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# Growth Following Trauma: Overview and Current Status

## Crecimiento tras el trauma: Revisión general y estado actual

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**Abstract**

Growth is commonly reported following all variety of stressful encounters. This phenomenon is receiving proliferating research attention, and much has been learned. In this article, we provide an overview of the current theoretical and empirical knowledge regarding growth. Most of this research concerns self-reported growth, but a small amount of research reviewed here concerns actual growth. In particular, we review theoretical models and empirical evidence of growth and relationships between growth and adjustment. We then address several methodological, cultural, and other important issues in this research area and conclude with directions for future research.
*Key words:* reported growth, actual growth, post-traumatic growth, stress-related growth, adjustment.

**Resumen**

El crecimiento es algo que a menudo informan quienes han padecido sucesos estresantes. Este fenómeno está recibiendo un interés creciente y se ha aprendido ya mucho sobre ello. En este trabajo proporcionamos una revisión del conocimiento teórico y empírico relacionado con el crecimiento. La mayor parte de esta investigación hace referencia a crecimiento auto-informado, aunque una porción de la investigación revisada tiene que ver con crecimiento objetivo. En particular, revisamos modelos teóricos y evidencia empírica de crecimiento y las relaciones entre crecimiento y ajuste. Para finalizar, señalamos varios aspectos importantes metodológicos y culturales, entre otros, en esta área de investigación y concluimos con algunas orientaciones para la investigación futura.
*Palabras clave***:** crecimiento informado, crecimiento real, crecimiento postraumático, crecimiento relacionado con el estrés, ajuste.

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## Introduction

The aftermath of highly stressful events differs from person to person. Although some people show negative decline and others report no change, many people report positive growth following adversity. This human capacity to identify benefits from crisis has already been reported in various populations including cancer survivors (Cordova, Cunningham, Carlson, & Andrykowski, 2001), people who experienced sexual assault (Frazier, Conlon, & Glaser, 2001) and bereavement (Currier, Mallot, Martinez, Sandy & Neimeyer, 2012), youth exposed to terror incidents (Laufer & Solomon, 2006), and even caregivers of cancer survivors (Weiss, 2002). Growth following stressors has been reported across many cultures (e.g., for Australians: Shakespeare-Finch & Coppoing, 2006; for Chinese: Ho, Chu, & Yiu, 2008; for Japanese: Taku, Calhoun, Tedeschi, Gil-Rivas, Kilmer, & Cann, 2007; for Latina immigrants: Berger & Weiss, 2006; for Malaysians: Schroevers & Teo, 2008).

Several terms have been used to name this phenomenon (e.g., adversarial growth: Linley & Joseph, 2004; finding benefits: Affleck & Tennen, 1996; posttraumatic growth (PTG): Tedeschi & Calhoun, 1995; stress-related growth: Park, Cohen, & Murch, 1996; thriving: O'Leary & Ickovics, 1995). Differences in terminologies are to some extent based on factors such as levels of stress exposure (e.g., posttraumatic growth vs. stress-related growth); however, regardless of the specific details, all of these terms focus on perceptions of positive changes following adversities. Tedeschi and Calhoun (2004) wrote that growth following stress includes positive psychological changes across different domains that *surpass* the person's previous state as a result of struggling with the stress.

In this paper, we will use *reported growth* to refer to this phenomenon because this is a more neutral, descriptive term that is not based on any specific theory. In addition, this may be a more accurate term, because it emphasizes the subjectivity of participants' responses and perceptions. Reported growth can be differentiated from other types of growth such as actual (i.e., measured) growth; the term *actual growth* has been used to describe objective and actual positive changes following stressful encounters. We will use the term reported growth to refer to the phenomenon commonly called "post-traumatic growth" or "stress-related growth" and introduce information on other types of growth later (especially regarding actual growth).

Reported growth occurs in several different domains and can be assessed by questionnaires such as the Benefit-Finding Scale (BFS; Tomich & Helgeson, 2002), the Perceived Benefit Scale (PBS; McMillen & Fisher, 1998), the Post-Traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), and the Stress-Related Growth Scale (SRGS; Park et al., 1996). Although each scale has different numbers and types of subfactors, common domains of reported growth include changes in one's sense of self, changes in relationships with others, and changes in one's spirituality or religion (Calhoun & Tedeschi, 2000, pp. 135-152). Similarly, Joseph, Murphy, and Regel (2012) said that it includes changes in self-views, improvement in interpersonal relationships, and changes in life philosophy (pp. 317-318).

Reported growth is not a rare phenomenon reported only by exceptional people. Studies have shown that the majority of people report growth following adversity. For example, 83% of breast cancer survivors reported experiencing something positive from their cancer within the first year of diagnosis (Sears, Stanton, & Danoff-Burg, 2003) and 74.4% of Israeli youth exposed to terror incidents reported experiencing growth (Laufer & Solomon, 2006). In addition, 55% of college students who had experienced stressful events reported growth while 39% reported a loss (Yanez, Stanton, Hoyt, Tennen, & Lechner, 2011).

### *Models of Growth: Theoretical Propositions*

How does growth come about? Several theories have been suggested (Calhoun, Cann, & Tedischi, 2010; Joseph & Linley, 2005; Joseph et al., 2012; Janoff-Bulman, 2004; Park, 2010; Tedeschi & Calhoun, 1995; see Zoellner & Maercker, 2006 for a review) as possible models of how people come to experience or report growth.

Before growth following stress was widely studied, Janoff-Bulman (1989) suggested that traumatic events affect people's assumptive worlds. That is, following trauma, people confront major cognitive disruption and assimilate their experience or change (accommodate) their basic schemas about themselves and their world. Later, she (Janoff-Bulman, 2004) suggested three models of growth, although they are not mutually exclusive, including strength through suffering, psychological preparedness, and existential reevaluation. First, strength through suffering is similar to the"no pain, no gain" motto. In the aftermath of trauma, people can become aware of their previously undiscovered strengths and develop new coping skills that help them find new possibilities in life. Second, similar to vaccination in medicine, psychological preparedness posits that trauma survivors can become resistant to subsequent tragedies. Through the process of rebuilding assumptive world, trauma survivors can acknowledge the possibility of

future misfortune. Acknowledgement of this vulnerability renders them psychologically prepared. Third, existential reevaluation is related to the process of meaning making in the face of trauma. Following stressful events, the world may seem meaningless and malevolent. However, people can minimize those negative perceptions (i.e., meaningless and malevolent) and make sense of the events.

Janoff-Bulman's theory (1989) about assumptive beliefs following stress influenced the ensuing growth research. Based on her theory, Tedeschi and Calhoun (1995) contended that it was not the characteristics of the event itself but the disruption of the assumptive beliefs that leads to growth; in their most recent model, they proposed that culture shapes these assumptive beliefs (Calhoun et al., 2010). Although their model is quite comprehensive and they observed that emotional distress can occur following crises, Tedeschi and Calhoun's models mostly focus on 'cognitive processing'. They especially emphasized different kinds of rumination such as automatic/intrusive and deliberate/reflective/constructive rumination (Calhoun et al., 2010). Intrusive thoughts occurring immediately following stress are more closely associated with emotional distress. This distress is thought to make people move to more deliberate forms of rumination in an effort to understand the meaning of the event and rebuild their shattered assumptions. In addition to cognitive processing, Calhoun and his colleagues (2010) suggested that several other factors, such as disclosure of concerns, reactions of others to the disclosures, sociocultural contexts, personal dispositions, and the degree to which events either permit or suppress the above-listed processes, are important determinants of growth as well.

Organismic Valuing (OV) theory (Joseph & Linley, 2005) is another theory influenced by the theory of assumptive beliefs. Likewise, Joseph and Linley described growth as the result of resolving challenged assumptive beliefs. However, an important aspect of this theory is its proposition that humans are intrinsically motivated to move towards growth. Therefore, according to Joseph and Linley, growth after highly stressful experiences is a natural and innate tendency of human beings. Further, they integrated posttraumatic stress symptoms into their model of growth through adversity, proposing that a great discrepancy between the person's previous assumptive beliefs and post-trauma experiences might provide greater potential for both post-traumatic stress symptoms and trauma-related growth.

Recently, Joseph et al. (2012) modified OV theory and suggested an affective-cognitive processing model in which growth can occur through event cognition (e.g., 'traumatic'), appraisals mechanisms (e.g., 'ruminations'), emotional states (e.g., 'positive and negative affect'), and coping (e.g., 'task-focused', 'emotion focused',' avoidance'). These cognitions, appraisals, and emotional states will occur as a repetitive cyclic process until discrepancies between pre-trauma assumptive world views and post-trauma information are resolved either through assimilative (e.g., 'retain their pre-existing assumptions') or accommodative processes (e.g., 'previous assumption is modified in light of the new trauma-related information').

Park (2010) suggested an integrated model of meaning making in the context of stress. In this model, she categorized meaning into two types: global meaning (the person's general orienting system, such as beliefs and goals) and situational meaning (i.e., the meaning of a specific situation). Meaning making processes can be facilitated when there are discrepancies between global meaning and situational meaning, and as the result of this process, meaning can be made. This 'meaning made' includes perceptions of growth/positive life changes. Although this model is not specifically targeting only growth, this is another broader theory encompassing positive changes following stress.

So far, we have introduced several theories explaining the occurrence of growth or positive changes following stress. Although each theory has a different emphasis, generally, these theories are comprehensive and mostly focus on cognitive processes such as appraisal of the event and rumination. Moreover, most of these models are primarily concerned with actual growth rather than subjective perceptions of growth. That is, they did not differentiate actual growth (changes) from reported growth and appeared to consider reported growth as actual growth.

In contrast, there are several theories suggesting that reported growth in the aftermath of stress does not necessarily reflect actual changes. For example, Taylor (1983) developed a cognitive adaption model in which positive changes following threatening events are temporal, self-enhancing illusions to alleviate stress. She noted that three themes come up in the readjustment process (the search for meaning, gaining a sense of mastery, and the process of self-enhancement) and efforts to resolve these themes is dependent on an ability to maintain and form cognitive illusions (See Kastenmuller, Greitemeyer, Epp, Frey, & Fischer, 2012 and McFarland & Alvaro, 2000, for empirical studies supporting this theory).

Maercker and Zoellner (2004) noted that Tedeschi and Calhoun focused only on the constructive side, but there is also a self-deceptive and illusory side, which might be linked to denial, avoidance, wishful thinking, self-consolidation, or palliation, as Taylor (1983) suggested. Maercker and Zoellner (2004) developed the Janus-Face model of

growth in which growth has two co-existing components: 1) a functional, constructive side and 2) an illusory, self-deceptive side. They proposed that the illusory side might not be associated with maladjustment in the short term. Rather, perceived (reported) growth can be an active and acute coping strategy with palliative functions. However, if it is associated with cognitive avoidant strategies in the long run, perceived growth can have negative effects on adjustment. In contrast, the constructive side is related to positive adjustment in the long run as well as short run (See Armeli, Gunthert, & Cohen, 2001 for empirical evidence supporting this theory).

In the following sections, we review several factors predicting reported and actual growth supported by empirical studies. We will especially introduce a few empirical studies in which actual growth was measured.

### *Empirical Studies: Which Factors Are Related to Growth?*

In order to test these theoretical models (here models assuming growth is real), several elements or factors specified by those models (such as whether shattered assumptive beliefs are the origin of reported growth and whether different kinds of rumination have different roles in growth, etc.)have been examined in empirical research. First, we review factors related to reported growth, then we introduce factors related to actual growth.

### *Factors related to Reported Growth*

Many empirical studies have tried to determine factors or pathways of growth in different study populations using different study designs. For example, Triplett et al. (2012) tested paths of growth in which disruptions in core beliefs are the departure point for reported growth, and examined how different kinds of rumination can play roles in this process. They found that in college students, disruptions in core beliefs as assessed by the Core Beliefs Inventory (CBI; Cann et al., 2010) were significantly related to both intrusive and deliberate ruminations, but only deliberate rumination was associated with reported growth. They interpreted these results as supporting the model of growth-proposed by Tedeschi and Calhoun (1996) and Calhoun and his colleagues (2010).

Other studies demonstrate that world assumptions assessed by the World Assumption Scale (WAS; Janoff-Bulman, 1992) contribute to the occurrence of growth; WAS consists of eight subscales (randomness, justice, controllability, self-control, self-worth, luck, benevolence of people and benevolence of the impersonal world) assessing three broad categories (the meaningfulness of events, the worthiness of the self, and the benevolence of the world and people). For example, Time 1 subscales of WAS such as higher justice and luck and lower self-worth and self-control were associated with higher Time 2 reported growth in hematologic cancer survivors (Carboon, Anderson, Pollard, Szer, & Seymour, 2005). Another study reported that Time 1 self-controllability predicted higher Time 2 perceived growth in Israel former prisoners of the Yom Kippur War (Dekel, Mandl, & Solomon, 2011). However, studies that directly measured *changes* in world assumptions as leading to reported growth have not supported this theory. For example, in a six-month longitudinal study, Park and Fenster (2004) examined processes predicting reported growth in college students. Using structural equation modeling, they found that intrusive thoughts and several coping strategies predicted reported growth whereas changes (subtracting Time 1 scores from Time 2) in world assumptions were not related to reported growth.

Likewise, findings regarding intrusive thoughts and optimism/hope have yielded mixed results. The above mentioned study of hematologic cancer survivors (Carboon et al., 2005) did not find relationships between intrusions and reported growth, whereas many other studies (e.g., Dunn, Occhipinti, Campbell, Ferguson, & Chambers, 2011; Park & Fenster, 2004; Yanez et al., 2011) reported significant (positive) relationships between them. With regard to optimism/hope, one study of cancer survivors found greater optimism was associated with higher reported growth (Dunn et al., 2011) whereas hope and optimism were not associated with reported growth in a study of breast cancer survivors (Bellizzi & Blank, 2006).

Specific coping strategies are rather consistently related to reported growth: positive reinterpretation (Frazier, Tennen, Gavian, Park, Tomich, & Tashiro, 2009; Sears et al., 2003), resources, appraisals, and coping activities (Park & Fenster, 2004), emotional expression and processing and support, problem-focused and denial coping (Yanez et al., 2011) have been found to be associated with reported growth.

In addition to these factors, personality factors such as extraversion and openness to experience (Feder et al., 2008; Tedeschi & Calhoun, 1996) and social support (Cadell, Regehr, & Hemsworth, 2003; Dunn et al., 2011; Park et al., 1996) have been positively associated with reported growth.

In their review article, Zoellner and Maercker (2006) summarized possible factors predicting reported growth

(e.g., openness to new experience, hardiness and sense of coherence, optimism, internal locus of control, coping, sense making, the quest for meaning, and rumination). Further, a meta-analysis (Helgeson, Reynolds, & Tomich, 2006) showed that reported growth (although they used the term *benefit finding*) is related to demographics (e.g., female gender, minority race, and younger age), stress-related factors (e.g., objective severity and subjective perceptions of stress), personality factors (e.g., optimism and religiosity), and coping strategies (e.g., positive reappraisal, acceptance, and denial coping).

Taken together, there are many possible factors predicting reported growth. However, studies have been somewhat inconsistent, perhaps depending on composition of the study samples and variations in study designs, measures, and timing. These mixed findings suggest that researchers should have in mind distinct (rather than typical) factors that predict reported growth particular to each study population (study design, measurement, etc.). Also, based on the findings that specific combinations of factors have been predictive of reported growth in specific study population, as Bellizzi and Blank (2006) found in their breast cancer study, comprehensive models in each population are required to better understand this phenomenon.

### *Factors related to Actual Growth*

Before talking about predictors of actual growth, we will start to introduce two studies (Frazier et al., 2009; Yanez et al., 2011) which used a prospective study design and tried to differentiate reported and actual growth. Although other studies have tried to validate reported growth in different ways, such as through corroboration by significant others, we introduce here only studies that differentiated two types of growth and yielded separate scores.

Frazier and colleagues (2009) measured both reported and actual growth prospectively in a sample of college students who, in a two month interim, had experienced a traumatic event. They assessed actual growth in two different ways: First, they created a current standing version of the PTGI (C-PTGI) in which the PTGI items were phrased (e.g., "I have had a sense of closeness with others") to reflect participants' feelings over the past two weeks, not changes resulting from the trauma. An actual growth score was calculated by subtracting the Time 1 C-PTGI scores from the Time 2 C-PTGI scores. Second, they administered five other measures that corresponded to each of the domains of growth assessed on the PTGI. Those five domains are 1) relationship quality, 2) meaning in life (chosen to assess the domains of changed priority), 3) life satisfaction, 4) gratitude (both life satisfaction and gratitude were chosen to assess the domain of appreciation of life in PTGI), and 5) religiosity-spirituality. Likewise, actual growth in each domain was calculated by subtracting Time 1 scores from Time 2 scores. Results showed that actual growth was not related to cognitive reappraisal coping whereas reported growth (assessed by Time 2 PTGI) was positively related to it.

One other prospective study (Yanez et al., 2011) measured both reported and actual growth (there, termed measured growth) in a sample of college students who, in a six week interim experienced a stressful event. Actual growth was assessed with a Current Attributes Scale (e.g., "I know my priorities about what is important in life"), a modified version of the PTGI to assess participants' current status on each domain on the PTGI. Results showed that actual growth was only negatively related to behavioral disengagement and not related to other coping strategies such as emotional expression and processing, instrumental and emotional support, problem-focused and denial coping. In contrast, many of these coping strategies were positively associated with reported growth (assessed by Time 2 PTGI). Also, actual growth was negatively associated with Time 1 positive mood.

Based on different results between reported and actual growth (we will briefly discuss limitations of these ways of measuring actual growth later. See the section of Issues in Measurement: Validity of Reported Growth in this paper), especially with regard to coping (i.e., reported growth consistently showed significant relationships with different coping strategies whereas actual growth did not show these relationships), it appears that actual growth is an outcome of coping processes whereas reported growth reflects a process of coping. However, we need more studies of actual growth to draw clearer conclusions.

### *Relationships between Growth and Adjustment*

It is not only an interesting but also an important question whether reported growth is related to better adjustment. Clinical psychologists, especially, are interested in improving mental health. Several researchers (e.g., Lechner & Antoni, 2004) commented on ways to promote growth and several studies (e.g., Antoniet al., 2001; Wagner, Knaevelsrud, & Maercker, 2007) found increased reported growth as an outcome of psychotherapeutic interventions following stressful events. These comments and results are more valuable when we have an understanding of the meaning of reported growth and well-being.

Some studies (Carver & Antoni, 2004; Park et al., 1996; Triplett et al., 2012) have shown that reported growth is associated with better adjustment. However, other studies (Cordova et al., 2001; Frazier et al., 2009; Park & Fenster, 2004) have failed to support this positive relationship.

In their meta-analysis, Helgeson and colleagues (2006) found that reported growth (there, termed benefit finding) was associated with less depression and greater positive well-being, but at the same time with more intrusive and avoidant thoughts about the stressor. They also found that reported growth was not related to anxiety, global distress, or quality of life. Therefore, what we can be sure is that there have been inconsistent findings for relationships between reported growth and adjustment. How can we explain these mixed findings?

One way to make sense of these mixed findings is to assume that reported growth is, itself, a distinct (independent) part of adjustment. Tedeschi and Calhoun (2004) proposed that reported growth will not necessarily lead to better adjustment, and that it can be related to adjustment in either direction (i.e., positive or negative). Calhoun et al. (2010) also proposed that as the result of growth, wisdom, which might facilitate psychological well-being, can be developed, but a positive relationship between wisdom and well-being is not always present.

Underlying third variables is another possible explanation. Even studies showing positive relationships between reported growth and adjustment suggest that these relationships might not be simple. For example, Triplett et al. (2012) found that reported growth had significant but weak association with life satisfaction. When they tested the indirect path through meaning in life by which reported growth is linked to life satisfaction, this path was also statistically significant. Interestingly, Yanez and colleagues (2011) showed that reported growth was associated with greater positive mood, but greater approach coping fully mediated this link. Also, they found that reported growth was related to psychological distress and that this link was partially mediated by denial coping.

Further, it appears that these relations between reported growth and adjustment are not well-explained by linear relationships. For example, curvilinear relationships between reported growth and adjustment have been reported in several cross-sectional studies (Kleim & Ehlers, 2009; Lechner, Carver, Antoni, Weaver, & Phillips, 2006), although another study (Tomich & Helgeson, 2012) found both linear and quadratic relationships in cross-sectional analyses but not in longitudinal analyses (i.e., only linear relationships were found in longitudinal analyses). These results also support the possibility that relationships between reported growth and adjustment are complex.

Moreover, timing can influence this relationship. Zoellner and Maercker (2006) said in their review that there is a trend that longitudinal studies show positive relationship between growth and adjustment whereas cross-sectional studies have mixed results. Park and Helgeson (2006) noted that when timing was taken into account, relationships between growth and well-being seem clearer: stronger positive relationships were found between them when at least two years had passed since trauma.

In addition to these explanations, there are other possibilities for explaining inconsistent relationships between reported growth and adjustment, including that measures of growth (validated vs. interview) and adjustment, severity of stress, and types of trauma are all possible factors that can affect those relationships. However, Helgeson et al. (2006) found that even when they took into account several factors as moderators of the relationship between growth and adjustment (e.g., the time since the event occurred, the nature of the event, the measurement of growth, and characteristics of participants), significant variability in their relationship remained that was not explained by these moderators.

A more critical point is that we cannot be certain that reported growth is truly driving the relationship between reported growth and adjustment if studies do not control for potential third variables such as optimism, hope, and positive affect. Because all potential third variables have not been (or cannot be) identified, this possibility remains and could explain all studies of reported growth and adjustment, most of which minimally control for third variables.

Those two studies of actual growth found that it was not associated with distress (Frazier et al., 2009) or negative emotion (Yanez et al., 2011). Also, through path analyses, Yanez et al. (2011) showed that actual growth was positively related to greater positive mood and less psychological distress over six weeks. Although actual growth yielded consistent results (i.e., better adjustment), many more studies are needed before solid conclusions can be drawn.

### *Issues Related to Reported Growth*

In this section, we discuss three important issues regarding reported growth (i.e., measurement, cross-cultural issues, and positive versus negative change). Some of these issues have been already discussed elsewhere (see Park & Helgeson, 2006).

### *Issues in Measurement: Validity of Reported Growth*

At the start of this paper, we differentiated actual growth from reported growth. This distinction is important because of the intense and unresolved issue of the genuineness of reported growth. As introduced earlier, several scales assess self-reported growth (e.g., BFS, PBS, PTGI, and SRGS). Such scales ask participants whether they experienced specific changes following stressful events. However, reported growth itself might not reflect actual growth for many reasons. For example, explanations include: 1) people just want (or feel somewhat pressured) to show that they are doing well, 2) reported growth can be a motivated illusion, 3) individual trajectories of self-reported growth show significant differences, and 4) people cannot accurately report about their changes (see Frazier & Kaler, 2006, pp. 859-860).

Because this series of possibilities was raised, several researchers (e.g., Frazier & Kaler, 2006; Helgeson, 2010) have attempted to corroborate self-reported growth in many different ways. As a result, Frazier and Kaler (2006) reported that they found fairly little evidence to validate self-reported growth. Helgeson (2010) also reported little validity when disease-free long-term (10 year) breast cancer survivors' growth reports were compared with their significant others' responses. However, Helgeson found some corroboration when self-reported growth was compared with survivors' reports of their current standing on relevant dimensions. Several other studies showed modest corroboration between people's reports of growth and the estimation of significant others regarding their growth (e.g., Park et al., 1996; Weiss, 2002).

Although the above-mentioned researchers (Frazier & Kaler, 2006; Helgeson, 2010) conducted clever studies, they were not prospective and also did not directly differentiate actual and reported growth.

Researchers know that one way to investigate the veridicality of growth is through prospective study. Results from two prospective studies showed that reported growth was only minimally ($r$ = . 22, $p$ <05) related to changes in self-report of standing on the domains assessed in the growth instrument (Frazier et al., 2009) and two types of growth are not significantly ($r$ = .10, *ns*) related to each other (Yanez et al., 2011). Also, they have different patterns of relationships with other variables. Of course, their ways to measure actual growth (see the section of 'predictors of actual growth' in this paper) might have limitations. (For example, neither type was evidenced by actual behavior changes and answering current standing is also a perception). Aspinwall and Tedeschi (2010) raised questions about how Frazier et al.'s study assessed actual growth: 1) they used self-report measures, which means that they did not measure 'actual' growth, 2) an eight- week time period is not enough to measure growth, 3) several of the measured domains did not correspond directly to those assessed by the PTGI, and 4) participants were asked to respond to the C-PTGI regardless of whether they had experienced events (see Aspinwall & Tedeschi, 2010 for more detailed criticism). However, the findings from Frazier et al. and Yanez et al.'s studies tell us that the need for a stronger demonstration of validity of self-reported growth is clear. That is, for this research area to progress, it is imperative that validated measures of actual growth be developed.

Moreover, because only a few studies have tried to differentiate each type of growth, many questions about actual growth remain unresolved. For example, what is the best and most accurate way to measure actual growth? Does each type of growth have different predictors in different populations? Will actual growth be more stable (i.e., will it persist longer than reported growth) and lead to actual behavior changes in daily life?

### *Cross-Cultural Issues: Are Mechanisms of Reported Growth Same Across Cultures?*

Growth following adversity is not only reported in Western cultures. Although this research originated in the U.S., accumulating studies conducted around the world demonstrate that growth is commonly reported in many other cultures (Berger & Weiss, 2006; Ho et al., 2008; Schroevers & Teo, 2008; Shakespeare-Finch & Coppoing, 2006; Taku et al., 2007) as well.

However, reported growth may not occur universally, and even if it does,it may vary from culture to culture in terms of amount or type (Vázquez, Pérez-Sales & Ochoa, in press). McMillen (2004) wrote that looking on the positive side of experience is especially promoted in the U.S. culture. In support of this assertion, it has been reported that mean PTGI scores were lower in non-U.S. cultures and not all PTGI subscales and factor structures have been found in other cultural populations (see Shakespeare-Finch & Coppoing, 2006).

Also, we do not much know whether mechanisms of reported or actual growth are the same across cultures. For example, are disruptions of world assumptions and ensuing ruminations and intrusive thoughts common factors driving reported (or actual) growth across cultures? Taku, Cann, Tedeschi, and Calhoun (2009) examined relationships between different kinds of ruminations (intrusive rumination soon after the event, recent intrusive rumination, deliberate

rumination soon after the event, and recent deliberate rumination) and reported growth in both the U.S. and Japan. Although there were some commonalities across samples (e.g., recent deliberate rumination was the strongest predictors of the reported growth in both), cultural differences were also found: recent deliberate rumination was more important than the deliberate rumination soon after the event in the U.S. sample, while deliberate rumination both soon after and recently were positively associated with reported growth in the Japanese sample.

Therefore, even if there is some universality of self-reported growth in different cultures more evidence is needed to draw conclusions about these cross-cultural issues (see Vázquez, Pérez-Sales & Ochoa, in press, for a review).

### *Neglecting Negative Impact: Does Focusing Only on Positive Impact Make Sense?*

With the advent of positive psychology (Seligman & Csikszentmihalyi, 2000), studies focusing on the positive impact of stress and its aftermath have been proliferating (Prati & Pietrantoni, 2009). However, focusing on positive aspects of a trauma or stressor while totally ignoring its negative impacts may lead to a serious misrepresentation of post-traumatic adjustment.

A qualitative study of reported growth in mothers of children with acquired disabilities found that although mothers could find positive aspects (e.g., strength, compassion and membership, meaning making, and faith and spirituality), these reports did not mitigate their suffering and sorrow (Konrad, 2006). In long-term breast cancer survivors, Helgeson (2010) found that nearly half of respondents reported positive changes in specific domains (e.g., health behavior). However, negative effects (e.g., fear of recurrence, adverse effects on physical health, negative self-image, and negative emotional changes) were also identified.

Several studies have demonstrated that when both positive and negative impacts of traumatic events are considered together, the effects of negative impacts essentially wash out the positive impacts (e.g., Bellizzi, Miller, Arora, & Rowland, 2007; Park & Blank, 2012). Therefore, it is clear that reported positive changes through adversity do not overshadow or erase the impact of negative changes. This fact implies that rather than exclusively focusing on one side (either positive changes or negative changes), we should consider both positive and negative changes at the same time. Along these lines, Wortman (2004) wrote, "In determining whether growth has occurred, it is necessary to consider the impact of such negative changes along with any positive changes that have been reported" (p. 82).

### *Future Directions*

Reports of positive changes following adversity have been received increasing research attention in recent decades and there have been great advances in our knowledge, but many unresolved problems within this area of study remain. In this section, we suggest some future directions that researchers should consider.

First, because measurement issues regarding the genuineness of reported growth have been raised, we recommend well-planned studies, particularly those conducted prospectively and longitudinally, assessing individuals *prior to* a stressful event and using multiple (more than two) assessment points. In addition, other suggestions to improve the validity of self-reported growth include behavioral studies and studies that examine coping with future life events (see Frazier & Kaler, 2006, pp. 867-868). If we reliably differentiate reported and actual growth, we can investigate whether these two types of growth have different predictors and also have different relations with adjustment. So far, many factors have been confirmed as predictors of reported growth. However, we have little information regarding whether those factors will have similar associations with actual growth as well. If we find different predictors and associations with adjustment for each type of growth, then we might find different pathways linking predictors, each type of growth, and adjustment.

Second, the fact that existing results in this area have been virtually exclusively reliant on self-reported outcome measures is a severe limitation. We have little knowledge regarding whether reported growth is also associated with changes in actual behaviors (e.g., increases in exercise or, healthy eating, decreases in dysfunctional coping) and physiological assessment (e.g., heart rate variability, immune functioning) as well. It may be that reported growth is less strongly linked to increases in actual behaviors and physiological indices whereas actual growth is more related to those assessments. Our current state of knowledge does not address this hypothesis; future research should therefore expand measures of adjustment that may be linked to reported growth. Improvements in assessments (in measuring both growth and adjustment) can give us more information about relationships between reported growth

and adjustment, which, as we have reviewed earlier, have yielded inconsistent findings.

Finally, in terms of the models of growth, comprehensive and distinct factors should be considered in different populations (i.e., predictors of growth in physically ill people might not be the same as those of growth in non-physically ill people who experienced stressful events). Also, as Zoellner and Maercker (2006) concluded in their review paper, existing models of growth have mostly focused on cognitive processes (e.g., disruptions in world assumptions and different kinds of cognitive processing such as ruminations),while emotion has been relatively neglected as an important predictor. For example, many studies consider positive and negative affect as indices of emotional well-being and assess them as outcomes rather than as predictors. Yet different affects may lead to very different outcomes (e.g., Park, Aldwin, Fenster & Snyder, 2008). Although Joseph et al. (2012) recently modified model of growth included emotional states in a repetitive cycle, empirical studies have still paid little attention to emotional states as predictors of growth.

## Conclusion

Growth following stressful life events is an area of tremendous interest and holds the promise of helping us to more fully understand the range of responses to stressful life events and perhaps to promote greater recovery and resilience. The fact that growth has garnered so much intense interest by both academicians and the general public (Joseph, 2010; Kramer, 2010) suggests that the concept holds deep resonance for people. Yet, to date, the research demonstrating actual growth and research findings that allow us to develop a deeper understanding of this phenomenon are frustratingly slim. Although, as we have described here, most current research suffers serious shortfalls and limitations, we maintain optimistic that continued research will bring a more comprehensive and useful understanding of growth following serious life stressors.

## References


Affleck, G., & Tennen, H. (1996). Construing Benefits from Adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality, 64*, 899-922. doi: 10.1111/j.1467-6494.1996.tb00948.x

Antoni, M. H., Lehman, J. M., Kilbourn, K. M., Boyers, A. E., Culver, J. L., Alferi, S. M., … Carver, C. S. (2001). Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychology, 20*, 20-32. doi: 10.1037/0278-6133.20.1.20

Armeli, S., Gunthert, K. C., & Cohen, L. H. (2001). Stressor appraisals, coping, and post-event outcomes: The dimensionality and antecedents of stress-related growth. *Journal of Social and Clinical Psychology, 20*, 366-395. doi: 10.1521/jscp.20.3.366.22304

Aspinwall, L. G., & Tedeschi, R. G. (2010). Of babies and bathwater: A reply to Coyne and Tennen's views on positive psychology and health. *Annals of Behavioral Medicine*, 39, 27-34. doi: 10.1007/s12160-010-9155-y

Bellizzi, K. M., & Blank, T. O. (2006). Predicting posttraumatic growth in breast cancer survivors. *Health Psychology, 25*, 47-56. doi: 10.1037/0278-6133.25.1.47

Bellizzi, K. M., Miller, M. F., Arora, N. K., & Rowland, J. H. (2007). Positive and negative life changes experienced by survivors of non-Hodgkin's lymphoma. *Annals of Behavioral Medicine, 34*, 188-199. doi: 10.1007/BF02872673

Berger, R., & Weiss, T. (2006). Posttraumatic growth in Latina immigrants, *Journal of Immigrant & Refugee Studies, 4*, 55-72. doi: 10.1300/J500v04n03_03

Cadell, S., Regehr, C., & Hemsworth, D. (2003). Factors contributing to posttraumatic growth: A proposed structural equation model. *American Journal of Orthopsychiatry, 73*, 279-287. doi: 10.1037/0002-9432.73.3.279

Calhoun, L. G., Cann, A., & Tedeschi, R. G. (2010). The posttraumatic growth model: Socio-cultural considerations. In. T. Weiss & R. Berger (Eds.), *Posttraumatic growth and culturally competent practice: Lessons learned from around the globe.* (pp. 1-14). New York: Wiley.

Calhoun, L. G., Tedeschi, R. G. (2000). Early posttraumatic interventions: Facilitating possibilities for growth. In J. M. Violanti, D. Paton, & C. Dunning (Eds.), *Posttraumatic stress intervention: Challenges, issues, and perspectives.* (pp. 135-152). Illinois: Charles C. Thomas Publisher.

Cann, A., Calhoun, L. G., Tedeschi, R. G., Klimer, R. P., Gil-Rivas, V., Vishnevsky, T., … Danhauer, S. C. (2010). The Core Beliefs Inventory: a brief measure of disruption in the assumptive world. *Anxiety, Stress & Coping: An International Journal, 23*, 19-34. doi: 10.1080/10615800802573013c

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*, 269-283. doi: 10.1177/153476560501100406

Carver, C. S., & Antoni, M. H. (2004). Finding benefit in breast cancer during the year after diagnosis predicts better adjustment 5 to 8 years after cancer. *Health Psychology, 23*, 595-598. doi: 10.1037/0278-6133.23.6.595

Cordova, M. J., Cunningham, L. L. C., Carlson, C. R., & Andrykowski, M. A. (2001). Posttraumatic growth following breast cancer: A controlled comparison study. *Health Psychology, 20*, 176-185. doi: 10.1037/0278-6133.20.3.176

Currier, J. M., Mallot, J., Martinez, T. E., Sandy, C., & Neimeyer, R. A. (2012, March 26). Bereavement, religion, and posttraumatic growth: A matched control group investigation. *Psychology of Religion and Spirituality*.Advance online publication. doi: 10.1037/a0027708

Dekel, S., Mandl, C., & Solomon, Z. (2011). Shared and unique predictors of post-traumatic growth and distress. *Journal of Clinical Psychology, 67*, 241–252. doi: 10.1002/jclp.20747

Dunn, J., Occhipinti, S., Campbell, A., Ferguson, M., & Chambers, S. K. (2011). Benefit finding after Cancer: The role of optimism, intrusive thinking and social environment. *Journal of Health Psychology, 16*, 169-177. doi: 10.1177/1359105310371555

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. doi: 10.1521/psyc.2008.71.4.359

Frazier, P., Conlon, A., & Glaser, T. (2001). Positive and negative life changes following sexual assault. *Journal of Consulting and Clinical Psychology, 69*, 1048-4055. doi: 10.1037/0022-006X.69.6.1048

Frazier, P., & Kaler, M. E. (2006). Assessing the validity of self-reported stress-related growth. *Journal of Consulting and Clinical Psychology, 74,* 859-869. doi: 10.1037/0022-006X.74.5.859

Frazier, P., Tennen, H. Gavian, M., Park, C., Tomich, P., & Tashiro, T. (2009). Does self-reported posttraumatic growth reflect genuine positive change? *Psychological Science, 20*, 912-919. doi: 10.1111/j.1467-9280.2009.02381.x

Helgeson, V. S. (2010). Corroboration of growth following breast cancer: Ten years later. *Journal of Social and Clinical Psychology, 29,* 546-574. doi: 10.1521/jscp.2010.29.5.546

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology, 74*, 797-816. doi: 10.1037/0022-006X.74.5.797

Ho, S.M.Y., Chu, K. W., & Yiu, J. (2008). The relationship between explanatory style and posttraumatic growth after bereavement in a non-clinical sample. *Death Studies, 32*, 461-478. doi: 10.1080/07481180801974760

Janoff-Bulman, R. (1989). Assumptive worlds and the stress of traumatic events: Applications of the schema construct. *Social Cognition: Stress, Coping, and Social Cognition, 7*, 113-136. doi: 10.1521/soco.1989.7.2.113

Janoff-Bulman, R. (1992). *Shattered assumptions.* New York: The Free Press.

Janoff-Bulman, R. (2004). Posttraumatic growth: Three explanatory models. *Psychological Inquiry, 15*, 30-34.

Joseph, S. (2010). *What doesn't kill us: The new psychology of posttraumatic growth.* New York: Basic Books.

Joseph, S., & Linley, P. A. (2005). Positive adjustment to threatening events: An organismic valuing theory of growth through adversity. *Review of General Psychology, 9*, 262-280. doi:10.1037/1089-2680.9.3.262

Joseph, S., Murphy, D., & Regel, S. (2012). An affective-cognitive processing model of post-traumatic growth. *Clinical Psychology and Psychotherapy, 19*, 316-325. doi: 10.1002/cpp.1798

Kastenmuller, A., Greitemeyer, T., Epp, D., Frey, D., & Fischer, P. (2012). Posttraumatic growth: why do people grow from their trauma? *Anxiety, Stress & Coping: An International Journal, 25*, 477-489. doi: 10.1080/10615806.2011.571770

Kleim, B., & Ehlers, A. (2009). Evidence for a curvilinear relationship between posttraumatic growth and posttraumatic depression and PTSD in assault survivors. *Journal of Traumatic Stress, 22*, 45-52. doi: 10.1002/jts.20378

Konrad, S. C. (2006): Posttraumatic growth in mothers of children with acquired disabilities. *Journal of Loss and Trauma: International Perspectives on Stress & Coping, 11*, 101-113. doi.org/10.1080/15325020500358274

Kramer, S. (2010). Stacey Kramer: The best gift I ever survived [Video file]. Retrieved from http://www.ted.com/talks/stacey_kramer_the_best_gift_i_ever_survived.html

Laufer, A., & Solomon Z. (2006). Posttraumatic symptoms and posttraumatic growth among Israeli youth exposed to terror incidents. *Journal of Social and Clinical Psychology, 25*, 429-447. doi: 10.1521/jscp.2006.25.4.429

Lechner, S. C., & Antoni, M. H. (2004). Posttraumatic growth and group-based interventions for persons dealing with cancer: What have we learned so far? *Psychological Inquiry, 15*, 35-41.

Lechner, S. C., Carver, C. S., Antoni, M. H., Weaver, K. W., & Phillips, K. M. (2006). Curvilinear associations between benefit finding and psychological adjustment to breast cancer. *Journal of Consulting and Clinical Psychology, 24*, 828-840. doi:10.1023/B:JOTS.0000014671.27856.7e

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17,* 11-21. doi: 10.1023/B:JOTS.0000014671.27856.7e

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.

McFarland, C., & Alvaro, C. (2000). The impact of motivation on temporal comparisons: coping with traumatic events by perceiving personal growth. *Journal of Personality and Social Psychology, 79*, 327-343. doi: 10.1037/0022-3514.79.3.327

McMillen, J. C. (2004). Posttraumatic growth: What's it all about? *Psychological Inquiry*, *15*, 48–52.

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.doi: 10.1093/swr/22.3.173

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: Research on Gender, Behavior, and Policy, 1*, 121-142.

Park, C. L. (2010). Making sense of the meaning literature: an integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin, 136*, 257-301. doi: 10.1037/a0018301

Park, C. L., Aldwin, C. M., Fenster, J. R., & Snyder, L. B. (2008). Pathways to posttraumatic growth versus posttraumatic stress: Coping and emotional reactions following the September 11, 2001, Terrorist Attacks. *American Journal of Orthopsychiatry, 78*, 300-312. doi: 10.1037/a0014054

Park, C. L., & Blank, T. O. (2012). Associations of positive and negative life changes with well-being in young-and middle aged adult cancer survivors. *Psychology & Health, 27,* 412-429. doi:10.1080/08870446.2011.586033

Park, C. L., Cohen, L. H., & Murch, R. (1996). Assessment and prediction of stress related growth. *Journal of Personality, 64*, 71-105. doi: 10.1111/j.1467-6494.1996.tb00815.x

Park, C. L., & Fenster, J. R. (2004). Stress-related growth: Predictors of occurrence and correlates with psychological adjustment. *Journal of Social and Clinical Psychology, 23*, 195-215. doi: 10.1521/jscp.23.2.195.31019

Park, C. L., & Helgeson, V. S. (2006). Introduction to the Special Section: Growth following highly stressful live events-Current Status and further directions. *Journal of Consulting and Counseling Psychology, 74*, 791-796. doi: 10.1037/0022-006X.74.5.791

Prati, G., & Pietrantoni, L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: A meta-analysis. *Journal of Loss and Trauma*, *14*, 364-388. doi:10.1080/15325020902724271

Schroevers, M. J., & Teo, I. (2008). The report of posttraumatic growth in Malaysian cancer patients: relationships with psychological distress and coping strategies. *Psycho-Oncology, 17*, 1239-1246. doi: 10.1002/pon.1366

Sears, S. R., Stanton, A. L., & Danoff-Burg, S. (2003). The yellow brick road and the Emerald City: Benefit finding, positive reappraisal coping, and posttraumatic growth in women with early-stage breast cancer. *Journal of Consulting and Clinical Psychology, 22*, 487-497. doi: 10.1037/0278-6133.22.5.487

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5-14. doi: 10.1037/0003-066X.55.1.5

Shakespeare-Finch, J., & Copping, A. (2006): A grounded theory approach to understanding cultural differences in posttraumatic growth. *Journal of Loss and Trauma: International Perspectives on Stress & Coping*, *11*, 355-371. doi: 10.1080/15325020600671949

Taku, K., Calhoun, L.G., Tedeschi, R.G., Gil-Rivas, V., Kilmer, R. P., & Cann, A. (2007). Examining posttraumatic growth among Japanese university students. *Anxiety, Stress & Coping: An International Journal, 20*, 353-367. doi:10.1080/10615800701295007

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: An International Journal, 22*, 129-136. doi:10.1080/10615800802317841

Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38*, 1161-1173. doi: 10.1037/0003-066X.38.11.1161

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.doi: 10.1007/BF02103658

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry, 15*, 1-18. doi:10.1207/s15327965pli1501_01

Tomich, P. L., & Helgeson, V. S. (2002). Five years later: A cross-sectional comparison of breast cancer survivors with healthy women. *Psycho-Oncology, 11*, 154-169. doi: 10.1002/pon.570

Tomich, P. L., & Helgeson, V. S. (2012). Posttraumatic growth following cancer: Links to quality of life. *Journal of Traumatic Stress, 25*, 567-573. doi: 10.1002/jts.21738

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. doi: 10.1037/a0024204

Vázquez, C., Pérez-Sales, P., & Ochoa, C. (in press). Posttraumatic growth: challenges from a cross-cultural viewpoint. In G. A. Fava and C. Ruini (Eds.), *Increasing Psychological Well-Being across Cultures*. NY: Springer.

Wagner, B., Knaevelsrud, C., & Maercker, A. (2007). Post-traumatic growth and optimism as outcomes of an internet-based intervention for complicated grief. *Cognitive Behaviour Therapy, 36*, 156-161. doi: 10.1080/16506070701339713

Weiss, T. (2002). Posttraumatic growth in women with breast cancer and their husbands. *Journal of Psychosocial Oncology, 20*, 65-80. doi: 10.1300/J077v20n02_04

Wortman, C. B. (2004). Posttraumatic growth: Progress and problems. *Psychological Inquiry, 15*, 81-90.

Yanez, B. R., Stanton, A. L., Hoyt, M. A., Tennen, H., & Lechner, S. (2011). Understanding perceptions of benefit following adversity: how do distinct assessments of growth relate to coping and adjustment to stressful events? *Journal of Social and Clinical Psychology, 30*, 699-721. doi: 10.1521/jscp.2011.30.7.699

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. doi.org/10.1016/j.cpr.2006.01.008