Psychological Inquiry
2004, Vol. 15, No. 1, 1–18

TARGET ARTICLE

Posttraumatic Growth: Conceptual Foundations and Empirical Evidence

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This article describes the concept of posttraumatic growth, its conceptual foundations, and supporting empirical evidence. Posttraumatic growth is the experience of positive change that occurs as a result of the struggle with highly challenging life crises. It is manifested in a variety of ways, including an increased appreciation for life in general, more meaningful interpersonal relationships, an increased sense of personal strength, changed priorities, and a richer existential and spiritual life. Although the term is new, the idea that great good can come from great suffering is ancient. We propose a model for understanding the process of posttraumatic growth in which individual characteristics, support and disclosure, and more centrally, significant cognitive processing involving cognitive structures threatened or nullified by the traumatic events, play an important role. It is also suggested that posttraumatic growth mutually interacts with life wisdom and the development of the life narrative, and that it is an ongoing process, not a static outcome.

In his memoir, *No Such Thing as a Bad Day*, Hamilton Jordan (2000) described some of the changes he experienced following his battle with cancer:

> After my first cancer, even the smallest joys in life took on a special meaning—watching a beautiful sunset, a hug from my child, a laugh with Dorothy. That feeling has not diminished with time. After my second and third cancers, the simple joys of life are everywhere and are boundless, as I cherish my family and friends and contemplate the rest of my life, a life I certainly do not take for granted. (p. 216)

Geology professor Sally Walker is a survivor of an airline crash that killed 83 people: "When I got home, the sky was brighter, I paid attention to the texture of sidewalks. It was like being in a movie. ... [Now] Everything is a gift" (Shearer, 2001, p. 64). International cycling champion Lance Armstrong was diagnosed with testicular cancer in 1996. The cancer had spread to his brain and his lungs. He had to undergo multiple surgeries and grueling chemotherapy. Armstrong had this to say about his battle with cancer:

> Looking back, I wouldn't change anything. Had I not been sick, I wouldn't have met my wife. I don't feel unlucky to have had to go through this. I learned a lot and grew tremendously the last two years.(Becker, 1998, p. 3C)

As these brief accounts suggest, the frightening and confusing aftermath of trauma, where fundamental assumptions are severely challenged, can be fertile ground for unexpected outcomes that can be observed in survivors: posttraumatic growth. The term *posttraumatic growth* refers to positive psychological change experienced as a result of the struggle with highly challenging life circumstances (Calhoun & Tedeschi, 1999, 2001). We use the words *trauma, crisis, highly stressful events,* and other similar terms interchangeably, as roughly synonymous expressions. Our usage of these terms is a bit broader and less restrictive than their usage in some literatures (e.g., American Psychiatric Association, 2000). With these expressions we are describing sets of circumstances that represent significant challenges to the adaptive resources of the individual, and that represent significant challenges to individuals' ways of understanding the world and their place in it (Janoff-Bulman, 1992). In what follows we provide a brief description of some of the negative psychological consequences that can be triggered by highly stressful events, a general description of the ways in which posttraumatic growth is experienced, and how the concept of posttraumatic growth differs from other similar constructs. Next, we provide an extensive description of a framework for understanding the process of posttraumatic growth with an emphasis on the role of cognitive processing.

Finally, we make some general conclusions and suggest some possible extensions of the concept for future work.

Typical Negative Reactions to Highly Stressful Events

Although the main focus here is on the possibilities of positive change arising from the challenge of difficult circumstances, it is appropriate to begin with the reminder that difficult circumstances can produce psychological distress, and to briefly review the kinds of negative responses that are quite common in persons exposed to highly stressful events. In doing so, we want the reader to understand that we recognize that traumatic events are not to be viewed simply as precursors to growth. They are profoundly disturbing. Second, it is important to recognize that the psychological processes involved in managing the disturbances are the same general types of processes that also can produce positive changes.

People facing major life crises typically experience distressing emotions. Particularly for sets of circumstances that threaten the person's physical well-being, anxiety or specific fears are common. Depending on the intensity, severity, and duration of physical threat or suffering (either direct or vicarious), the anxious responses can persist for a long time after the actual threat is removed. Sadness and depression can be common responses to life crises. Reactions to the loss of a loved one, for example, typically include sadness, yearning for the deceased, and a general wish that things could be different. As data indicate, of course, these responses are typical but not universal (Wortman & Silver, 2001). Guilt, anger, and general irritability are other affective responses commonly observed in persons struggling with significant life problems.

Distressing and sometimes dysfunctional patterns of thinking can be set in motion by major life crises. For sudden and unexpected events, initial reactions of disbelief and the experience of psychological numbness are common. For highly threatening events, repetitive intrusions of thoughts and images of the challenging event are common. Intrusive ruminative thought may be more common than intrusive images, but both tend to be experienced as unpleasant and distressing.

When the level of stress is high, a variety of unpleasant physical reactions can be experienced as well. Specific responses vary across individuals, but they can include prolonged activation of bodily systems that can be experienced in the form of fatigue, muscle tension and aches, gastric symptoms, and general physical discomfort. Finally, although in most sets of circumstances individuals facing even the most traumatic sets of circumstances do not develop psychiatric disorders, exposure to major life crises does indeed increase the risk of developing psychiatric problems (Rubonis & Bickman, 1991).

As we turn our attention to the main focus of this target article, posttraumatic growth, it is important to maintain the perspective that major life crises typically engender unpleasant psychological reactions. Posttraumatic growth occurs concomitantly with the attempts to adapt to highly negative sets of circumstances that can engender high levels of psychological distress. For a minority of persons who experience them, major life crises can serve as the catalysts for the development or exacerbation of significant psychiatric difficulties. The main focus of work in psychology, medicine, and related disciplines, has traditionally been on the ways in which traumatic events are precursors to highly distressing and sometimes severe sets of psychological and physical problems. Because the predominant scholarly and clinical work has been done with persons facing very difficult circumstances, and because the focus was on persons who had entered the therapeutic system because of the presence of noticeable psychological difficulties, this "negative" focus is understandable, and appropriate to the requirements of those contexts.

In the developing literature on posttraumatic growth, we have been finding that reports of growth experiences in the aftermath of traumatic events far outnumber reports of psychiatric disorders. This is despite the fact that we are concerned with truly traumatic circumstances rather than everyday stressors. The widespread assumptions that traumas often result in disorder should not be replaced with expectations that growth is an inevitable result. Instead, we are finding that continuing personal distress and growth often coexist. Although not prevalent in either clinical or research settings, there has been a very long tradition of viewing human suffering as offering the possibility for the origin of significant good.

Focusing on the Positive Aspects of the Struggle With Trauma

The general understanding that suffering and distress can be possible sources of positive change is thousands of years old. For example, some of the early ideas and writings of the ancient Hebrews, Greeks, and early Christians, as well as some of the teachings of Hinduism, Buddhism, and Islam contain elements of the potentially transformative power of suffering (Tedeschi & Calhoun, 1995). A major theme of Christian traditions, for example, are the narratives about the transformative effect of the execution of Jesus. His suffering is viewed as having the power to transform others. In some Islamic traditions, suffering is seen as instrumental to the purposes of Allah (Bowker, 1970).

A central theme of much philosophical inquiry, and the work of novelists, dramatists, and poets, has included attempts to understand and discover the meaning of human suffering (Tedeschi & Calhoun, 1995).

In the 20th century several clinicians and scientists (e.g., Caplan, 1964; Dohrenwend, 1978; Frankl, 1963; Maslow, 1954; Yalom, 1980), writing in the general domain of psychology, addressed the ways in which critical life crises offered possibilities for positive personal change. Maslow (1970), for example, whose most influential work was originally published in the 1950s and 1960s, argued consistently that psychologists should expend much greater efforts in studying "people who are actually *healthy*," (p. 270) and the better and brighter aspects of human behavior and nature. Caplan, a pioneer in what earlier was called community psychiatry, wrote extensively about the processes whereby individuals encountering major life crises might be helped to cope effectively and, as a consequence, to develop psychologically as a result of what they had experienced. More recent calls for an emphasis on positive psychology (Cowen & Kilmer, 2002; Seligman & Csikszentmihalyi, 2000) represent a continuation of this useful tradition.

It was not until the 1980s, and then more strongly in the 1990s, however, that systematic scholarly interest specifically focused on the possibility of growth from the struggle with trauma emerged. This area of inquiry is important for some very simple reasons. The evidence is overwhelming that individuals facing a wide variety of very difficult circumstances experience significant changes in their lives that they view as highly positive. Although much progress has been made recently, little is known about the processes, concomitants, and consequences of the experience of growth. Investigations in this area can inform us about psychological phenomena about which we know very little, and as they do so, they can provide significant information for those who attempt to provide assistance to those coping with major life disruptions.

Types of Trauma and Posttraumatic Growth

There are now reports in the literature of a very wide array of major life challenges that have acted as catalysts for posttraumatic growth. Many of the earlier research reports mentioned these growth outcomes in passing, but more recent investigations have been more specifically focused on these outcomes. Among the life crises that have produced reports of posttraumatic growth, at least in some form, are college students experiencing negative events (Park, Cohen, & Murch, 1996), bereavement (Calhoun & Tedeschi, 1989-1990; Edmonds & Hooker, 1992; Hogan, Morse, & Tason, 1996; Lehman et al., 1993; Miles & Crandall, 1983; Nerken, 1993; Schwab, 1990), rheumatoid arthritis (Tennen, Affleck, Urrows, Higgins, & Mendola, 1992), HIV infection (Bower, Kemeny, Taylor, & Fahey, 1998; Schwartzberg, 1993), cancer (Collins, Taylor, & Skokan, 1990; Cordova, Cunningham, Carlson, & Andrykowski, 2001), bone marrow transplantation (Andrykowski, Brady, & Hunt, 1993; Curbow, Somerfield, Baker, Wingard, & Legro, 1993), heart attacks (Affleck, Tennen, Croog, & Levine, 1987; Laerum, Johnsen, Smith, & Larsen, 1987), coping with the medical problems of children (Abbott & Meredith, 1986; Affleck, Tennen, & Gershman, 1985), transportation accidents (Joseph, Williams, & Yule, 1993), house fires (Thompson, 1985), sexual assault and sexual abuse (Burt & Katz, 1987; Draucker, 1992; Frazier, Conlon, & Glaser, 2001; McMillen, Zuravin, & Rideout, 1995; Silver, Boon, & Stones, 1983; Veronen & Kilpatrick, 1983), combat (Elder & Clipp, 1989; Sledge, Boydstun, & Rabe, 1980), refugee experiences (Berger & Weiss, in press), and being taken hostage (Cole, 1992; Sank, 1979). It appears that the phenomenon of posttraumatic growth occurs in a wide range of people, facing a wide variety of traumatic circumstances.

Posttraumatic Growth Terminology and Related Concepts

We first used the term posttraumatic growth in print in an article describing the development of an inventory designed to measure such growth (Tedeschi & Calhoun, 1996). Earlier in our work we used terms such as *perceived benefits, positive aspects,* and the *transformation of trauma* (e.g., Calhoun & Tedeschi, 1989–1990, 1991; Tedeschi & Calhoun, 1988, 1995; Tedeschi, Calhoun, Morrell, & Johnson, 1984). Many other terms have been used to describe posttraumatic growth. These include *stren conversion* (Finkel, 1974, 1975), *positive psychological changes* (Yalom & Lieberman, 1991), *perceived benefits* or *construing benefits* (Calhoun & Tedeschi, 1991; McMillen et al., 1995; Tennen et al., 1992), *stress-related growth* (Park et al., 1996), *flourishing* (Ryff & Singer, 1998), *positive by-products* (McMillen, Howard, Nower, & Chung, 2001), *discovery of meaning* (Bower et al., 1998), *positive emotions* (Folkman & Moskowitz, 2000), and *thriving* (O'Leary & Ickovics, 1995). Taylor and Brown (1988) labeled some similar outcomes as *positive illusions.* Among those emphasizing these positive changes as coping mechanisms, several terms have been applied, including *positive reinterpretation* (Scheier, Weintraub, & Carver, 1986), *drawing strength from adversity* (McCrae, 1984), and *transformational coping* (Aldwin, 1994; Pargament, 1996).

We favor the term posttraumatic growth because it appears to capture the essentials of this phenomenon better than others in several ways. First, in contrast to what might be suggested by the term stress-related growth, for example, it appears to focus more distinctly on the conditions of major crises rather than lower level stress. We discuss later how important significant life disruption is to producing the changes we describe. Second, in contrast to the terms that emphasize the "illusions" of people who report these changes, there do appear to be veridical transformative life changes that go beyond illusion. Third, in contrast to those terms that emphasize this process as one of many ways to cope with trauma, for those who are reporting these changes, they are experienced as an outcome or an ongoing process, rather than a coping mechanism. Finally, significant posttraumatic growth may require a significant threat or the shattering of fundamental schemas and may at times coexist with significant psychological distress, something the words *thriving* or *flourishing* do not connote. To some extent, these are semantic choices. It is clear that in spite of wide variation in such choices, the last 15 years have seen considerable interest in the reports of growth resulting from the struggle with major life crises.

Posttraumatic growth describes the experience of individuals whose development, at least in some areas, has surpassed what was present before the struggle with crises occurred. The individual has not only survived, but has experienced changes that are viewed as important, and that go beyond what was the previous status quo. Posttraumatic growth is not simply a return to baseline—it is an experience of improvement that for some persons is deeply profound.

Related Concepts

Distinctions should also be made between posttraumatic growth and the concepts of resilience, hardiness, optimism, and sense of coherence. All these concepts describe certain personal characteristics that allow people to manage adversity well. *Resilience* is usually considered to be an ability to go on with life after hardship and adversity, or to continue living a purposeful life after experiencing hardship and adversity. It has often been studied in children who manage to remain psychologically healthy despite very difficult circumstances (Garmezy, 1985; Rutter, 1987; Werner, 1989). *Hardiness* (Kobasa, 1979; Kobasa, Maddi, Puccetti, & Zola, 1985) consists of tendencies toward commitment, control, and challenge in response to life events. Persons high in hardiness are curious and active, believe they can influence events, and expect life to present challenges that can be met with personal development. *Optimism* involves expectations of positive outcomes to events (Scheier & Carver, 1985). *Sense of coherence* (Antonovsky, 1987) describes persons who are in the best position to manage stress, because they can comprehend or understand events, can manage or cope with them, and find meaning in them.

In contrast, posttraumatic growth refers to a change in people that goes beyond an ability to resist and not be damaged by highly stressful circumstances; it involves a movement beyond pretrauma levels of adaptation. Posttraumatic growth, then, has a quality of transformation, or a qualitative change in functioning, unlike the apparently similar concepts of resilience, sense of coherence, optimism, and hardiness (Tedeschi & Calhoun, 1995). Although we are not aware of any direct tests of the relations of hardiness, sense of coherence, and posttraumatic growth, it may be that persons who are highest on these dimensions of coping capacity will report relatively little growth. That is because these people have coping capacities that will allow them to be less challenged by trauma, and we posit that the struggle with the trauma is what is crucial for posttraumatic growth. We have previously suggested the possibility of a general curvilinear relation between psychological fitness and growth that is analogous to the relation between levels of physical fitness and response to physical rigors (Tedeschi & Calhoun, 1995). Those who are already very fit will experience little additional benefit compared with those who are moderately capable. And, persons who have serious physical limitations and weaknesses may have insufficient resources to benefit much at all from rigorous physical activity.

Posttraumatic growth may be a construct that is more applicable to adolescents or adults than to young children, because posttraumatic growth implies an established set of schemas that are changed in the wake of trauma. We might also expect that younger people will report more growth than much older people, as the young may be open to the learning and change of this process to a greater degree than the old, who might have already learned their life lessons. This has been reported in at least one study using a sample with a large age range (Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003).

There is little work with adolescents or children to clarify the action of posttraumatic growth at these ages (Milam, Ritt-Olsen, & Unger, 2001). We have begun to develop a measure of posttraumatic growth for children that shows promise in picking up some changes akin to those reported by adults (Cryder, Tedeschi, Calhoun, & Kilmer, 2002).

The Process of Posttraumatic Growth

The Traumatic Event

As others have suggested (Epstein, 1990; Janoff-Bulman, 1992; Parkes, 1971) we assume that individuals develop and rely on a general set of beliefs

and assumptions about the world, that guide their actions, that help them to understand the causes and reasons for what happens, and that can provide them with a general sense of meaning and purpose. Parkes (1971) called this general constellation the "assumptive world" and indicated that it "includes everything we know or think we know" (p. 103). The assumptive world provides individuals with the general perspectives, or paradigms (Kuhn, 1970) within which they operate. Major life crises can present major challenges to the person's understanding of the world.

Growth, however, does not occur as a direct result of trauma. It is the individual's struggle with the new reality in the aftermath of trauma that is crucial in determining the extent to which posttraumatic growth occurs. We have used the metaphor of an earthquake to describe this process (Calhoun & Tedeschi, 1998). A psychologically seismic event can severely shake, threaten, or reduce to rubble many of the schematic structures that have guided understanding, decision making, and meaningfulness. Psychological crisis can be defined in relation to the extent to which the fundamental components of the assumptive world are challenged, including assumptions about the benevolence, predictability, and controllability of the world; one's safety is challenged, and one's identity and future are challenged (Janoff-Bulman, 1992). The "seismic" set of circumstances severely challenges, contradicts, or may even nullify the way the individual understands why things happen, in terms of proximate causes and reasons, and in terms of more abstract notions involving the general purpose and meaning of the person's existence. Such threats to the assumptive world are accompanied by significant levels of psychological distress.

Extending our seismic metaphor, cognitive processing and restructuring may be comparable to the physical rebuilding that occurs after an earthquake. The physical structures can be designed to be more resistant to shocks in the future, as the community learns from the earthquake what has withstood the shaking and what has not. Cognitive rebuilding that takes into account the changed reality of one's life after trauma produces schemas that incorporate the trauma and possible events in the future, and that are more resistant to being shattered. These results are experienced as growth.

The Personal Experience

The psychological processing of the crisis events has a highly emotional element connected to it. What makes these experiences transformative seems to be that they have this affective component, so that the lessons learned are not merely intellectual reflections. Writer Reynolds Price (1994) described his paralysis from cancer this way:

> [Trauma forces a person] to be somebody else, the next viable you—a stripped-down whole other clear-eyed person, realistic as a sawed-off shotgun and thankful for air, not to speak of the human kindness you'll meet if you get normal luck. (p. 183)

The perspectives of persons surviving terrible trauma have in common the valuing of what has happened to them in the aftermath of trauma; that is, the growth they have experienced in their attempts to cope or survive. The trauma itself remains a distressing event. It appears that few people consciously and systematically intend to make meaning out of trauma or to benefit from it. Posttraumatic growth is most likely a consequence of attempts at psychological survival, and it can coexist with the residual distress of the trauma. Wright (1989) made this clear in describing how disability can be experienced:

> The point is, however, that appreciating a disability, giving it value, need not require that it be preferred in and of itself; just that its ramifying meaning is valued ... It is then that the disability, being viewed within a broader life context of a dauntless human spirit, becomes appreciated for what it signifies. (p. 528)

The affective quality of the learning and change in posttraumatic growth may distinguish it from other normative developmental processes that lead people to report that they have been improving or maturing over time. Because of the affect involved, and the restructuring of the fundamental components of the assumptive world, growth seems to have a qualitative and quantitative difference in trauma survivors. Their attributions that growth was accomplished because of, and in the aftermath of, the struggle with trauma may be acknowledgments that much cognitive processing and affective engagement went into the changes they report. Research indicates that when persons who have experienced severe trauma have been compared with those who do not report trauma, positive personal changes are reported at a reliably higher level among trauma survivors (Tedeschi & Calhoun, 1996). However, even persons who have not experienced trauma report some growth, indicating that there may be a tendency to perceive oneself as changing positively in general, and not only as a result of lessons learned from traumatic events (McFarland & Alvaro, 2000).

Domains of Posttraumatic Growth

The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), which measures five domains of growth, was developed to allow quantification of the experience of growth. The items on the scale were developed out of a review of the literature on responses to highly stressful events and from interviews conducted with persons who had experienced spousal loss, physical disabilities, and other life crises. The items were fac-

tor-analyzed, producing a 21-item scale with five factors that define the major domains of posttraumatic growth: greater appreciation of life and changed sense of priorities; warmer, more intimate relationships with others; a greater sense of personal strength; recognition of new possibilities or paths for one's life; and spiritual development (Tedeschi & Calhoun, 1996). Our impression is that these items do a good job of covering the reported experiences of posttraumatic growth. We have not seen research that indicates that other types of growth are reported that are not generally represented in this scale. However, it remains to be seen if the five domains hold up in factor analyses of various samples of trauma survivors (Maercker & Langner, 2001). A recent study of Bosnian war refugees, for example, shows a slightly different factor structure in a translated and altered version of the PTGI (Powell et al., 2003).

An increased appreciation for life in general, and many smaller aspects of it, along with a changed sense of what is important, is a common element in the experience of many persons who have struggled with major difficulties. As Jordan (2000) put it, "even the smallest joys in life took on a special meaning" (p. 216). Individuals typically report this as a major shift in how they approach and experience their daily lives. This sense of "being so lucky" is not uncommon. A radically changed sense of priorities can accompany the increase in appreciation for what one still has. A typical change in priorities is an increase in the importance of what before might have been considered the "little things," such as a child's smile and spending time with a toddler, and the recognition of the importance of things formerly taken for granted.

Closer, more intimate, and more meaningful relationships with other people can also be part of the individual's experience of posttraumatic growth. A study of posttraumatic growth in bereaved parents has provided us with some good examples of this change (Calhoun, Tedeschi, Fulmer, & Harlan, 2000). As one bereaved parent said, "When he died people just came out of the woodwork ... I realize that relationships with people are really important now ... and I cherish my husband a lot more." However, the experience of deeper and more meaningful relationships can occur along with the loss or disappearance of other relationships, because, as one person said "you find out who your real friends are in a situation like this." The experience of an increased sense of compassion, particularly for others who now share the same difficult fate, is another way in which the greater connection to others occurs. As another bereaved parent said, "I've become more empathetic towards anybody in pain and anybody in any kind of grief."

A general sense of increased personal strength, or the recognition of possessing personal strength, is another domain of posttraumatic growth. Another bereaved parent reported to us: "I can handle things better. Things that used to be big deals aren't big deals to me anymore. Like big crisis problems, they will either work out or they won't. Whichever way it goes, you have to deal with it." The identification of strength is often correlated, almost paradoxically, with an increased sense of being vulnerable. Growth in this domain is experienced as a combination of the clear knowledge that bad things can and do happen and the discovery that "if I handled this then I can handle just about anything."

Posttraumatic growth can also be seen in the individual's identification of new possibilities for one's life or of the possibility of taking a new and different path in life. One of the people who talked with us about her personal loss was influenced by her own struggle with grief to become an oncology nurse, where she could try to provide care and comfort to other persons facing suffering and loss.

Growth in the domain of spiritual and existential matters is another way in which some persons experience positive change in their struggles with stress and loss. As one person said:

> You think about getting through something like that and it's downright impossible to even conceive of how you ever could. But that's the beauty of the thing ... it's gonna have to be said because I believe that God got me through it. Five or six years ago I didn't have these beliefs. And I don't know what I would do without Him now.

Individuals who are not religious, or who are actively atheistic, can also experience growth in this domain. There can be a greater engagement with fundamental existential questions and that engagement in itself may be experienced as growth.

Each of the five domains of posttraumatic growth tends to have a paradoxical element to it that represents a special case of the general paradox of this field: that out of loss there is gain. For example, in the situation where people are more limited in what choices they have in life, such as becoming reliant on a wheelchair for mobility, there may be a willingness to explore opportunities never before considered, such as a radical change of vocational paths. At a time when one is vulnerable as never before, there is a sense of strength. Out of spiritual doubt there can emerge a deeper faith. Recognition of these paradoxes engages trauma survivors in dialectical thinking that is similar to that described in the literature on wisdom (Baltes, Staudinger, Maercker, & Smith, 1995) and integrative complexity (Porter & Suedfeld, 1981).

Although perhaps unnecessary, a reminder may be in order. This description of the domains of posttraumatic growth is positive, because the experience of growth is viewed that way. However, the presence of growth does not necessarily signal an end to

pain or distress, and usually it is not accompanied by a perspective that views the crisis, loss, or trauma itself as desirable. Many persons facing devastating tragedies do experience growth arising from their struggles. The events themselves, however, are not viewed as desirable—only the good that has come out of having to face them.

The Process of Posttraumatic Growth

Now we consider in more detail what processing trauma into growth entails. Figure 1 (Calhoun & Tedeschi, 1998) provides a general overview of what we think this process is. Drawing both on empirical work in the area and on our experiences as practicing psychologists, we have proposed that posttraumatic growth involves a variety of elements and we discuss them next.

We begin by briefly describing some of the individual characteristics and the styles of managing distressing emotions that may increase the likelihood that individuals will experience posttraumatic growth. Next we suggest that the degree to which individuals engage in self-disclosure about their emotions and about their perspective on their crisis, and how others respond to that self-disclosure, may also play a role in growth. Then we describe how the cognitive processing of the traumatic event, particularly the process of ruminative thought, is related to growth; we argue that how the individual cognitively processes the crisis plays a crucial role in the process of posttraumatic growth. Finally, we suggest that posttraumatic growth can be connected to significant development of wisdom and of the individual's life narrative.

Varieties of Trauma and Levels of Posttraumatic Growth

Although we contend that it is not the trauma itself that is responsible for growth as much as what happens in the aftermath of trauma, it is important that the events are challenging enough to the assumptive world

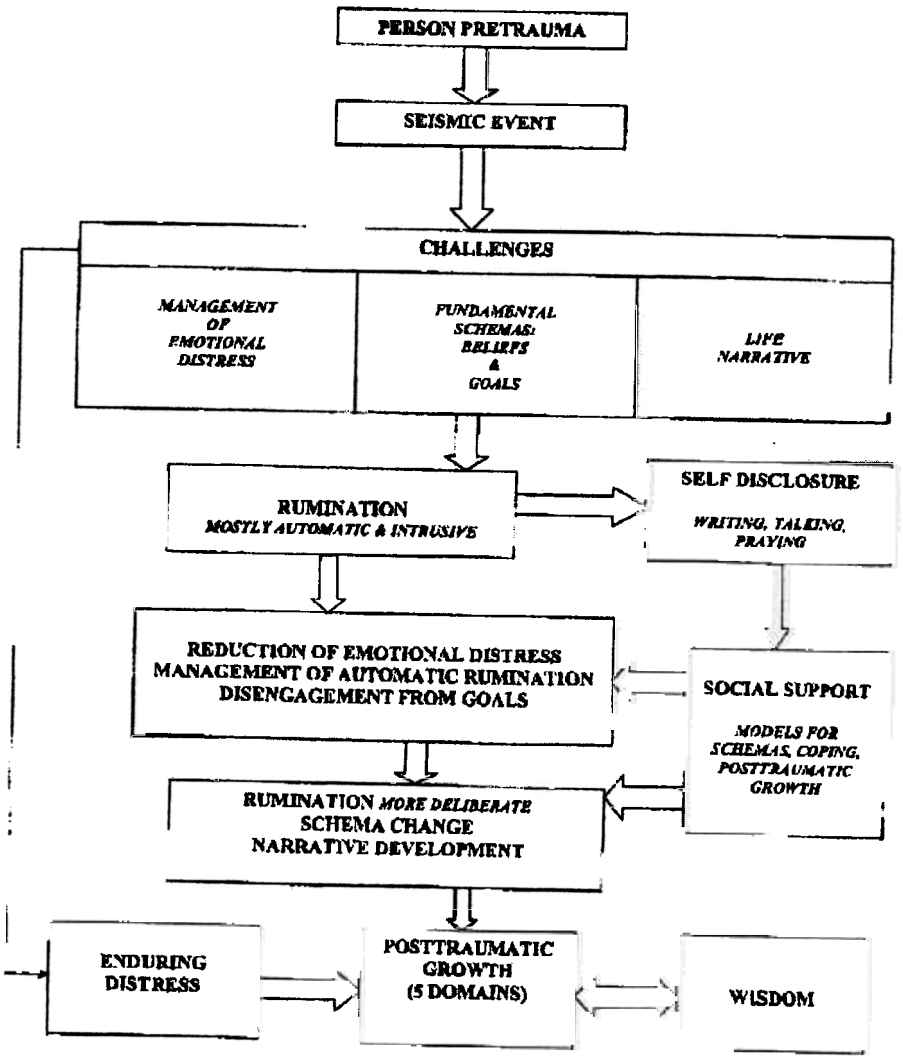

Figure 1. *A model of posttraumatic growth.*

to set in motion the cognitive processing necessary for growth. There are several studies that allow some tentative comparisons between traumatic events and levels of reported growth on the PTGI, with the caveat that of course the sample characteristics also differ in many ways. Some of the lowest reported scores come from a study of criminal victimization in South Africa (PTGI total $M = 40$; Peltzer, 2000), whereas the highest come from a small subsample of college students reporting the highest levels of severity of trauma (Tedeschi & Calhoun, 1996), although the events themselves varied (PTGI $M = 83$). Other studies have typically reported intermediate scores; for example, bereaved parents (PTGI $M = 60$; Polatinsky & Esprey, 2000), World War II bombing victims (PTGI = 69 on scores transformed to standard scoring system; Maercker & Langner, 2001), and women with breast cancer (PTGI $M = 58$; Weiss, 2002).

Individual Characteristics

Personality characteristics. There appear to be two basic personality qualities that may affect the likelihood that people can make positive use of the aftermath of traumatic events that befall them: extraversion and openness to experience. In our original PTGI validation sample we found some indications that openness to experience and extraversion, as measured by the NEO Personality Inventory (Costa & McCrae, 1992), are modestly related to posttraumatic growth, whereas other Big Five personality dimensions tended not to be related. Scores on all five factors of the PTGI correlated reliably but quite modestly with extraversion (ranging from a correlation of .15 between personal strength and extraversion to a correlation of .28 between extraversion and relating to others). Scores on only two of the PTGI factors correlated reliably with openness (r = .25 both for new possibilities and for personal strength). The specific facets of the NEO that we found to be most strongly related to the PTGI were activity (r = .31), positive emotions (r = .34), and openness to feelings (r = .28). Perhaps persons with these three characteristics will be aware of positive emotions even in adversity, and will be able to process information about these experiences more effectively, producing the schema change reported as posttraumatic growth. Indeed, there is good evidence that positive affect is implicated in this kind of information processing (Aspinwall, 1998).

Especially interesting is the lack of relation between neuroticism and posttraumatic growth. Park (1998) pointed out that positive and negative aspects of adjustment may be independent, and that compared to persons who report only positive change, those who report both positive and negative changes show more growth (Taylor, Kemeny, Reed, & Aspinwall, 1991). Of course, only prospective, longitudinal research designs will be able to demonstrate conclusively whether certain pretrauma personality characteristics allow for posttraumatic growth.

Although we have also found a positive relation between optimism and PTGI scores (Tedeschi & Calhoun, 1996), this is also a rather modest correlation (r = .23). This indicates that posttraumatic growth and optimism may well be distinct concepts. The way optimism may be related to posttraumatic growth may again be through the influence it has on cognitive processing. Specifically, optimists may be better able to focus attention and resources on the most important matters, and disengage from uncontrollable or unsolvable problems (Aspinwall, Richter, & Hoffman, 2001). This ability may be especially important in the cognitive processing that occurs in the aftermath of trauma, as we discuss later.

Managing distressing emotions. The person facing a major life crisis must find ways of managing initial distress, which can often be debilitating. This is necessary to allow some degree of constructive cognitive processing to occur, producing schema changes that will contribute to the experience of posttraumatic growth. At the early stages of response to trauma, cognitive processing is more likely to be automatic; that is, there are many occasions for intrusive thoughts and images, and negative intrusive rumination is typically frequent. Eventually, if this process is effective, it leads to disengagement from previous goals and assumptions, as it becomes clear that the old way of living is no longer appropriate in radically changed circumstances. We say "eventually," because this process can take some time. Many people who survive traumatic events report that many months later they can still be struck by a sense of disbelief. To an extent, this process may involve "grief-work" in the sense that the loss involved in the trauma is gradually accepted. This often lengthy process during which distress persists may actually be important for the maximum degree of posttraumatic growth to occur. This distress keeps the cognitive processing active, whereas a rapid resolution is probably an indication that the assumptive world was not severely tested, and could accommodate the traumatic events.

Support and disclosure. Supportive others can aid in posttraumatic growth by providing a way to craft narratives about the changes that have occurred, and by offering perspectives that can be integrated into schema change (Neimeyer, 2001; Tedeschi & Calhoun, 1996). We have emphasized the important role of mutual support in particular, because the credibility of those who have "been there" can be crucial

in determining the degree of willingness trauma survivors have to incorporate new perspectives or schemas (Tedeschi & Calhoun, 1993). Narratives of trauma and survival are always important in posttraumatic growth, because the development of these narratives forces survivors to confront questions of meaning and how it can be reconstructed (McAdams, 1993; Neimeyer, 2001). In telling these stories to others, the emotional aspects of the events and the survivor are usually revealed, resulting in an intimacy that may be surprising. In bereaved parent support groups we have often heard group members talk about the group being their family, because they have revealed more and been accepted more than in any other personal relationship. The narratives of trauma and growth may also have the effect of spreading the lessons to others through vicarious posttraumatic growth. These stories then transcend individuals, and can challenge whole societies to initiate beneficial changes (Bloom, 1998; Karakasian, 1998; Tedeschi, 1999).

Cognitive Processing and Growth

O'Leary, Alday, and Ickovics (1998) summarized various models of change that could be useful in understanding the process of posttraumatic growth. Among several of these models there is a common concern with how the usual homeostatic mechanisms of self-regulation can be abruptly altered, and a new pattern of functioning emerges (Aldwin, 1994; Carver & Scheier, 1998; Miller & C'deBaca, 1994). Aldwin and Carver both used dynamic systems models to account for the process of posttraumatic growth. Aldwin (1994), in describing transformational coping, posited that individual differences in coping abilities set some people on a maladaptive spiral, whereas others proceed on an adaptive spiral. This deviation-amplification process fits with our model that some early success in coping is a precursor to later posttraumatic growth. Carver (1998) described a catastrophe model that includes a deviation-reducing mechanism. He predicted that self-confidence in coping and the importance of the events interact to determine the degree to which people engage in coping or give up. When events are very important, people with high confidence persist toward reducing the discrepancy between their circumstances and optimal functioning, and those with low confidence give up. In our conception of posttraumatic growth, there is the additional complication that people who report growth must disengage, or give up, certain goals and basic assumptions, at the same time persisting in an attempt at building new schemas, goals, and meanings. This persistence in cognitive processing should be associated with posttraumatic growth.

Rumination or Cognitive Processing

To some extent this idea that persistent cognitive processing is associated with growth is surprising, given the body of evidence that demonstrates a relation between certain types of rumination and negative affect and depression (e.g., Horowitz, 1986; Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Nolen-Hoeksema & Morrow, 1991). It has been pointed out that this evidence for the long-term drawbacks to rumination does not seem to square with the idea that it is involved in posttraumatic growth (Updegraff & Taylor, 2001). Because the typical affective experiences of trauma survivors appear to be qualitatively different from what is seen in clinical depression (Robinson & Fleming, 1992), we might expect that depressogenic rumination may be different from that associated with posttraumatic growth. Rumination's perceived relation with negative outcomes also may be due to the now common restrictive use of the term to apply exclusively to negative, self-punitive thinking (e.g., Nolen-Hoeksema, McBride, & Larson, 1997).

In contrast, Martin and Tesser (1996) recognized "several varieties of recurrent [event-related] thinking, including making sense, problem solving, reminiscence, and anticipation" (p. 192). They proposed a definition that incorporates the common features of rumination found in previous work and they described rumination as thinking that (a) is conscious; (b) revolves around an instrumental theme; and (c) occurs without a direct cueing from the environment, but is easily and indirectly cued because it is connected with important goals, leading to recurrent thoughts. They categorized modes of ruminative thought as referring to the past, present, or future regarding negative or positive events.

The event-related rumination can involve goal attainment or a discrepancy involving unattained goals or lack of fit between schemas and events that have occurred. In coping with life crises, people are concerned with the negative events with a discrepancy focus. Martin and Tesser (1996) categorized the thinking about the past as working through, the present as current concerns, and the future as worry. To distinguish the type of recurrent negative thinking that has been labeled rumination by many other researchers from the processes referred to by Martin and Tesser, we use the term *cognitive processing,* but we rely on Martin and Tesser's concepts about rumination in considering the kind of thinking that leads trauma survivors toward growth.

It appears that as survivors reflect on the discrepancy involving unattained goals or schemas and events, they develop the universal character of the trauma narrative—the before and after the trauma, the trauma as turning point (McAdams, 1993; McAdams,

Reynolds, Lewis, Patten, & Bowman, 2001; Tedeschi & Calhoun, 1995). A goal was possible then, but not now. A philosophy or belief may have seemed true then, but not now. This is particularly the case when the goals or schemas are high order (they are general or fundamental, related to identity and purpose) and appear not only to be unattained, but now because of the trauma, are unattainable. The disengagement from the unattainable goals or the worldview that cannot accommodate the reality of the trauma can allow the trauma survivor to formulate new goals and worldviews that allow a perception that one is moving forward again toward goals in a world that permits this. As Little (1998) pointed out, the sense of movement toward achieving goals is crucial in life satisfaction.

There is probably not a clear distinction between the discrepancy focus involving unattained, and apparently unattainable, goals and the general schemas that represent fundamental assumptions about one's life and the world. Both involve giving up dearly held goals that survivors had assumed they would be able to attain, as when a bereaved parent is forced to give up dreams and expectations for a child's life. We also submit that the presence of posttraumatic growth does not necessarily mean a lessened degree of psychological distress. Virtually everyone reporting posttraumatic growth also acknowledges at least some distress. What they went through cannot be accommodated easily, and losses have been suffered. This "past" temporal orientation, a focus on what has been lost, is related to poorer outcomes (Holman & Silver, 1998), but is also realistically acknowledged by the vast majority of those reporting posttraumatic growth. Consider Rabbi Harold Kushner's reflection on the death of his son:

> I am a more sensitive person, a more effective pastor, a more sympathetic counselor because of Aaron's life and death than I would ever have been without it. And I would give up all of those gains in a second if I could have my son back. If I could choose, I would forego all of the spiritual growth and depth which has come my way because of our experiences ... But I cannot choose. (Viorst, 1986, p. 295)

Another kind of cognitive activity that seems related to higher levels of distress is regret and repeated consideration of how the trauma could have been avoided (Greenberg, 1995). These "counterfactuals" have a past temporal orientation and appear to be associated with negative affect. In their studies of counterfactual thinking among bereaved parents and patients with spinal cord injuries, Davis and Lehman (1995) found that such thoughts occurred even when causes of the traumatic events were clear and there was evidence of others' roles in causing the trauma. Although this cognitive processing of counterfactuals can persist for years, Davis and Lehman concluded that counterfactual rumination is ultimately in the service of making sense of events in the light of shattered assumptions. Following this cognitive processing long enough to see these outcomes is the only way that researchers will be able to understand the convoluted process of cognitive processing involved in posttraumatic growth.

When cognitive processing is followed over time, changes in its quality may become evident. In our clinical work, we believe we observe such changes, but empirical longitudinal studies are needed to confirm this. Initially, trauma survivors typically report intrusive thoughts and images that are highly distressing. There may also be attempts to comprehend and manage the aftermath of trauma (Tedeschi & Calhoun, 1995). This is meaning as comprehensibility that can be distinguished from meaning as significance (Davis, Nolen-Hoeksema, & Larson, 1998; Tedeschi & Calhoun, 1995). Initial revisions of schemas that produce comprehensibility may be an intermediate step to posttraumatic growth. The negative cognitive processes set in motion by major life crises are difficult to distinguish from positive ones, because the destruction wrought by such crises to higher order goals and schemas also allows for schema reconstruction based on new principles, recognition that trauma is a personal reality, and a definition of self as a survivor. For example, a musician we interviewed suffered permanent paralysis and cognitively processed this loss by asking himself "Who am I?" and "What will become of my life?" These disturbing questions also represented an orientation toward the future, producing more healthy processing of the trauma into revised goals and schemas. We quoted him at the beginning of our first book on this topic:

> This was the one thing that happened in my life that I needed to have happen, it was probably the best thing that ever happened to me .... If I hadn't experienced this and lived through it, I likely wouldn't be here today because of my lifestyle previously—I was on a real self-destructive path. If I had it to do all over again I would want it to happen the same way. I would not want it not to happen. (Tedeschi & Calhoun, 1995, p. 1)

Data from recent studies provide some support for the hypothesized relation between cognitive processing and posttraumatic growth. In a study (Tedeschi, Calhoun, & Cooper, 2000) of a group of older adults who reported on experiences with trauma, growth attributed to the struggle with the two events in their lives they described as the most stressful was associated with the frequency of rumination across all traumatic events in their lives ($r = .49$, $p < .01$). Unfortunately, the specific content of this rumination was not obtained from the respondents. In a study of bereaved HIV-positive men, there was a link between

deliberate, repetitive cognitive processing and experiences of personal growth (Bower et al., 1998). Similarly, Ullrich and Lutgendorf (2002) found that college students who used a journaling exercise reported higher scores on the PTGI after 4 weeks if they had been instructed to cognitively process the emotional aspects of the traumas they were coping with. Focusing on facts or emotions alone did not produce posttraumatic growth. These findings fit with our model, in that deliberate cognitive processing is crucial to growth outcomes, and this processing is happening somewhere in the time frame between intrusive, automatic thinking and posttraumatic growth. In another study, (Calhoun, Cann, Tedeschi, & McMillan, 2000), young adult trauma survivors tended to report greater posttraumatic growth when also reporting greater levels of cognitive processing recalled as occurring soon after the event ($r = .32$, $p < .05$), but not when engaged in continuing processing years after the event. These results are congruent with previous findings that continued and extended searches for meaning, perhaps longer than a decade, bode poorly (Silver et al., 1983; Tait & Silver, 1989).

Calhoun, Tedeschi, et al. (2000) examined the relation between different types of rumination in bereaved parents who participated in mutual help support groups. Items from various inventories were used to assess five types of cognitive processing in reports about experiences parents recalled as occurring soon after their children's deaths and more recently. Measures of intrusive thinking, both recalled as occurring soon after the child's death and recently, were unrelated to posttraumatic growth. Nonintrusive repetitive thinking recalled as occurring in the immediate aftermath of the child's death was associated with posttraumatic growth ($r = .38$, $p < .05$), but repetitive thinking recently was not. Attempts at deliberate meaning making recalled as occurring soon after the death were related to posttraumatic growth ($r = .48$, $p < .01$), but recent attempts at meaning making were not. Finally, attempts at positive reinterpretation and benefit reminding were related to posttraumatic growth when engaged in recently ($r = .36$, $p < .05$; $r = .44$, $p < .05$, respectively), but not soon after children's deaths.

In addition, these data showed that the different domains of posttraumatic growth measured by the PTGI were differentially related to cognitive processing. For example, personal strength was the only domain related to repetitive thoughts soon after the children's deaths ($r = .48$, $p < .01$), whereas all domains except personal strength were related to attempts to make sense of what had happened soon after the deaths. Appreciation of life was most strongly related to recent attempts at positive reappraisal ($r = .55$, $p < .001$) and benefit reminding ($r = .55$, $p < .001$), with new possibilities somewhat less so ($r = .46$, $p < .01$; $r = .36$, $p < .05$, respectively), and with other domains being unrelated to these kinds of thinking. These data appear to demonstrate that understanding the type of cognitive processing and when it occurs may be crucial to understanding the cognitive routes to posttraumatic growth, and that different aspects of growth may be particularly sensitive to certain kinds of cognitive activity at different periods of time after trauma.

Growth, cognitive processing, and disclosure. The cognitive processing of trauma into growth appears to be aided in many people by self-disclosure in supportive social environments. It is unclear whether this disclosure works better if it is written or verbal, because there is evidence that posttraumatic growth can be increased by specific interventions that enhance cognitive processing during journal writing (Ullrich & Lutgendorf, 2002). It may be that the facilitation or discouragement of cognitive processing of emotional material in trauma survivors is the key, and this can happen in direct social contact or through instructions to persons who write personal journals.

Lepore and associates (Lepore & Helgeson, 1998; Lepore, Silver, Wortman, & Wayment, 1996) have shown that social constraint (i.e., blocking of self-disclosure of intrusive thoughts) produces a strong relation between these thoughts and depression. Nolen-Hoeksema and Davis (1999) reported, in their study of bereaved persons over 18 months, that people with a ruminative coping style sought out more social support, although they at first were less comfortable talking than nonruminators. However, the ruminators ended up benefitting more from the support, helping them avoid becoming depressed. Reporting on the same data, Nolen-Hoeksema and Larson (1999) found that seeking social support produced posttraumatic growth in two of the four waves of interviews over 18 months, and that this may be because many persons sought support but did not find it.

Social support may play a strong role in the development of posttraumatic growth when it remains stable and consistent over time. For example, Heindrich and Ryff (1993) found that greater social integration buffered elderly women with health problems and produced greater sense of well-being. Powell et al. (2003) found differences in posttraumatic growth among persons who experienced the war in Sarajevo. In this study, persons who had fled the country and been in socially stable environments reported more growth than those who endured the entire conflict in the city. A more direct test of the relation between posttraumatic growth and social support is found in a study of breast cancer survivors (Cordova, 1999; Cordova et al., 2001). When friends and family did not wish to hear from cancer patients about their illness, cognitive processing appeared to be inhibited. The less cognitive

processing, the less posttraumatic growth was reported by the survivors.

Another study of breast cancer survivors and their husbands also supports the hypothesis that posttraumatic growth is positively influenced by social support. Weiss (2000, 2002) reported that the posttraumatic growth of wives was a significant predictor of husbands' posttraumatic growth, and that this was not related to reported degree of marital conflict. General social support was also related to posttraumatic growth, and to acknowledgment of fear among husbands. Weiss suggested that the relation between posttraumatic growth and social support may be due in part to the tolerance of distress that sustains cognitive processing.

We have previously emphasized the potential benefits of social support experiences in facilitating posttraumatic growth through mutual support groups, because they provide "discussion of perspective, offering of beliefs, and the use of metaphor to explain experience. All of this is fertile ground for the revision of schemas that is essential to the experience of growth" (Calhoun & Tedeschi, 1999, p. 68). The only published data we are aware of testing the notion that posttraumatic growth can be actively promoted in groups is a study by Antoni et al. (2001). These researchers looked at perceptions of benefit from experiencing cancer using a 10-week group-based cognitive-behavioral stress management intervention for women with early-stage breast cancer. Women who were low in optimism, in contrast to those high in optimism, had a greater increase in reported benefits from the cancer experience over 3- to 6-month follow-up. Emotional processing was also related to reported perceptions of benefit, but not optimism.

Wisdom and Narrative Development

Our assumption is that as individuals experience posttraumatic growth, these changes have an ongoing, mutual influence with the development of general wisdom about life and further development of the general framework, the narrative, people have for thinking about their lives. Posttraumatic growth shares some common foundations with what has been described as the "fundamental pragmatics of life" (Baltes & Smith, 1990, p. 21). Persons who have faced major challenges in their lives may also develop "the ability to balance reflection and action, weigh the known and the unknowns of life, be better able to accept some of the paradoxes of life, and to more openly and satisfactorily address the fundamental questions of human existence" (Calhoun & Tedeschi, 1999, p. 21).

For persons who have experienced major life crises, their lives are often conceptualized as having a before and after: before and after the loss of the baby, before and after the war, before and after the stock market crash, or before and after the criminal assault, for example (Tedeschi & Calhoun, 1995). The struggle with traumatic events can lead, along with the possibility of posttraumatic growth, to a revised life story (McAdams, 1993). As the graphic representation of our model of posttraumatic growth suggests (Figure 1), the development of the individual's personal life narrative and posttraumatic growth may mutually influence one another.

Ongoing and Interactive

One of the questions that can be raised about posttraumatic growth is whether it is a process or an outcome. We think of it as being both. Our assumption is that a variety of factors in different domains interact with, influence, and are influenced by posttraumatic growth. This general pattern of mutual influences unfolds over time. For most persons this active process tends to taper off with time, but the few available longitudinal studies in this area suggest that there may be different temporal patterns for different aspects of growth, and there may be significant variation between individuals (e.g., Frazier et al., 2001).

General Summary of the Process

As we have conceptualized it, the process of posttraumatic growth is set in motion by the occurrence of a major life crisis that severely challenges and perhaps shatters the individual's understanding of the world and his or her place in it. Certain kinds of personal qualities—extraversion, openness to experience, and perhaps optimism—may make growth a bit more likely. Initially, the individual typically must engage in coping responses needed to manage overwhelming emotions, but intense cognitive processing of the difficult circumstances also occurs. The degree to which the person is engaged cognitively by the crisis appears to be a central element in the process of posttraumatic growth. The individual's social system may also play an important role in the general process of growth, particularly through the provision of new schemas related to growth, and the empathetic acceptance of disclosures about the traumatic event and about growth-related themes. Posttraumatic growth seems closely connected to the development of general wisdom about life, and the development and modification of the individual's life narrative. Although posttraumatic growth has been found to be correlated with a reduction of distress, our thinking is some degree of psychological upset or distress is necessary not only to set the process of growth in motion, but also some enduring

upset may accompany the enhancement and maintenance of posttraumatic growth.

Posttraumatic Growth and Physical Functioning

We are aware of only one study that has looked at the relations between posttraumatic growth and physical well-being. Epel, McEwen, and Ickovics (1998) reported that of the five factors of the PTGI, elevations on spiritual growth and appreciation of life were related to quicker cortisol habituation to a laboratory stressor. Similarly, Bower et al. (1998) found that men with HIV were less likely to have rapid declines in CD4 T-cell levels if they cognitively processed their situation into something meaningful. These men also had lower levels of mortality, regardless of health status at the start of the study or health-related behavior. This finding echoes the earlier study of Affleck et al. (1987), who reported lower rates of mortality in heart attack victims who derived benefits from their illness. Much work remains to be done in exploring the links among cognitive processing, posttraumatic growth, and health-related outcomes, but these studies suggest this may be a promising area for investigation.

Posttraumatic Growth and Psychological Distress

An important issue addressed in the published research on posttraumatic growth is the degree to which higher levels of growth are associated with lower levels of psychological distress. The quantitative evidence is mixed. Where relations are observed, higher levels of growth tend to be associated with lower levels of distress (Frazier et al., 2001; Park et al., 1996). However, other investigations have found no reliable relation between posttraumatic growth and distress (Cordova et al., 2001; Powell et al., 2003). Further, some studies indicate a significant relation between measures of intrusive thoughts and posttraumatic growth (Calhoun, Cann, et al., 2000).

How do we reconcile the reports of rumination related to depression and our findings of cognitive processing related to posttraumatic growth? Posttraumatic growth and distress are essentially separate dimensions, and growth experiences do not put an end to distress in trauma survivors (Calhoun & Tedeschi, 1998; Tedeschi & Calhoun, 1995). These distinctions are seen in a study by Cordova et al. (2001). Matching breast cancer survivors with healthy controls, they found that cancer survivors and controls were no different in levels of depressive symptoms, although the cancer survivors reported more posttraumatic growth. Depression, intrusive thinking, and general personal well-being were all unrelated to posttraumatic growth. Instead, posttraumatic growth was related to perceived threat of the cancer experience and talking with others about it. It appears that in general, there are surprisingly few relations between posttraumatic growth and apparently related variables such as well-being, optimism, and (low) depression, or (low) neuroticism.

Park (1998) suggested that the failure to find a negative relation between growth and distress occurs because some people reporting growth may deny negative aspects of their experiences, whereas others do not (e.g., Taylor et al., 1991), and that domains of posttraumatic growth are conceptually distinct from general emotional adjustment. Continuing levels of manageable distress may actually fuel posttraumatic growth, as suggested in our model (Calhoun & Tedeschi, 1998). The available data suggest that experiencing higher levels of posttraumatic growth is correlated with, and perhaps may result in, reduced levels of psychological distress, but not always.

Is the lack of relation between distress and growth not a limitation of the concept? We think not. As we have indicated, the absence of consistent relations suggests that posttraumatic growth and traditional measures of psychological adjustment are independent. Posttraumatic growth is not the same as an increase in well-being or a decrease in distress. In addition, the impetus for growth is the individual's struggle with a highly distressing set of circumstances that significantly challenges people's understanding of the world and their place in it. The maintenance of growth may also require periodic cognitive and emotional reminders that are not pleasant, of what has been lost, but paradoxically, also of what has been gained. As others have suggested (Yalom & Lieberman, 1991), growth and subjective pain may indeed coexist for some people. The experience of posttraumatic growth may be accompanied by a reduction in distress, but our model does not predict such a relation.

Some studies just cited suggest repetitive thoughts that are difficult to stop are related to posttraumatic growth. Initial deliberate attempts to make meaning and later attempts to interpret the aftermath positively and bring the benefits to mind, may be reliably related to posttraumatic growth. Active disclosure of thoughts and emotions to empathetic others may be important to the development of posttraumatic growth. However, the development of measures of the complicated cognitions associated with posttraumatic growth and the longitudinal examinations of these processes await the attention of researchers focusing on this area.

Understanding the relations among these thought processes and the best outcomes for trauma survivors is important in helping professionals who work with such populations to discern the positive nature of the apparently painful cognitive activity of these persons. Attempts on the part of people in the support networks

of trauma survivors to suppress rumination are perceived by survivors as not helpful (Lehman, Ellard, & Wortman, 1986; Lehman & Hemphill, 1990). Similarly, therapeutic interventions with trauma survivors that are focused on rapid distress relief may prevent greater long-term gains (Calhoun & Tedeschi, 1999).

Extension of the Concept to Social Transformation

Traumatic events happen not only to individuals, but also to groups, and through vicarious processes, to whole countries and societies. Therefore, we might also consider how the concept of posttraumatic growth might be applied to social change in the aftermath of widespread trauma. Socially shared schemas can be challenged and changed by traumas that are widely shared, such as war or economic hardship (Bloom, 1998; Tedeschi, 1999). The social narrative can be changed by the struggle with events, just as it is in individuals, creating a discussion about who "we" are in the aftermath of the events, what principles should guide the society, and what meaning the trauma has for the society.

For example, the Great Depression of the 1930s produced new ideas about the responsibility of government to protect individuals from the excesses of capitalism. World War II transformed the combatants' views of their societies and national character, and produced changes to socially shared schemas that are still felt. Such a turning point in the social narrative in Japan marked a change from a strongly militaristic to a more pacifistic culture. In Germany, the Holocaust has had an enduring effect on the youth of the country as they try to identify positively with their nation (Brendler, 1995). The Vietnam War led Americans to reconsider the role of morality and national consensus in making war, and changed views of the trustworthiness of government leaders. The attacks against the World Trade Center in New York, on September 11, 2001, are being seen as a catalyst for social change, although it is too early to tell exactly what those changes might be.

Positive changes can arise out of such events when the individual narratives are shared and integrated into the social narrative in such a way that the events are recognized as turning points. Leadership is also important. The famous and the unknown can emerge as important forces in changing the narratives and the schemas of societies. In South Africa, Desmond Tutu and Nelson Mandela gave powerful moral direction that led to the breakup of apartheid and the establishment of the Truth and Reconciliation Commission. This group allowed for the telling of stories that reinforced changes in individual and social schemas. Candy Lightner, a bereaved mother, started a nationwide effort in the United States to eliminate drunk driving, resulting in not only legal changes, but socially shared recognition of the dangers of this activity, a stigma about it, and even a new language including such terms as *designated driver.* With these kinds of determined leaders who wish to transform their own experiences of trauma and the vicariously experienced trauma of others, there can arise mutual support among those with similar experiences, and in such support there can be important social change.

Other Routes to Growth

In the original validation study of the PTGI (Tedeschi & Calhoun, 1996), we found that persons who did not experience any trauma also reported growth, although at lower levels than trauma survivors. Although this may represent a self-enhancing cognitive bias that allows people to claim ongoing self-improvement, these results might also reflect recognition of a maturational process in the young adults in that sample. The domains of growth represented by the PTGI might be experienced to some degree through other processes than massive schema violation through trauma, perhaps by an accumulation of experience over time that produces gradual changes that can't be attributed to single events.

Positive experiences might also have a similar effect on the domains of posttraumatic growth, especially if they are extraordinary enough to challenge schemas the way traumatic events do. Peak experiences and similar concepts (Csikszentmihalyi, 1990; Maslow, 1971; Privette & Landsman, 1983) may represent some life-altering event that results in some of the same changes that trauma survivors report. Concepts of positive experiences, such as Maslow's, do not make clear how and why these experiences might produce changed life perspectives. Following our model, positive life changes initiated by positive events would have to involve significant challenge to schemas and a clear change in the life narrative, and to accomplish this, positive experiences would need to combine the affective and intellectual in learning this new view of life. Empirical analyses would then be necessary to compare posttraumatic growth with growth in the aftermath of positive experiences to determine whether they produce the same trajectories of change over time, endure for the same periods, or have other similarities.

It should be apparent, however, that personal growth probably has a common core, although it occurs for different reasons. The five domains of the PTGI are probably a good representation of the breadth of growth that people can experience. Whatever the catalyst might be for growth, there are bound to be some biases introduced by the person experiencing the

growth, because experience is inherently constructive (Neimeyer & Stewart, 2000).

Conclusion

Reports of posttraumatic growth are now well-documented and this aspect of the psychological responses to major life crises should be regularly integrated into research in this area. The phenomenon is complex, and cannot easily be reduced to simply a coping mechanism, a cognitive distortion, psychological adjustment or well-being, or a host of apparently similar constructs. The outcomes of posttraumatic growth might be best considered as iterative, and it will take longitudinal work to trace the varied trajectories of the posttraumatic growth process. This process is likely to involve a powerful combination of demand for emotional relief and cognitive clarity, that is achieved through construction of higher order schemas that allow for appreciation of paradox. Metaphorical and narrative elements are likely to serve trauma survivors well as they take on a life that has become surprising, complicated beyond expectation, and painful. Researchers need to be focused on individual attempts to navigate the aftermath of trauma to develop an overall appreciation for these transformative processes.

We must also appreciate that trauma survivors often do not see themselves as embarking on searches for meaning or attempts to construct benefits from their experiences. They are either attempting to survive or trying to determine if survival is worthwhile. We have noticed that posttraumatic growth tends to surprise people, and has not usually been a conscious goal. Therefore, we emphasize in our work that posttraumatic growth is a consequence of attempts to reestablish some useful, basic cognitive guides for living, rather than a search for meaning or an attempt to manage the terror of mortality (Davis & Nolen-Hoeksema, 2001).

The overall picture of posttraumatic growth has been sketched. Describing the details of cognitive processing and narrative development will be much more difficult, and will demand from researchers an intimate knowledge of many literatures related to posttraumatic growth, and of qualitative and quantitative analytic procedures applied to long-term processes at the micro and macro levels.

Notes

The authors are grateful to Leonard L. Martin for his helpful editorial suggestions and expert guidance in the preparation of this target article.

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