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**Posttraumatic Growth in Military Populations:
Theory, Research, and Application**

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Posttraumatic Growth in Military Populations: Theory, Research, and Application

As far back as human recorded history, the theme of the ‘hero’s journey’ has been reflected in numerous religious, philosophical, and historical texts. Many such stories detail the hero’s struggle through extraordinary trauma and tribulation to emerge with profound and transformational wisdom and personal growth. Indeed, this simple idea has long been reflected in the seminal works of many diverse and influential thought leaders, namely, that adversity provides an opportunity for personal growth (Frankl, 1963; Maslow, 1954; Yalom, 1980). A related theme is reflected in the musings of 19th century nihilist philosopher Friedrich Nietzsche: “From life’s school of war: that which does not kill us, makes us stronger” (Nietzsche & Large, 1998, p. 5). But is this commonly traded platitude, in fact, true? Can the experience of life-altering trauma result in positive psychological outcomes and transformational personal growth?

Although the human experience of it is not new, it was not until the mid-90s that the term *posttraumatic growth* (PTG) was coined (Tedeschi & Calhoun, 1996). Other terms, related but not necessarily interchangeable, have been used to describe the construct (e.g., *adversarial growth*; *benefit finding*; *stress-related growth*). However, over the past decade many scholars have begun to unify around the term PTG in order to share a common research language. PTG is defined as positive changes in emotion, cognition, and behavior occurring as a result of a complex and dynamic personal struggle with traumatic events or circumstances (Tedeschi & Calhoun, 2004). In fact, it *is* the struggle which defines the construct. Within the PTG framework, growth derives *directly* from the process of grappling with the aversive experience, and is influenced by a range of environmental (e.g., social support, cultural values), and individual factors (e.g., level of distress, disposition/personality, coping style, comfort level with self-disclosure). Over the past two decades, accumulating research suggests that the PTG

phenomenon is common (see Linley & Joseph, 2004 for review), and is reflected worldwide in personal narratives of diverse people and regions, albeit with cultural variation (Kashyap & Hussain, 2018; Splevins, Cohen, Bowley, & Joseph, 2010).

Some scholars embrace the idea of PTG as both a distinct process and a unique outcome (e.g., Cann et al., 2011; Calhoun & Tedeschi, 2004, 2006; Morris & Shakespeare-Finch, 2011; O'Leary, Alday, & Ickovics, 1998; Tedeschi & McNally, 2011). Others are less persuaded, and question what role common resilience plays, or whether posttraumatic changes are simply self-enhancing 'illusory' distortions – necessary to reduce the cognitive dissonance which occurs following a cataclysmic rupture in assumptive worldviews (Affleck & Tennen, 1996; Bonanno, 2004; Coyne & Tennen, 2010; Frazier et al., 2009; Hobfoll et al., 2007; Taylor, 1983). Yet it is possible that the PTG model may allow for both positions to be true. Early phases of automatic coping with trauma may be inherently self-serving, as a desperate attempt to restore one's sense of safety and world order. Over time, with deliberative cognitive processing, a more nuanced and 'authentic' growth may take place (Maercker & Zoellner, 2004; Tedeschi & McNally, 2011; Zoellner & Maercker, 2006).

However, the experience of PTG is by no means universal; not all, nor even a majority of trauma victims will necessarily manifest PTG. Clinicians emphasize that no traumatic event, nor any aspect of it, is a good or desirable experience. To the contrary—there are decade's worth of research documenting the damage done by early, repeated, or severe trauma (see for example Carr, Martins, Stingel, Lemgruber, & Juruena, 2013; Sperry, 2016). Therefore, the absence of a PTG-like experience in trauma survivors does *not* imply poorer coping or recovery status, and should not be considered a clinical failure or a less-valued outcome (Tedeschi, Shakespeare-Finch, Taku, & Calhoun, 2018). In fact, research indicates the most resilient individuals may

manifest PTG the *least*, perhaps due to more robust coping skills (leaving less room for the impact of trauma, the destruction, and subsequent reconstruction required in PTG) (Levine, Laufer, Stein, Hamama-Raz, & Solomon, 2009). This seeming paradox might be reflected in an observation by Holocaust survivor Viktor Frankl (1959), who noted that “some prisoners of a less hardy make-up often seemed to survive camp life better than did those of a robust nature [perhaps] because these sensitive people ... were able to retreat from their terrible surroundings to a life of inner riches and spiritual freedom" (p. 35). Nonetheless, for those who wish to understand PTG, an appreciation for the theory upon which it is premised is necessary.

The Role of the Assumptive Worldview

At the heart of the PTG model is an organizing principle captured in the *shattered assumptions theory* (Janoff-Bulman, 1989; 1992). Humans, it is argued, have a very complex, deeply-rooted, and well integrated schema about the world and themselves. Specifically, we hold three basic, generally positive assumptions that are rarely consciously examined or challenged: (a) the world is benevolent, predictable, and controllable; (b) events occur for a reason; (c) the self (and most others) are generally good. These beliefs work together to create the foundation of a complex system that governs much of who we are as an individual, all the while operating largely outside conscious awareness or examination. These beliefs serve an important function in maintaining a psychological sense of wellbeing, and are self- and security-enhancing in nature. In short, our *assumptive world* allows us to believe that we (and others) are good and worthy people, who live in a (relatively) just and benevolent world, where (most) things that happen make sense. These assumptions allow us to move through the world with a generally confident, coherent, and stable outlook. Extreme trauma—of any sort—shakes the very foundation of this core belief system, revealing our beliefs to be delusory, and forcing us to confront the

terrifyingly random, arbitrary, cruel, or capricious nature of life. In fact, when traumatic events are experienced, they cause great cognitive dissonance and distress that may be apparent even years or decades later (Beder, 2005; Janoff-Bulman, 1989, 1992, 2004). How trauma survivors attempt to resolve this cognitive dissonance forms the starting point for PTG theory and research.

Defining Posttraumatic Growth

Three aspects of PTG bear explication as terms used vary somewhat from common usage and definitions for trauma and stress related disorders in the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition ([DSM-5], American Psychiatric Association, 2013). What is meant by the term *trauma*, how is the word *growth* conceptualized, and when does it occur?

Trauma. Much debate exists over the definition of the construct of trauma, especially following recent DSM-5 revisions to posttraumatic stress disorder (PTSD) criteria (May & Wisco, 2016). Traditionally, scholars have defined trauma as a highly stressful event or situation that overwhelms the individual's capacity to cope, and "pose[s] an extreme psychological or physical threat or harm to an individual" (Sperry, 2016, p. 162). For scholars, in PTG however, trauma is defined not so much by the event itself as its ability to shatter existing schemas and assumptive worldviews (Calhoun & Tedeschi, 2004, 2006; Linley & Joseph, 2004). The trauma event is often conceptualized as a 'turning point,' a 'break in the life narrative,' or a 'watershed moment' (Tedeschi & McNally, 2011). Thus, it is the *survivor's interpretation* of the event as catastrophic that will define an event as traumatic. Central to the construct is loss; the actual loss of someone or something, but even more so, the loss of one's identity, role, or assumptions about self, others, and the world more broadly. In this context, trauma is defined more broadly than in the DSM-5 (i.e., threat to life/physical integrity); however, the event must be considered 'extremely undesirable' (O'Leary et al., 1998; Tedeschi, Park, & Calhoun, 1998) and represent a

‘seismic’ disruption in core beliefs or worldview (Calhoun & Tedeschi, 1999). Less emphasis is placed on a fear-based or physiological response to the threat than to the cognitive and emotional sequelae of the trauma.

Unlike DSM-5 criteria for PTSD, there is no expectation that the trauma occurred in a single or easily definable temporal space. Thus, a traumatic *event* in the PTG model may be a single, easily definable occurrence (e.g., a violent assault), but may also be an experience that happens over time and is embedded in a complex number of other successive events (e.g., natural disaster and its after effects). Many traumatic experiences unfold over time (e.g., a chronic, progressively debilitating illness), and others simply cannot be neatly extricated from their larger context (e.g., a particularly violent firefight within an ongoing combat deployment).

Growth. In simple terms, growth often suggests a progressive improvement, refinement, or maturing of existing conditions. Indeed, many people report positive growth and development over time simply as a result of maturing and acquiring wisdom. For the PTG model however, the growth must be *transformative*. PTG is not age-related, and growth is earned only in the arduous process of meaning-making following deeply life-altering experiences of trauma. It is the growth that manifests *as a result of the struggle* which can be defined as PTG. Normative developmental processes may be occurring alongside of PTG, but are distinguished from PTG by the absence of any type of hard-won personal struggle with traumatic content. PTG is the result of deliberative cognitive processing or rumination focusing on issues related to the ‘shattered worldview’ in an attempt to modify, adapt, or revise cognitive schemas which have been violated by the trauma. Simplistic, binary or dichotomous thinking, must give way to more nuanced and flexible analysis. In other words, it is not a typical anxiety-fueling ruminative style, but rather a consciously cognitive approach to understanding what happened, re-examining core beliefs, and

perhaps modifying or creating new belief systems that can incorporate the trauma into a new, expanded worldview that makes sense to the survivor (Taku, Cann, Tedeschi, & Calhoun, 2015; Tedeschi & Calhoun, 2004; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012).

Finally, it is important to note that PTG does *not* preclude the presence of concurrent distress, or even active trauma-related symptoms. A number of studies suggest both PTG and PTSD symptoms can co-occur in complex ways (Blix, Birkeland, Hansen, & Heir, 2016; Engelhard, Lommen, & Sijbrandij, 2015; First, First, Stevens, Mieseler, & Houston, 2018; Frazier et al., 2009). Especially in military populations, it would be unsurprising to witness PTSD (Steenkamp, Litz, Hoge, & Marmar, 2015), moral injury (Litz et al., 2009; Nash, 2007) and/or complicated grief reactions (Lichtenthal, Cruess, & Prigerson, 2004)—co-occurring alongside the process of PTG. This fact underscores the uniqueness of the PTG construct, and may simultaneously defeat the argument that the growth reported is simply ‘illusory’ or self-protecting denial of distress or suffering (Tedeschi & McNally, 2011).

Post-trauma growth period. As important as the definition of the trauma, is an understanding of the critical phase in PTG. Important for the PTG model is the assumption that significant growth or changes will occur in people *after*, and sometimes long after, the traumatic event. Much of immediate responding to a traumatic event is unthinking or automatic, and involves typical coping strategies. (This may be the period that some scholars refer to as ‘illusory’ where survivor gains are more of a self-serving nature simply to stabilize their world and be able to function within it.) PTG, on the other hand, is thought to be the result of more deliberate cognitive processing, and is often an unplanned or unexpected process of *meaning-making*, that seeks to create a new narrative consistent with an altered worldview. Thus, the focus of PTG is not so much about the experience or cognitions during or immediately after the

trauma, as on the long term consequences and outcome (which is, of course, different for each individual). This timeline suggests that capturing PTG may require a much more flexible window than is often available in research paradigms. On one hand, a thirty-year retrospective may lose too much to the fog of time (Dekel, Mandl, & Solomon, 2011); on the other hand, assessing for PTG two months post-trauma may be too soon to detect significant change (Frazier et al., 2009). The idiosyncrasy of each individual's growth pattern is just one of the many factors which make this complex and nuanced topic challenging to research.

Posttraumatic Growth in Context

It bears noting that the vast majority of people who report experiencing PTG have accomplished this transformational change without the assistance of a mental health professional. Often, social support circles surrounding and supporting the trauma survivor are sufficient to provide the necessary scaffolding to create conditions conducive to personal growth. In fact, research shows that 50-70% of the U.S. population will experience at least one violent or traumatic event during their lifetime and yet only 5-10% will develop PTSD (Ozer, Best, Lipsey, & Weiss, 2003). This fact suggests most trauma survivors will resist, recover, and/or thrive post-trauma—and will do so without the assistance of a therapist or doctor. Nonetheless, clinical research has identified important factors which appear to facilitate PTG, and mental health professionals are encouraged to utilize this developing knowledge base to support clients in their meaning-making journey post-trauma. However, it is equally important to understand what PTG is *not*, as well as what it *is*.

Posttraumatic growth is not resilience. Tedeschi and Calhoun (1995, 2004) have described PTG as transformational positive psychological changes experienced as a result of the struggle with traumatic or highly challenging life-altering circumstances. *Resilience*, on the other

hand, is often defined as the ability to adaptively return to baseline functioning (O’Leary & Ickovics, 1995), or to resist being compromised by trauma in the first place (Bonanno, 2004). While some insist on clearly distinguishing the three related terms (Bonanno, 2004), others have tried to integrate multiple aspects into a global definition (i.e., *resistance*, *recovery*, and *reconfiguration*) (Lepore & Revenson, 2006). To be clear, PTG is *not* simply a return to baseline; it is to surpass a previous baseline on the way to something even better. More nuanced, more heartfelt, and more hard-won than ‘normal.’ The end state of such a transformational struggle is sometimes conceptualized as *thriving* (as opposed to surviving, resisting, or recovering). A model by O’Leary and Ickovics (1994, 1995) depicts the distinction between the common understanding of resilience (recovery or return to normal function/baseline), and thriving (see Figure 1). Although somewhat oversimplified, it could be said that PTG most closely resembles the idea of thriving in this model.

INSERT FIGURE 1 HERE

The Posttraumatic Growth Model

The current corpus of research, taken as a whole, suggests the emerging picture of PTG is much more complicated than first imagined; the field is still very much evolving. For example, some studies have found resilience to be negatively correlated with PTG and PTSD symptoms (Levine et.al, 2009), whereas others have found resilience to be positively associated with PTG, but negatively with PTSD symptoms (Bensimon, 2012). Nonetheless, the factor structure of PTG (Tedeschi & Calhoun, 1996) has been extensively researched and enjoys wide support. Additionally, there are early indicators of modest agreement on a number of factors which seem to facilitate or be associated with PTG, although other variables are related in complex and sometimes contradictory ways.

Measuring posttraumatic growth. There are nearly a dozen measures designed to tap into domains similar or related to PTG. The most prominent measures include the *Stress Related Growth Scale* (Park, Cohen, & Murch, 1996); *Perceived Benefit Scale* (McMillen & Fisher, 1998); *Thriving Scale* (Abraído-Lanza, Guier, & Colón, 1998); *Changes in Outlook Questionnaire* (Joseph, Williams, & Yule, 1993); and *Posttraumatic Growth Inventory* ([PTGI] Tedeschi & Calhoun, 1996, 2004). A discussion of all measures is beyond the scope of this chapter; however, factor analysis of the PTGI, long considered the gold standard in the field, has yielded five empirically derived domains: *greater appreciation of life and changed priorities*, *warmer, more intimate relations with others*, *greater sense of personal strength*, *recognition of new possibilities*, and *spiritual development*.

Greater appreciation of life and changed priorities. As a result of the trauma and its aftermath, survivors often report valuing ‘the little things,’ which they may have previously taken for granted. Now fully aware that they have little control over some events, survivors may report feeling ‘lucky’ or ‘blessed,’ and frequently report that their life priorities have shifted towards more meaningful and relational-based goals and values. Acknowledging the pain of loss has allowed them to appreciate the value of many other things previously overlooked (e.g., relationships, time, health, resources).

Warmer, more intimate relations with others. Especially in the case of bereavement, survivors often experience a shift in values towards building, maintaining, and cherishing closer and more intimate social relationships. By way of increased self-disclosure, survivors may experience the support and emotional engagement which might have been lacking in their lives previously. Empathy and compassion may be more manifest in close relationships and reports of being better able to understand others’ pain are common. Social connections can shift: new

relationships may be formed, and existing relationships that were not supportive or productive may be ended.

Greater sense of personal strength. Paradoxically, the PTG experience often leaves survivors with an enhanced sense of self efficacy (i.e., *If I got through that, I can get through anything.*) Although they may be fully aware of and humbled by their own vulnerability, there is often a more nuanced understanding that strength lies in the ability to be flexible and adaptive to changing life circumstances. Having overcome previously unimaginable trauma or challenges, survivors often have a much deeper and more accurate understanding of what they are able to personally cope with and overcome.

Recognition of new possibilities. Often the experience of trauma opens doors to avenues never previously considered. For example, survivors might consider a new or different occupation (e.g., losing a child to a drunken driver prompts a mother to create an anti-drinking campaign). For others, the PTG process helps them to see that an entirely new life path or goal set is attainable, and, given the uncertainty of life, it may be reasonable to ‘take the leap’ now (whereas previously it seemed too risky or irresponsible). Constructing a new philosophy about life can lead to the recognition of new possibilities in a wide range of areas (e.g., relationships, professional endeavors, health and lifestyle).

Spiritual development. Expressed in various ways, the common theme in this domain is an enhanced sense of closeness with, or understanding of, larger forces and their role in the survivor’s life. For example, if the survivor endorses a belief system with a ‘personal God’ (more common in the West) they will often report that the deity was responsible for them ‘getting through it all.’ For individuals who are not necessarily religious, or who are adherents of other belief systems, this feeling is often expressed as a larger existential awareness or an increased

orientation towards humanism or connectedness to others. For obvious reasons, research findings depend largely on the survivor's culture as well as prior orientation towards religion and/or spirituality. A recent revision of the PTGI scale (PTGI-X) has expanded this section and now allows for much more flexibility and inclusion of those who do not endorse traditional religious perspectives (Tedeschi, Cann, Taku, Senol-Durak, & Calhoun, 2017).

Universal and Ubiquitous: The Experience of Posttraumatic Growth

There has long been evidence that many survivors of traumatic or highly challenging events report transformational and positive psychological outcomes. In fact, between 40-70% of trauma survivors—including, for example, natural disaster victims, sexual assault survivors, chronically ill and cancer patients, vehicular crash and accident victims, prisoners of war and combat veterans—report some positive psychological benefit as a result of trauma experienced (Abraído-Lanza, et al., 1998; Calhoun & Tedeschi, 1999; Cryder, Kilmer, Tedeschi, & Calhoun, 2006; Dohrenwend et al., 2004; Feder et al., 2008; First et al., 2018; Frankl, 1963; Frazier, Tashino, Berman, Steger, & Long, 2004; Joseph et al., 2005; Maguen, Vogt, King, King, & Litz, 2006; Ramos & Leal, 2013; Shakespeare-Finch & Armstrong, 2010; Shakespeare-Finch & de Dassel, 2009; Sledge, Boydston, & Rabe, 1980; Snape, 1997; Solomon & Dekel, 2007; Stanton, Bower, & Low, 2006; Tedeschi & Calhoun, 2004; Tsai, El-Gabalawy, Sledge, Southwick, & Pietrzak, 2015). Although there are hundreds of studies investigating PTG in various types of trauma survivor populations, many of the researchers in this area are military-affiliated with specialized expertise as a result of working with a population at high risk for experiencing trauma. Indeed, veterans from eras going back to World War II have reported experiencing PTG as a result of their wartime experiences.

Posttraumatic growth in military and related settings. Remarkably, a significant proportion of combat veterans and POWs consistently report psychological benefits resulting from their period of captivity and maltreatment. Israeli researchers (Solomon & Dekel, 2007) working with Yom Kippur War (1973) veterans and POWs, have reported on the most extensive longitudinal study to date. Three key findings emerged from the 30 year follow up: (a) POWs reported significantly higher PTG scores and higher levels of PTSD symptoms when compared to controls (combat experienced, but non-POWs); (b) PTG and PTSD symptoms were positively correlated, meaning they were co-existent; and (c) PTG manifested a curvilinear relationship (inverted U) with severity of PTSD symptoms, indicating that an intermediate level of severity was associated with the highest levels of PTG. Furthermore, PTG was significantly and positively associated with *combat exposure*, *loss of control*, *suffering while in captivity*, and *belief in a just world* (Dekel, Mandl, & Solomon, 2011). In a study of former East German political prisoners, researchers found 72% of survivors spontaneously reported at least one aspect of perceived growth gained from the experience of being imprisoned. The growth area most frequently pertained to a *changed philosophy of life* and increased *understanding of human nature* (Maercker & Zoellner, 2004). Research with Dutch peacekeeper ISAF personnel deployed to Afghanistan indicated PTG was positively associated with *perceived threat* while in-country and inversely correlated with *rank* (Boermans, Kamphuis, Delahaij, van den Berg, & Euwema, 2014). However, a recent study of survivors of the Oslo terrorist bombing in Norway found an initially strong correlation between PTG and PTSD, which gradually became nonsignificant after 22 months. Perhaps more importantly, this cross-lagged design revealed that PTG was both a consequence *and* antecedent of PTSD, meaning that PTG predicted later PTSD and vice versa (Blix, et al., 2016). In another recent cross-lagged design, researchers in the Netherlands were

concerned to see that higher levels of PTG five months post-deployment were positively correlated with PTSD symptoms, and were also predictive of even higher levels of stress symptoms 15 months later, suggesting that PTG may be a harbinger of worse outcomes (Engelhard, et al., 2015).

In the United States, a great deal of research has been done with Vietnam era veterans. Based on a national database (the *National Vietnam Veterans Readjustment Study*; Kulka et al., 1990), Dohrenwend and colleagues (2004) found that 71% of veterans reported the effect of their wartime service in Vietnam was mainly positive (Dohrenwend et al., 2004). Similarly, aviators who had been taken prisoner by the North Vietnamese reported high rates of PTG; in one study, nearly two-thirds (63%) reported moderate or greater levels of growth, and 37% of that sample indicated a high or very high degree of PTG as a result of their suffering. Interestingly, *dispositional optimism* and *duration of captivity* were significant predictors of PTG in this POW population (Feder et al., 2008). Other POWs who survived captivity and torture reported that the experience had increased their *self-confidence* and reorganized *life priorities*. Specifically, 61% reported that they had benefited psychologically from their traumatic experience; the more severe the maltreatment suffered, the more likely the survivor was to report experiencing PTG (Sledge et al., 1980). In a study of Gulf War veterans, *perceived threat* while in the war zone was the strongest predictor of *appreciation for life* (one aspect of PTG); however, overall, PTG was best predicted by *social connectedness* post-deployment (Maguen, Vogt, King, King, & Litz, 2006). More recently, researchers drawing on a large national database of Post 9/11 veterans confirmed the curvilinear relationship between PTG and PTSD severity, and also reported that half of the total sample, and 72% of those who screened positive for PTSD, reported at least moderate levels of PTG as a result of their worst traumatic event. They found PTG to be

positively correlated with *social connectedness*, *intrinsic religiosity*, and having a *life purpose* (Tsai et al., 2015). In another U.S. Army sample, PTG was significantly and positively correlated with *number of combat* experiences; it was negatively correlated with *recent suicidal ideation* (Gallway, Millikan, & Bell, 2011).

The preceding discussion of research in military and related settings reveals the fundamental paradox present in PTG, namely, that “out of loss there is gain” (Tedeschi & Calhoun, 2004, p. 6). The experience of PTG can help survivors construct meaning, personal significance, and even hope—in the aftermath of suffering. However, given that not all trauma survivors experience PTG, what do those who report PTG have in common? Research has revealed a handful of factors that are associated with PTG. However, many of the studies await replication and variables under investigation sometimes manifest complex and seemingly counterintuitive relationships with each other. Therefore, the following discussion of findings should be considered tentative at this time.

Factors Associated with Posttraumatic Growth

A wide range of factors or variables have been connected to PTG over the years (Linley & Joseph, 2004). The factors can be categorized generally at the environmental or individual level, which, together, create a unique profile for each survivor of trauma.

Environmental factors. Environmental factors are those outside forces or conditions which act upon or influence the experience of the survivor, but are not internally located nor necessarily under their direct control.

Social support and connectedness. Research shows that a lack social support is implicated in a wide range of adverse outcomes for both physical and mental health; conversely, the presence of a strong and supportive social network functions as a powerful protective factor

against psychopathology (Price, Pallito, & Legrand, 2018). In fact, social support was the strongest predictor in a meta-analysis of studies examining risk and protective factors for PTSD (Ozer et al., 2003). It seems clear that those who have experienced a traumatic loss often fare better if they perceive themselves within a strong social network of support (Park et al., 1996; Tsai et al., 2015). Complicating the issue however is the fact that personality and ruminative style appears to interact with perceived social support and PTG such that ruminators are more likely to seek support and benefit from it, but will actually report receiving *less* social support than non-ruminators (Nolen-Hoeksema, & Davis, 1999). Generally, it is reasonable to assume that PTG would be facilitated by strong social support; however, it is presently unclear whether the relationship between social support and PTG is bidirectional and direct, or whether one precedes the other or manifests via indirect pathways (Schaefer & Moos, 1998).

Religiosity/religious participation. Perhaps more than other domains, research in this area struggles with operationalizing terms and avoiding cultural bias (Kashyap & Hussain, 2018). Spirituality is a challenging construct to assess and even more difficult to interpret. Nonetheless, some scholars have found a positive association between PTG and spirituality/religiosity (i.e., religious beliefs, religious participation) (Calhoun, Tedeschi, Cann, & McMillan, 2000; Koenig, Pargament, & Nielsen, 1998; Park et al., 1996; Tsai et al., 2015). For adherents of any major faith tradition, the idea of facing a challenge and triumphing over adversity is a well-known and cherished theme reflected in dozens of parables in the guiding documents of every religious tradition. It may be then, that the idea of growth following a personal tragedy or trauma is something for which followers already possess a schema, a language, and an expectation of future success. Combined with the strong social support system that many religions foster, this inculcation of values and expectations may serve as a powerful

protective or health-promoting factor when faced with a personal trauma. However, others have noted an inverse relationship, with the trauma event precipitating the death of previously held spiritual or religious beliefs, presumably because the rupture which destabilized the survivor's worldview was too great to overcome or reconcile with the religious belief system (Pargament, Desai, & McConnell, 2006).

Nature of the traumatic event. There is no clear evidence that a specific *type* of traumatic event is more likely to foster PTG; however, the perceived *controllability* and *severity* of the trauma do appear to play a role. Specifically, there appears to be a curvilinear (inverted U) relationship between PTG and trauma severity such that intermediate levels of trauma are most strongly associated with growth (Dekel et al., 2011; Fontana & Rosenheck, 1998; Park et al., 1996; Schnurr, Rosenberg, & Friedman, 1993; Solomon & Dekel, 2007; Tsai et al., 2015). It may be that lesser degrees of trauma are not sufficiently disruptive to cause the survivor to examine or reorganize belief systems or worldview. On the other end of the spectrum, extreme or repeated trauma may simply overwhelm the survivor's ability to cognitively process the event or even recover baseline following the trauma.

Individual factors. Individual factors are those attributes which reside within the survivor including attitudes, knowledge, skills, genetics, and dispositional/personality or other personal characteristics.

Demographics. It appears there is a tendency for younger people to report PTG more frequently than older individuals. Women are more likely than men to report PTG, as are those individuals with higher levels of education (Linley & Joseph, 2004; Tedeschi & Calhoun, 2004). Although these findings are interesting, a number of alternative explanations should be considered. It is possible that older people have already acquired significant wisdom and life

experience, or that their perspective has shifted, having less time to live. Older individuals may be more resilient simply due to life experience, and thus, manifest less PTG as has been found in some studies with resilient survivors. Women tend generally to be more comfortable with self-disclosure as well as therapeutic engagement; it may be that women are more likely to report PTG simply because they are more likely to possess many of the factors associated with PTG (e.g., social support networks; willingness to self-disclose), and are more comfortable or familiar with the ‘language’ of therapy or growth. Finally, a higher level of education may be correlated with a range of variables which better position a survivor to experience PTG (e.g., cognitive capacity, more resources, greater freedom or opportunity).

Distress or trauma symptoms. At first glance it would seem intuitive that PTG would be associated with lower levels of distress. However, the research contains a host of contradictory findings. In some cases, PTG is negatively correlated with distress such as depression, anxiety, and/or trauma symptoms (Cadell, Regehr, & Hemsworth, 2003; Linley, Joseph, & Goodfellow, 2008; Tomich & Helgeson, 2004); in others, PTG and distress/trauma symptoms co-exist (Calhoun & Tedeschi, 2006; Solomon & Dekel, 2007). In yet other studies, researchers have found PTG to be both an antecedent and consequence of PTSD symptoms (Blix, et al., 2016). The research seems to suggest a complicated relationship between the presence of distress/trauma symptoms and PTG. Nonetheless, it is clear that the two are not mutually exclusive and that the presence of one may tell us little or nothing about the other.

Personality/dispositional traits. Although much work remains to be done in this area, studies do generally find that four of the five ‘Big Five’ traits (*extraversion, openness to experience, agreeableness, and conscientiousness*) are positively associated with PTG, while *neuroticism* (i.e., negative emotionality, such as anxiety, fear, anger, guilt) is often negatively

correlated with PTG (Linley & Joseph, 2004; Tedeschi & Calhoun, 2004), but not always (Engelhard, et al., 2015). Perhaps not surprisingly, *optimism* (Zoellner & Maercker, 2006) and *extraversion* are associated with PTG (Engelhard, et al., 2015). However, once again, the relationship is complicated by the fact that optimistic people generally have stronger/wider social support networks, are more likely to engage in self-disclosure, express their feelings more effectively, and employ adaptive coping—all of which bode well for the PTG process. Whether optimism is a predictor or simply a marker variable for PTG remains to be determined (Bostock, Sheikh, & Barton, 2009). Other characteristics positively associated with PTG include *self-efficacy* and *self-esteem* (Linley & Joseph, 2004). Finally, a core characteristic associated with growth is *emotional disclosure*. Individuals who engage in this behavior not only report PTG, also manifest improved physical function, reduced distress, and better immune system functioning (Lepore, Fernandez-Berrocal, Ragan, & Ramos, 2004). Again however, the relationship of emotional disclosure to PTG may not be a direct one but rather conflated with a cluster of other pro-health behaviors, traits, or characteristics.

Rumination mode. In traditional clinical parlance, a ‘ruminative style’ is associated with a wide range of poor mental health outcomes (e.g., increased risk for depression, anxiety) (Johnson et al., 2016). Rumination is typically defined as an automatic tendency to obsessively and automatically focus on negative content, repeatedly recalling and re-experiencing the material without processing in a healthy or helpful manner. However, researchers in the PTG field have made a distinction between that style of rumination which occurs shortly after a trauma or highly challenging event (i.e., automatic, obsessive, intrusive) – and another more deliberate and focused mode which generally manifests much later in the process (Lindstrom, Cann, Calhoun, & Tedeschi, 2013; Nolen-Hoeksema & Davis, 1999). They argue that both

ruminative modes may be present in the PTG process, but that it is the latter one, a deliberate processing of the traumatic event with the purpose of understanding and accommodating new realities, which will produce the transformational changes in the trauma survivor (Calhoun & Tedeschi, 2004). In this context, the term *ruminatio*n takes on an expanded meaning, to include a later-stage, more deliberate and productive cognitive processing of traumatic material.

Coping Style. Coping style refers to the manner in which individuals respond to stressors or traumatic events. There is generally considered to be three coping *techniques*: active, passive, or avoidance. At the individual level, scholars have proposed dozens of coping *strategies*. The more prominent approaches reference a handful of strategies such as *appraisal-focused* (adaptive cognitive), *problem-focused* (adaptive behavioral), *emotion-focused*, and *avoidance coping* (Billings & Moos, 1981). Some research suggests that problem- and emotion-focused coping are positively associated with PTG, while avoidance coping is negatively correlated (Linley & Joseph, 2004). It is unclear why a cognitive coping style would fail to be associated with PTG given the central importance of cognitive processing in the PTG model. However, it may be that the more important elements of PTG involve an emotional rather than intellectual understanding.

Therapeutic Approaches

In current practice, treatment of traumatic psychological injuries is considered to be successful if clinical symptoms are eliminated or ameliorated. As is common in Western medicine, this model assumes the healthy natural state to be the absence of pain or suffering. However, this conceptualization stands in contrast to the rich and complex process of meaning-making in PTG, which may occur alongside symptom reduction, but often coexists with symptoms of distress (See Figure 2). In fact, the PTG construct may be better aligned with Eastern philosophies that reject such dualistic thinking and instead embrace the necessity of

complementary light and dark forces (Zheng & Gray, 2015). Nonetheless, it is clear that in the process of operationalizing the construct it has developed a distinct Western flavor (Kashyap & Hussain, 2018; Splevins et al., 2010). The Eastern model embraces the malleability of the self, and acknowledges both suffering and growth can be present in the same moment. These core beliefs are reflected in modern schools of thought such as *contemplative psychotherapy* or *transpersonal psychology* more generally (, Darnall, 2007; Friedman, 2018). Tedeschi and Calhoun (1995, 1996, 2004), have been refining a model of the PTG process over the past two decades (Figure 2). Over time it has become apparent that there are many routes to achieving PTG, and much depends upon environmental and individual factors, which vary for each individual.

INSERT FIGURE 2 HERE

Adaptive disclosure therapy. As both a constructivist process and a clinical outcome, PTG is argued to be distinct from, yet potentially overlapping, the typical recovery process from traumatic stress exposure as is commonly seen in traditional therapeutic interventions for PTSD (e.g., cognitive behavioral therapy; prolonged exposure). However, a novel intervention specifically designed for active-duty military members was recently developed; preliminary findings suggest it may actually facilitate PTG (Gray et al., 2012). *Adaptive disclosure* is an exposure-based intervention that posits combat stress-related disorders are multifaceted injuries that may also include traumatic loss and *moral injury* (Litz et al., 2009). Moral injury is a construct that encompasses a complicated syndrome of demoralization, shame, anger, and grief that results from a violation of deeply held ethical and moral values or beliefs. A common experience underlying both moral injury and PTG may be the violent rupture of the survivor's assumptive worldview. Findings from a study of 44 U.S. Marines showed that adaptive

disclosure therapy appeared to have fostered significant decreases in ratings of depression, PTSD symptoms, and negative posttraumatic appraisals. Interestingly, the intervention also appeared to promote PTG (Gray et al., 2012).

Integration into existing models. Although adaptive disclosure therapy has shown great promise with military members, it may not be appropriate or available to many therapists working with trauma survivors. Therefore, clinicians are encouraged to work flexibly within the appropriate modality, matching client needs to therapist skills—while integrating the core features of PTG promotion or facilitation. Distilling best practices down to simple, pithy points, Tedeschi and McNally (2011) have offered a number of recommendations. Rather than assuming a traditionally paternalistic or expert role, they suggest adopting the persona of an ‘expert companion,’ someone who is willing to learn from the client and not feel compelled to foster, direct or dictate the terms of growth. The therapist should nonetheless be aware of and actively listening for PTG themes emerging, without ever attempting to shape or modify the therapeutic process. The manifestation of distress or active symptoms is entirely consistent with the PTG process and therapists should neither expect nor deny distress when it arises. It is important to allow the client to assign their own interpretation and understanding of events; regardless of whether such interpretations are judged ‘illusory’ or not, the client’s experience should be validated (assuming they are not delusional). Finally, not all trauma survivors will experience PTG; this should not be interpreted as treatment failure, as research has suggested that the most resilient may not manifest PTG, and that the nature of the traumatic event may play a role in the ability of the individual to experience PTG.

Conclusion

Research into PTG as a clinical construct has steadily grown over the past two decades since its introduction and operationalization in the literature; progress has been made. Two basic tenets have been consistently supported in the research. First, research has revealed that PTG and PTSD/distress symptoms frequently coexist. This relationship is neither unexpected nor unexplainable – assuming familiarity with the PTG model. Adopting a non-binary and holistic viewpoint allows one to see that it is precisely the struggle that is essential in order to produce the growth. Second, the relationship between PTG and trauma/threat severity is likely curvilinear. Consistent with what we know of stress/arousal more generally, research supports the idea that low levels of stress/trauma are unlikely to be sufficiently motivating or to cause significant ruptures of existing schemas or worldviews necessary for PTG. At the same time, extremely high levels of stress/trauma may completely overwhelm coping mechanisms and cognitive processing capacity. In such a case it would be difficult to construct a new and positive meaning for events. (Nonetheless, it's important to highlight the subjective nature of the lived experience of trauma, as research with POWs has revealed). Finally, a number of factors that appear to be associated with or predictive of PTG have been identified, but efforts continue to clarify and replicate findings which are complex and often paradoxical.

Although many questions remain to be answered, much progress has been made since the PTG term was first introduced. The next decade will witness a further refining of terms, methodology, and a wider cultural adaptation. Our understanding of PTG, a seemingly ageless and universal construct, will continue to evolve. Perhaps in the final analysis the best aphorism to describe the PTG phenomenon is not one from a 19th century nihilist, but rather, one offered by a 20th century healer and Holocaust survivor:

We must never forget that we may also find meaning in life even when confronted with a hopeless situation, when facing a fate that cannot be changed. For what then matters is to bear witness to the uniquely human potential at its best, which is to transform a personal tragedy into a triumph, to turn one's predicament into a human achievement....When we are no longer able to change a situation ...we are challenged to change ourselves. (Frankl, 1963, pg. 112).

References

- Abraído-Lanza, A. F., Guier, C., & Colón, R. M. (1998). Psychological thriving among Latinas with chronic illness. *Journal of Social Issues, 54*, 405-424.
- Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality, 64*, 899-922.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. (5th Ed.). Washington, DC: Author.
- Beder, J. (2005). Loss of the assumptive world—How do we deal with death and loss? *Omega, 50*(4), 255-265.
- Bensimon, M. (2012). Elaboration on the association between trauma, PTSD and posttraumatic growth: The role of trait resilience. *Personality and Individual Differences, 52*(7), 7782-787.
- Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioral Medicine, 4* (2), 139–157.
- Blix, I., Skogbrott Birkeland, M., Bang Hansen, M., & Heir, T. (2016). Posttraumatic growth—An antecedent and outcome of posttraumatic stress: Cross-lagged associations among individuals exposed to terrorism. *Clinical Psychological Science, 4*(4), 620-628.
- Boermans, S., Kamphuis, W., Delahaij, R., van den Berg, C., & Euwema, M. (2014). Team Spirit Makes the Difference: The Interactive Effects of Team Work Engagement and Organizational Constraints during a Military Operation on Psychological Outcomes Afterwards. *Stress and Health, 30*, 386-396.

- Bonanno, G.A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*, 20-28.
- Bostock, L., Sheikh, A. I., & Barton, S. (2009). Posttraumatic growth and optimism in health-related trauma: A systematic review. *Journal of Clinical Psychology in Medical Settings, 16*, 281-296.
- Cadell, S., Regehr, C., & Hemsworth, D. (2003). Factors contributing to posttraumatic growth: A proposed structural equation model. *The American Journal of Orthopsychiatry, 73*(3), 3279-287.
- Calhoun, L. G., & Tedeschi, R. G. (2004). The foundations of posttraumatic growth: New considerations. *Psychological Inquiry, 15*, 93-102.
- Calhoun, L. G., & Tedeschi, R. G. (1999). *Facilitating posttraumatic growth: A clinician's guide*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Calhoun, L. G., & Tedeschi, R. G. (2006). The foundations of posttraumatic growth: An expanded framework. In L. G. Calhoun, & R. G. Tedeschi. (Eds.), *Handbook of posttraumatic growth: Research and Practice* (pp. 3-23). Mahwah, NJ: Lawrence Erlbaum Associates.
- Calhoun, L. G., Tedeschi, R. G., Cann, A., & McMillan, J. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *Journal of Traumatic Stress, 13*(3), 3521-527.
- Cann, A., Calhoun, L. G., Tedeschi, R. G., Triplett, K. N., Vishnevsky, T., Lindstrom, C. M. (2011). Assessing posttraumatic cognitive processes: The Event Related Rumination Inventory. *Anxiety, Stress, & Coping, 24*, 137-156.
- Carr, C. P., Martins, C. M. S., Stingel, A. M., Lemgruber, V. B., & Juruena, M. F. (2013). The role of early life stress in adult psychiatric disorders: A systematic review according to childhood trauma subtypes. *Journal of Nervous and Mental Disease,*

- 201(12), 1007–1020. Coyne, J. C., & Tennen, H. (2010). Positive psychology in cancer care: Bad science, exaggerated claims, and unproven medicine. *Annals of Behavioral Medicine, 39*, 16-26.
- Cryder, C. H., Kilmer, R. P., Tedeschi, R. G., & Calhoun, L. G. (2006). An exploratory study of posttraumatic growth in children following a natural disaster. *The American Journal of Orthopsychiatry, 76*, 65-69.
- Darnall, K. T. (2007). Contemplative psychotherapy: Integrating Western psychology and Eastern philosophy. *The Behavior Therapist, 30*(7), 156–160.
- Dekel, S., Mandl, C., & Solomon, Z. (2011). Shared and unique predictors of post-traumatic growth and distress. *Journal of Clinical Psychology, 67*(3), 241-252.
- Dohrenwend, B. P., Neria, Y., Turner J. B., Turse, N., Marshall, R., Lewis-Fernandez, R., & Koenen, K. C. (2004). Positive tertiary appraisals and posttraumatic stress disorder in U.S. male veterans of the war in Vietnam: The roles of positive affirmation, positive reformulation, and defensive denial. *Journal of Consulting and Clinical Psychology, 72*, 417-433.
- Engelhard, I. M., Lommen, M. J., & Sijbrandij, M. (2015). Changing for better or worse? Posttraumatic growth reported by soldiers deployed to Iraq. *Clinical Psychological Science, 3*(5), 789-796.
- Feder, A., Southwick, S. M, Goetz, R. R., Wang, Y., Alonso, A., Smith, B. W., ...Vythilingam, M. (2008). Posttraumatic growth in former Vietnam prisoners of war. *Psychiatry, 71*, 359-370.

- First, J., First, N., Stevens, J., Mieseler, V., & Houston, J. B. (2018): Post-traumatic growth 2.5 years after the 2011 Joplin, Missouri tornado. *Journal of Family Social Work, 21*(1), 5-21.
- Fontana, A., & Rosenheck, R. (1998). Psychological benefits and liabilities of traumatic exposure in the war zone. *Journal of Traumatic Stress, 11*(3), 485–503.
- Frankl, V. (1959). *From death-camp to existentialism: A psychiatrist's path to a new therapy*. Boston, MA: Beacon Press.
- Frankl, V. (1963). *Man's search for meaning: An introduction to logotherapy*. Oxford, England: Washington Square Press.
- Frazier, P., Tashino, T., Berman, M., Steger, M., & Long, J. (2004). Correlates of levels and patterns of positive life changes following sexual assault. *Journal of Consulting and Clinical Psychology, 72*(1), 119-30.
- Frazier, P., Tennen, H., Gavian, M., Park, C., Tomich, P., & Tashiro, T. (2009). Does self-reported posttraumatic growth reflect genuine positive change? *Journal of Psychological Science, 20*(7), 912-919.
- Friedman, H. L. (2018). Transpersonal psychology as a heterodox approach to psychological science: Focus on the construct of self-expansiveness and its measure. *Archives of Scientific Psychology, 6*(1), 230–242.
- Gallaway, M. S., Millikan, A. M., & Bell, M. R. (2011). The association between deployment-related posttraumatic growth among US Army soldiers and negative behavioral health conditions. *Journal of Clinical Psychology, 67*(12), 1151–1160.
- Gray, M., Schorr, Y., Nash, W., Lebowitz, L., Amidon, A., Lansing, A., Maglione, M., Lang, A., & Litz, B. (2012). Adaptive disclosure: An open trial of a novel exposure-based

- intervention for service members with combat-related psychological stress injuries. *Behavior Therapy* 43(2), 407–15.
- Hobfoll, S. E., Hall, B. J., Canetti-Nisim, D., Galea, S., Johnson, R. J., & Palmieri, P. A. (2007). Refining our understanding of traumatic growth in the face of terrorism: Moving from meaning cognitions to doing what is meaningful. *Applied Psychology: An International Review*, 56(3), 345–366.
- Janoff-Bulman, R. (1989). Assumptive worlds and the stress of traumatic events: Applications of the schema construct. *Social Cognition*, 7(2), 113–136.
- Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York, NY, US: Free Press.
- Janoff-Bulman, R. (2004). Posttraumatic growth: Three explanatory models. *Psychological Inquiry*, 15, 30-34.
- Johnson, D. P., Rhee, S. H., Friedman, N. P., Corley, R. P., Munn-Chernoff, M. A., Hewitt, J. K., & Whisman, M. A. (2016). A twin study examining rumination as a transdiagnostic correlate of psychopathology. *Clinical Psychological Science*, 4(6), 971–987.
- Joseph, S., Linley, A., Andrews, L., Harris, G., Howle, B., Woodward, C., & Sheylin, M. (2005). Assessing Positive and Negative Changes in the Aftermath of Adversity: Psychometric Evaluation of the Changes in Outlook Questionnaire. *Psychological Assessment*, 17, 70-80.
- Joseph, S., Williams, R., & Yule, W. (1993). Changes in outlook following disaster: The preliminary development of a measure to assess positive and negative responses. *Journal of Traumatic Stress*, 6, 271-279.

- Koenig, H. G., Pargament, K. I., & Nielsen, J. (1998). Religious coping and health status in medically ill hospitalized older adults. *Journal of Nervous and Mental Disease, 186*, 513–521.
- Kashyap, S., & Hussain, D. (2018). Cross-cultural challenges to the construct “posttraumatic growth.” *Journal of Loss and Trauma, 23*(1), 51–69.
- Kulka, R., Schlenger, W., Fairbank, J., Hough, R., Jordan, B., Marmar, C., Weiss, D., & Grady, D. (1990). *Trauma and the Vietnam War Generation: Report of Findings from the National Vietnam Veterans Readjustment Study*. New York: Brunner/Mazel.
- Lepore, S. J., Fernandez-Berrocal, P., Ragan, J., & Ramos, N. (2004). It's not that bad: Social challenges to emotional disclosure enhance adjustment to stress. *Anxiety, Stress, and Coping, 17*, 341-361.
- Lepore, S., & Revenson, T. (2006). Relationships between posttraumatic growth and resilience: Recovery, resistance and reconfiguration. In L. G. Calhoun & R. G. Tedeschi (Eds.), *The handbook of posttraumatic growth: Research and practice* (pp. 24-46). Mahwah, NJ: Lawrence Erlbaum.
- Levine, S. Z., Laufer, A., Stein, E., Hamama-Raz, Y., & Solomon, Z. (2009). Examining the relationship between resilience and posttraumatic growth. *Journal of Traumatic Stress, 22*, 282-286.
- Lichtenthal, W., Cruess, D., & Prigerson, H. (2004). A case for establishing complicated grief as a distinct mental disorder in DSM-IV. *Clinical Psychology Review, 24*, 637-662.
- Lindstrom, C. M., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2013). The relationship of core belief challenge, rumination, disclosure, and sociocultural elements to posttraumatic growth. *Psychological Trauma, 5*(1), 150-55.

- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*, 11-21. Linley, P. A., Joseph, S., & Goodfellow, B. (2008). Positive changes in outlook following trauma and their relationship to subsequent posttraumatic stress, depression, and anxiety. *Journal of Social and Clinical Psychology, 27*(8), 887-891.
- Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., Nash, W.P., Silva, C., & Maguen, S. (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention strategy." *Clinical Psychology Review, 29*(8), 695–706.
- Maercker, A., & Zoellner, T. (2004). The Janus face of self-perceived growth: Toward a two-component model of posttraumatic growth. *Psychological Inquiry, 15*, 41-48. Maguen, S., Vogt, D. S., King, L. A., King, D. W., & Litz, B. T. (2006). Posttraumatic growth among Gulf War I veterans: The predictive role of deployment-related experiences and background characteristics. *Journal of Loss and Trauma, 11*, 373-388.
- Maslow, A. (1954). *Motivation and personality*. Oxford, England: Harpers.
- May, C. L., & Wisco, B. E. (2016). Defining trauma: How level of exposure and proximity affect risk for posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*(2), 233-240.
- McMillen, J. C., & Fisher, R. H. (1998). The Perceived Benefit Scales: Measuring perceived positive life changes after negative events. *Social Work Research, 22*, 173-187. Morris, B. A., & Shakespeare-Finch, J. (2011). Rumination, post-traumatic growth, and distress: Structural equation modelling with cancer survivors. *Psycho-Oncology, 20*, 1176-1183.

- Nash, W.P. (2007). Combat/operational stress adaptations and injuries. In C. R. Figley & W. P. Nash (Eds.), *Combat stress injury: Theory, research, and management*. New York: Routledge.
- Nietzsche, F. W., & Large, D. (1998). *Twilight of the idols, or, How to philosophize with a hammer*. Oxford: Oxford University Press.
- Nolen-Hoeksema, S., & Davis, C. G. (1999). "Thanks for sharing that": Ruminators and their social support networks. *Journal of Personality and Social Psychology*, 77(4), 4801-814.
- O'Leary, V. E., Alday, C. S., & Ickovics, J. R. (1998). Models of life change and posttraumatic growth. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *The LEA series in personality and clinical psychology. Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 127-151). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- O'Leary, V. E., & Ickovics, J. R. (1994). *Women's resilience: A heuristic model*. Paper presented at the American Psychological Association Conference on Psychosocial and Behavioral Factors in Women's Health. Washington, D.C.
- O'Leary, V. E., & Ickovics, J. R. (1995). Resilience and thriving in response to challenge: An opportunity for a paradigm shift in women's health. *Women's Health*, 1(2), 121-142.
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129, 52-71.
- Pargament, K. I., Desai, K. M., & McConnell, K. M. (2006). Spirituality: A pathway to posttraumatic growth or decline? In L. G. Calhoun & R. G. Tedeschi (Eds.), *The handbook of posttraumatic growth: Research and practice* (pp. 121-137). Mahwah, NJ: Lawrence Erlbaum.

- Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality, 64*, 71-105.
- Price, M., Pallito, S., & Legrand, A. C. (2018). Heterogeneity in the strength of the relation between social support and post-trauma psychopathology. *Journal of Psychopathology and Behavioral Assessment, 40*(2), 334–343.
- Ramos, C. & Leal, I. (2013). Posttraumatic growth in the aftermath of trauma: A literature review about related factors and application contexts. *Psychology, Community & Health, 2*(1).
- Schaefer, J. A., & Moos, R. H. (1998). The context for posttraumatic growth: Life crises, individual and social resources, and coping. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 99–125). Mahwah, NJ: Lawrence Erlbaum.
- Schnurr, P. P., Rosenberg, S. D., & Friedman, M. J. (1993). Change in MMPI scores from college to adulthood as a function of military service. *Journal of Abnormal Psychology, 102*, 288–296.
- Shakespeare-Finch, J., & Armstrong, D. (2010). Trauma type and post-trauma outcomes: Differences between survivors of motor vehicle accidents, sexual assault, and bereavement. *Journal of Loss and Trauma, 15*, 69-82.
- Shakespeare-Finch, J., & de Dassel, T. (2009). The impact of child sexual abuse on victims/survivors. *Journal of Child Sexual Abuse, 18*, 623-640. Sledge, W. H., Boydston, J. A., & Rabe, A. J. (1980). Self-concept changes related to war captivity. *Archives of General Psychiatry, 37*, 430-443.

- Snape, M. C. (1997). Reactions to a traumatic event: The good, the bad and the ugly? *Psychology Health and Medicine, 2*, 237-242.
- Solomon, Z., & Dekel, R. (2007). Posttraumatic stress disorder and posttraumatic growth among Israeli ex-POWs. *Journal of Traumatic Stress, 20*, 303-312.
- Sperry, L. (2016). Trauma, neurobiology, and personality dynamics: A primer. *The Journal of Individual Psychology, 72*(3), 161–167.
- Splevins, K., Cohen, K., Bowley, J., & Joseph, S. (2010). Theories of posttraumatic growth: Cross-cultural perspectives. *Journal of Loss and Trauma, 15*, 259-277.
- Stanton, A. L., Bower, J. E., & Low, C. A. (2006). Posttraumatic growth after cancer. In L. G. Calhoun & R. G. Tedeschi (Eds.), *The handbook of posttraumatic growth: Research and practice* (pp. 138-175). Mahwah, NJ: Lawrence Erlbaum.
- Steenkamp, M.M., Litz, B.T., Hoge, C.W., & Marmar, C.R. (2015). Psychotherapy for military-related PTSD: A review of randomized clinical trials. *Journal of the American Medical Association, 31*(4), 489-500.
- Taku, K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2015). Core beliefs shaken by an earthquake correlate with posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy, 7*, 563-569.
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38*, 1161-1173.
- Tedeschi, R. G. (April, 2012). *Posttraumatic growth: Psychological reconstruction in the aftermath of disaster*. Keynote delivered to 9th Annual Conference of the Institute for Disaster Mental Health (IDMH). New Paltz, New York.

- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering*. Thousand Oaks, CA: Sage.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*, 455-471.
- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry, 15*, 1-18.
- Tedeschi, R.G., Cann, A, Taku, K., Senol-Durak, E., & Calhoun, L.G. (2017). The Posttraumatic Growth Inventory: A revision integrating existential and spiritual change. *Journal of Traumatic Stress, 30*(1), 11-18.
- Tedeschi, R. G., & McNally, R. J. (2011). Can we facilitate posttraumatic growth in combat veterans? *American Psychologist, 66*, 19-24.
- Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). Posttraumatic growth: Conceptual issues. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun, (Eds.), *Posttraumatic Growth: Positive changes in the aftermath of crisis* (pp. 1-22). Lawrence Erlbaum Associates.
- Tedeschi, R.G., Shakespeare-Finch, J., Taku, K., & Calhoun, L.G. (2018). *Posttraumatic Growth: Theory, Research and Applications*. New York: Routledge.
- Tomich, P. L., & Helgeson, V. S. (2004). Is finding something good in the bad always good? Benefit finding among women with breast cancer. *Health Psychology, 23*(1), 116-23.
- Triplett, K. N., Tedeschi, R. G., Cann, A., Calhoun, L. G., & Reeve, C. L. (2012). Posttraumatic growth, meaning in life, and life satisfaction in response to trauma. *Psychological Trauma: Theory, Research, Practice, and Policy, 4*, 400-410.

- Tsai, J., El-Gabalawy, R., Sledge, W., Southwick, S., & Pietrzak, R. (2015). Post-traumatic growth among veterans in the USA: Results from the National Health and Resilience in Veterans Study. *Psychological Medicine, 45*(1), 165-179.
- Yalom, I. (1980). *Existential therapy*. New York, NY: Basic Books.
- Zheng, P., & Gray, M. J. (2015). Posttraumatic coping and distress: An evaluation of Western conceptualization of trauma and its applicability to Chinese culture. *Journal of Cross-Cultural Psychology, 46*, 723-736.
- Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology: A critical review and introduction of a two component model. *Clinical Psychology Review, 26*, 626-653.

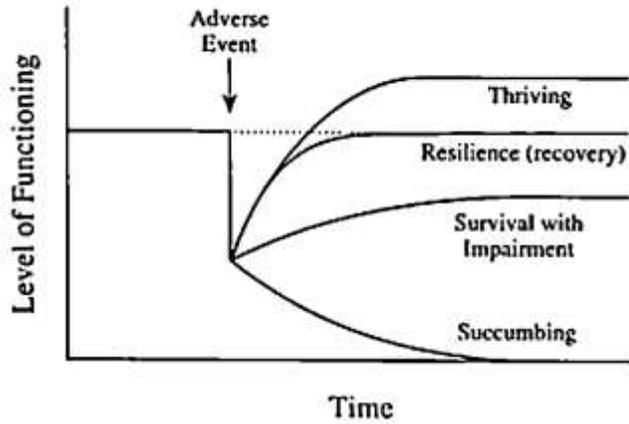


Figure 1. Responses to adversity (Adapted by O’Leary & Ickovics, 1994, 1995)

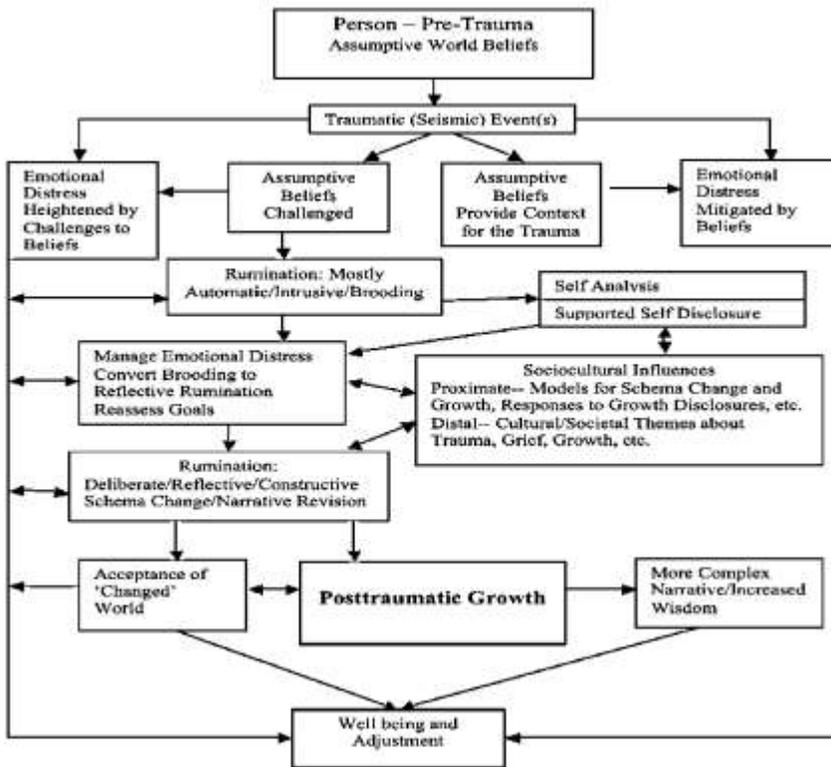


Figure 2. Posttraumatic growth pathways (Tedeschi, 2012)