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Posttraumatic Growth and Depreciation as Independent Experiences and Predictors of Well-Being

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Positive changes (posttraumatic growth [PTG]) and negative changes (posttraumatic depreciation [PTD]) were assessed using the PTGI-42 with persons reporting changes from a stressful event. PTG and PTD were uncorrelated, and PTG was much greater than PTD. PTG was positively related to disruption of core beliefs and recent deliberate rumination and negatively related to recent intrusive rumination. PTD was positively related to intrusive rumination. Quality of life and meaning in one's life were positively related to PTG, negatively related to PTD, and an interaction indicated that PTG moderated the impact of PTD on both, indicating that PTG and PTD may separately contribute to current well-being.

The view that the struggle with major life crises can lead to significant positive transformations is ancient, but the systematic study of this phenomenon, posttraumatic growth (PTG), is much more recent (Affleck & Tennen, 1996; Caplan, 1964; Linley & Joseph, 2004; Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1995; Yalom, 1980). There are now more than 300 published papers in this area, but many questions remain about the variety of changes possible in the aftermath of a highly stressful experience. One limitation identified in the research on posttraumatic changes (Park &

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Lechner, 2006) is that the scales developed to measure posttraumatic growth (Tedeschi & Calhoun, 1996) and related constructs (McMillen, Smith, & Fisher, 1997; Park et al., 1996) have, with some exceptions (Joseph, Williams, & Yule, 1993), focused only on the possible positive outcomes of the struggle (Park et al., 1996; Tedeschi & Calhoun, 1996). Thus, the measures have not allowed respondents to report possible negative posttraumatic changes that also may result from their efforts to deal with stressful events. In order to better understand the phenomenon of posttraumatic transformation, it seems desirable to allow respondents to report negative changes, especially as they may occur in the same domains in which people also typically report growth (Park & Lechner, 2006; Morris, Shakespeare-Finch, Rieck, & Newbery, 2005; Taku, Cann, Calhoun, & Tedeschi, 2008).

We are aware of only one published study (Baker, Kelly, Calhoun, Cann, & Tedeschi, 2008) that has examined both posttraumatic growth and the corresponding negative changes, posttraumatic depreciation (PTD), in the same domains. Although there are studies that have simultaneously examined positive and negative consequences of the struggle with major life crises (Hawley & Joseph, 2008; Joseph et al., 1993; Park, Aldwin, Fenster, & Snyder, 2008), those studies have examined self-reported positive and negative changes in different domains. Baker et al. (2008) created an expanded version of the commonly used Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) that allowed respondents to indicate both positive changes, growth (e.g., I appreciate each day more), and negative changes, depreciation (e.g., I appreciate each day less), in the same areas. In a sample of individuals reporting on a variety of different highly stressful events, they found that endorsements of PTG were significantly higher than those for PTD and that the two dimensions were statistically independent; however, as yet there have been no reports of attempts to replicate those findings. Evidence from studies that have examined posttraumatic stress and growth separately (Park et al., 2008) suggest that each may have unique correlates. One purpose of the present study, then, was to examine the relationships between PTG and PTD to determine if the previously reported independence of the two changes would be replicated, and if PTG and PTD would have different patterns of correlations with other relevant variables, such as quality of life and meaning in life.

An additional issue in the research on the growth that may emerge from the struggle with significant life adversity is the degree to which it is related to, and in a sense corroborated by, positive changes in other life domains (Affleck & Tennen, 2009). The existing research on the relationship of growth to such factors as adjustment and well-being is somewhat inconsistent (Park & Lechner, 2006), and there are no reports of the relationships between growth and other variables, and between depreciation and those same variables, in the same sample. Although numerous studies have now reported on the relationships between benefit finding, stress-related growth, and PTG, on the one

hand, and measures of well-being, on the other, we know of no study that has looked at both PTG and PTD and their relationships to these kinds of variables. Another purpose of the present study was to do just that.

When examining the relationships between PTG and other variables, particularly indicants of psychological well-being, it seems useful to include measures that tap into both hedonic and eudemonic aspects of adjustment (Ryan & Deci, 2001). Hedonic measures focus on the individual's report of levels of feeling good or feeling bad psychologically. Measures that assess quality of life, for example, tend to focus on general levels of satisfaction with life in a variety of domains and represent measures of the hedonic aspects of psychological functioning. Assessment of eudemonic well-being, however, focuses more on the general degree to which the person reports living a full meaningful life (Ryan & Deci, 2001). Although there are studies that have examined the relationship between perceived benefits and some aspects of meaning (Park, Emondson, Fenster, & Blank, 2008), the relationship between this more eudemonic domain of meaning and purpose in life and PTG remains largely unexplored. There are at least two major domains of meaning in life, searching for it and finding it (Frankl, 1963; Frazier, Oishi, & Steger, 2003; Steger, Frazier, Oishi, & Kaler, 2006). Similar to continued unproductive rumination (Watkins, 2008), the continued search for purpose in life would be expected to be negatively related to PTG, while the degree of found meaning and purpose would be expected to be positively related to PTG. It would also seem productive to examine the relationships between meaning and PTD, since there does not seem to have been an examination of these relationships yet.

Some models of the processes associated with understanding trauma and achieving PTG have emphasized the degree to which the disruption of the assumptive world is a key ingredient that sets in motion not only the psychological experience of trauma (Janoff-Bulman, 1992; Linley & Joseph, 2004), but that also can lay the groundwork for subsequent psychological growth (Calhoun & Tedeschi, 2006; Janoff-Bulman, 2006; Tedeschi & Calhoun, 1995, 2004). Although until recently no specific assessment of the experience of disruption of the assumptive world had been included in research on PTG, the limited available research has been supportive of this prediction (Cann et al., 2010). There are scales that can provide assessment of the content of the assumptive world (Janoff-Bulman, 1989), but such scales do not assess the individual's perception of the degree to which the components of the assumptive world are challenged or shattered. Given these limited reports of a relationship, attempts to replicate such findings would seem desirable, and no research has yet examined the possible relationship of disruption of the assumptive world with PTD.

In addition, it is important to evaluate the degree to which disruptions in the assumptive world are uniquely correlated with PTG or PTD, independently of other factors such as rumination and perceived stressfulness of the event, both of which have been found to be correlated with PTG

(Calhoun, Cann, Tedeschi, & McMillen, 2000; Phelps, Williams, Raichle, Turner, & Ehde, 2008). The characteristics of the ruminative process may have a significant impact not only on general psychological responses to stressful events (Watkins, 2008), but also on posttraumatic growth (Phelps et al., 2008). Another purpose of the present study was to examine the degree to which disruption of the assumptive world, rumination about the event, and rated stressfulness of the event would combine to predict PTG and whether they are similarly related to PTD.

The purposes of the present study, then, were as follows. First, we examined PTG and PTD as separate outcomes following a stressful experience. Do the disruption of core beliefs and the ruminative processes that follow have the same relationships in predicting both PTG and PTD, or do the routes to PTG and PTD differ? Second, how are PTG and PTD related to both quality of life outcomes and the sense that one has meaning in one's life? Perhaps the inconsistent findings concerning the relationship of PTG to well-being will be clarified by including PTD as well. Since PTG and PTD have been found to be independent experiences (Baker et al., 2008), perhaps they both contribute to feelings of life satisfaction or well-being.

METHOD

Participants

The participants for this study were recruited from introductory psychology courses. Students in eligible courses completed an online pretest including questions submitted by multiple researchers. One question asked if the student had experienced any of a series of traumatic or highly stressful events, such as death of a loved one or serious personal illness within the past 3 years. When students later accessed the online research participation Web site to volunteer for research, only students answering "yes" to at least one traumatic event could access the current online survey. A total of 123 subjects took the survey, but 5 were subsequently dropped from consideration because they reported the stressfulness of the event when it occurred to be less than a 4 on a 7-point scale (1 = not at all stressful, 7 = extremely stressful). The final sample of 118 participants included 35 males and 83 females. The sample was predominantly Caucasian (68.6%), with 16.1% African American, 6.8% Hispanic, 5.1% Asian, and 3.4% "other." The ages ranged from 18 to 44 years, with a mean age of 20.7 years. The time since the event varied from 0 to 36 months ($M = 15.1$, $SD = 10.8$), and time was not reliably related to any of the study variables.

Participants reported a variety of stressful events, including death of someone close, serious illness of a friend or family member, personal illness or injury, being attacked or robbed, parental divorce, and military deployment. Overall, these events were rated as highly stressful on the 7-point scale described above ($M = 6.21$, $SD = .93$, range = 4–7).

Materials

Demographic and event information

The participants were first asked to provide demographic information (gender, age, ethnicity). They were then asked to briefly describe the most stressful event they had experienced in the last 3 years, indicate how long ago it happened, and rate how stressful it was at the time it happened and how stressful it felt to them currently (1 = not at all, 7 = extremely).

Posttraumatic growth and depreciation

Growth and depreciation were assessed using the Paired Format Posttraumatic Growth Inventory (PTGI-42; Baker et al., 2008), which is a revision of the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). The inventory includes the 21 items from the original PTGI and 21 matched but negatively worded items developed by Baker et al. (2008) to measure posttraumatic depreciation. The instructions indicate that items are presented in pairs and that both types of change can occur as the result of a highly stressful life experience. The participants are asked to indicate the degree to which they experienced the change described by each item using a 6-point scale ranging from 0 ("I did not experience this change as a result of my crisis") to 5 ("I experienced this change to a very great degree as a result of my crisis"). The presentation of the items as pairs encourages participants to consider both types of change, growth and depreciation, at the same time. This also should facilitate their mapping of the two changes onto the same scale. The 21 positive items and the 21 negative items are separately summed to create PTG and PTD composite scores (possible range of 0 to 105). In the development of the scale, the internal reliabilities for both composite scores were at least .89 across two separate samples. Both the growth and depreciation composites were also found to have good internal consistency in the current sample (alpha = 0.94 for the growth items, alpha = 0.92 for the depreciation items). Although no factor analysis was attempted on the current data set, given the limited sample size, the factor structure of the PTGI has been supported through confirmatory factor analyses (Morris et al., 2005; Taku et al., 2008), and the negative items used to assess depreciation were designed to match the PTGI items (Baker et al., 2008).

Rumination

Posttrauma ruminations were assessed using a revised version of the scale described in Calhoun et al. (2000). The scale, intended to capture both intrusive and deliberate rumination, was revised after recent findings indicated some items were not loading on the intrusive or deliberate dimensions well (Taku, Cann, Calhoun, & Tedeschi, 2008). The new scale contains six items to

assess each dimension, with two new deliberate items added and one intrusive item dropped from the original scale and four new intrusive items added. Deliberate items deal with rumination about the event that people engage in purposely, usually to help themselves work though the event. Intrusive items represent rumination that the person does not engage in purposely, and usually involves recurrent, negative thoughts that are unwanted by the individual. In the current study, participants responded to all 12 items in two different time frames, creating four rumination scores. Deliberate and intrusive rumination soon after the event was defined as rumination occurring within 3 weeks after the event, and recent deliberate and intrusive rumination was defined as rumination occurring within the last 3 weeks before filling out the inventory. For each item, the participants indicated how often they experienced that type of rumination as a result of the stressful event on a scale from 0 (not at all) to 3 (often). Scores are reported as means of the six items, so scores can range from 0 to 3. Deliberate and intrusive scores were shown to have good internal consistency in this study (alphas = .80 and .93, respectively).

Satisfaction with life

Satisfaction with life was measured using a slightly revised version of the Quality of Life Index (QLI; Ferrans & Powers, 1985). The original Quality of Life Index contains 35 items designed to measure satisfaction with life over four subscales: Health and Functioning, Social and Economic, Psychological/Spiritual, and Family. For the purpose of this study, the QLI was altered to make it more appropriate for a college population, since it was originally developed for older samples in medical settings. Questions dealing with health care issues and the amount of pain a person was experiencing were omitted. In addition, an item about satisfaction with children was removed, and questions pertaining to marriage or sex were changed to inquire about "romantic life." In addition, an item about "faith in God" was altered to refer to "spirituality." The final index contained 25 items, and participants rated their satisfaction level for the domain described in each item using a scale from 1 (very dissatisfied) to 7 (very satisfied). Scores are reported as means of the 25 items. The original QLI has been shown to have good test-retest reliability, with correlations of .87 after 2 weeks and .81 over 1 month (Ferrans & Powers, 1985). The index has also been shown to have good internal consistency, with Cronbach alpha values ranging from .71 (Robinson-Smith, Johnston, & Allen, 2000) to .99 (Yamada & Santos, 2005). In the current sample, the internal reliability was quite good (alpha = .88).

Meaning in life

The Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006) is a 10-item inventory divided into two subscales, Presence of

Meaning in Life and Search for Meaning in Life. The presence subscale measures the self-reported sense that one's life is currently meaningful, while the search subscale measures the current felt need to find meaning in one's life. Ratings are made using a 7-point scale from 1 (absolutely untrue) to 7 (absolutely true). Scores are reported as means of the five items for each subscale. The MLQ has been found to have good convergent validity with measures such as life satisfaction and positive affect, as well as Cronbach alpha scores of .86 for the presence subscale and .92 for the search subscale. The scale has also been found to have good test-retest reliability (.70 for presence and .73 for search) over a 1-month period (Steger et al., 2006). In the current sample, both subscales had good internal reliability (presence, alpha = .88; search, alpha = .91).

Disruption of core beliefs

The Core Beliefs Inventory (CBI; Cann et al., 2010) is a nine-item inventory designed to assess the extent to which a specific event leads people to examine core assumptions about their world. CBI items, for example, ask if, as the result of a stressful experience, "I seriously examined the degree to which I believe things that happen to people are fair" and "I seriously examined my assumptions concerning why other people think and behave the way that they do." Participants indicate the degree to which they examined that core belief using a 6-point scale from 0 (not at all) to 5 (to a very great degree), and scores are reported as means of the 9 items. This scale has been found to have good internal reliability, with Cronbach alphas ranging from .82 to .90 across three studies (Cann et al., 2010) and a test-retest reliability across 2 months of .69 (Cann et al., 2009). In the present sample, the Cronbach alpha was .88.

Procedure

Students logged on to a research participation Web site where they were presented with a list of available studies. Only students who had indicated that they had experienced a highly stressful event on the pretest could see the current study on their list. Participants completed the inventories online. They first completed the demographic information, followed by the other measures, which were presented in a random order for each participant to avoid order effects.

RESULTS

Descriptive statistics for the study variables, and correlations among them, are provided in Table 1. The levels of growth (PTG) and depreciation

TABLE 1 Descriptive Statistics and Correlations for Predictor and Outcome Variables.

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. PTG	52.36	24.44		.10	.63^{*a}	.17^{a}	.04^{a}	.33^{*a}	.49^{*a}	.20^{a}	.40^{*a}	.25^{*a}	.30^{*a}	.18^{a}
2. PTD	16.38	17.16			.30^{*b}	.21^{a}	.35^{*b}	.29^{*a}	.17^{b}	.60^{*b}	.45^{*a}	−.48^{*b}	−.42^{*b}	.19^{a}
3. CBI	2.92	1.16				.33*	.34*	.41*	.55*	.39*	.48*	−.02	.07	.40*
4. Stress then	6.21	0.93					.44*	.52*	.28*	.30*	.32*	−.15	−.12	.11
5. Stress now	3.43	1.56						.40*	.17	.52*	.30*	−.15	−.14	.17
6. I Rum sa	2.04	0.86							.54*	.50*	.47*	−.23	−.14	.15
7. D Rum sa	1.69	0.62								.39*	.57*	−.05	.02	.30*
8. I Rum rec	0.96	0.86									.72*	−.24*	−.17	.14
9. D Rum rec	1.13	0.74										−.10	−.03	.09
10. QLI	5.16	1.02											.61*	−.15
11. ML-P	4.93	1.28												−.30*
12. ML-S	4.84	1.46												

Note. PTG (posttraumatic growth) and PTD (posttraumatic depreciation) are on a 0–105 scale. CBI (Core Beliefs Inventory) is on a 0–5 scale, with higher scores indicating greater disruption of core beliefs. Stress then and Stress now can vary from 1 (not at all) to 7 (extremely). Rumination scores vary from 0 (never) to 3 (often): I Rum sa = intrusive rumination soon after, D Rum sa = deliberate rumination soon after, I Rum rec = intrusive rumination recently, and D Rum rec = deliberate rumination recently. QLI (Quality of Life Index) scores can range from 1 (very dissatisfied) to 7 (very satisfied). ML-P (Meaning in Life presence) and ML-S (Meaning in Life search) are rated on a scale from 1 (absolutely untrue) to 7 (absolutely true). In comparing the correlations of the various predictors variables with PTG and PTD, if the correlations share a superscript, they are not reliably different from each other at $p < .01$.

$^{*}p < .05$.

(PTD) are similar to those reported by Baker et al. (2008), with growth scores around 50, depreciation in the mid-teens, and significantly higher levels of growth than depreciation reported, $t(117) = 13.72$, $p < .001$. Also consistent with Baker et al. (2008) is the lack of a reliable correlation between PTG and PTD scores. The relationships between PTG and rumination are consistent with the posttraumatic growth model (Calhoun & Tedeschi, 2006). Both styles of rumination should be important for eventual growth in the time soon after the event, but over time deliberate rumination will be more likely to facilitate growth, so recent levels of deliberate rumination should be positively related to growth, while recent intrusive rumination should be negatively related or unrelated. The model does not have predictions for relationships between rumination styles and depreciation. A potentially interesting finding is that depreciation appears to be unrelated to deliberate rumination soon after the event, and recent intrusive rumination is strongly related to depreciation. To the extent that individuals continue to experience the less constructive intrusive thoughts, it appears that higher levels of depreciation are present.

The results for disruption of core beliefs are also consistent with previous research (Cann et al., 2010). Scores on the CBI were found to be reliably related to PTG, while stressfulness of the event at the time it happened was unrelated to PTG. Again, consistent with the posttraumatic

growth model (Calhoun & Tedeschi, 2006), it is the shaking of the assumptive world, not the inherent stressfulness of the event, that begins the processes that ultimately result in PTG. Some events can be quite stressful but do not challenge core beliefs about the world, so PTG would not result. The relationships of the two subscales of the Meaning in Life Questionnaire with the QLI replicate the findings of Steger et al. (2006), which indicated that satisfaction with life is positively related only to the presence of meaning, not the search.

Predicting PTG and PTD

Although the individual bivariate results are consistent with prior reports, the main goal of the current research was to see how the predictors as a group are related to PTG and PTD following a stressful event, and how PTG and PTD may be related to subsequent meaning finding and well-being. First, a regression analysis predicting PTG included disruption of core beliefs, stress at the time of the event, and the four rumination measures as predictors. Note that the rumination items are responded to in two time frames (soon after and recently), so the "recent" ruminations should be thought of as residualized change coefficients. The model was significant (see Table 2) and explained a large percentage of the variance in posttraumatic growth scores. Within the model, individually significant predictors were consistent with expectations; greater disruption of core beliefs and recent deliberate rumination were positively related to growth, while recent intrusive ruminations were negatively related.

PTD was predicted using the same set of variables and, again, the model was significant (see Table 2). In this model, however, the only individually significant predictor was a positive relationship with the level of recent intrusive thoughts. People who report higher levels of posttraumatic depreciation are also continuing to have intrusive ruminations about their stressful experience. Neither disruption of core beliefs nor deliberate rumination contributed significantly to the prediction of PTD.

TABLE 2 Regression Results Predicting Posttraumatic Growth and Posttraumatic Depreciation.

			Rumination soon after		Rumination recently				
Criterion	CBI	Stress Then	Intrusive	Deliberate	Intrusive	Deliberate	F	R^2_{adj}	p
PTG	.534*	−.094	.108	.126	−.258*	.237*	16.04	.44	<.001
PTD	.141	.020	.011	−.188	.552*	.083	11.81	.36	<.001

Note. PTG = posttraumatic growth, PTD = posttraumatic depreciation, CBI = Core Beliefs Inventory.
*$p < .05$.

Predicting Quality of Life and Meaning

Quality of life and meaning in life are outcomes that are often assumed to be related to the posttraumatic growth experience, but the relationships have been inconsistent. The present data allow us to consider two independent predictors of these outcomes, PTG and PTD, as well as the possible interaction between the two. The correlations in Table 1 indicate that both PTG and PTD are related to quality of life and the presence of meaning, but not the search for meaning. However, the simple correlations cannot provide insight into a possible interaction effect. Thus, PTG, PTD, and the interaction term were used in regression models to predict quality of life, presence of meaning, and the search for meaning. PTG and PTD were centered, and the centered variables were used in the regression analyses.

The model predicting quality of life was significant, and PTG, PTD, and their interaction all were significant (see Table 3). As expected, the main effects indicate that quality of life is higher when PTD is lower and when PTG is higher. An examination of the interaction (Figure 1) indicates that with lower levels of PTD, there is little relationship between increases in PTG and increases in quality of life, with quality of life scores generally high. However, with higher levels of PTD, increases in PTG are more strongly related to increases in quality of life. Tests of the simple slopes reveal that when PTD is low, the slope is not reliably different from 0, $t(114) = 1.76$, $p = .08$, but for higher levels of PTD, the slope is significant, $t(114) = 4.04$, $p < .001$.

The model predicting the presence of meaning in life, the sense that one's life does currently have meaning, also was significant, and the pattern of results is nearly identical to those found for quality of life (see Table 3). PTG and PTD were both individually significant, and the interaction was significant. As with quality of life, PTD was negatively related to the experienced presence of meaning in life, and PTG was positively related. The interaction (Figure 2) reveals the same pattern as was found for quality of life. When PTD is low, differences in PTG are essentially unrelated to the presence of meaning; however, when PTD is high, meaning is more strongly

TABLE 3 Regression Results Predicting Quality of Life and Meaning in Life Outcomes.

Criterion	PTG	PTD	PTG × PTD	F	R^2_{adj}	p
QLI	.014**	−.032**	.0004*	20.17	.33	<.001
ML-P	.021**	−.035**	.0006*	17.87	.30	<.001
ML-S	.008	−.016*	−.0004	3.21	.05	.03

Note. QLI = Quality of Life Index, ML-S = search subscale of the Meaning in Life Scale, ML-P = presence subscale of the Meaning in Life Scale, PTG = posttraumatic growth score, PTD = posttraumatic depreciation score. PTG and PTD were centered prior to being entered into the regression model.
*$p < .05$; **$p < .01$.

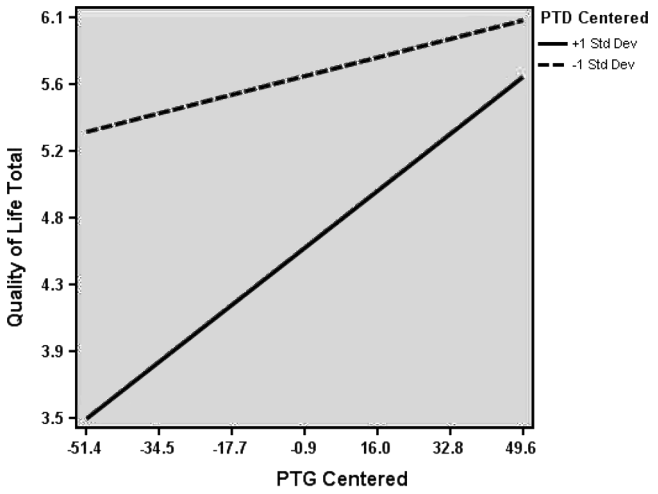

FIGURE 1 Plot of the interaction of PTG and PTD in predicting quality of life.

and positively related to PTG. In this case, tests of the simple slopes were both significant, but when PTD is low, $t(114) = 2.08$, $p = .04$, the lower bound of the 95% confidence interval is very close to 0 (.0005), while the results for higher levels of PTD are clearer, $t(114) = 4.44$, $p < .001$.

The regression analysis on the search for meaning was significant (see Table 3), but the only predictor that was individually significant was PTD, and the model explained a very small percentage of variance. PTD was negatively related to the search for meaning. An examination of the simple correlations (Table 1) suggests that the search for meaning may be more

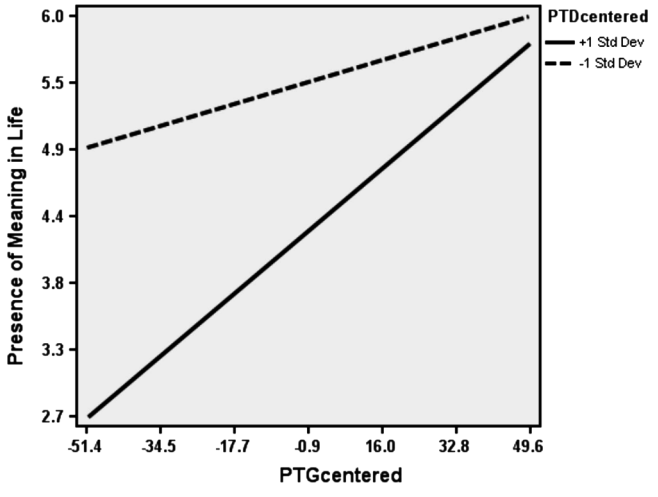

FIGURE 2 Plot of the interaction of PTG and PTD in predicting the presence of meaning.

strongly related to the initial disruption of core beliefs. Logically, this relationship is understandable, since a greater disruption of the assumptive world would likely be associated with a stronger need to find meaning.

DISCUSSION

The first result of note is the replication of the previously reported finding (Baker et al., 2008) that people exposed to life crises report much higher levels of growth than they do of depreciation, when those assessments are made in the same domains. To some extent, these findings suggest that concerns that inventories designed to assess posttraumatic growth, stress-related growth, and related concepts are somehow deficient because they do not assess negative as well as posttraumatic experiences are perhaps a bit overblown; the low levels of endorsement of depreciation items suggest that giving respondents an opportunity to report depreciation may not result in a major gain of information. Nevertheless, participants in both this study and in previous studies (Baker et al., 2008) have reported at least some posttraumatic depreciation, so adding those items does provide additional information that might be related to other outcome variables. The present findings also suggest that, when considering the assessment of negative (e.g., depreciation) posttraumatic responses it is important to carefully distinguish between reports of negative posttraumatic responses generally and negative posttraumatic responses *in the same domains in which growth is assessed*. When the assessment of depreciation is in the same area as the typical domains of posttraumatic growth, respondents report quite low levels of negative experiences.

A second noteworthy finding, supporting an outcome that may seem counterintuitive, is that the results replicate previous reports (Baker at al., 2008) that posttraumatic growth and depreciation are not negatively related, they are not related at all. On the surface it might seem logical to predict that as a positive element goes up, a negative element will go down commensurately; however, the present findings offer additional evidence that growth and depreciation assessed in the same domains are independent experiences. This finding raises the possibility that these two reactions to a highly stressful life experience, PTG and PTD, might be differently associated with variables assumed to predict growth, and they might differentially predict outcome variables assumed to be associated with growth.

One of the main purposes of the current study was to see if PTG and PTD would be predicted by the same variables. A key element in current models of posttraumatic growth (Calhoun & Tedeschi, 2006; Janoff-Bulman, 1992, 2006; Linley & Joseph, 2004) is the expectation that the process that may eventually lead to growth is begun by circumstances that challenge or shatter important elements of the assumptive world. The present findings offer additional support for those predictions; greater disruption of core

beliefs was correlated with PTG, and was found to be a reliable predictor of growth in the regression model. These data are cross-sectional and cannot indicate the direction of effect, but they suggest clear predictions for longitudinal work—early posttraumatic disruptions of the assumptive world should predict later posttraumatic growth.

The disruption of the assumptive world is assumed to trigger ruminative processes that reflect cognitive work aimed toward rebuilding the assumptive world, which in turn can determine, at least in part, eventual growth (Calhoun & Tedeschi, 2006; Linley & Joseph, 2004). The present findings provide cross-sectional confirmation of this prediction as well. The findings, however, provide some qualification to those predictions. Although the degree of recent deliberate ruminations was positively related to posttraumatic growth, when the recent rumination was intrusive the relationship to growth was negative. Current intrusive ruminations may reflect a failure to deal constructively with the challenges brought on by the traumatic experience, either due to avoidance or an inability to find a constructive path to rebuild the assumptive world.

In the first test of how the disruption of world assumptions and rumination are related to depreciation following a stressful experience, the pattern of relationships was clearly different for depreciation. The only significant correlate with PTD was the positive relationship with recent intrusive rumination. Although recent intrusive rumination is negatively associated with PTG, it is positively predictive of PTD. Again, in a cross-sectional design the direction of influence cannot definitively be determined, but it appears that psychological losses, like posttraumatic symptoms, are associated with continued intrusive thoughts about the stressful event.

The lack of a relationship between disruption of the assumptive world and depreciation is intriguing, because the shattering of assumptions often can be a significant element in posttraumatic symptoms (Janoff-Bulman, 1992). A simple explanation may be that posttraumatic depreciation does not directly reflect posttraumatic symptomatology, so such a relationship would not be expected. More intriguingly, perhaps, the finding that the disruption of the assumptive world is strongly correlated with growth, but not with depreciation, suggests that different kinds of processes may be operating to produce growth and depreciation. Depreciation is related to apparent difficulty in moving from intrusive to more deliberate and constructive forms of rumination.

How do experiences of growth and loss relate to one's sense of well-being and a meaningful life? The findings on the relationship between growth and indicators of well-being have been varied (Park & Lechner, 2006). The current findings suggest that a contributor to the inconsistency in findings may be the failure to consider the posttraumatic depreciation that can also result from experiencing a highly stressful event. The sense that growth and depreciation should be considered two ends of a single

continuum of experiences is not supported by the current findings or others where both experiences have been assessed on the same dimensions (Baker et al., 2008). Recognizing that the two experiences are independent implies that they each could be relevant in determining the sense of well-being and meaning in one's life in the aftermath of trauma.

Our results confirm that both PTG and PTD are reliably related to both reports of the quality of one's life and the felt presence of meaning in one's life. These opposing forces, the positive relationship of PTG and the negative relationship of PTD, mean that both may need to be considered to fully appreciate the sense of well-being and meaning an individual currently enjoys. Interestingly, in addition to the reliable independent relationships for PTG and PTG, they also interact in predicting both quality of life and the presence of meaning. For the variables quality of life and presence of meaning, those who reported high levels of posttraumatic depreciation and low levels of posttraumatic growth fared worst. High levels of posttraumatic growth moderated the effect of high posttraumatic depreciation, allowing those experiencing these difficulties to report quality of life and meaning comparable to levels found in those reporting low levels of posttraumatic depreciation. High levels of growth might also provide meaning, allowing for other unpleasant outcomes to not be the entire focus of attention in the aftermath of trauma. Furthermore, these meaningful outcomes may produce behavior (e.g., altruistic initiatives, closer relationships) that may also enhance quality of life.

Although these findings must be considered in the context of the cross-sectional methodology used, they do suggest some important relationships that should be considered in research on changes in the aftermath of trauma. People do report, as independent experiences, both growth and loss following a significant stressful event. These two experiences, PTG and PTD, are predicted by different underlying variables, reflecting potentially different processes that lead to growth and depreciation. Finally, the well-being, or sense of life meaning, a person experiences after dealing with a stressful event can best be understood by understanding both the growth and the depreciation the person has experienced.

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