

AN EXAMINATION OF POSTTRAUMATIC GROWTH AND POSTTRAUMATIC DEPRECIATION: TWO EXPLORATORY STUDIES

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Will people report both posttraumatic growth and depreciation following a highly stressful event? Using the Posttraumatic Growth Inventory as the measure of growth, two studies compared responses to equivalent items designed to assess depreciation. Both types of change were reported, but growth was reported at much higher levels, and there was no correlation between growth and depreciation. Small order and gender differences were found when the items were grouped into two separate sets, but not when equivalent items were paired. People experience both growth and depreciation on the same dimensions following a stressful event. Implications of these studies are discussed.

An area of great current interest is the experience of positive change that many persons report arising from their struggle with highly stressful events. Two of the most widely used instruments designed to assess this experience are the Stress-Related Growth Scale (*SRGS*) (Park, Cohen, & Murch, 1996) and the Posttraumatic Growth Inventory (*PTGI*) (Tedeschi & Calhoun, 1996). Although there is some indication that part of the variance in the responses to such scales may be associated with self-enhancing biases (McFarland & Alvaro, 2000; Zoellner & Maercker, 2006), significant evidence exists for the validity of the scales. For example, responses on the scales are reliably correlated with growth observed by others close to the survivor (Park et al., 1996; Weiss, 2002), the scales do not correlate with measures of social desirability (Tedeschi & Calhoun, 1996; Weinrib, Rothrock, Johnsen,

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& Lutgendorf, 2006), significant distortions in reports of positive change appear to occur in only a small minority of respondents (Dohrenwend et al., 2004), and reports of growth are correlated with physiological changes (Milam, 2004; Rabe, Zoellner, Maercker, & Karl, 2006).

However, one potential limitation of both the SRGS and the PTGI is that they only allow respondents to indicate the degree to which they have experienced a variety of personal changes that are assumed to be positive. Neither scale allows respondents to report negative experiences, a characteristic that has been suggested as problematic because this focus on the positive may enhance the likelihood of a positive response bias (Tomich & Helgeson, 2004; Park & Lechner, 2006), inadvertently leading to overly positive self-reports. One possible solution to this problem would be to make individual items bipolar, allowing the item to be rated in a positive or a negative direction so respondents could characterize each particular change as representing a positive change, growth, or a negative change, what we have termed depreciation (Park & Lechner, 2006). However, there are also problems inherent with this approach (Tomich & Helgeson, 2004), since the respondent is forced to characterize change in an area as *either* growth *or* depreciation, not allowing for the possibility, which seems to characterize the real experience of persons facing a crisis, that the presence of gains can coexist with losses (Hobfoll, 1989; Tedeschi & Calhoun, 2004). The bipolar and dichotomous options would not allow the individual to report both growth and depreciation experiences in the same domain, a restriction that creates a different potential bias affecting the interpretation of the person's experience.

Since there are problems with the use of bipolar and dichotomous items, a solution to the potential problem created by scales that include only positive posttraumatic changes is to "include both positive and negative effects" (Tomich & Helgeson, 2004, p. 22) in the assessment. Good scales have been developed that measure both positive and negative effects (e.g., Joseph et al., 2005; Joseph, Williams, & Yule, 1993; McMillen & Fisher, 1998). For example, the Changes in Outlook Questionnaire (Joseph et al., 1993), developed using the responses of survivors of a shipping disaster, contains 26 items, 11 assessing positive changes (e.g., "I live every day to the full now") and 15 assessing negative changes (e.g., "I am less tolerant of others now"). The scale has good internal

consistency, and the positive items are reliably correlated with other measures of perceived growth. Although the scale does include items for reporting both positive and negative changes, *the items do not tap identical dimensions*, making the positive items still vulnerable to the same criticism directed at scales that contain exclusively positive changes, that is, individuals do not have the option to report depreciation in the same domains semantically tapped by the growth items.

It has been well established that people exposed to highly stressful events can experience significant psychological distress, at least for a time, and that some persons develop significant psychiatric disorders (Hodgkinson & Stewart, 1991; Keane, Marshall, & Taft, 2006; Raphael, 1986). There already is, then, a very large body of data on the ways in which exposure to life crises may lead to a sense of depreciation in some aspects of life. But, in addition, data support the experience of positive changes, or posttraumatic growth, from the struggle with these same stressors and losses. The unanswered question is what happens when individuals are given the opportunity to report both growth and depreciation *in the same kinds of life domains*?

At first glance, asking individuals to report both growth and depreciation in the same domains may seem paradoxical—how can people experience both growth and depreciation in the same area due to the same experience? Perhaps they will not; however, the data suggest that this can indeed be the case, and it is probably typical of human responses to major stressors (Park & Lechner, 2006; Tedeschi & Calhoun, 1996). A major life crisis may lead one to develop, for example, closer relationships with some people but also to experience depreciation in relationships with other people. Although some may question this interpretation of such data, the issue is ultimately an empirical one that can readily be evaluated. When clearly given the opportunity to indicate, independently, both posttraumatic growth and posttraumatic depreciation, in the same domains, what will people report? If they do, as expected, indicate both types of change, two additional questions become relevant. Will people report more growth or more depreciation when they are asked about the impact of a single event, and what is the relationship between reports of posttraumatic growth and posttraumatic depreciation? Are they independent dimensions that are uncorrelated, or do they covary in some way?

In seeking an empirical answer to these questions, one concern that must be addressed is the potential impact of being forced to consider both growth and depreciation experiences. If items are designed to tap similar dimensions, it is possible that the sequence in which growth and depreciation items are presented may affect responses. Concentrating on your experience of growth may lead you to perceive your depreciation differently, or vice versa. An assessment of the influence of order effects is important, since it is possible that results can be affected by the order in which items are presented.

The two investigations reported here represent an exploratory step to expand the measurement and understanding of post-traumatic personal changes, by examining the consequences of allowing participants to report both growth and depreciation in the same psychological domains. To our knowledge, these are the first studies that have attempted to assess both growth from the struggle with a major life crisis, and the corresponding depreciation, in the same areas. These two studies were designed to seek answers to four general questions. First, when provided with the opportunity to report both growth and depreciation in the very same domain, will people report both types of experiences? Second, if both types of changes are reported, will there be a difference in amount of growth compared with depreciation? Third, what is the relationship between the degree of posttraumatic growth and of depreciation? Fourth, what are the consequences, if any, of the order in which the growth and the depreciation items are presented? If people do experience both growth and depreciation at the same time, this could have important implications for understanding psychological responses following stressful experiences.

Study 1

Participants

Participants were 286 undergraduate students enrolled in a large public university in the southeastern United States. Seventy-nine percent ($n = 226$) were women and 21% were men ($n = 60$), and ages ranged from 18 to 54 years ($M = 22.0$, $SD = 7.4$). Most were single (87%); 73% were Caucasian, 15% were African American,

5% were Asian American, 3% were Latino/Hispanic, and the remainder reported their ethnic status as "other." Self-reported religious affiliations included 50% mainline Protestants (e.g., Presbyterian, Lutheran, Baptist), 15% Catholic, 10% nondenominational Christian, and the remainder included Jewish, Muslim, "other," and no religion. All participants reported on the effects of a single, highly stressful event. Mean number of months since the event was 14.8 ($SD = 10.7$).

The events included a broad range of life experiences, for example, death of a loved one, motor vehicle accidents, serious medical issues, and serious relationship issues. All events were rated above 3 on a 7-point scale not at all, 1–7 = extremely stressful), with a mean stressfulness rating "at the time" of the event of 6.18 ($SD = .88$).

Measures

LIFE EVENTS REPORT

This measure was used to assess self-reported exposure to highly stressful events, and it was based on items from the inventory developed by Norris (1990). Respondents were asked to briefly describe the most stressful event they had experienced "in the last 3 years," to indicate how far in the past the event had occurred, and to rate the stressfulness of the event (1 = not at all stressful, 7 = extremely stressful) "at the time it happened."

POSTTRAUMATIC GROWTH INVENTORY (PTGI)

This 21-item scale is designed to measure the positive changes experienced as a result of the struggle with major life stressors (Tedeschi & Calhoun, 1996). It has good internal consistency, acceptable test-retest reliability over 2 months (.76), and it is not correlated with measures of social desirability. Responses are provided on a 6-point scale ranging from "I did not experience this change" (0) to "I experienced this change to a very great degree" (5). Scores on the PTGI have been found to cluster into five factors (Morris, Shakespeare-Finch, Rieck, & Newbery, 2005; Taku, Cann, Calhoun, & Tedeschi, 2008; Tedeschi & Calhoun, 1996) that have been labeled *Relating to Others* (e.g., having compassion for others), *New Possibilities* (e.g., "I developed new interests"), *Personal Strength* (e.g., "I discovered that I was stronger than I

thought I was”), *Spiritual Change* (e.g., a better understanding of spiritual matters), and *Appreciation of Life* (e.g., an appreciation for the value of my own life).

POSTTRAUMATIC DEPRECIATION

This 21-item measure was developed to assess depreciation, with items designed to parallel the original items from the PTGI. The goal was to create a measure that would allow respondents to report depreciation in the same domains in which they report growth on the PTGI. These items were developed through the following process: (a) For items where the strategy was appropriate, researchers identified antonyms (e.g., “I appreciate each day more/less”) to convey the negative alternative to each of the original PTGI items, and where simple antonyms did not work, items were created that conveyed a meaning indicating depreciation (e.g., “I established a new path for my life” vs. “I have a less clear path for my life”); (b) preliminary versions of the negatively worded items were shown to experts in scale development and to graduate students in psychology; and (c) following multiple alterations in wording based on feedback received in the previous step, the negatively worded items were pilot tested in samples of volunteer undergraduate students, and participants reported no difficulty understanding the meaning of the 21 negatively worded PTGI items. Examples of depreciation items include “I am less willing to express my emotions” and “I have a weaker religious faith.”

The assumption here, reflecting the data on what individuals describe from their experience with crisis and loss (Neimeyer, 2001), is that persons can experience both growth and depreciation in the same area, so asking for ratings that reflect both growth and depreciation, in the same domain, reflects the actual experience of many people. For example, an individual can experience growth in one area of religious life (“*I feel closer to God*”) and depreciation in another area of religious life (“*I really do not accept a lot of doctrine anymore*”).

The same response scale was used with the depreciation items as was used with the PTGI. Instructions given to participants clearly indicated that individuals can experience both positive and negative changes coming from the struggle with the same event, and that the respondent could report no changes, changes

in only a positive or negative direction, or both positive and negative changes to some degree on each of the appropriate items. In this first study, to assess for any differences in responding to the growth and depreciation items, participants were asked to rate the ease or difficulty they had in deciding on their answer to each item on both the original PTGI and the posttraumatic depreciation items on a 6-point Likert scale (0 = *the answer came quickly to mind*, 5 = *I had to think a lot about the question*).

Procedure

Participants were volunteers recruited from an introductory course in psychology who received course credit. They were asked to focus on the stressful event they had reported on the Life Events Report and to complete the two scales. *For this study, the original 21-item PTGI was presented intact, and a separate 21-item scale including the posttraumatic depreciation items was also presented, with equivalent depreciation items in the same sequence as on the original PTGI.*

Participants completed a sheet of demographic information, the Life Events Report, and then the PTGI scales in one of two sequences: original PTGI first followed by the 21 negative items or original PTGI after the depreciation items. The two sequences were randomly assigned to participants.

Results

A first step was to assess the internal reliabilities of the PTGI and of the depreciation items. For the PTGI, Cronbach alphas were .90 for the whole scale, and for the five factors reliability coefficients ranged from .72 for Personal Strength to .85 for Spiritual Change. For the groups of depreciation items, Cronbach alpha was .89 for the whole scale, and reliabilities on the depreciation items corresponding to the factors on the PTGI ranged from .59 for Appreciation of Life to .84 for New Possibilities.

An examination of the mean ratings for difficulty of item endorsement indicated that respondents reported very little difficulty overall with either set of items, but items on the PTGI were rated as requiring slightly more thought to answer ($M = 0.9$,

$SD = 0.7$) than the depreciation items ($M = 0.7$, $SD = 0.7$), $t(279) = 6.8$, $p < .001$ (95% $CI = .18$ to $.32$).

Next, we assessed whether or not participants would actually report change in both growth and depreciation on matched items representing equivalent content. For each of the 21 pairs of items from the two scales, we calculated the percentage of participants who reported at least some change *on both items*. Across the 21 pairs of items, the mean percentage was 27%, with a range from 11% to 47%. In other words, on average, across the 21 item pairs, over one quarter of the respondents felt that they had experienced some amount of change in both growth and depreciation in the domain tapped by the item. Clearly, these participants were not hesitant to express both positive and negative change in the same area.

A next step was the examination of the relationship between overall scores on the PTGI and on the depreciation items. There was no reliable correlation between total scores on the PTGI and total scores on depreciation, $r(284) = .05$, $p = .38$, indicating that changes in growth and depreciation were independent.

In this study, the two scales, PTGI and posttraumatic depreciation, were presented as separate 21-item scales. To assess possible effects of order, gender differences, and differences across type of change (growth vs. depreciation), a Gender \times Order (PTGI first or second) \times Type of Change (growth vs. depreciation) mixed design analysis of variance was conducted using total scores on the 21-item scales as the dependent variable. The type of change main effect, $F(1, 282) = 309.69$, $p < .001$, $partial\ eta^2 = .52$, was significant, as were the interactions involving type of change and order, $F(1, 282) = 9.48$, $p = .002$, $partial\ eta^2 = .03$, and type of change and gender, $F(1, 282) = 7.96$, $p = .005$, $partial\ eta^2 = .03$. The gender main effect, $F(1, 282) = 15.82$, $p < .001$, $partial\ eta^2 = .05$, also was significant, but it may be better understood by looking at the Type of Change \times Gender interaction, which separates the two types of change, since women scored significantly higher than men for growth but not depreciation. The means reported are estimated marginal means, because of the unbalanced design due to differences in the numbers of women and men in the sample.

Total scores were higher for growth (the original PTGI; $M = 47.94$) than for depreciation ($M = 16.24$). The interaction of change type with order, although accounting for very little variance, indicated that scores on the original PTGI were higher when

it was presented first ($M = 50.29$) than when it was second ($M = 45.59$), $t(282) = 2.16$, $p < .05$, and posttraumatic depreciation was higher ($M = 17.59$) when it came first than when it was second ($M = 14.89$), $t(282) = 4.20$, $p < .05$. The Gender \times Type of Change interaction also accounted for a very small percentage of variance, and it suggests that on the original PTGI women ($M = 54.37$) scored higher than men ($M = 41.51$), $t(282) = 6.18$, $p < .05$, while gender differences were not significant for posttraumatic depreciation (women, $M = 17.59$; men, $M = 14.89$), $t(282) = 1.86$, $p > .05$.

Study 2

Participants

Participants included 48 men and 136 women from a large public university in the southeastern United States. Although most were undergraduate students in psychology, 48 were undergraduates in other departments, 7 were graduate students, and 12 were faculty or staff. Their ages ranged from 18 to 62 years ($M = 22.8$, $SD = 7.4$), 86% were single, 77% were Caucasian, 12% were African American, 4% were Asian American, 2% were Latino/Hispanic, and the remainder reported "other." Religious affiliations included 43% mainline Protestants (e.g., Presbyterian, Lutheran, Baptist), 17% Catholic, 19% nondenominational Christian, and the remainder included Jewish, Muslim, "other," and no religion.

Stressful events included death of a loved one, school difficulties, intimate relationship difficulties, and serious medical issues. All ratings of stressfulness of the event were above 3 on a 7-point scale (1 = not at all stressful, 7 = extremely stressful), with a mean rating of stressfulness "at the time" the event occurred of 6.12 ($SD = .85$).

Measures

The *Life Events Report* was once again used to assess self-reports of past stressful events. The original PTGI and the same 21 depreciation items from Study 1 were also used in this study. Respondents were asked to focus on the stressful event they had reported on the Life Events Report. *For this study, the individual*

items of the PTGI and posttraumatic depreciation were paired, and some participants received the 42 items with the negative item first in each pair and other participants received the original PTGI item first in each pair. Order of positive or negative items was determined randomly.

Procedure

Participants were recruited in a variety of ways. Undergraduate students in psychology participated to fulfill a course requirement, and others volunteered in response to flyers posted on campus and e-mails sent to department chairs asking for participants. Participants completed a sheet of demographic information, the Life Events Report, and then one form of the 42-item measure.

Results

In this study, internal reliabilities for the PTGI were good (Cronbachs alpha = .89), and for the five factors reliability coefficients ranged from .67 for Appreciation of Life to .82 for Relating to Others and Spiritual Change. For the depreciation items overall reliability was good (Cronbachs alpha = .90), and five-factors reliability coefficients ranged from .64 for Appreciation of Life to .83 for Relating to Others.

Once again, we found that participants were willing to report changes in both growth and depreciation on the matched items even when the paired items were presented together. On average, across the 21 item pairs, 27% of participants reported some change on both dimensions on matched items, with a range from 10% to 52% on specific item pairs. Also replicated with this second study was the lack of a correlation between the total scores on the PTGI items and the depreciation items, $r(182) = .04$, $p = .63$.

For Study 2, items tapping the same content from the two forms were paired, with some participants responding to the original PTGI item first and some responding to the depreciation item first in each pair. A three-way mixed-design analysis of variance, Gender \times Type of Change \times Order (original PTGI item first or negative item first in each pair), on total scores indicated that only the main effect, for type of change, reached statistical significance. Scores on the original PTGI ($M = 55.52$) were once again

significantly higher than those on the depreciation items ($M = 16.82$), $F(1, 180) = 317.55$, $p < .001$, $partial\ eta^2 = .64$. No other main effects or interactions reached statistical significance.

Discussion

Two studies were conducted to investigate the implications of allowing individuals, describing responses to stressful events, the opportunity to report both posttraumatic growth and depreciation in the same areas. The findings suggest that individuals who experience significant stressors may indeed simultaneously report depreciation in the same domains in which they report posttraumatic growth. These findings, although indicating that both growth and depreciation do occur, also provide empirical support for the argument that forcing respondents to code changes as *either* growth *or* depreciation, as would be the case with bipolar items, will lead to loss of information. As the literature on responses to losses and highly stressful events has indicated, individuals tend to report that the struggle to adapt produces both positive and negative changes (Harvey, Barnett, & Overstreet, 2004; Low, Stanton, Thompson, Kwan, & Ganz, 2006; Tomich & Helgeson, 2004). If scales assessing perceived benefits are going to include the option of reporting both growth and depreciation, the scales should contain both kinds of items, rather than bipolar items, since individuals can experience both growth and depreciation in the same domain (Park & Lechner, 2006; Tedeschi & Calhoun, 1996; Tomich & Helgeson, 2004).

Additional support for the importance of including separate positive and negative items is the lack of any correlation between scores reflecting growth and scores indicating depreciation, a result found in both of the present studies. This suggests that reports of depreciation are independent of reports of growth, when the focus is on the same content areas. This finding is different from some results obtained with scales measuring positive and negative changes in somewhat different domains (Linley, Joseph, Cooper, Harris, & Meyer, 2003). These different results suggest that an area for continued investigation is the impact of employing items that reflect, as isomorphically as possible, items assessing both growth and depreciation in the same domains.

Giving participants the option to report both growth and depreciation in the same areas may appear to be paradoxical and somewhat counterintuitive in a purely logical sense. How, for example, can one perceive growth and depreciation in one's personal strengths emerging from the same struggle in dealing with a serious stressor? Clearly, the present results indicate that respondents do not have any difficulty reporting both types of change, even on individual pairs of items that represent changes in the identical domain. People apparently are able to keep separate "scores" for the positive and the negative changes they perceive in themselves, and asking them to respond with a simple sum of their experiences does not capture what they feel has happened.

The finding that participants reported much less depreciation than posttraumatic growth would seem to provide support for the hypothesis that the PTGI, and by inference similar measures of posttraumatic growth (e.g., Stress-Related Growth Scale, Changes in Outlook Questionnaire), are assessing a unique and important aspect of the posttraumatic experience. Losses and major stressors have been repeatedly found to produce, for most people, at least some temporary forms of psychological distress. The present data, particularly the replicated result that growth and depreciation were unrelated measures, suggest that scales measuring self-reported benefits arising from the struggle with crisis appear to be measuring something unique, rather than simply assessing the opposite end of a continuum with posttraumatic distress at the other end.

The findings from the two studies described here suggest that the intuitive assumption that as people report more stress-related growth they will report commensurately less depreciation in that same area (and vice versa) is incorrect. The data reported here suggest that growth and depreciation are independent dimensions, even when the assessment of depreciation is made in the same domains of experience that have been empirically determined to be characteristic of growth. However, it could be the case that reports of growth are negatively associated with reports of negative experiences when the items assessing posttraumatic growth and those assessing posttraumatic depreciation tap *different dimensions* of experience, and where the negative items are derived from the negative posttraumatic experiences of persons facing major stressors. The finding reported by Linley et al. (2003), for example, where items tapping separate positive and negative domains were

found to be negatively correlated, suggests that this could be the case. However, the possibility remains a hypothesis until additional findings confirm it.

Another area for subsequent investigation is the impact of giving respondents both the growth and the depreciation items at the same time. It is possible that having both sets of items might, for example, enhance responses by creating something of a contrast effect. A comparison of responses to the two scales administered together and administered separately would be needed to investigate the impact of presenting both kinds of items at the same time.

The relatively low ratings on depreciation items raise a question about the practical utility of routinely adding depreciation items to the assessment of growth—does adding a set of depreciation items provide enough additional information to justify their use? In practical terms, researchers, particularly those working in the “real world”—in the context of natural disasters, for example—face the need to keep the number of assessments and the number of items in individual inventories manageable. The present data suggest that adding items assessing posttraumatic depreciation can provide some additional information, but the low ratings on depreciation items suggest that the additional data obtained may not outweigh the “costs” of having participants complete the additional items. Clearly, however, this is a question that will best be answered by additional investigations that are able to identify the potentially distinct correlates of the experiences of growth and depreciation.

The preliminary nature of the current findings requires caution in drawing inferences for clinical work, so the following suggestions must be regarded as tentative. The present findings support what scholars in the area have maintained (Calhoun & Tedeschi, 1999; Linley & Joseph, 2004; Park, 1998; Wortman, 2004)—that it is important for clinicians, even while attending to potential themes of growth in the experience of their clients, to remember that there may be negative changes in the very same areas in which their clients are reporting growth. Taking this suggestion one step farther, clinicians may need to listen for and perhaps probe for the presence of negative changes in the same areas in which research, or their clients’ reports, suggests the possibility of posttraumatic growth.

Although the current findings provide some intriguing bases for additional work in the area, there are a variety of limitations that should be noted. First, the respondents were describing a variety of losses and stressors, not all of which would meet the criteria for trauma required by diagnostic manuals (American Psychiatric Association, 2000). Second, although samples of university students are more representative of the general population than is often assumed (Vrana & Lauerterbach, 1994), the participants in this study may not have reflected some of the characteristics of the broader population. Third, the posttraumatic depreciation items developed for this study, in spite of their very good internal reliability, have not been subjected to the necessary evaluations of scale construction, and cannot yet be regarded as an independent inventory. The present findings with depreciation items must be regarded as suggestive, but perhaps they can provide a foundation for further investigation of posttraumatic depreciation.

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