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Review Article

What promotes post traumatic growth? A systematic review

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ABSTRACT

People who experience major life crises often report post-traumatic stress. However, the literature suggests that traumatic experiences can also be "catalysts" for positive change (i.e., posttraumatic growth; PTG). PTG (Calhoun & Tedeschi, 2006) can include improved relationships, new possibilities for one's life, a greater appreciation for life, a greater sense of personal strength, and spiritual development.

While the general population isn't confronted with traumatic events regularly, individuals such as firefighters, policemen, and EMTs are. But what factors foster the emergence of PTG? To answer this question, a systematic search of four major database (Psychology and Behavioral Sciences Collection, PsycARTICLES, PsycINFO, and ScienceDirect) was conducted.

Some of the factors that promoted PTG included sharing negative emotions, cognitive processing or rumination, positive coping strategies (e.g. positive reappraisal), personality traits (e.g. agreeableness), experiencing multiple sources of trauma, event centrality, resilience, and growth actions. Other factors were mediators of PTG rather than direct influencers (e.g., seeking social support coping, social support, optimism, etc.). Finally, studies show a positive correlation between PTG and support for aggressive behavior suggesting that growth may be more nuanced than originally thought. By exploring systematically the factors that foster PTG in trauma-exposed professionals, we hope this systematic review will both provide avenues for future research and help design new methods of prevention and intervention for first responders.

Background

The assumption that suffering can make individuals stronger (Tedeschi & Calhoun, 1995) is not new in religious and philosophical literature. The idea that positive changes may result from adversity and trauma has been present across cultures for centuries. Indeed, from the rebirth of the phoenix in Egyptian mythology to the forgiveness of sin for all people who believed in the Christ's resurrection, ancient literature already long recognized the opportunities for growth that come from hardship. Philosophers also introduced this idea, in particular Friedrich Nietzsche with his famous quote "*was mich nicht umbringt macht mich stärker*" ("that which does not kill me makes me stronger", 1888), or "*increscunt animi, virescit volnere virtus*" ("spirits grow and courage increases through wounds", 1888). However, it is only recently that this notion was applied in the field of psychology. The available data suggests that at least a minority of individuals who have been confronted with trauma (e.g., sexual assault, military combat) report meaningful levels of personal growth (e.g., Calhoun & Tedeschi, 1999, 2006, 2013; Tedeschi & Calhoun, 1995, 2004), i.e. the positive changes that may arise from the struggle to cope with a critical or traumatizing situation. Therefore, it is important to note that growth is not a result of the event itself, but rather a result of the struggle to deal with it. The types of changes that may occur as a result of the struggle to cope with major life crises are listed in the *Post-Traumatic Growth Inventory* (PTGI; Tedeschi & Calhoun, 1996), and include "improved relationships, new possibilities for one's life, a greater appreciation for life, a greater sense of personal strength, and spiritual development".

Despite these positive changes, the link between post-traumatic growth (PTG) and "the sense of psychological comfort" remains uncertain. According to Tedeschi and Calhoun (2014), it would appear that PTG and psychological comfort may be distinct constructs. Indeed, the literature mostly suggests that "growth will not necessarily decrease pain or increase happiness, but on the contrary, significant growth may only occur when it is preceded by,

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or when it occurs together with significant amounts of subjective distress" (Tedeschi, Park, & Calhoun, 1998, p.217). The authors base this affirmation on several studies, including Edmonds and Hooker (1992) showing that positive psychological changes will occur after bereavement. Thus, growth experiences do not put an end to distress in trauma survivors (Calhoun & Tedeschi, 1998; Tedeschi & Calhoun, 1995). Tedeschi and Calhoun (2014) add that "the maintenance of the growth experienced may require unpleasant periodic cognitive reminders of what has been lost, so that in an apparently paradoxical way, what has been gained remains in focus" (Tedeschi & Calhoun, 2014, p. 505). Thus, while PTG helps individuals live a fuller and more meaningful life, it does not allow a return to normality. The aim of this systematic review is to better understand in what circumstances posttraumatic growth may occur, and whether or not it has a protective effect on mental health outcomes.

Method

Search strategy

Studies published between 1998 and 2019 were identified through four major database searches: Psychology and Behavioral Sciences Collection, PsycARTICLES, PsycINFO, and ScienceDirect. We used the following keywords: *PTG*, *post-traumatic growth, posttraumatic growth,* and *vicarious PTG*.

Inclusion criteria

Studies were included if the title contained the words "post-traumatic growth" or "posttraumatic growth".

Exclusion criteria

Studies were excluded if they didn't measure PTG or positive changes as a result of exposure to potentially traumatic events, and if they did not use the PTGI (*Post-Traumatic Growth Inventory*) to measure growth.

A total of 281 articles met inclusion criteria. Thirty-eight studies were longitudinal while 243 were cross-sectional. Samples were comprised of firefighters, HIV-positive individuals, cancer survivors, natural disaster survivors, sexual assault survivors, veterans, refugees, accident survivors, students, bereaved adults, medical staff, homeless women, police officers, and parents of children with severe illness. Studies were carried out in various countries: United States, Australia, Romania, Japan, Poland, France, Germany and Portugal (Fig. 1).

Results

The role of "cognitive engagement" and "cognitive processing" in PTG

Tedeschi and Calhoun (2014, p. 506) compare traumatic events (or *life challenges*) to "earthquakes" that can severely "shake, challenge, or sometimes shatter" the way individuals perceive the world and their place in it. Therefore, because they challenge the individual's assumptive world (Park, 1998), these "seismic events" have a great life-changing potential. However, Tedeschi and Calhoun (2014) insist on the fact that, in order for growth to be possible, traumatic events must have a big enough impact to "force" individuals to reassess their representation of themselves and others, the world they live in, and what the future may bring. It had been demonstrated empirically that core beliefs must be

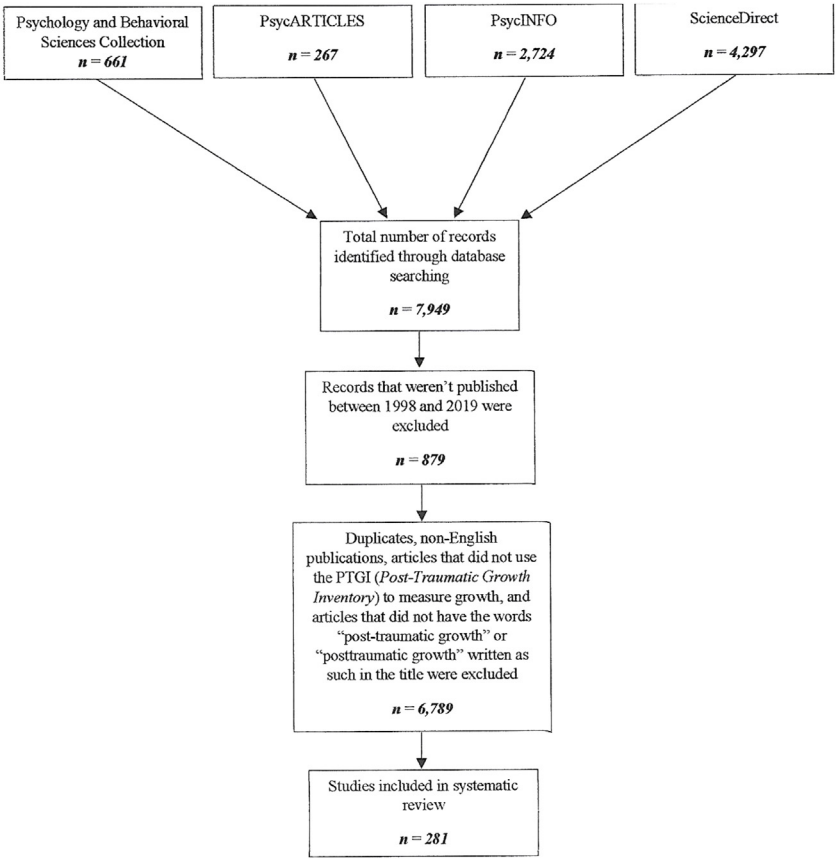

Fig. 1. Schema of selected studies in systematic review of the literature.

challenged in order for growth to occur (Krosch & Shakespeare-Finch, 2017; Ramos et al., 2018; Wilson, Morris, & Chambers, 2014). Once they have been challenged or shattered, these representations (or "assumptive worlds") must be reconstructed. Calhoun and Tedeschi (2013) extend their seismic metaphor by comparing this reconstruction to the physical rebuilding that occurs after an earthquake. According to them, the "reconstruction" that occurs after a trauma leads individuals to rethink repeatedly about the circumstances of the traumatic event they have experienced, in the hope of giving it some meaning: They refer to this process as "cognitive engagement". This first step towards growth may lead individuals to realize that some of their life goals are no longer feasible, and that some of their representations and beliefs do not reflect the world they live in anymore. These deep reconsiderations are what will enable individuals to establish new life goals. This process can sometimes take months or years and, in some cases, individuals who have been confronted with trauma may never experience positive psychological changes, as PTG also depends on personal and individual characteristics.

Furthermore, Tedeschi and Calhoun (2014) explain that individuals who face major life challenges generally tend to "cognitively engage" with two main purposes: 1) Finding an explanation to the immediate circumstances of the event (‘‘why did this happen?’’), and 2) understanding the fundamental issues raised by the event (‘‘what impact does the event have in my life?’’). Tedeschi and Calhoun (2014) refer to this process as ‘‘cognitive processing’’. Empirical studies suggest that cognitive processing is associated with higher levels of PTG. For example, Calhoun, Cann, Tedeschi, and McMillan (2000)) investigated rumination and growth in a group of 54 young adults who had experienced a traumatic event. Their results indicated a positive relationship between event-related rumination and the level of reported PTG: The more rumination participants reported experiencing soon after the event, the greater the degree of posttraumatic growth. Palmer, Murphy, and Spencer-Harper (2016) add in one of their studies that veterans tend to report growth after reaching a certain ‘‘turning point’’ following the traumatic event. This turning point typically occurs after several years of living with PTSD symptoms and is generally prompted by the veterans themselves after reaching extreme levels of despair due to their symptoms. In other words, the authors suggest that, in some cases, growth may be triggered by a posterior crisis situation caused by dealing with PTSD symptoms. This ‘‘crisis’’ may be what leads individuals to ‘‘cognitively engage’’ when rumination about the event hasn’t occurred yet. Furthermore, they note that the individuals’ acknowledgment of their PTSD symptoms is an important part of the growth process, as it enables them to separate these symptoms from their own identity and restore a sense of control. Thus, when dealing with individuals who are diagnosed with PTSD, focusing on helping them recognize and understand their symptoms may help promote PTG.

Going back to Tedeschi and Calhoun’s (2014) model, the authors also make a distinction between cognitive engagement characterized by "deliberate rumination" and cognitive engagement characterized by ‘‘intrusive rumination’’. While intrusive rumination is often associated with PTSD and depression, Taku, Cann, Tedeschi, and Calhoun (2009) showed that both types of rumination were in fact associated with higher levels of PTG. More specifically, Taku, Cann, Tedeschi, and Calhoun (2009)) examined the effects of four types of rumination across US (n = 224) and Japanese (n = 431) samples: Intrusive and deliberate rumination soon after the event, and intrusive and deliberate rumination recently (still present well after the traumatic event).

The results indicate that both rumination types (intrusive and deliberate) were positively associated with posttraumatic growth; however, intrusive rumination **recently** did not significantly predict PTG, which is consistent with Cann, Calhoun, Tedeschi, and Solomon (2010)) study. Furthermore, the authors assume that intrusive rumination **soon after the event** was positively correlated to PTG because it may subsequently help trigger deliberate cognitive processing: Intrusive rumination soon after the event may therefore be considered as a ‘‘catalyst’’. Indeed, several studies confirm the positive link between intrusive rumination and PTG (Hallam & Morris, 2014; Jeon, Yoo, Kim, & Lee, 2015; Ramos et al., 2018; Wilson et al., 2014).

In addition, for both samples, recent deliberate rumination predicted the strongest levels of PTG, possibly because, according to Taku et al. (2009), the presence of deliberate rumination long after the event occurred was proof of an ongoing process of sense-making and reconstructing of one’s representations of the world over a large period of time (continuous cognitive processing = higher levels of growth). Several studies confirm the positive association between deliberate rumination and growth (Hill & Watkins, 2017; Hirooka, Fukahori, Taku, Togari, & Ogawa, 2017; Palacio-González, Clark, & O’Sullivan, 2017; Stockton, Hunt, & Joseph, 2011).

Experience sharing and social support

According to Calhoun and Tedeschi (2013), cognitive engagement and cognitive processing of traumatic events could be fostered by the sharing (or the "disclosure") of one’s internal experience with others, as long as the individual’s social environment is able to provide the necessary support. Indeed, the disclosure of internal cognitive processes with a supportive social environment reduces the risks of depression and/or promotes higher levels of growth (Nolen-Hoeksema & Larson, 1999; Saltzman et al., 2018). This is consistent with Ogińska-Bulik and Kobylarczyk (2015) and Dirik and Göcek-Yorulmaz’s (2018) results showing that venting negative emotions is positively associated with PTG (Fig. 2).

Therefore, disclosure could be considered as a mediator of the relationship between cognitive engagement and PTG. This appears to be particularly true when sharing with people who have gone through similar traumatic experiences, as it has the positive effect of normalizing the individual’s situation and feelings (Palmer, Murphy, & Spencer-Harper, 2016; Richardson, 2016). Additionally, Palmer et al. (2016) showed it was not simply the presence of social support that contributed to PTG, but that the ‘‘support network’’ needed to have an in-depth knowledge of the individual’s difficulties and trauma experiences (e.g. the spouse) in order to maximize growth. Canevello, Michels, and Hilaire (2016)) add that having a partner who experiences PTG will increase people’s perception of partner’s PTG, which predicts actor’s increased relationship quality (Lee, Kim, Lim, & Kim, 2017) and, in turn, predicts people’s decreased psychological distress. Thus, partners’ PTG can benefit people’ evaluations of their relationship and, ultimately, people’ psychological well-being. This is supported by Weiss (2004), who shows that couples facing cancer together share not only the pain but also the potential for gain from the trauma. Additionally, Albuquerque, Narciso, and Pereira (2018)) and Büchi et al. (2009) show that higher levels of stress communication by the partner and higher levels of emotional exchange between partners also promote actor’s PTG. This is consistent with Canevello et al.’s (2016) longitudinal study, suggesting that the perception of the partner’s responsiveness in married couples was greatly associated with PTG. Additionally, secure partner attachment seems to play an important role in the prediction of PTG (Levi-Belz & Lev-Ari, 2018; Salo, Qouta, & Punamäki, 2005). Furthermore, the literature suggests that parents’ PTG may also affect their children’s experience with growth. For example, in

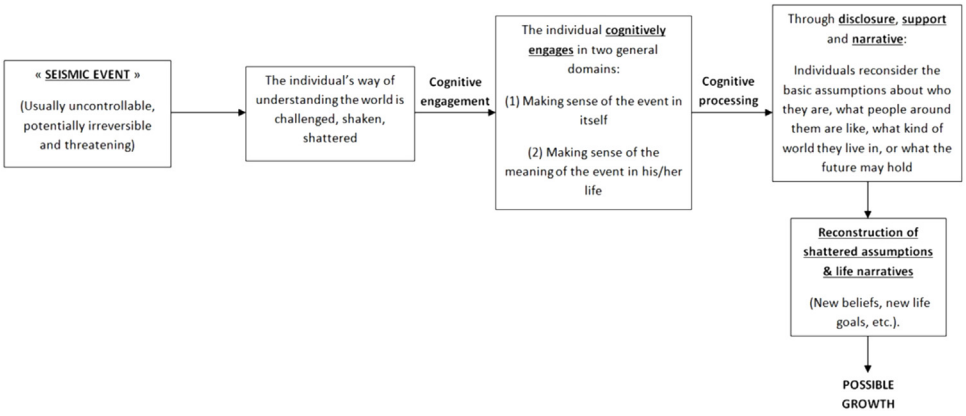

Fig. 2. Tedeschi and Calhoun's model of post-traumatic growth (2004).

families who had been directly exposed to the 2004 tsunami in Thailand, parents' self-reported PTG was a significant predictor of their children's PTG (Hafstad, Gil-Rivas, Kilmer, & Raeder, 2010). Thus, parents' functioning can affect children's positive adaptation after experiencing a disaster. This further suggests, along with the positive effect of partners' PTG, that interconnections and relatedness play a major role in the development of growth in individuals who experience trauma.

Coping strategies

As coping strategies foster a more positive perception of potentially threatening situations, influence behaviors, strengthen one's ability to adapt, and help individuals give meaning to the events they experience, they play a major role in the facilitation of growth. For instance, Prati and Pietrantoni (2009) showed in a meta-analysis of 103 studies the influence of several coping strategies on PTG. Indeed, religious coping was strongly correlated to growth. As stated by Pargament, Koenig, and Perez (2000)), religious coping could have various positive consequences for individuals in their daily lives (e.g., giving meaning to negative events, providing a sense of control and comfort during difficult times, fostering social relations through the religious community, and helping individuals make major life changes). Furthermore, spirituality predicted moderate positive changes (Prati & Pietrantoni, 2009; Rzeszutek, Oniszczenko, & Firląg-Burkacka, 2017, Danhauer et al., 2013a, Tsai & Pietrzak, 2017). Spirituality differs from religious coping in that it is defined as "an individual's sense of peace, purpose, and connection to others, and beliefs about the meaning of life"; whereas religion is defined as a set of beliefs and practices associated with a particular religious tradition or denomination (Vallurupalli et al., 2012). According to Prati and Pietrantoni (2009), spirituality may foster PTG because it increases feelings of belonging within the religious community, ensures the presence of social support through the community, and promotes beliefs that encourage individuals to search for meaning. Thus, spirituality may only be indirectly related to growth. Indeed, meaning-making has been positively associated with PTG in several studies (Cadell et al., 2014; Dursun, Steger, Bentele, & Schulenberg, 2016). Additionally, the positive effect of the sense of belonging on PTG is supported by Armstrong, Shakespeare-Finch, and Shochet (2014), who found that belongingness was a mediator of the relationship between coping strategies and posttraumatic growth. Indeed, the sense of belonging may encourage individuals to seek social support which, consequently, will lead to higher levels of PTG. Prati and Pietrantoni (2009) hypothesize that seeking social support could have a positive influence on the quantity and quality of social support and, therefore, also act as a mediator of PTG.

Positive reappraisal coping was also associated with PTG. This coping strategy implies the individual's attempt to construe negative events in a more positive way which, consequently, may generate positive changes. This is consistent with several studies suggesting that positive reframing/reinterpretation, positive affect/attitude, and positive sense-making are positively correlated to PTG (Hamama & Sharon, 2013; Trzebiński & Zięba, 2013). Other coping strategies that promote growth include the appraisal of the event as a "challenge" ("challenge appraisal"; see Yeung, Lu, Wong, & Huynh, 2016; Goldberg, McDonald, & Perrin, 2018; Wilson et al., 2014), which could be considered as a form of positive reinterpretation of the event, and "gratitude", also known as the tendency to show appreciation for something done or received which, consequently, may result in increased use of positive reappraisal (Tsai & Pietrzak, 2017; Tsai, Sippel, Mota, Southwick, & Pietrzak, 2016). Additionally, Prati and Pietrantoni (2009) show that acceptance coping, defined as "accepting that a difficult situation is real and must be addressed" (Carver, Scheier, & Weintraub, 1989), had a small but significant effect on PTG. According to the authors, this supports the hypothesis that people's ability to accept whatever situation may come their way plays an important role in the growth process (Rzeszutek et al., 2017; Zoellner & Maercker, 2006).

In addition, three other coping strategies positively predict PTG: *Self-care coping*(Armstrong, Shakespeare-Finch, & Shochet, 2016), *Problem-focused coping*, and *avoidance coping* (Akbar & Witruk, 2016), the last two being quite contradictory. Indeed, several studies show that problem-focused coping is positively associated with growth (Dirik & Göcek-Yorulmaz, 2018; Rodríguez-Rey & Alonso-Tapia, 2017), which supports Lazarus and Folkman's (1984) findings suggesting that individuals who use problem-based coping (vs. avoidance coping) feel they have more control over the situation and a greater ability to manage the problem. However, avoidance coping was also found to be positively related to growth (Akbar & Witruk, 2016; Carboon, Anderson, Pollard, Szer, & Seymour, 2005; Hallam & Morris, 2014), which is inconsistent with the literature on coping and health. Thus, how can avoidance and solution-focused coping both be correlated to PTG? Kunz, Joseph, Geyh, and Peter (2018)) show in a longitudinal study that higher levels of growth are predicted by the use of both approach- and avoidance-oriented coping, as well as by coping flexibility, that is, the use both types of coping equally. The authors hypothesize that a flexible use of approach- and avoidance-oriented coping

strategies may enable individuals to process trauma at times, but also avoid thoughts and activities when such a confrontation is too overwhelming, which together could promote PTG. Avoidance coping would therefore allow distress reduction preceding engagement in cognitive processing. Thus, this suggests that a flexible use of different coping strategies according to situational demands may be most predictive of posttraumatic growth. This is consistent with Su and Chen's (2015) longitudinal study, suggesting that distractive coping style, described as "a mode of purposefully turning one's attention away from one's distress to pleasant or neutral activities" (p. 104), is an important facilitator of growth.

Personality traits

The role of the personality traits of the Big Five (Goldberg, 1992) on PTG has been examined in several studies. More specifically, Agreeableness, Extraversion, Openness (Mattson, James, & Engdahl, 2018; Taku & Matthew, 2018) and Conscientiousness (Karanci et al., 2012; Owens, 2016) were positively correlated to growth, which doesn't come as a surprise since these Big Five personality traits are generally associated with positive health outcomes (Cheng, Weiss, & Siegel, 2015). We note that Mattson et al.'s (2018) findings suggest that Openness was the most predictive of PTG. The authors do not offer any explanation for this; however, given the personality traits associated with Openness, e.g. imagination and adventurousness, it is possible to hypothesize that individuals high in Openness may be more prone to adapt to unexpected life events (Costa & McCrae, 1992).

Personality traits also have an indirect effect on growth through the use of either adaptive or maladaptive coping strategies (Mattson et al., 2018). On the one hand, Extraversion, Agreeableness, and Openness significantly predicted adaptive coping in a sample of 271 OIF and OEF veterans, and in turn promoted growth. We note that Optimism, which isn't one of the Big Five personality traits, also predicted PTG through the use of adaptive coping in Mattson et al.'s study (2018). On the other hand, Neuroticism significantly predicted maladaptive coping, which impeded the development of growth (Mattson et al., 2018). Nevertheless, while we expect neurotic individuals to be less likely to develop PTG because of their lower ability to manage stress, one study found a positive association between neuroticism and PTG in motor vehicle accident perpetrators (Merecz, Waszkowska, & Wezyk, 2012). However, Merecz et al. (2012) specify that the mean value of neuroticism in their sample was rather low and insufficient to assume that those individuals were emotionally unstable. Thus, the authors come to the conclusion that low levels of neuroticism may sensitize individuals to life events (which is essential for posttraumatic growth), but has no detrimental effect on the individual's ability to cope with them.

Additionally, altruistic behavior (e.g., the tendency for an individual to act out of concern for the well-being of others, regardless of his/her own self-interest) positively predicted PTG (Tsai et al., 2016). Indeed, while altruism is not a personality trait, it is a trait that could stem from high levels of Agreeableness.

Lastly, "narcissism" (Levi & Bachar, 2019) was also reported as a predictor of PTG. Indeed, according to Levi and Bachar (2019), narcissistic individuals are more inclined to use processes of self-deception associated with the adoption of positive attributions and the exclusion of negative attributions. Therefore, despite being a "negative" trait, narcissism may be relatively useful when confronted with stressful events as it may provide an illusory sense of control ("I have all the necessary qualities to face and overcome this situation"). Individuals who feel they have control over themselves or the situation they are facing usually feel they are more capable of managing the problem (Lazarus & Folkman, 1984). Indeed, self-control (or personal mastery) reduces the onset of PTSD symptoms (Smith et al., 2011). In addition to being a protective factor against PTSD, the sense of control may also be a factor that promotes PTG. For example, for survivors of diverse traumatic events, control was a key determinant of psychological adjustment after adversity (Dekel, Mandl, & Solomon, 2011; Kaye-Tzadok & Davidson-Arad, 2016). Kaye-Tzadok and Davidson-Arad (2016) specify that both realistic control and "unrealistic" control are associated with PTG. Thus, simply being under the impression that one is in control of their environment can facilitate growth. Consistent with these findings, Shuwiekh, Kira, and Ashby (2018)) show that striving for 'standards' (high performance expectations) and 'order' promotes PTG. Furthermore, Mamon, Solomon, and Dekel (2016)) show in a group of Israeli Veterans that Obsessive Compulsive Behavior (OCB), a disorder characterized by the attempt to control one's environment, may facilitate psychological growth. Indeed, according to Mamon et al. (2016), OCB symptoms trigger an ongoing ruminative processing of the event, "initiating a more deliberate search for understanding and finding meaning in the trauma, which subsequently supports growth" (Mamon et al., 2016, p.488). However, an alternative explanation is that OCB promotes PTG due to a "cognitive bias towards exaggerated personal control" (Mamon et al., 2016, p.489). Indeed, "individuals with OC symptoms tend to use compulsive rituals as a way to compensate and instill an illusory sense of control" (p.489). However, in a paradoxical way, belief in social complexity (or the belief that the world is nearly impossible to control) also appears to be positively associated with PTG (Nalipay, Bernardo, & Mordeno, 2016). Indeed, Nalipay et al. (2016) show that generalized beliefs about how the world functions, specifically social complexity, may be one of the factors that could provide a framework for individuals to understand and make sense of stressful events. More specifically, they argue that individuals who believe in social complexity may be more likely to engage in cognitive processes that will allow them to view a traumatic experience from various perspectives which, ultimately, will promote flexible coping strategies, positive cognitive restructuring, and acceptance of what happened (Nalipay et al., 2016).

The sense of coherence (SOC), defined as "the extent to which one has a pervasive, enduring though dynamic, feeling of confidence that one's environment is predictable and that things will work out as well as can reasonably be expected" (Antonovsky, 1979), also appears to be a potential enhancer of PTG. Indeed, Xiu, Mc Gee, and Maercker (2018)) and López et al. (2015) demonstrate that high levels of SOC are positively associated with growth. In other words, SOC could be described as a form of "optimism" and personal belief that one's environment is "controllable" (controllability), which are both known to enhance psychological growth. SOC, in contrast to the Big Five personality traits, is a trait that individuals develop through various life events. Thus, while biological personality characteristics (such as Extraversion) play a major role in the experience of PTG, socio-cognitive characteristics (such as the sense of control or the sense of coherence) can also be harnessed for positive psychological change. Therefore, promoting SOC in individuals who are low on Extraversion or Openness may help them experience post-traumatic growth.

In addition to the sense of control and coherence, the sense of purpose also appears as a potential facilitator of PTG. According to Reker (2000), the sense of purpose can be defined as having the ability to find meaning in non-materialistic aspects of life, having goals, a sense of direction, a sense of self-worth, a reason for existence (e.g. having children, enjoying the "little things", etc.). Reker states that the sense of purpose is "an important construct in the prevention of illness, the promotion of wellness and successful adaptation to life's changing circumstances" (Reker, 2000, p. 39). Indeed, it was found that having a sense of purpose promoted PTG

in samples of U.S. Veterans, Traumatic brain injury survivors, adults living with chronic illness, and hurricane survivors (Lowe, Manove, & Rhodes, 2013; Powell, Gilson, & Collin, 2012; Tsai & Pietrzak, 2017; Zeligman, Varney, Grad, & Huffstead, 2018). Similar to purpose, "hope" also seems to play a significant role in reaching PTG (Yuen, Ho, & Chan, 2014). Like purpose, the hope construct represents a focus on significant future aims, and can be defined as "a belief that one knows how to reach one's goals and a belief that one has the motivation to use those pathways to reach one's goals" (Cotton Bronk, Hill, Lapsley, Talib, & Finch, 2009, p.501).

Event centrality

According to Berntsen and Rubin (2006), "highly accessible and vivid personal memories help to give meaning and structure to our life narratives and help to anchor and stabilize our conceptions of ourselves" (p. 219). More specifically, the extent to which an individual feels a particular event has become central in the organization of his/her identity is called "Event Centrality" (EC). Indeed, Berntsen (2001) hypothesized that a traumatic event accompanied by significant consequences and repercussions in one's life may be more likely to be centralized or viewed as an important part of one's life story (Wright, 2015). It has been reported that high EC is associated with high levels of PTSD (Berntsen & Rubin, 2006; Bohn, 2010; Rubin, Boals, & Hoyle, 2014) and emotional distress (Zaragoza, Salgado, Shao, & Berntsen, 2014). Indeed, high EC may cause individuals to overestimate or emphasize the negative effects of the endured trauma which, in turn, will foster post-traumatic stress. However, EC may also be associated with posttraumatic growth in survivors of different traumatic events (Allbaugh, Wright, & Folger, 2016; Barton, Boals, & Knowles, 2013; Boals & Schuettler, 2011; Roland, Currier, Rojas-Flores, & Herrera, 2014; Schuettler & Boals, 2011; Staugaard, Johannessen, Thomsen, Bertelsen, & Berntsen, 2015). This positive link could be explained by the fact that construing a traumatic experience as central to one's identity may result in more posttraumatic cognitions (deliberate and intrusive rumination) which, as demonstrated previously, is highly associated with PTG. Thus, the centrality given to trauma appears to serve as a "double-edged sword", in that this construct might foster both PTSD and PTG. However, Blix, Birkeland, Hansen, and Heir (2015)) showed in a longitudinal study that the positive association between EC and PTG attenuated over time. Thus, it is possible to hypothesize that high EC may only be beneficial soon after the traumatic event occurred, as it may help trigger cognitive processes related to growth outcomes (e.g. intrusive and deliberate rumination, see Taku et al., 2009).

Resilience

Resilience can be defined as a process characterized by the ability to successfully cope with a crisis and to return to pre-crisis status quickly (De Terte & Stephens, 2014). More specifically, resilience is the "ability to go on with life after hardship and adversity" and "to remain psychologically healthy despite very difficult circumstances" (Tedeschi & Calhoun, 2004, p.4). Therefore, Resilience differs from posttraumatic growth in that it is characterized by a return of the individual to its initial state (pre-crisis state), whereas PTG is characterized by the « gain » of positive psychological benefits. Indeed, according to Tedeschi and Calhoun (2004), "posttraumatic growth refers to a change in people that goes beyond an ability to resist and not be damaged by highly stressful circumstances [...] posttraumatic growth, then, has a quality of transformation" (Tedeschi & Calhoun, 2004, p.4).

It has been demonstrated that high levels of resilience reduce the onset of PTSD symptoms in firefighters (Lee, Ahn, Jeong, Chae, & Choi, 2014). However, resilience may also promote growth in individuals who are confronted with various traumatic events (Kong et al., 2018; Rzeszutek et al., 2017). Additionally, Liu et al. (2018) demonstrate that high levels of family resilience are positively correlated to PTG in patients with early-stage breast cancer. Thus, individuals facing adversity seem to benefit from their own level of resilience, but also from the levels of resilience displayed by their social environment. These findings suggest that individual resilience as well as *collective resilience* are key determinants of growth. However, some studies have found a negative correlation between resilience and PTG. Indeed, Garrido-Hernansaiz, Murphy, and Alonso-Tapia (2017)) and Levine, Laufer, Stein, Hamama-Raz, and Solomon (2009)) showed that high levels of resilience were associated with lower levels of posttraumatic growth. The authors hypothesize that resilience may decrease PTG because resilient individuals tend to struggle with adversity less than others, thus making them less likely to engage in the meaning-making behaviors that are associated with PTG. Therefore, it is argued that resilience may provide little opportunity for growth (Westphal & Bonanno, 2007).

Resource loss

As stated by Hobfoll (1989), individuals "strive to retain, protect, and build resources and [...] what is threatening to them is the potential or actual loss of these valued resources" (Hobfoll, 1989, p. 516). Thus, according to Hobfoll's Conservation of Resource theory (COR; 1989), resource loss is known to increase traumatic stress. This assumption is verified by Cook, Aten, Moore, Hook, and Davis (2013)) study, showing a negative association between resource loss and health in a sample of university students soon after Hurricane Katrina hit the Gulf coast in 2005. However, Cook et al.'s results also show the presence of a positive association between resource loss and PTG. We note that resource loss was assessed by the 18-item measure developed by Sattler et al. (2002) specifically to assess resource loss in response to a hurricane. Respondents were asked to describe the amount of loss experienced as a result of the hurricane. Resource loss was a significant positive predictor of PTG. Since resource loss increases levels of distress, it is possible to assume that resource loss fosters growth through high levels of traumatic stress. This finding is consistent with Tedeschi and Calhoun's (2004) model suggesting that growth can only occur through high levels of distress.

Growth actions

Hobfoll, Hall, Canetti-Nisim, Galea, Johnson, and Palmieri (2007) show in a group of Jewish and Arab citizens of Israel highly exposed to terrorism that PTG may be beneficial when accompanied by action, not solely cognitive maneuvers. Indeed, while Calhoun and Tedeschi (2013) tend to describe the growth process as a search for meaning (e.g. cognitive engagement), Hobfoll et al. (2007) make a distinction between *growth actions* and *growth cognitions*, stating that cognitive change alone is not sufficient for growth to occur. Indeed, they show in one of their studies that PTG may only be beneficial if it includes taking action. The authors compared PTG levels between a group of settlers in Israel who took part in the resistance in the days prior to the disengagement from Gaza, and a group of settlers who did not take part in the resistance. The results show that individuals who took action by resisting the disengagement reported more PTG and were less likely to develop PTSD. Thus, this suggests that "growth actions" may play an important role in the development of posttraumatic growth and the reduction of post-traumatic stress. This hypothesis is consistent with Anderson et al. (2016) results, showing that volunteers in the March 2011 Disaster in Fukushima (Japan) reported significantly higher levels of PTG than non-

volunteers. The authors found that volunteers were also less likely to feel guilty than non-volunteers. These findings, along with Hobfoll et al.'s (2007), indicate that actions can have lasting positive effects and convey a protective benefit.

Sociodemographic characteristics

Gender

According to several studies, sociodemographic characteristics such as gender, age, education, and ethnicity play an important role in post-traumatic growth. Indeed, it was often found that women reported higher levels of growth than men (Jeon et al., 2015; Jin, Xu, & Liu, 2014; Nakayama et al., 2017; Sharp, Redfearn, Timmons, Balfe, & Patterson, 2018; Val & Linley, 2006). A possible explanation for this is that women may be more susceptible than men to sharing their experiences with others when confronted with adversity which, in turn, facilitates cognitive processes such as deliberate rumination. This hypothesis is consistent with Wu et al.'s (2016) study, showing that women score significantly higher on the "Relating to Others" subscale of the PTGI than men.

Age

Additionally, it was largely found that individuals of a younger age tend to report higher levels of growth than older individuals (Boyle, Stanton, Ganz, & Bower, 2017; Sharp et al., 2018). Bellizzi and Blank (2006) explain this by hypothesizing that older individuals may be dealing with more comorbidities or other significant life events compared with younger survivors, such as dealing with the loss of loved ones, hearing and vision impairment, etc. However, Palgi (2016) suggests that time perspectives may also influence PTG. Indeed, Palgi found that older adults (age range 50–90) reporting younger subjective age and further distance to death reported higher levels of PTG than adults reporting older subjective age and closer distance to death. Thus, while being of a younger age promotes the chances of reaching growth, the *perception* of being young fosters PTG as well, regardless of the individual's actual age. However, several studies found a positive association between older age and PTG in samples of sexual assault victims, individuals with Acquired Brain Injury, and breast cancer survivors (Grace, Kinsella, Muldoon, & Fortune, 2015; Ullman, 2014). A possible explanation may be that older adults have acquired more life experience, which may help them deal with stressful events more easily than younger individuals. As a matter of fact, Tallman, Shaw, Schultz, and Altmaier (2010)) report in their longitudinal study that older cancer survivors reported more enhanced spirituality on the PTGI.

Education/employment

Furthermore, the level of education also stood out as a factor that influences PTG, even though the results remain equivocal. On the one hand, several studies demonstrate that higher levels of education are positively associated with growth (Danhauer et al., 2013b, Grace et al., 2015). Indeed, resources such as time, money, and education facilitate resistance to stress (Hobfoll, 1989): Individuals who come from an educated environment may perceive they have a wider range of possibilities and choices available to them in coping with stressful events. On the other hand, several studies also provide evidence that PTG may be associated with lower levels of education (Tang et al., 2015; Ullman, 2014). Bellizzi and Blank (2006) hypothesize that individuals with lower educational levels may have "more room to grow in their relationships" (p. 54). In other words, individuals with lower levels of education may lean on other types of resources to overcome stressful situations. Thus, whether individuals rely more on their education or on their relationships to grow from adversity remains unclear. Additionally, employment also seems to play an important role in the process of growth. Indeed, Salo et al. (2005); Bellizzi and Blank (2006), and Grace et al. (2015) show that individuals that hold high professional positions or a steady employment are more likely to experience PTG. Sattler, Boyd, and Kirsch (2014)) and Xu and Wu (2014) add that occupation/work satisfaction predicts PTG as well. A possible explanation could be that general life satisfaction may help promote growth.

Ethnicity/stigmatized minorities

Lastly, the literature suggests that belonging to an ethnic minority may promote PTG (Hijazi, Keith, & O'Brien, 2015; Ullman, 2014). Hijazi et al. (2015) hypothesize that being part of an ethnic minority is associated with increased discrimination and life adversity, which may ultimately facilitate benefit finding. This is consistent with Zeligman, Barden, and Hagedorn (2016)) study, suggesting that stigma may foster PTG in HIV-positive individuals. Thus, while it is unusual to associate discrimination with positive mental outcomes (Rzeszutek & Gruszczyńska, 2018; Wei, Li, Tu, Zhao, & Zhao, 2016), studies suggest that individuals belonging to stigmatized groups may be more prone to developing positive changes due to their life experiences. Another hypothesis may be that stigmatized groups develop a strong sense of belonging which, ultimately, helps promote growth.

Conclusion

The aim of this literature review was to provide a critical analysis of different factors that may promote the development of growth among trauma-exposed individuals. Some of the factors that promote PTG include sharing negative emotions, cognitive processing or rumination, positive coping strategies (e.g. positive reappraisal), personality traits (e.g. agreeableness), experiencing multiple sources of trauma, event centrality, resilience, growth actions. Authors have also suggested that some factors may be mediators of PTG rather than direct influencers, such as seeking social support coping, social support, optimism, spirituality, and the sense of belonging. These mediators indirectly foster growth either by promoting the use of positive coping (e.g. optimism, social support), by influencing the quantity and quality of social support (e.g. seeking social support coping), by ensuring the presence of social support (e.g. spirituality), or by encouraging individuals to seek social support (e.g. sense of belonging).

Additionally, the studies suggest that PTG might be more nuanced than originally thought. Indeed, Hobfoll et al. (2007) found that post-traumatic growth was positively associated with more right-wing political attitudes, support for aggressive behaviors, and ethnocentrism in a sample of individuals who experience ongoing violence and terrorism. As suggested previously, this could mean that there are multiple ways of developing growth, and that PTG may not express itself the same way in all contexts.

Declarations of interest

None.

References

Akbar, Z., & Witruk, E. (2016). Coping mediates the relationship between gender and posttraumatic growth. *Procedia - Social and Behavioral Sciences, 217*, 1036–1043.

Albuquerque, S., Narciso, I., & Pereira, M. (2018). Posttraumatic growth in bereaved parents: A multidimensional model of associated factors. *Psychological Trauma: Theory, Research, Practice, and Policy, 10*(2), 199–207.

Allbaugh, L. J., Wright, M. O., & Folger, S. F. (2016). The role of repetitive thought in determining posttraumatic growth and distress following interpersonal trauma. *Anxiety, Stress & Coping: An International Journal, 29*(1), 21–37.

Anderson, D., Prioleau, P., Taku, K., Naruse, Y., Sekine, H., Maeda, M., et al. (2016). Post-traumatic stress and growth among medical student volunteers after the march

2011 disaster in Fukushima, Japan: Implications for student involvement with future disasters. *Psychiatr Q, 87*, 241–251.
Antonovsky, A. (1979). *Health, stress, and coping: New perspectives on mental and physical well-being*. San Francisco: Jossey-Bass.
Armstrong, D., Shakespeare-Finch, J., & Shochet, I. (2016). Predicting post-traumatic growth and post-traumatic stress in firefighters. *Australian Journal of Psychology, 66*, 38–46.
Barton, S., Boals, A., & Knowles, L. (2013). Thinking about trauma: the unique contributions of event centrality and posttraumatic cognitions in predicting PTSD and posttraumatic growth. *Journal of Traumatic Stress, 26*(6), 718–726.
Bellizzi, K. M., & Blank, T. O. (2006). Predicting posttraumatic growth in breast cancer survivors. *Health Psychology, 25*(1), 47–56.
Berntsen, D. (2001). Involuntary memories of emotional events. Do memories of traumas and extremely happy events differ? *Applied Cognitive Psychology, 15*, 135–158.
Berntsen, D., & Rubin, D. C. (2006). The centrality of event scale: A measure of integration a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behaviour Research and Therapy, 44*, 219–231.
Blix, I., Birkeland, M. S., Hansen, M. B., & Heir, T. (2015). Posttraumatic growth and centrality of event: A longitudinal study in the aftermath of the 2011 Oslo bombing. *Psychological Trauma: Theory, Research, Practice, and Policy, 7*(1), 18–23.
Boals, A., & Schuettler, D. (2011). A double-edged sword: Event centrality, PTSD and posttraumatic growth. *Applied Cognitive Psychology, 25*(5), 817–822.
Bohn, A. (2010). Generational differences in cultural life scripts and life story memories of younger and older adults. *Applied Cognitive Psychology, 24*, 1324–1345.
Boyle, C. C., Stanton, A. L., Ganz, P. A., & Bower, J. E. (2017). Posttraumatic growth in breast cancer survivors: does age matter? *Psycho-Oncology, 26*(6), 800–807.
Büchi, S. J., Mörgeli, H., Schnyder, U., Jenewein, J., Glaser, A., Fauchère, J-C., et al. (2009). Shared or discordant grief in couples 2-6 years after the death of their premature baby: Effects on suffering and posttraumatic growth. *Psychosomatics: Journal of Consultation and Liaison Psychiatry, 50*(2), 123–130.
Cadell, S., Hemsworth, D., Smit Quosai, T., Steele, R., Davies, E., Liben, S., et al. (2014). Posttraumatic growth in parents caring for a child with a life-limiting illness: A structural equation model. *American Journal of Orthopsychiatry, 84*(2), 123–133.
Calhoun, L. G., Cann, A., Tedeschi, R. G., & McMillan, J. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *Journal of Traumatic Stress, 13*, 521–527.
Calhoun, L. G., & Tedeschi, R. G. (1999). *Facilitating posttraumatic growth: A clinician's guide*. Mahwah, NJ: Erlbaum.
Calhoun, L. G., & Tedeschi, R. G. (2013). *Posttraumatic growth in clinical practice*. New York, NY: Routledge.
Canevello, A., Michels, V., & Hilaire, N. (2016). Posttraumatic Growth: Spouses' Relationship Quality and Psychological Distress. *Journal of Loss & Trauma, 21*(6), 548–559.
Cann, A., Calhoun, L. G., Tedeschi, R. G., & Solomon, D. T. (2010). Posttraumatic growth and depreciation as independent experiences and predictors of well-being. *Journal of Loss and Trauma, 15*(3), 151–166.
Carboon, I., Anderson, V. A., Pollard, A., Szer, J., & Seymour, J. F. (2005). Posttraumatic Growth Following a Cancer Diagnosis: Do World Assumptions Contribute? *Traumatology, 11*(4), 269–283.
Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267–283.
Cheng, C-H.E., Weiss, J. W., & Siegel, J. M. (2015). Personality traits and health behaviors as predictors of subjective wellbeing among a multiethnic sample of university-attending emerging young adults. *International Journal of Wellbeing, 5*(3), 21–43.
Cook, S. W., Aten, J. D., Moore, M., Hook, J. N., & Davis, D. E. (2013). Resource loss, religiousness, health, and posttraumatic growth following Hurricane Katrina. *Mental Health, Religion & Culture, 16*(4), 352–366.
Costa, P. T., & McCrae, R. R. (1992). *NEO personality Inventory professional manual*. Odessa, FL: Psychological Assessment Resources.
Cotton Bronk, K., Hill, P. L., Lapsley, D. K., Talib, T. L., & Finch, H. (2009). Purpose, hope, and life satisfaction in three age groups. *The Journal of Positive Psychology, 4*(6), 500–510.
Danhauer, S. C., Case, L. D., Tedeschi, R., Russell, G., Vishnevsky, T., Triplett, K., et al. (2013a). Predictors of posttraumatic growth in women with breast cancer. *Psycho-Oncology, 22*(12), 2676–2683.
Danhauer, S. C., Case, L. D., Tedeschi, R., Russell, G., Vishnevsky, T., Triplett, K., et al. (2013b). Predictors of posttraumatic growth in women with breast cancer. *Psycho-Oncology, 22*(12), 2676–2683.
De Terte, I., & Stephens, C. (2014). Psychological Resilience of Workers in High-Risk Occupations. *Stress and Health, 30*(5), 353–355.
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.
Dirik, G., & Göcek-Yorulmaz, E. (2018). Positive Sides of the Disease: Posttraumatic Growth in Adults with Type 2 Diabetes. *Behavioral Medicine, 44*(1), 1–10.
Dursun, P., Steger, M. F., Bentele, C., & Schulenberg, S. E. (2016). Meaning and posttraumatic growth among survivors of the September 2013 Colorado floods. *Journal of Clinical Psychology, 72*(12), 1247–1263.
Edmonds, S., & Hooker, K. (1992). Perceived changes in life meaning following bereavement. *Omega, 25*, 307–318.
Garrido-Hernansaiz, H., Murphy, P. J., & Alonso-Tapia, J. (2017). Predictors of resilience and posttraumatic growth among people living with HIV: A longitudinal study. *AIDS and Behavior, 21*(11), 3260–3270.
Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*(1), 26–42.
Goldberg, L. D., McDonald, S. D., & Perrin, P. B. (2018). Predicting trajectories of posttraumatic growth following acquired physical disability. *Rehabilitation Psychology, 64*(1), 37–49.
Grace, J. J., Kinsella, E. L., Muldoon, O. T., & Fortune, D. G. (2015). Post-traumatic growth following acquired brain injury: A systematic review and meta-analysis. *Frontiers in Psychology, 6*. ArtID: 1162.
Hafstad, G. S., Gil-Rivas, V., Kilmer, R. P., & Raeder, S. (2010). Parental adjustment, family functioning, and posttraumatic growth among Norwegian children and adolescents following a natural disaster. *American Journal of Orthopsychiatry, 80*(2), 248–257.
Hallam, W., & Morris, R. (2014). Post-traumatic growth in stroke carers: A comparison of theories. *British Journal of Health Psychology, 19*(3), 619–635.
Hamama, L., & Sharon, M. (2013). Posttraumatic Growth and Subjective Well-Being among Caregivers of Chronic Patients: A Preliminary Study. *Journal of Happiness Studies, 14*(6), 1717–1737.
Hijazi, A. M., Keith, J. A., & O'Brien, C. (2015). Predictors of posttraumatic growth in a multiwar sample of U.S. Combat veterans. *Peace and Conflict: Journal of Peace Psychology, 21*(3), 395–408.
Hill, E. M., & Watkins, K. (2017). Women with ovarian cancer: Examining the role of social support and rumination in posttraumatic growth, psychological distress, and psychological well-being. *Journal of Clinical Psychology in Medical Settings, 24*(1), 47–58.
Hirooka, K., Fukahori, H., Taku, K., Togari, T., & Ogawa, A. (2017). Quality of death, rumination, and posttraumatic growth among bereaved family members of cancer patients in home palliative care. *Psycho-Oncology, 26*(12), 2168–2174.
Hobfoll, S. E. (1989). Conservation of Resources, A New Attempt at Conceptualizing Stress. *American Psychologist, 44*(3), 513–524.
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*, 345–366.
Jeon, M., Yoo, I. Y., Kim, S., & Lee, J. (2015). Post-traumatic growth in survivors of allogeneic hematopoietic stem cell transplantation. *Psycho-Oncology, 24*(8), 871–877.
Jin, Y., Xu, J., & Liu, D. (2014). The relationship between posttraumatic stress disorder and post traumatic growth: gender differences in PTG and PTSD subgroups. *Social Psychiatry & Psychiatric Epidemiology, 49*(12), 1903–1910.
Karanci, A. N., Işıklı, S., Aker, A. T., Gül, E. I., Erkan, B. B., Özkol, H., et al. (2012). Personality, posttraumatic stress and trauma type: Factors contributing to post-traumatic growth and its domains in a Turkish community sample. *European Journal of Psychotraumatology, 3*. ArtID: 17303.
Kaye-Tzadok, A., & Davidson-Arad, B. (2016). Posttraumatic growth among women survivors of childhood sexual abuse: Its relation to cognitive strategies, posttraumatic symptoms, and resilience. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*(5), 550–558.
Kong, L., Fang, M., Ma, T., Li, G., Yang, F., Meng, Q., et al. (2018). Positive affect mediates the relationships between resilience, social support and posttraumatic growth of women with infertility. *Psychology, Health & Medicine, 23*(6), 707–716.
Krosch, D. J., & Shakespeare-Finch, J. (2017). Grief, traumatic stress, and posttraumatic growth in women who have experienced pregnancy loss. *Psychological Trauma: Theory, Research, Practice, and Policy, 9*(4), 425–433.
Kunz, S., Joseph, S., Geyh, S., & Peter, C. (2018). Coping and posttraumatic growth: A longitudinal comparison of two alternative views. *Rehabilitation Psychology, 63*(2), 240–249.
Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
Lee, J-S., Ahn, Y-S., Jeong, K-S., Chae, J-H., & Choi, K-S. (2014). Resilience buffers the impact of traumatic events on the development of PTSD symptoms in firefighters. *Journal of Affective Disorder*, 128–133.
Lee, M., Kim, K., Lim, C., & Kim, J-S. (2017). Posttraumatic growth in breast cancer survivors and their husbands based on the actor-partner interdependence model. *Psycho-Oncology, 26*(10), 1586–1592.
Levi, E., & Bachar, E. (2019). The moderating role of narcissism on the relationship between posttraumatic growth and PTSD symptoms. *Personality and Individual Differences, 138*, 292–297.
Levi-Belz, Y., & Lev-Ari, L. (2018). Attachment Styles and Posttraumatic Growth Among Suicide-Loss Survivors: The Mediating Role of Interpersonal Factors. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 40*(3), 186–195.
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*(4), 282–286.
Liu, Y., Li, Y., Chen, L., Li, Y., Qi, W., & Yu, L. (2018). Relationships between family resilience and posttraumatic growth in breast cancer survivors and caregiver burden. *Psycho-Oncology, 27*(4), 1284–1290.
Lowe, S. R., Manove, E. E., & Rhodes, J. E. (2013). Posttraumatic stress and posttraumatic growth among low-income mothers who survived Hurricane Katrina. *Journal of Consulting and Clinical Psychology, 81*(5), 877–889.
Mamon, D., Solomon, Z., & Dekel, S. (2016). Obsessive Compulsive Symptoms Predict Posttraumatic Growth: A Longitudinal Study. *Journal of Loss & Trauma, 21*(6), 484–491.
Mattson, E., James, L., & Engdahl, B. (2018). Personality Factors and Their Impact on PTSD and Post-traumatic Growth is Mediated by Coping Style Among OIF/OEF Veterans. *Military Medicine, 00*. 0/0:1.
Merecz, D., Waszkowska, M., & Wezyk, A. (2012). Psychological consequences of trauma in MVA perpetrators—Relationship between post-traumatic growth, PTSD symptoms and individual characteristics. *Transportation Research Part F: Traffic Psychology and Behaviour, 15*(5), 565–574.

Nakayama, N., Mori, N., Ishimaru, S., Ohyama, W., Yuza, Y., Kaneko, T., et al. (2017). Factors associated with posttraumatic growth among parents of children with cancer. *Psycho-Oncology, 26*(9), 1369–1375.
Nalipay, M. J. N., Bernardo, A. B. I., & Mordeno, I. G. (2016). Social complexity beliefs predict posttraumatic growth in survivors of a natural disaster. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*(5), 559–567.
Nolen-Hoeksema, S., & Larson, J. (1999). *Coping with loss*. Mahwah, NJ: Erlbaum.
Ogińska-Bulik, N., & Kobylarczyk, M. (2015). Relation between resiliency and posttraumatic growth in a group of paramedics: The mediating role of coping strategies. *International Journal of Occupational Medicine and Environmental Health, 28*(4), 707–719.
Owens, G. P. (2016). Predictors of Posttraumatic Growth and Posttraumatic Stress Symptom Severity in Undergraduates Reporting Potentially Traumatic Events. *Journal of Clinical Psychology, 72*(10), 1064–1076.
Palacio-González, A., Clark, D. A., & O'Sullivan, L. F. (2017). Cognitive processing in the aftermath of relationship dissolution: Associations with concurrent and prospective distress and posttraumatic growth. *Stress and Health: Journal of the International Society for the Investigation of Stress, 33*(5), 540–548.
Palgi, Y. (2016). Subjective age and perceived distance-to-death moderate the association between posttraumatic stress symptoms and posttraumatic growth among older adults. *Aging & Mental Health, 20*(9), 948–954.
Palmer, E., Murphy, D., & Spencer-Harper, L. (2016). Experience of post-traumatic growth in UK veterans with PTSD: A qualitative study. *J R Army Med Corps, 163*(3), 171–176.
Pargament, K. I., Koenig, H. G., & Perez, L. (2000). The many methods of religious coping: Development and initial validation of the RCOPE. *Journal of Clinical Psychology, 56*, 519–543.
Park, C. L. (1998). Implications of posttraumatic growth for individuals. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive change in the aftermath of crisis* (pp. 153–177). Mahwah, NJ: Erlbaum.
Powell, T., Gilson, R., & Collin, C. (2012). TBI 13 years on: factors associated with posttraumatic growth. *Disability & Rehabilitation, 34*(17), 1461–1467.
Prati, G., & Pietrantoni, L. (2009). Optimisim, Social Support, and Coping Strategies as Factors Contributing to Posttraumatic Growth: A Meta-Analysis. *Journal of Loss and Trauma, 14*, 364–388.
Ramos, C., Costa, P. A., Rudnicki, T., Marôco, A. L., Leal, I., Guimarães, R., et al. (2018). The effectiveness of a group intervention to facilitate posttraumatic growth among women with breast cancer. *Psycho-Oncology, 27*(1), 258–264.
Reker, G. T. (2000). Theoretical perspective, dimensions, and measurement of existential meaning. In G. T. Reker & K. Chamberlain (Eds.), *Exploring existential meaning: Optimizing human development across the life span* (pp. 39–55). Thousand Oaks, CA: Sage Publications.
Richardson, K. M. (2016). The surviving sisters club: Examining social support and posttraumatic growth among FDNY 9/11 widows. *Journal of Loss & Trauma, 21*(1), 1–15.
Rodríguez-Rey, R., & Alonso-Tapia, J. (2017). Relation between parental psychopathology and posttraumatic growth after a child's admission to intensive care: Two faces of the same coin? *Intensive and Critical Care Nursing, 43*, 156–161.
Roland, A. G., Currier, J. M., Rojas-Flores, L., & Herrera, S. (2014). Event centrality and posttraumatic outcomes in the context of pervasive violence: a study of teachers in El Salvador. *Anxiety, Stress & Coping, 27*(3), 335–346.
Rubin, D. C., Boals, A., & Hoyle, R. H. (2014). Narrative centrality and negative affectivity: Independent and interactive contributors to stress reactions. *Journal of Experimental Psychology: General, 143*, 1159–1170.
Rzeszutek, M., & Gruszczyńska, E. (2018). Posttraumatic growth among people living with HIV: A systematic review. *Journal of Psychosomatic Research, 114*, 81–91.
Rzeszutek, M., Oniszczenko, W., & Firląg-Burkacka, E. (2017). Social support, stress coping strategies, resilience and posttraumatic growth in a Polish sample of HIV-infected individuals: results of a 1year longitudinal study. *Journal of Behavioral Medicine, 40*(6), 942–954.
Salo, J. A., Qouta, S., & Punamäki, R-L. (2005). Adult attachment, posttraumatic growth and negative emotions among former political prisoners. *Anxiety, Stress & Coping: An International Journal, 18*(4), 361–378.
Saltzman, L. Y., Pat-Horenczyk, R., Lombe, M., Weltman, A., Ziv, Y., McNamara, T., et al. (2018). Post-combat adaptation: improving social support and reaching constructive growth. *Anxiety, Stress & Coping, 31*(4), 418–430.
Sattler, D. N., Boyd, B., & Kirsch, J. (2014). Trauma-exposed firefighters: Relationships among posttraumatic growth, posttraumatic stress, resource availability, coping and critical incident stress debriefing experience. *Stress and Health: Journal of the International Society for the Investigation of Stress, 30*(5), 356–365.
Schuettler, D., & Boals, A. (2011). The path to posttraumatic growth versus posttraumatic stress disorder: Contributions of event centrality and coping. *Journal of Loss and Trauma, 16*(2), 180–194.
Sharp, L., Redfearn, D., Timmons, A., Balfe, M., & Patterson, J. (2018). Posttraumatic growth in head and neck cancer survivors: Is it possible and what are the correlates? *Psycho-Oncology, 27*(6), 1517–1523.
Shuwiekh, H., Kira, I. A., & Ashby, J. S. (2018). What are the personality and trauma dynamics that contribute to posttraumatic growth? *International Journal of Stress Management, 25*(2), 181–194.
Smith, B. W., Ortiz, J. A., Steffen, L. E., Tooley, E. M., Wiggins, K. T., Yeater, E. A., et al. (2011). Mindfulness Is Associated with Fewer PTSD Symptoms, Depressive Symptoms, Physical Symptoms, and Alcohol Problems in Urban Firefighters. *Journal of Consulting and Clinical Psychology, 79*(5), 613–617.
Staugaard, S. R., Johannessen, K. B., Thomsen, Y. D., Bertelsen, M., & Berntsen, D. (2015). Centrality of positive and negative deployment memories predicts posttraumatic growth in Danish veterans. *Journal of Clinical Psychology, 71*(4), 362–377.
Stockton, H., Hunt, N., & Joseph, S. (2011). Cognitive processing, rumination, and posttraumatic growth. *Journal of Traumatic Stress, 24*(1), 85–92.
Taku, K., & Matthew, J. W. M. (2018). Posttraumatic growth profiles and their relationships with HEXACO personality traits. *Personality and Individual Differences, 134*, 33–42.
Taku, K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2009). Intrusive versus deliberate rumination in posttraumatic growth across US and Japanese samples. *Anxiety, Stress & Coping, 22*(2), 129–136.
Tallman, B., Shaw, K., Schultz, J., & Altmaier, E. (2010). Well-being and posttraumatic growth in unrelated donor marrow transplant survivors: A nine-year longitudinal study. *Rehabilitation Psychology, 55*(2), 204–210.
Tang, S. T., Lin, K-C., Chen, J-S., Chang, W-C., Hsieh, C-H., & Chou, W-C. (2015). Threatened with death but growing: Changes in and determinants of posttraumatic growth over the dying process for Taiwanese terminally ill cancer patients. *Psycho-Oncology, 24*(2), 147–154.
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), 1–18.
Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering*. Newbury Park, CA: Sage.
Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). *Posttraumatic growth: Positive change in the aftermath of crisis*. Mahwah, NJ: Erlbaum.
Trzebiński, J., & Zięba, M. (2013). Basic trust and posttraumatic growth in oncology patients. *Journal of Loss and Trauma, 18*(3), 195–209.
Tsai, J., & Pietrzak, R. H. (2017). Trajectories of posttraumatic growth among US military veterans: a 4-year nationally representative, prospective cohort study. *Acta Psychiatrica Scandinavica, 136*(5), 483–492.
Tsai, J., Sippel, L. M., Mota, N., Southwick, S. M., & Pietrzak, R. H. (2016). Longitudinal course of posttraumatic growth among U.S. military veterans: Results from the National Health and Resilience in Veterans study. *Depression & Anxiety, 33*(1), 9–18.
Ullman, S. A. (2014). Correlates of posttraumatic growth in adult sexual assault victims. *Traumatology, 20*(3), 219–224.
Val, E. B., & Linley, P. A. (2006). Posttraumatic Growth, Positive Changes, and Negative Changes in Madrid Residents Following the March 11, 2004, Madrid Train Bombings. *Journal of Loss and Trauma, 11*(5), 409–424.
Vallurupalli, M., Lauderdale, K., Balboni, M. J., Phelps, A. C., Block, S. D., Ng, A. K., et al. (2012). The Role of Spirituality and Religious Coping in the Quality of Life of Patients with Advanced Cancer Receiving Palliative Radiation Therapy. *J Support Oncol., 10*(2), 81–87.
Wei, W., Li, X., Tu, X., Zhao, J., & Zhao, G. (2016). Perceived social support, hopefulness, and emotional regulations as mediators of the relationship between enacted stigma and post-traumatic growth among children. *AIDS Care, 28*, 99–105.
Westphal, M., & Bonanno, G. A. (2007). Posttraumatic growth and resilience to trauma: Different sides of the same coin or different coins? *Applied Psychology: An International Review, 56*(3), 417–427.
Wilson, B., Morris, B. A., & Chambers, S. (2014). A structural equation model of posttraumatic growth after prostate cancer. *Psycho-Oncology, 23*(11), 1212–1219.
Wright, A. M. (2015). Event Centrality After Trauma: Stability, Trauma Type, And Posttraumatic Stress Disorder. Wayne State University Dissertations Paper 1323.
Xiu, D., Mc Gee, S. L., & Maercker, A. (2018). Sense of Coherence and Posttraumatic Growth: The Moderating Role of Value Orientation in Chinese and Swiss Bereaved Parents. *Journal of Loss & Trauma, 23*(3), 259–270.
Xu, J., & Wu, W. (2014). Work satisfaction and posttraumatic growth 1 year after the 2008 Wenchuan earthquake: The perceived stress as a moderating factor. *Archives of Psychiatric Nursing, 28*(3), 206–211.
Yeung, N. C. Y., Lu, Q., Wong, C. C. Y., & Huynh, H. C. (2016). The roles of needs satisfaction, cognitive appraisals, and coping strategies in promoting posttraumatic growth: A stress and coping perspective. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*(3), 284–292.
Yuen, A. N. Y., Ho, S. M. Y., & Chan, C. K. Y. (2014). The mediating roles of cancer-related rumination in the relationship between dispositional hope and psychological outcomes among childhood cancer survivors. *Psycho-Oncology, 23*(4), 412–419.
Zeligman, M., Barden, S. M., & Hagedorn, W. B. (2016). Posttraumatic growth and HIV: A study on associations of stigma and social support. *Journal of Counseling & Development, 94*(2), 141–149.
Zeligman, M., Varney, M., Grad, R. I., & Huffstead, M. (2018). Posttraumatic growth in individuals with chronic illness: The role of social support and meaning making. *Journal of Counseling & Development, 96*(1), 53–63.
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.