

TRAUMA, PTSD, AND RESILIENCE

A Review of the Literature

CHRISTINE E. AGAIBI

University of Akron

JOHN P. WILSON

Cleveland State University

Based on the available literature, this review article investigates the issue of resilience in relation to trauma and posttraumatic stress disorder. Resilient coping to extreme stress and trauma is a multifaceted phenomena characterized as a complex repertoire of behavioral tendencies. An integrative Person \times Situation model is developed based on the literature that specifies the nature of interactions among five classes of variables: (a) personality, (b) affect regulation, (c) coping, (d) ego defenses, and (e) the utilization and mobilization of protective factors and resources to aid coping.

Key words: *PTSD, resilience, positive coping, resilient behaviors, interactional models*

THIS REVIEW OF THE LITERATURE on trauma, posttraumatic stress disorder (PTSD), and resilience examines a wide range of studies over several decades. It develops a framework by which to view the historical evolution of research on psychological resilience in general and the nature of posttraumatic resilience in particular. The chapter organization reflects the central conceptual issues surrounding the concept of resilience; the early developmental studies of resilient children growing up under adverse environmental conditions; the paradigm of extreme stress, trauma, and resilient coping during and after exposure to powerful, life-threatening stressors; and the need for a generic model of posttraumatic resilience, coping, and adaptation.

Theoretical models of traumatic stress syndromes and the literature on PTSD have established that there is a wide range of outcomes in how persons cope with traumatic experiences (Bonnano, 2004; Wilson, 1995; Wilson & Drozdek, 2004; Wilson, Friedman, & Lindy, 2001; Wilson & Raphael, 1993; Zeidner & Endler, 1996). The models of traumatic stress (Wilson, 1989, 2004a; Wilson et al., 2001; Wilson & Thomas, 2004) and adaptive coping processes (Folkman, 1997) are useful paradigms by which to examine the question of resiliency: How is it that persons recover and "spring back" from psychological trauma? What are the psychological factors that are associated with resiliency and effective coping? What are its internal mechanisms in the psyche and as manifest in adaptation to environmental demands?

THE DEFINITION OF RESILIENCE

In this article, we explore the question of trauma and resiliency. We present a conceptual model of trauma and resilience based on a review of the literature. To undertake such an analysis requires definitional clarity on the meaning of resilience. Understanding the nature of resilience requires conceptual and definitional clarity. What is resilience and what constitutes resilient behavior? This seemingly simple question turns out to be very complex as a psychological and behavioral process. There are at least five distinct ways to define human resilience. First, what is the lexical definition of resilience? Second, what constitutes resilience as a psychological phenomenon in its purest form devoid of contextual parameters? In terms of basic processes of perception, cognition, affect regulation, and information processing, what characterizes resilience? Third, what defines resilient behavior under adverse environmental conditions? This question spurred the early research on resilient children who grew up in poverty, in malfunctional families, or in conditions of cultural deprivation. The focus on resilient behavior is a way of evaluating resilience by outcome: How is good performance maintained in the face of adversity, overwhelming disadvantage, or impediments to highly effective adaptation and performance as defined by a range of dependent variables (e.g., mental health, school performance, absence of illness or psychopathology, etc.)? Fourth, the question of psychological trauma and resilience is a variation on conceptualizations of effective coping and adaptation under adverse environmental circumstances. Trauma, however, is generally defined by stress events that present extraordinary challenges to coping and adaptation. Indeed, the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR*; American Psychiatric Association, 2000) definition of traumatic stressors includes "experiencing, witnessing, or confronting events that involve actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (p. 467). Thus, the issue of resilience to traumatic situations raises questions as to the nature of peri-

KEY POINTS OF THE RESEARCH REVIEW

- Posttraumatic resilience refers to a complex repertoire of behavioral tendencies.
- Posttraumatic resilience is associated with a cluster of personality traits linked to extraversion, high self-esteem, assertiveness, hardiness, internal locus of control, and cognitive feedback.
- Posttraumatic resilience is associated with ego resilience, which includes flexibility, energy, assertiveness, humor, transcendent detachment, and a good capacity for affect regulation.
- Posttraumatic resilience is a form of behavioral adaptation to situational stress and a style of personality functioning.
- Posttraumatic resilience in response to trauma includes recovery from PTSD to optimal states of functioning and psychological immunity to psychopathology.

traumatic (during) and posttraumatic forms of resilient behavior. Stated differently, what set of psychological factors are associated with resilient coping in the "face" and "wake" of trauma? Fifth, the issue of PTSD and resilience similarly raises questions regarding the dimensions of effective coping. For example, what factors are protective against the onset or later development of PTSD? What factors (e.g., personal, social, support resources, etc.) are associated with resilient recovery from PTSD versus chronic forms of the disorder? Resilient posttraumatic coping behavior poses the question as to continuities and discontinuities in resiliency across the life span. Is posttraumatic resiliency a characteristic of the person or highly influenced by normative life crises of aging and unique situational contexts that challenge coping repertoires?

The *Oxford English Dictionary* defines *resilience* as "the activity of rebounding or springing back; to rebound; to recoil." It further defines resilience as "elasticity; the power of resuming the original shape or position after compression, bending, etc." It is the ability "to return to the original position." The lexical analysis also includes the adjectives "cheerful, buoyant, and exuberant." The linguistic use of the term *resilience* refers to a property: an ability of an object to restore its original structural form, despite being temporarily altered by external forces that

would “bend” or “compress” its shape. The property of resilience, then, would apply to behavioral phenomena in engineering, physiology, the natural environment, and human behavior in a variety of environmental contexts. Moreover, resilience is generally viewed as a quality of character, personality, and coping ability. Resiliency connotes strength, flexibility, a capacity for mastery, and resumption of normal functioning after excessive stress that challenges individual coping skills (Lazarus & Folkman, 1984; Richardson, 2002). In some definitions, resilience refers to an ability to overcome high loads of stressful events (e.g., trauma, death, economic loss, disaster, political upheaval and cultural changes) and maintain psychological vitality and mental health (Bonnano, 2004; Harel, Kahana, & Kahana, 1993; Harel, Kahana, & Wilson, 1993; Wilson, 2004a; Wilson & Drozdek, 2004; Yehuda, 1998). In experimental studies, resilience has been used as independent and dependent variables. In this regard, it is meaningful to speak of resilient persons and resilient behavioral adaptations and outcomes in different situations. Clearly, a Person \times Situation interactional model of resilience is conceptually critical to the analysis of resilience as a posttraumatic phenomena (see Aronoff & Wilson, 1985; Wilson, 1989; Zeidler & Endler, 1996 for a review). What are the characteristics of resilient persons that distinguish them from less resilient persons? What constitutes resilient behavior in different types of traumatic situations with varying degrees of stress demands, adversity, or the complexity of problems to be solved?

In a metatheory of resilience, Richardson (2002) proposed that the history of research on resilience can be classified in three ways: (a) identifying the unique characteristics of persons who cope well in the face of adversity, (b) identifying the processes by which resiliency is attained through developmental and life experiences, and (c) identifying the cognitive mechanisms that govern resilient adaptations. Previous research on the phenomena of resilience has examined a substantial domain of critical factors thought to be associated with resilience and include genetics, neurobiological factors, child-

hood development, type of trauma or stressful life event, personality characteristics, cognitive style, prior history of exposure to stressful events, gender, age, capacity for affect regulation, social support, and ego defenses (Agaibi, 2003; Fredrickson, 2002; Schore, 2003; Southwick, Morgan, Vythilingham, Krystal, & Charney, 2004; Wilson, 1995; Zeidner & Endler, 1996; Zuckerman, 1999).

Resilient Persons, Resilient Behavior and Its Process Over Time

To facilitate a review of the relevant literature, we will organize this article into sections and attempt to draw conclusions from an analysis of the findings. To be clear about the importance of resiliency, the concept must be operationally defined. Wilson and Agaibi (in press) suggest that it is conceptually advantageous to define resilience as a “complex repertoire of behavioral tendencies.”

They state that resilience characterizes a style of behavior with identifiable patterns of thinking, perceiving, and decision making across different types of situations. Current definitions of resilience vary from absence of psychopathology in a child of a severely mentally ill parent, to the recovery of a brain-injured

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patient, to the resumption of healthy functioning in survivors of extreme trauma (Folkman, 1997; Garmezy, 1996; Harel, Kahana, & Wilson, 1993; Wilson & Drozdek, 2004; Wilson & Raphael, 1993). In this regard, it is helpful to study longitudinally the process of resilience, examining positive versus negative adaptation, coping, and the operation of personality variables in different situational contexts. For example, is resilience a stable characteristic of personality or a variable dimension of behavioral adaptation under situational pressures? Is the study of resilience in relation to trauma a universal paradigm by which to understand all forms of

resilient behavior? Are resilient trauma survivors the “gold standard” examples of successful coping and adaptation?

In the most basic sense, resiliency has been defined as the ability to adapt and cope successfully despite threatening or challenging situations. Resilience is a good outcome regardless of high demands, costs, stress, or risk. Resilience is sustained competence in response to demands that tax coping resources. Resilience is healthy recovery from extreme stress and trauma (Wilson & Drozdek, 2004). Resilience has been conceptually linked with curiosity and intellectual mastery as well as the ability to detach and conceptualize problems (J. H. Block & Kremen, 1996). Resilience has also been postulated to include strong extroverted personality characteristics (e.g., hardiness, ego resilience, self-esteem, assertiveness, locus of control) and the capacity to mobilize resources (Wilson & Agaibi, in press).

Historical Foci in the Study of Resilience: Children, Gender, Competence, Trauma, and PTSD

Richardson (2002) stated that “from a historical view, the first wave of resiliency inquiry focused on the paradigm shift from looking at the risk factors that led to psychosocial problems to the identification of strengths of an individual” (p. 309). Indeed, prior to the onset of systematic research on PTSD in 1980 (Wilson, 1995; Wilson et al., 2001; Wilson & Raphael, 1993), studies tended to look at how children subjected to harsh developmental and formative experiences emerged psychologically healthy rather than developing psychopathology. In his succinct review, Richardson (2002) highlighted the research of Werner and Smith (1992), Michael Rutter (1990), and Norman Garmezy (1991), who studied children thought to be “at risk” because of economic poverty, severely mentally ill parents, or developmental deprivations of different types (e.g., neglect, abuse, poverty, social class). Among the classic pioneering studies of psychological resiliency, Garmezy (1981) and Cicchetti and Garmezy (1993) noted that caution is warranted in the study of resilient persons by not selecting extremes for study and opt

for a middle ground, studying successful adaptation in the context to unusually adverse life circumstances.

Researchers studying resilience recognize the multifaceted task of understanding the different forms of adaptation that characterize resilient behaviors (Caffo & Belaise, 2003). Multirisk situations as well as psychobiological (Southwick et al., 2004) and sociocultural influences have been analyzed to understand the nature and dynamics of resiliency. In regards to psychological trauma, Weisaeth (1995) has identified the nature of high-risk persons, situations, and reactions to traumatic stressors and proposes a matrix analysis of their interactive effects in coping and adaptation.

In relation to other concepts identified in the traumatic stress literature, resiliency reflects a pattern of competence and self-efficacy in the presence of extraordinarily difficult events and raises critical questions. Are resilient individuals primarily characterized by having competence in areas of psychological functioning? Competent performance indicates positive beliefs about self, task performance, and problem solving (Weisaeth, 1995). Areas of personal competence extend to the successful mastery and ability to cope with traumatic stressors as trauma invariably taxes coping resources (Yehuda, 1998). On the other hand, chronic, excessive stress imposes demands for coping and can lead to health problems (Schnurr & Green, 2004). In analyzing these variables, research evidence suggests that competence is related to use of psychosocial resources (Caffo & Belaise, 2003). In brief, resources to develop competence are less prevalent among children growing up in adversity. Competence does develop, however, with sufficient resources even if there are chronically severe stressors present. Research shows that adolescents with maladaptive behavior tend to be overly reactive to stress and have a history of low resource utilization and lack competence in coping with stressor demands (Masten et al., 1999). Good parenting is associated with the development of cognitive skills that facilitate greater competence in coping with different types of stressors. Among individual difference variables, IQ is a significant predictor of social competence and intellectual

functioning (J. H. Block & Kremen, 1996) and acts as a vulnerability factor for antisocial behavior in "at-risk" groups of children and adolescents (Masten et al., 1999).

In terms of vulnerability factors, Masten et al. (1999) found few differences that differentiated competent and resilient individuals. Resilient children tended to resemble their competent peers but differed dramatically from maladaptive, vulnerable, and at-risk youth. Although it is possible to identify differences that distinguish resilient from nonresilient children, the question remains as to how internal psychological processes (e.g., stress appraisal, personality differences) interact with situational pressures (e.g., type of trauma, threat level) to set up an array of possible forms of resilient and nonresilient behavior.

Taking a broad view of the seminal studies on resilient and "stress-immune" children, it can be seen that among the keys to understanding resiliency is analyzing risk and vulnerability, protective factors, coping, competence, personality factors, and the capacity to effectively use resources. As summarized by Caffo and Belaise (2003), psychological resilience is a consequence of positive human development and the capacity to cope with stressors. Protective and growth-promoting factors are necessary to the development of competence and resilience, especially in disadvantaged urban youth (Parsons, 1994). Children, as well as adolescents, cope more effectively with adversity if they receive nurturing and stable care from others. Rutter (1990) found that organizational or institutional settings that promote self-esteem and problem-solving behavior increase the likelihood of competence, resilience, and the mastery of situations that challenge coping.

Research evidence suggests that resilience is not gender specific and does not increase or decrease with age (Zeidler & Endler, 1996). It is, however, related to psychological development and changes in emotional and cognitive competency (Folkman, 1997; Fredrickson, 2001; Fredrickson & Tudeade, 2003). Resiliency and responses to different types of life stressors can change over time (Felsman & Vaillant, 1982). Moreover, coping mechanisms are situationally dependent and interact with personality vari-

ables (Aronoff & Wilson, 1985; Wilson, 1989; Zeidner & Endler, 1996; Zeidner & Endler, 1996). Resiliency is a multidimensional construct that is defined by performance outcome, the adequacy of responses to normal and severe stressors, including traumatic ones, and how cognitive processes and the ability to modulate emotions influence the ability to utilize personal and social resources (J. H. Block & Kremen, 1996).

Viewed from the perspective of traumatology, resilience is efficacious adaptation regardless of significant traumatic threats to personal and physical integrity (Harel, Kahana, & Wilson, 1993; Wilson, 2004a; Wilson & Drozdek, 2004). Children that have had exposure to chronic stress such as war trauma, refugee status, civil violence, extreme poverty, and economic or social deprivation exhibited diverse forms of resiliency (Wilson & Drozdek, 2004). In examining "at-risk" populations that exhibit resiliency (e.g., raped adolescent girls in situations of ethnic cleansing, displaced refugees and asylum seekers, torture victims, etc.), various protective factors have been identified (Solomon, Neria, Ohry, Waysman, & Ginzburg, 1994; Wilson & Drozdek, 2004). Studies of "at-risk" populations (Dugan & Coles, 1989), especially those who do not develop PTSD, mood disorders, or comorbid disorders (Folkman & Moskowitz, 2000; Fredrickson et al., 2003), is especially important because they hold clues to optimal functioning in the face of trauma, extreme stress, and adversity in life (Wilson, in press).

Risk Stressors for Children: Early Paradigms for Analyzing Resilience

A wide array of stressors exists that puts children at risk for maladaptive behaviors including the development of PTSD. These stressors include psychological trauma and abuse, mentally ill parents, physical disability, life-threatening birth defects and personal injuries, asylum seeking and refugee status, war, disasters, and life-threatening illness (Caffo & Belaise, 2003; Masten, Morison, Pellegrini, & Tellegen, 1990; Nader, 1997, 2004; Pynoos & Nader, 1993).

Garmezy (1991) identified traumatic stressors that potentially put children at risk for the development of psychopathology, including PTSD. He studied disadvantaged children in America's urban cities who were subjected to extreme stress. Among other outcomes, Garmezy found that these children were twice as likely to die in the first year of life, be born prematurely, suffer low birth weight, have mothers who had little or no prenatal care, and have unemployed parent(s). These children were 3 times more likely to have mothers die during their delivery, be forced to live in foster homes, or die from abuse. They were also 4 times more likely to live without a biological parent and be supervised by a child welfare agency. They were also 4 times more likely to be the victims of murder by age 1 or as teenagers. Clearly, these findings suggest a wide range of negative effects to attachment processes, ego development, vulnerability to stressors, and the learning of competencies in social behavior.

At a higher meta level of analysis, social class, as an independent variable, may be a distal risk factor but result in proximal stressors that directly affect those subjected to such experiences and lead to high rates of PTSD (Kinsie, 1988, 1994). Risk factors of socially disadvantaged mothers often occur together and include such things as poor maternal nutrition, geographical displacement from home, domestic violence, and substance abuse. Garmezy (1991) noted that the combination of maternal social, biological, and environmental disadvantages and stressors increases the risk of pathology in the child. Similarly, Caffo and Belaise (2003) described children undergoing stressors in a cyclical, stress-related pattern that increases the child's vulnerability to pathology. Children of impoverished environments tend to have poorer overall health, become school dropouts, and consequently have limited job opportunities, which further perpetuates the cycle of poverty and allied social pathologies. However, the majority of the children studied that lived in adverse conditions did not repeat the abusive patterns in their adult lives (Luthar & Zigler, 1991).

In the classic study of Hawaiian children, Werner and Smith (1982, 1992) predicted adjust-

ment problems at later stages of development for children with risks such as chronic poverty, low maternal education, and moderate to severe perinatal stress. One third of the Hawaiian sample tested was considered resilient because they did not develop problems and were psychologically healthy at ages 10, 18, and 30. A comparison was made between resilient children and a high-risk sample that developed adjustment problems. Resilient children received more attention as infants and, according to their mothers, presented as more active and socially responsive. In summarizing her work, Emmy Werner (2004) stated that resilient children "were consistently characterized by their mothers as active, affectionate, cuddly, good-natured, and easy to deal with" (p. 61).

How do "distal" and "proximal" risk factors interact with each other? How does culture, social status, and economic status influence family patterns, child development, and the presence or absence of specific stressors? Agaibi (2003) stated that distal risk factors are based on indirect stressors, such as social class. These risks are, however, part of the characteristics of proximal risk factors that are directly experienced. Proximal risks include such things as chaotic environments, family trauma (Harkness, 1993; Wilson & Kurtz, 1997), familial instability, parental substance abuse, inadequate nutrition, parental dissension, mental illness, or antisocial behavior (Nader, 1997). Agaibi suggested that if a child is exposed to distal risks (e.g., poverty), yet experiences no proximal risk (e.g., neglect, childhood abuse), it is then safer to assume that the family is more resilient than not.

In the literature on risk and vulnerability, the two terms have been used interchangeably. Research on classes of risk factors traditionally anchors itself in epidemiological studies of psychopathology. Studies of risk factors have focused on factors that emphasize or reduce the disposition to psychopathology or increase salutary outcomes. Vulnerability has been seen as an inclination toward negative outcomes, especially after exposure to traumatic stressors. We refer to this process as *peri-traumatic vulnerability* (Wilson, 1989, 2004a, in press). Sources of vulnerability to adversity, stress, and trauma can

be present in the individual's personality and coping repertoire or in the environment (Wilson et al., 2001; Wilson & Prabucki, 1989). These sources of vulnerability can function independently or in an additive manner. Compas and Phares (1991) identified five sources of vulnerability: (a) coping strategies and styles, (b) age or developmental level, (c) personal characteristics that relate to gender, (d) social-cognitive factors, and (e) the stress and symptoms experienced by close family members.

Stress Appraisal Processes

The perception and appraisal of stressors can be conceptualized as moderating factors to PTSD and comorbidity (Folkman, 1997; Lazarus & Folkman, 1984; Wilson, 2004b). As we will discuss, the literature on coping supports the idea that problem-centered versus emotional coping is more effective in dealing with traumatic stress (Folkman & Moskowitz, 2000; Wilson, Harel, & Kahana, 1988; Wilson & Raphael, 1993; Zeidner & Endler, 1996). Lazarus and Folkman (1984) suggested that an event will be perceived as stressful if the person believes that the stress exceeds coping capacity. The perception of overwhelming stressor demands may lead to self-attributions of inadequate competence to effect positive outcomes. In this regard, Garmezy (1987) found that children with poor self-esteem are vulnerable to interpersonal and academic stressors and tend to perceive events as more stressful. Compas and Phares (1991) found that using problem solving to cope with interpersonal stressors is correlated with lower levels of maladjustment in children. Compas and Phares predicted that the level of parents' and children's stress level would be correlated and found that fathers' symptoms were significant predictors of behavior problems and of children's self-reports of internalizing the stress. They found that mothers' symptom level, in comparison to the fathers', must be more severe before children are at risk to the development of problems. Similar results were reported by Harkness (1993) in a study of adolescent children of treatment-seeking Vietnam combat veterans. The fathers' level of PTSD, anger, aggressive behavior, and depression had

different effects on male and female children as determined by the mothers' style of coping and role behaviors (e.g., protective nurturance, central family decision maker, etc.).

To partially summarize the literature's view on risk and vulnerability, one can say that although these terms are often used interchangeably, they are distinct processes. Children may be deemed "at risk" by trauma, genetics, and early environmental factors (Richardson, 2002). Vulnerability is seen as a response to a stressor. Risk behaviors are seen as responses to traumatic stressors (Weisaeth, 1995). Rutter (1990) found that psychiatric illness for children increases when there are two or more risk factors present. In other situations, vulnerability and resiliency seem to be on opposite ends of a continuum, in which vulnerability identifies a risk factor eventuating in pathology and resiliency identifies a factor leading to positive adaptive behavior (Garmezy, 1996). Although vulnerability can be classified in categories (e.g., age, nature of stressor, developmental level, personality, etc.), each category is a representation of a factor that is associated with a vulnerability to develop a prolonged stress reaction (McEwen, 2002). In this sense, Garmezy (1985, 1987, 1991) saw protective factors as the ability to moderate emotions, cope with stressors, and manifest positive responsiveness to stressors, a view shared by J. H. Block and Kremen (1996) in their analysis of ego resilience, intelligence, and coping.

Research findings suggest that effective parenting can increase self-efficacy by modeling solutions to stress. Self-esteem and self-confidence function as personality moderators of traumatic experiences and serve as protective factors. Self-efficacy increases with previous mastery of stressful situations (White, 1959). Secure and healthy attachment increases the potential for mastering a stressful experience and promotes autonomy (Masten et al., 1990). Similarly, Nunn

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(1995) found that intellectual skills and social cognitive abilities function as protective factors. Resourceful children with problem-solving skills tend to be more resilient and recognize danger cues more quickly than intellectually challenged children (Nader, 1997, 2004). Because danger is quickly discerned, help seeking is initiated proactively as a response tendency that may truncate the onset of acute stress disorder phenomena (Nader, 1997, 2004).

Longitudinal Research and the Identification of Resilient Factors

In studies of trauma, PTSD, and coping with extreme stress, the personality variable, internal locus of control, has been associated with effective adaptation to stress (Harel, Kahana, & Wilson, 1993; Wilson, 1989; Wilson, Harel, & Kahana, 1989). Persons with an internal locus of control tend to exhibit less PTSD and psychopathology and have better overall adjustment than persons with an external locus of control. In a longitudinal study, Elder and Clipp (1988), using the Oakland Growth studies data bank, were able to evaluate personality variables evident in childhood that predicted PTSD symptoms in Korean and World War II veterans. Prior to military service, men who were sensitive, introspective, obsessive, and introverted were more likely to manifest psychiatric morbidity than were men who were extroverted, dominant, assertive, and self-assured. Although risk factors include traumatic life stressors, protective factors are significantly related to positive family and peer relationships. Preexisting psychopathology tends to be a risk factor for negative psychosocial consequences, including the development of PTSD following trauma (Friedman, 2000a; Garmezy & Masten, 1991; Wilson & Drozdek, 2004; Yehuda, 1998). In this regard, Rutter (1990) defined three broad variables as protective factors: (a) personality coherence, (b) family cohesion, and (c) social support. Personality factors include level of autonomy, self-esteem and self-efficacy, good temperament, and positive social outlook. In the area of traumatic stress research, Wilson and Raphael (1993) and Wilson (1995) identified similar factors associated with resilience, which include internal lo-

cus of control, altruism, the perception of social and economic resources, self-disclosure, and the formation of a clear sense of identity as a survivor. Family cohesion, warmth, and lack of discord or tension have been identified as protective factors (Garmezy & Masten, 1991). External support systems, whether perceived or used, promote good coping.

In a 40-year longitudinal study of Harvard University students, Felsman and Vaillant (1982) attempted to identify the childhood and adolescent factors associated with resiliency in later adulthood. This study has direct relevance to understanding psychological trauma and resiliency because of its longitudinal nature and the wide domain of personal characteristics assessed throughout the course of the study (e.g., Eriksonian life stages, maturity of ego defenses, IQ, boyhood competence, family background, socioeconomic status, etc.).

The results produced an interesting set of findings that tend to "dove-tail" with the findings on studies of trauma, PTSD, and resilience. First, IQ and boyhood competence (a measure of active involvement in activities and a good childhood environment) were positively correlated with current mental health, the attainment of ego maturity (i.e., generativity), good object relations, and the use of mature ego defenses (e.g., altruism, sublimation). Conversely, their measure of childhood emotional problems was negatively correlated with these same variables but significantly associated with sociopathy. Second, there was considerable variability in psychosocial development across early adult development for the more resilient members of the study. There was little evidence for a linear, uninterrupted pattern of life-span development that led to successful achievements later in life. There were periods of discontinuity and regression. However, what seemed to distinguish the resilient adults was "a clear pattern of recovery, restoration, and gradual mastery" (Felsman & Vaillant, 1982, p. 311). In terms of resilience, this would suggest that there were identifiable periods of rest, recuperation, and recovery that facilitated a restoration of competence, active coping, and striving, which "gradually" culminated in the mastery of challenging personal experiences. In terms of personological variables,

the data suggest that men who come from more or less stable childhood backgrounds, with positive early learning periods that served to facilitate boyhood competence, developed more functional and mature ego defenses that, in turn, may have moderated the development of self-esteem, locus of control, and prosocial behavior. This being the case, we would expect that persons suffering from psychological trauma and PTSD would manifest patterns of adaptation, coping, and resilience that would wax and wane over time, marked by periods of continuity versus discontinuity, ego coherence versus fragmentation, good versus poor object relations, gradual assimilation and mastery of the impairment of trauma to their sense of well-being (see Wilson, 2004a, for a discussion).

PARADIGM SHIFT: FROM "AT-RISK" CHILDREN TO TRAUMA SURVIVORS AND THE STUDY OF PTSD

With the advent of PTSD as a diagnostic entity in 1980, the study of resilience began to move away from traditional social-psychological and developmental studies to more in-depth studies of trauma survivors. Studies of posttraumatic resilience examined pre- and posttrauma areas of adaptive competence among different trauma populations, including those who do and do not develop PTSD.

The Core Factors of Posttraumatic Vulnerability to PTSD

Zuckerman (1999) reviewed the literature on vulnerability and the development of PTSD. In terms of PTSD, vulnerability and resilience are related concepts, as they characterize twin sides of trauma and the responses to it. In his summary analysis, Zuckerman noted that there are clearly identifiable vulnerability factors to the psychiatric sequelae of PTSD that include genetics (True et al., 1993), individual risk factors (e.g., family background), personality (e.g., types of ego defense, extraversion), biological factors (e.g., alterations in brain function), cognitive style, and information processing. Although these findings do not directly address the issues of resiliency in the face of trauma,

they do suggest that there are an interrelated set of psychobiological processes at work that influence (a) the genetic predisposition to trauma, (b) the probable protective factors from childhood development, (c) the operation and moderating functions of personality processes, and (d) the nature and cause of prolonged stress response patterns in the central nervous system (i.e., the active psychobiological metabolism of the trauma experience, including traumatic memories; see Southwick et al., 2004, for a review).

In a review of studies concerned with war trauma, natural and technological disasters, torture, the Holocaust, and duty-related trauma, Wilson and Raphael (1993) and Wilson (1995) identified seven factors associated with resilience. Wilson (1995) found that there were similar constellations of predictors of current well-being, positive mental health, and manifestations of resilience in these survivor populations that included: (a) locus of control (i.e., a sense of efficacy and determination, (b) self-disclosure of the trauma experience to significant others, (c) a sense of group identity and sense of self as a positive survivor, (d) the perception of personal and social resources to aid in coping in the posttrauma recovery environment, (e) altruistic or prosocial behaviors, (f) the capacity to find meaning in the traumatic experience and life afterward, and (g) connection, bonding, and social interaction within a significant community of friends and fellow survivors. Viewed from the perspective of resilience, these seven factors appear to be identifying important classes of variables that interact together in generating resilience. These include factors within the person (i.e., locus of control, cognitive attributions of being a strong survivor, a firm sense of personal identity as a survivor) as well as specific forms of coping (i.e., perception of personal and social resources to aid coping, capacity to find meaning) and behavioral activities in the recovery environment (e.g., appropriate self-disclosure, altruism, prosocial behaviors, bonding and fellowship with other survivors) that promote resilient functioning. Persons who have an internal locus of control who can find meaning in their trauma experiences may be able to initiate a set of processes that enables them to shape a

personal sense of identity by being bonded and attached to fellow survivors who, in turn, are perceived as resources for coping with emotional, social, and economic needs (see Zakin, Solomon, & Neria, 2003). Furthermore, within a trusted enclave of fellow survivors, the bonding and networks formed may facilitate healthy self-disclosure and the opportunity to enact prosocial behaviors and positive emotional states as part of the natural transformation process of dealing with individual trauma. In this way, too, prosocial enactments reinforce personal systems of meaning and validate the strengths of survivorship. Similar conclusions were found by Hendin and Haas (1984), who found that Vietnam combat veterans with high resilience were characterized by six factors: (a) calmness under pressure, (b) acceptance of fear in self and others, (c) low levels of excessive violence in the war zone, (d) the importance of understanding and good judgment, (e) absence of guilt, and (f) humor.

PTSD symptoms following traumatic stressors can be a result of personal vulnerability or types of pre-traumatic vulnerability (e.g., prior stressors, trauma, psychological disorders). In some individuals, exposure to repeated trauma may increase resilience; in other survivors, it can degrade resiliency. This difference in outcome of traumatic stress response has been referred to as the "steeling effect" or "prior vulnerability" disposition to develop prolonged stress reactions (Figley, 1985, 1986; Wilson, 1989, 1995; Wilson & Raphael, 1993; Wilson & Drozdek, 2004).

Traumatic Stressors and Peri-Traumatic and Posttraumatic Forms of Resilience

It is a truism to say that not everyone develops PTSD following trauma, a fact that makes the study of resilience both interesting and important. Clearly, it is necessary to understand vulnerability and resiliency factors to meaningfully interpret the adaptation to trauma. Yehuda (1998) clarified the difference between chronic, non-life-threatening stress and acute, life-threatening stress. She indicates that although acute stress reactions have mental and physical health consequences, it has been as-

sumed that these consequences would lift once the stressor terminated (Bryant, 2004). Although chronic stress effects developed over a period of time, acute stress effects were sudden and immediately impactful. In chronic stress, physiological and emotional processes degrade over time (Friedman, 2000a; McEwen, 2002). In acute stress, there is a rapid and sudden change in these physiological and mental processes (Friedman, 2000a; Friedman & McEwen, 2004). In chronic stress, the individual experiences feelings of being overwhelmed and struggles to cope with the long-term consequences of prolonged stress-related symptoms. Traumatic stress results in feelings of fear that can activate complex allostatic psychological responses (McEwen, 2002; Thomas & Wilson, 2004; Wilson, 2004b; Wilson et al., 2001; Wilson & Thomas, 2004).

In terms of trauma and PTSD, there are several studies that have examined resilience in relation to war trauma, internment, civil violence, and terrorism. L. A. King, King, Fairbank, Keane, and Adams (1998) studied resiliency associated with PTSD among Vietnam veterans in relation to hardiness, social support, and stressful life events. L. A. King et al. predicted that hardy war veterans would cope better with life stresses than less hardy veterans. They suggested that hardy veterans would utilize social supports in their environment to overcome a stress. They predicted that veterans exposed to extreme war stressors who had strong, current social support would display fewer PTSD symptoms than veterans with less support. They argued that when war stressors were measured at low levels, there would be a weak relationship between social support and the development of PTSD.

The results indicated that male and female veterans who scored high on the hardiness dimensions of control, commitment, and challenge showed fewer PTSD symptoms. Hardiness was associated with fewer PTSD symptoms and appears to help the individual establish relationships that aid coping with PTSD symptoms when present. Contrary to their hypothesis, hardiness did not seem to protect veterans from PTSD symptoms if these individuals experienced heavy combat, a finding

replicated in studies of prisoners of war (Zeiss & Dickman, 1989). However, the amount of social support received did predict the extent of PTSD symptoms. L. A. King et al. (1998) concurred with Solomon and Mikulincer (1992), who stated that negative life events tend to be negatively correlated with prevalence of intact social support. Stressful events can deplete social networks that, in turn, increase PTSD symptoms. Similar findings were reported by Sutker, Davis, Uddo, and Ditta (1995) in a study of war-zone stress, personal resources, and PTSD in Persian Gulf War veterans. From a sample of 775 military veterans, 97 with diagnosed PTSD were compared to 484 who did not show pathological signs of distress. The results indicated that veterans with PTSD scored lower on Kobasa's (1979) measure of hardiness (i.e., commitment, control, challenge) and had less social support and family cohesion as well as avoidant coping styles with strong tendencies to self-blame. These results illustrate the interaction between personality characteristics, coping styles, and use of social support.

There are several studies that examined stress, coping, and the presence of PTSD among veterans of the 1991 Gulf War. The findings show a similar pattern of results that, as a personality dimension, hardiness moderates the effects of war-zone stress and post-war coping with civilian stressors. Bartone (1999) studied six Army National Guard and reserve medical units about a year after the end of the Gulf War in Kuwait and Iraq. A sample of 787 participants were given the Kobasa Hardiness Scale, the Brief Symptom Inventory, Holmes-Rahe Stress Scale, a 20-item measure of current health status, and a 15-item Gulf War zone stressor assessment scale. The results supported a Person \times Situation model of resilience (Wilson, 1980). Using a regression analysis, hardiness interacted with combat stress in predicting the global severity psychiatric index for low- and high-hardiness participants. High-hardiness persons had fewer psychological and health-related symptoms than did low-hardiness individuals. Similar findings were reported by Benotsch, Brailey, Vasterling, and Sutker (2000), who examined 348 Gulf War veterans at two different time intervals after repatriation. The authors measured

PTSD, dispositional resilience, coping styles, personal resources, and social support. At the first time interval after repatriation, those with more severe PTSD symptoms were characterized by avoidance coping and lack of family cohesion. At the second time interval, conducted about 2 years after the war, avoidance coping and a general decrease in perceived social support resources predicted PTSD symptoms. In a related study, Sharkansky, King, King, Wolfe, Erikson, and Stokes (2000) examined 2,949 Gulf War veterans and measured combat exposure, coping styles, PTSD, life stressors, and depression. Results showed that when comparing postwar adjustment at two different intervals within 2 years of repatriation, veterans who used approach (i.e., active) coping styles had fewer PTSD symptoms than men who utilized avoidant forms of coping. However, those with the highest levels of combat exposure had more PTSD and depressive symptoms, irrespective of coping styles.

In an Israeli study, Zakin et al. (2003) examined the relationship between hardiness, attachment style, and long-term distress among Israeli prisoners of war (POWs) and combat veterans of the Yom Kippur War in 1973. Using Israeli POWs and matched combat controls, the former soldiers were administered the Symptom Checklist 90 (SCL-90), a measure of attachment styles, the Kobasa Hardiness Scale, and a measure of PTSD based on the *DSM-III-R* (1987) diagnostic criteria. The results showed that hardiness was associated with low levels of symptoms reported. Using a hierarchical regression analysis, the interaction between hardiness and attachment style account for 20% to 40% of the measured variance in depression, anxiety, somatization, and present and past PTSD symptoms. These results are consistent with the findings on hardiness as a personality dimension associated with resilience in the form of fewer manifest symptoms of psychiatric distress associated with exposure to war-zone stressors.

In a study of former prisoners of war, Gold et al. (2000) examined PTSD symptoms and recovery in World War II and Korean former POWs. Former POWs whose exposure to trauma was severe were at high risk for experiencing psychological problems such as PTSD, depres-

sion, anxiety, or cognitive deficits (Beebe, 1975; Eberly & Engdahl, 1991; Engdahl, Dikel, Eberly, & Blank, 1997; Page, Engdahl, & Eberly, 1991; Sutker, Winstead, Galina, & Ayain, 1991; Tennant, Goulston, & Dent, 1986). Although combat veterans have a lifetime occurrence of PTSD at 30%, POWs have a lifetime occurrence of PTSD at 67% (Khuznik, Speed, VanVelkenberg, & MacGraw, 1986; Kulka et al., 1990). Gold et al. (2000) suggested that the greater the torture and weight loss experienced while imprisoned, the greater the PTSD symptoms. They noted that premilitary trauma, personality, age, and postmilitary social support played a role in determining the severity of the PTSD symptoms.

The predictors for the severity of PTSD symptoms were thought to include severity of trauma during imprisonment, factors of resilience, and postwar social support. It was found that the severity of the trauma experienced during imprisonment was related to distress experienced 40 to 50 years later. The level of distress was inversely associated with education and age at the time of the trauma. There was a significant correlation between reexperiencing the trauma and the initial coping response (i.e., peri-traumatic coping) of avoiding triggers that reminded veterans of their POW experience. Contrary to other studies, the presence of social support did not moderate the level of PTSD symptoms.

In a 40-year follow-up study of former POWs, Zeiss and Dickman (1989) assessed factors associated with PTSD among WWII veterans who were captured as war prisoners in Europe and the South Pacific war zones. They employed a Person \times Situation interactional analysis of the variables significantly associated with the persistence of PTSD symptoms across four decades. The results revealed that 55.7% reported PTSD symptoms using the *DSM-III* (1980) diagnostic criteria. They note, however, that PTSD symptoms waxed and waned during this postwar period of time. In terms of demographic variables, higher military status (rank) and education predicted better outcomes in terms of PTSD and postwar adaptation. Duration of internment and age at capture did not correlate significantly with assessments of PTSD over time. The authors suggest that

personal characteristics, such as greater self-efficacy, emotional maturity, intelligence, interpersonal skill, educational level, commitment to the war effort, or locus of control may be mediating variables that resulted in both promotion in rank and relative ease of adjustment to stresses of POW life and repatriation. (Zeiss & Dickman, 1989, p. 86)

The effects of hardiness as a personality trait have been studied in direct relation to coping, daily hassles, and life stresses. These studies have direct relevance to traumatic exposure and resilience in persons characterized as hardy. In two related studies, Maddi (1999a; Maddi & Hightower, 1999) examined the difference between high- and low-hardiness students on several measures of coping and attitudinal outlook. In the first study, Maddi and Hightower (1999) found that hardiness predicted actual transformational coping better than measured optimism. Undergraduate students with hardiness used more active coping and planning. Hardiness was negatively correlated with behavioral disengagement, denial, mental disengagement, and proneness to use alcohol to cope with stress. Hardiness was positively correlated with emotional and instrumental forms of social support. The authors conclude that hardiness reflects a propensity for active problem solving and capacity to mobilize resources as needed to achieve desired outcomes. In the second study, Maddi (1999a) obtained similar results in a study of coping and strain among 20 male managers at a midwestern company. The results showed that high-hardiness participants were characterized by active enjoyment and interests, openness of mood, social support, and a transformational work style (i.e., one characterized by active problem-solving approaches to the challenges of the workplace). Furthermore, the results indicated that high-hardiness participants had significant fewer symptoms as measured by the SCL-90 symptom checklist (e.g., anxiety, depression, somatization, interpersonal sensitivity, etc.). The lower level of global distress on the SCL-90 suggests the possibility that the hardy individuals are better at modulating affect in relation to stressful demands.

The concept of hardiness has also been used to study coping among prisoners of war in Is-

rael. Waysman, Schwarzwald, and Solomon (2001) studied Israeli POWs of the 1973 Yom Kippur War. Hardiness was viewed as either a direct or moderating effect leading to long-term positive or negative change as a result of exposure to war trauma. Consistent with the theoretical work of Antonovsky and Bernstein (1977), Waysman et al. looked at the role of hardiness in protecting POWs from long-term negative consequences. The results revealed that hardiness was beneficial for people who were exposed to extreme stressors when compared with those who were exposed to lower levels of stress. Hardiness as a stress moderator exerted an effect of stress-related symptoms in POWs but not on controls who fought in the same war but experienced less exposure. An inverse relationship was found between hardiness and negative changes in both the POW and non-POW groups. It was found that the higher the hardiness score, the fewer negative changes experienced. POWs generally reported more negative changes in their lives following the trauma of war than their non-POW counterparts. Hardy POWs were less adversely impacted by postwar negative life changes than less hardy former internees.

In a study of Holocaust survivors who were children at the time of their internment, Cohen, Dekel, and Solomon (2002) examined the role of attachment as a variable associated with PTSD symptoms and patterns of adjustment. In comparison to non-Holocaust controls, the survivor group manifested more symptoms of PTSD. However, treatment-seeking survivors showed higher levels of anxiety, avoidant attachment, and current symptoms of PTSD than did the untreated survivors and matched controls. The authors note that as a cohort, Holocaust survivors show a wide range of variability in their scores for PTSD, coping styles, and issues related to attachment. These findings parallel those reported by Eitinger (1980); Harel, Kahana, and Kahana (1993); and Kahana, Harel, and Kahana (1988).

As an independent variable, resilience has been conceptualized as a personality characteristic (e.g., hardiness, locus of control) and in terms of ego processes. J. H. Block and Kremen (1996) studied the relationship between intelli-

gence and ego resiliency using Block's measure of ego resilience as an independent variable (Block, 1981; J. H. Block & Block, 1980). The people were participants in the Longitudinal Study of Cognitive and Ego Development who were administered measures of intelligence, a 14-item scale to assess ego resilience, and the California Adult Q-Sort of personality measurement. The study generated a wide set of findings that included descriptions of persons with high levels of ego resilience who were characterized on dimensions that included flexibility, challenge, confidence, curiosity, assertiveness, control, sociability, energy, and prosocial dispositions. When the effects of intelligence were controlled, resilient men and women were found to be outgoing, warm, assertive, calm, energetic, autonomous, active, productive, internally consistent, poised, and responsive to humor. In summarizing their findings, J. H. Block and Kremen stated, "The biosocial problem of the individual is adaptation. *Insufficiencies of adaptation are signaled to the individual by the intrusion of affect. Yet, current expanded conceptions of intelligence have remained 'cognitive' and still largely ignore affective and motivational aspects of behavior*" (p. 359, emphasis added). It would appear that ego resilience reflects qualities of personality and their use in adaptation but also a capacity to modulate stress response, an important issue in the dynamics of PTSD. Consistent with Fredrickson's (2001) formulation that positive emotions establish a "broaden and build" domain of effective behaviors in regards to stress modulation, ego resilience appears to reflect an interrelated set of cognitive and personality variables that work in harmony to promote resilient behavior. These findings match conclusions by Siebert (1996), who studied the traits of survivors of extreme environmental hardship and threats to life. Siebert indicated that survivor personalities were characterized by optimism, acceptance of their situational fate, creative problem solving, and the integration of right-brain abilities of intuition and holistic thinking with left-brain analytical thinking. These characteristics of survivor personality traits are quite similar to the attributes of ego resiliency as described by J. H. Block and Kremen.

In two related studies, Connor and Davidson (2003; Connor, Davidson, & Lee, 2003) reported findings on the development of a scale to measure resilience as a concept. In the first study, the 25-item Connor-Davidson Resilience Scale (CD-RISC) was developed to measure dimensions thought to be associated with resilience (e.g., 1. able to adapt to change, 6. see the human side of things, 12. when things look hopeless, I don't give up). Five groups of participants were selected for study: (a) general population, (b) psychiatric outpatients, (c) participants in a generalized anxiety disorder study, (d) patients in private practice, and (e) participants in a study of PTSD. The 25-item CD-RISC was administered to all five groups and subjected to a factor analysis and revealed five factors: (a) personal competence, (b) affect tolerance, (c) acceptance of change, (d) sense of internal control, and (e) spirituality. The CD-RISC scale was also cross-validated in this study with the Kobasa hardiness measure, the Perceived Stress Scale, and the Stress Vulnerability Scale. The results show that measured resilience was significantly correlated with high levels of hardiness and low levels of perceived stress vulnerability.

Connor et al. (2003) used the CD-RISC in a study of survivors of violent trauma who completed an online computer survey that assessed spirituality, anger, health, PTSD, and trauma-related distress. As predicted, resilience was associated with more positive outcomes in terms of current physical and mental health status and fewer PTSD symptoms. The results suggest that although the relationship between trauma and psychological distress is complex, resilience is strongly associated with positive outcomes in terms of affect balance (i.e., less anger), fewer PTSD symptoms, and better overall health status.

There are several recent studies that have examined the role of positive emotions in coping with stress, trauma, and adverse life circumstances. Fredrickson (1998, 2001) developed the "broaden and build" theory of positive emotions, which posits, among other things, that positive emotional states may mediate various types of behavioral phenomena. Fredrickson argued that the role of positive emotions has been inadequately investigated but cites re-

search supporting the idea that positive emotions are associated with some types of resilient functioning. For example, Tugade and Fredrickson (2004) found that resilient participants in an anxiety-producing experimental task returned to homeostasis faster than did nonresilient participants. More specifically, Fredrickson suggested that positive emotions, which include joy, interest, contentment, and love, have a functional capacity to broaden a "thought-action" repertoire and lead to effective coping. This idea was tested in a study of college students who were evaluated before and after the September 11, 2001, terrorist attacks on the World Trade Center in New York City. Resilience was measured by J. H. Block and Kremen's (1996) ego resilience scales. Personality characteristics were assessed by the neuroticism, extraversion, openness (NEO) five-factor model and by measures of current mood using a scale to rate current affective states (e.g., sadness/depression, joy/excitement, etc.). The results showed that positive emotions were associated with pre-9/11 resilience and the absence of depressive symptoms post-9/11. In short, those who manifest gratitude, interest, love, and other positive emotions were less distressed emotionally by the terrorist attacks. Similar results were found by Folkman (1997; Folkman & Moskowitz, 2000) in studies of HIV/AIDS-related caregiving (Moskowitz, Acree, & Folkman, 1998, as cited in Folkman & Moskowitz, 2000). Those who had positive affect, as assessed by the Bradburn Affect Balance Scale, were less clinically depressed during the course of the study period than those who experienced negative affect. Building on the seminal work of Lazarus and Folkman (1984), Folkman and Moskowitz (2000) identified three different coping styles: (a) positive reappraisal, (b) problem-focused coping, and (c) the capacity to create meaning. Clearly, resilient persons and resilient forms of situationally based coping responses may use these styles of positive coping with stress, trauma, and ordinary hassles of daily living.

The relation of exposure to terrorism, war stressors, and resilience among children subjected to ongoing violence, chaos, and disruption of normal living was studied by Punamaki, Qouta, and El-Sarraj (2001). They found that

children exposed to terrorism experience loss, danger, and fear for their lives and can suffer from anxiety, emotional problems, and PTSD symptoms. Children not only experienced political violence but manifested positive changes when Israeli troops withdrew from the occupied geographical area of Gaza. The environmental changes included lifting of a nighttime curfew, cessation in attacks and bombed housing, the frequency and amount of death and killing, and a decrease in the general violence. Other relevant changes included political prisoners returning home and schools reopening.

Punamaki et al. (2001) stated that children's stress decreased after the 1991 Gulf War's SCUD missile attacks ceased. They suggested that resiliency depends on the parents' and family's coping responses and that younger children may be more susceptible to military violence than older children.

Research on Palestinian children found that parental love and proper discipline increased a child's resilience by increasing their creativity and cognitive capacity (Ayalon, 1993; Punamaki, 1997). If a mother was unable to control her intrusive PTSD symptoms (e.g., recalling horrible war images) and had an avoidant coping patterns, her children would be more vulnerable to war stressors, a finding also reported by Laor, Wolmer, Mayes, Gershman, and Weizman (1997). According to Punamaki et al. (2001), this is evidence that the trauma experienced by the child is dependent on how the parents react, a finding commonly shown in the disaster literature (Green, 1993; Gleser, Green, & Winget, 1981; Raphael, 1983; Wilson & Raphael, 1993). In addition, Laor and Wolmer (1997; Laor, Wolmer, & Cohen, 2001) reported greater PTSD and psychiatric symptom rates for Israeli children whose families were displaced and adversely effected by SCUD missile attacks during the first Gulf War (1991) in Iraq. Punamaki et al. (2001) found that single stressor events do not predict resiliency or vulnerability. They suggest that even if a child has positive coping skills (e.g., high cognitive capacity, intelligence, and creativity) parents need to encourage these characteristics in the service of resilience during situations of extreme stress, such as terrorist suicide bombings or war violence.

In a study of children in guerrilla urban warfare, Punamaki et al. (2001) followed Palestinian children 3 years after the cessation of military violence in the Gaza strip and occupied territory in Israel. Results indicated that an active response to military violence, creativity (e.g., high cognitive capacity) and nurturing parenting styles resulted in beneficial coping that they viewed as resiliency factors. Those who had responded proactively to the violence exhibited fewer PTSD symptoms and emotional disorders. The stress-related anxiety symptoms of children decreased significantly during the 3-year follow-up period. These children were considered to have plasticity in their coping behavior. Nevertheless, other children experienced vulnerability that resulted in increases in psychiatric symptoms during the war-related violence and manifest PTSD symptoms 3 years later. Gender differences showed that girls were found to be more vulnerable than boys and that girls' symptoms decreased less across time.

A GENERIC MODEL OF RESILIENCE IN RESPONSE TO PSYCHOLOGICAL TRAUMA

Based on the studies reviewed above, Figure 1 presents a summary illustration of resilience in response to psychological trauma. The model identifies key variables that interact dynamically in the determination of resilient behavior evoked by traumatic life experiences. The figure is a simplification of the various pathways by which resilience results from exposure to different types of traumatic events (see Wilson & Lindy, 1994, for a discussion).

The model is a person-environment paradigm of resiliency in relation to the perception, processing, and adaptation to traumatic stress. As such, it incorporates the earlier models presented by Green, Wilson, and Lindy (1985), Maddi (1999b), Richardson (2002), Wilson (1989), and Wilson et al. (2001). The integrative nature of the model helps to identify the complex levels of interaction among many classes of variables that can work together to produce a continuum of adaptive behavior and different degrees of resilient behavior in the wake of psychological trauma. Furthermore, as our review

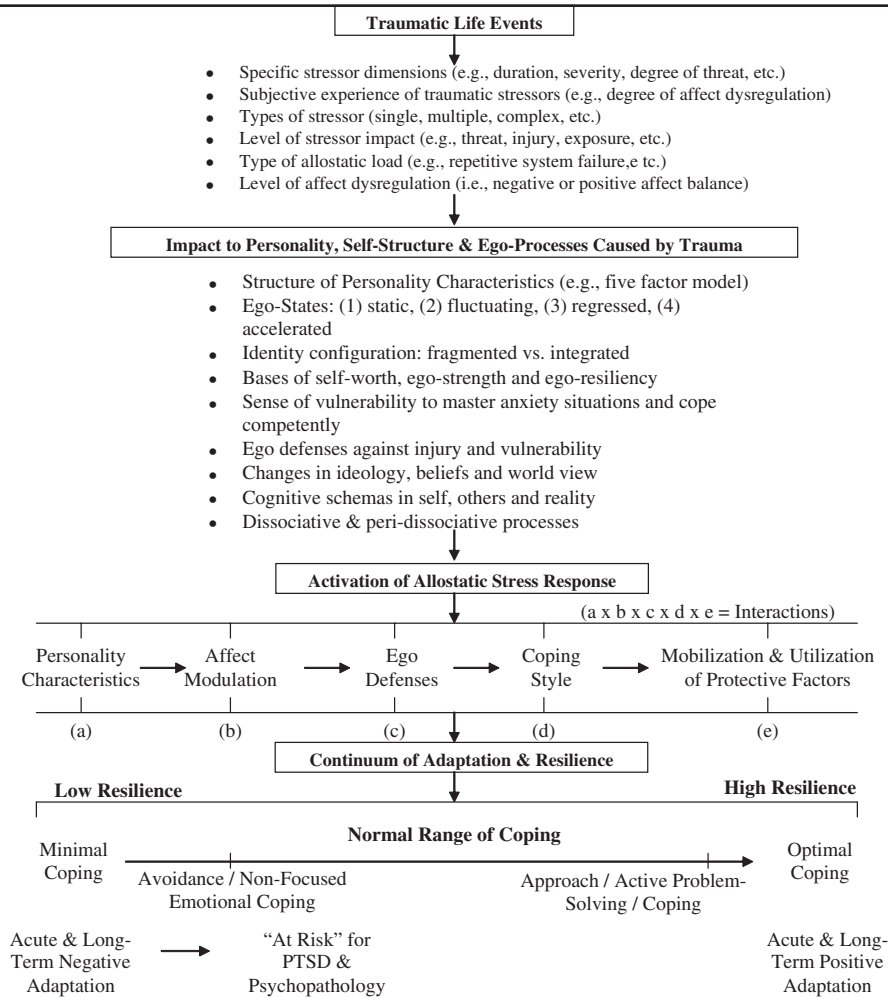


Figure 1: A Model of Resilience in Response to Psychological Trauma[®]
SOURCE: Wilson (2001, 2004).

To understand the plasticity of behavior in response to traumatic life events, it is necessary to recognize the multidimensional nature of traumatic experiences. Traumas are not equal in their impact to the psyche and vary greatly in their stressor dimensions.

of the literature suggests, the model of resiliency in response to trauma serves to clarify which aspects of the resilience puzzle have been investigated empirically and which ones have not been studied at all or within the context of an interactional model that attempts to specify how traumatic events impact internal psychological processes at multiple levels of psychological functioning.

To understand the plasticity of behavior in response to traumatic life events, it is necessary to

recognize the multidimensional nature of traumatic experiences. Traumas are not equal in their impact to the psyche and vary greatly in their stressor dimensions (Wilson, 1989, 2004a; Wilson & Lindy, 1994). Second, there are individual subjective responses evoked by trauma that set in motion a cascade of internal psychological processes (Wilson, 2004b). Third, there are different types of stressor events (e.g., single, multiple, single vs. complex) that vary in their severity of impact and resultant states of allostatic load (McEwen, 1998, 2002; Wilson et al., 2001). As an intricate part of allostatic load phenomena, there are degrees of affect dysregulation that are directly related to the cognitive processing of traumatic experiences (Schore, 2002). There are at least five distinct patterns of allostatic load caused by trauma that result in

different baseline levels of organismic functioning following trauma (McEwen, 2002). In other words, there is a new "set point" of stress response patterns (Wilson et al., 2001; Wilson & Thomas, 2004)

It is a truism to say that traumatic events impact preexisting personality organization (i.e., structure, dynamics, defenses, competencies, self-structure, and ego processes). As Figure 1 shows, there are potential impacts to active ego states, identity configurations, and cognitive schemas of self, others, and situations. Trauma has the power to evoke peri-traumatic dissociation (Marmar, Metzler, & Otte, 2004; Marmar, Weiss, & Metzler, 1997) and full-blown dissociative states (Wilson et al., 2001). Considered from a holistic perspective, trauma's impact to the organism not only has the power to attack personality and self-processes but it also automatically activates allostatic stress response patterns that are part of the sensory nervous system's (SNS) neurohormonal engineering system governing acute and prolonged forms of human stress response (Friedman, 2000b; McEwen, 2002; Wilson, 2004b).

The activation of allostatic stress response patterns include at least five interrelated areas of functioning: (a) coping styles, (b) affect modulation and degrees of affect balance, (c) personality characteristics (e.g., hardiness, locus of control, assertiveness, etc.), (d) ego-defensive processes, and (e) the mobilization and utilization of protective factors that may exist in the repertoire of coping behaviors.

The outcome of the response patterns triggered by a traumatic life event is the generation of a continuum of adaptation and resilience. Viewed in this way, the positive end of the continuum reflects optimal coping with trauma. This includes acute and long-term patterns of adaptation and resilience that results from the mastery of excessive stress by (a) the operation of specific personality variables (e.g., hardiness) that moderates the effects of traumatic stressors; (b) the function of ego defenses and protective factors that are part of ego states, identity configuration, and coping styles; (c) the capacity for affect modulation (i.e., affect balance); (d) the capacity to maintain a positive outlook and create a positive sense of meaning from the trauma

experience that may be aided by mobilizing social support mechanisms; and (e) the manifestation of resilient forms of behavior as required by specific stressors that, in turn, evoke a stress response syndrome, whether it is normal, acute, or prolonged, as in the case of PTSD.

CONCLUSION

Our review of the literature on trauma, PTSD, and resilience has identified a core set of findings that fit well within the model illustrated in Figure 1. In summary, these results show that researchers have implicitly used a Person \times Situation interactional model in formulating hypotheses about the factors that influence different forms of resilient behavior for different survivor populations. However, the task of predicting resiliency is further complicated because there is no universally defined concept of what constitutes resilient behavior. In some cases, resiliency is defined by the absence of psychopathology, prolonged stress response patterns (e.g., PTSD), or maladaptive coping. In other cases, resilience is defined by having superior coping, on average, over a longitudinal course of life-span development (Felsman & Vaillant, 1982). In some studies, resilience is defined as a personality variable (e.g., locus of control, ego resilience, hardiness) that is presumed to moderate outcome variables. As a personality variable, high levels of resilience have been examined in terms of how resilience affects thinking, perception, affect modulation, and disposition to behavior. Personality processes (e.g., hardiness, locus of control, self-esteem, assertiveness, etc.) are one side of the person-environment equation that determines the stress appraisal process and, by implication, the level of emotional arousal experienced as well as the capacity to modulate affect (J. H. Block & Kremen, 1996). Personality processes, including intelligence and cognitive styles of information processing, are correlated with coping styles (e.g., avoidance, approach, problem solving, emotional) and the types of ego defenses used under anxiety-provoking situations (Fels & Vaillant, 1987; Vaillant, 1977). There is evidence that coping style and ego defense are related to the ca-

capacity to mobilize and utilize protective factors to master overwhelmingly stressful situations. In this regard, researchers have identified protective factors such as social and personal support mechanisms, mobilizing aid, and initiating instrumental actions directed at finding solutions to the problems embedded within the stressful situation.

It is important to attempt to define a conceptually meaningful continuum of adaptation and resilience as pertains to normal, acute, and prolonged forms of human stress response (Friedman, 2000b; McEwen, 2002; Wilson et al., 2001).

Optimal coping and adaptation defines highly resilient behaviors in terms of acute and long-term positive adaptation. At the other end of the continuum, minimal coping defines acute and long-term negative adaptation and represents significant risk factors for the development of PTSD and psychopathology. When considering posttraumatic resilience on a continuum of optimal levels of environmental adaptation, it is possible to define the property of resilience as a complex repertoire of behavioral tendencies that may be evoked or activated by environmental demands.

IMPLICATIONS FOR PRACTICE, POLICY, & RESEARCH

- Understanding posttraumatic resilience is critical to successful treatment.
- Posttraumatic resilience can be learned.
- Posttraumatic resilience characterizes psychobiologically healthy survivors.
- Posttraumatic resilience can be implemented through training programs to reduce the effects of traumatic exposure.

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SUGGESTED FUTURE READINGS

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Christine E. Agaibi, M.A., is currently a doctoral student in counseling psychology at the University of Akron. She received her bachelor's degree in 1999 from John Carroll University and her master's in clinical counseling psychology in 2003 from Cleveland State University. Her professional and research interests are in the areas of resiliency, coping, child development, and posttraumatic growth. She has authored a literature review for her master's thesis titled "Understanding Resilience to the Effects of Traumatic Stress." She is a student affiliate member of the American Psychological Association, the Society of Counseling Psychology (APA Division 17), Division of Theoretical and Philosophical Psychology (APA Division 24), Division of Clinical Neuropsychology (APA Division 40), the Cleveland Psychological Association, Psi Chi, and is student representative-elect for her current university's counseling psychology graduate student organization.



John P. Wilson, Ph.D., is a professor of psychology and a Fulbright Scholar at Cleveland State University. He is cofounder of the International Society for Traumatic Stress Studies. He is the author of more than 10 books on posttraumatic stress disorder including (with Boris Drozdek) *Broken Spirits: The Treatment of Traumatized Asylum Seekers, Refugees, War and Torture Victims* (Brunner-Routledge 2004); *Empathy in the Treatment of Trauma and PTSD* (Routledge, 2004, 2nd ed.); and *Assessing Psychological Trauma and PTSD* (Guilford, 2004, 2nd ed.). He has received numerous awards for his work, including the George Washington Honor Medal.