

A Correlational Test of the Relationship Between Posttraumatic Growth, Religion, and Cognitive Processing

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The present study examined the degree to which event related rumination, a quest orientation to religion, and religious involvement is related to posttraumatic growth. Fifty-four young adults, selected based on prescreening for experience of a traumatic event, completed a measure of event related ruminations, the Quest Scale, an index of religious participation, and the Posttraumatic Growth Inventory. The three subscales of the Quest Scale, the two groups of rumination items (soon after event/ within past two weeks), and the index of religious participation were entered in a standard multiple regression with the total score of the Posttraumatic Growth Inventory as the dependent variable. The degree of rumination soon after the event and the degree of openness to religious change were significantly related to Posttraumatic Growth. Congruent with theoretical predictions, more rumination soon after the event, and greater openness to religious change were related to more posttraumatic growth. Present findings offer some confirmation of theoretical predictions, and also offer clear direction for further research on the relationships of religion, rumination, and posttraumatic growth.

KEY WORDS: trauma; growth; cognitions; religion; posttraumatic.

Posttraumatic growth is the individual's experience of significant positive change arising from the struggle with a major life crisis. The phenomenon has been recognized for centuries, but it is only in recent years that attempts have been made to study it systematically (Affleck & Tennen, 1996; Calhoun & Tedeschi, 1998). Traumatic events produce a significant upheaval in the individual's understanding of the world and the prior worldview may, in many ways, become

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invalidated by the occurrence of loss and tragedy (Calhoun & Tedeschi, 1999; Janoff-Bulman, 1992). Cognitive processing is an important component of the individual's attempt to rebuild the worldview and to adapt to trauma (Greenberg, 1995). Cognitive processing has also been suggested as an important element in the development of posttraumatic growth (Tedeschi & Calhoun, 1995). The present study examined two different domains of cognitive processing—event related rumination and a quest orientation to religious beliefs—and also a third factor, the individual's level of religious participation, as possible predictors of posttraumatic growth.

One domain that has been proposed as important in the experience of growth arising from the struggle with trauma is the extent of rumination about the event (Calhoun & Tedeschi, 1998). There is some lack of consistency in the use of the word "rumination" in the current literature. In the present context, *rumination* "refers to several varieties of recurrent [event related] thinking, including making sense, problem solving, reminiscence, and anticipation" (Martin & Tesser, 1996, p. 192). Persons who have experienced a major crisis tend to think frequently about a variety of aspects of the stressful circumstances in attempts to understand, resolve, and make sense out of what happened (Greenberg, 1995; Martin & Tesser, 1996). Although exclusively negative, self-punitive rumination has an adverse effect on general psychological functioning (Nolen-Hoeksema, McBride, & Larson, 1997), event related rumination that is not exclusively negative may be predictive of posttraumatic growth. Theoretical models of posttraumatic cognitive processing have explicitly suggested that the more an individual ruminates, "chews the cud," about what happened, actively thinking about the circumstances and ways to make sense out of them, the more likely it is that posttraumatic growth will be experienced (Calhoun & Tedeschi, 1998; O'Leary, Alday, & Ickovics, 1998). However, a direct test of this predicted relationship between event related rumination and degree of posttraumatic growth has not yet been made.

A second relevant set of variables is suggested by findings on two aspects of religiousness as related to posttraumatic growth. Religious participation has been shown to be related to posttraumatic growth (Pargament, 1997; Tedeschi & Calhoun, 1995), suggesting that either persons experiencing posttraumatic growth seek out religious experiences, or that their religious participation primes them for spiritual growth (Tedeschi & Calhoun, 1996). Increased religiousness has been reported as an outcome of stressful experiences (Park, Cohen, & Murch, 1996). This increase appears to indicate a certain degree of openness to revise religious schemas, perhaps related to the quest orientation to religion (Batson, Schoenrade, & Ventis, 1993).

The purpose of the present exploratory, cross-sectional study was to examine the degree to which event related rumination, a quest orientation to religion, and religious involvement are related to posttraumatic growth.

Method

Participants

The participants were 54 students who had experienced a major traumatic event (Norris, 1990) within the past 3 years. The trauma experience of university students is comparable to the general population (Bernat, Ronfeldt, Calhoun, & Arias, 1998) and participants were selected based on prescreening of a larger group of 195 students enrolled in the introductory psychology course at a large university in the southeastern United States. They included 35 women and 19 men, with a mean age of 22.5 years; 85% were single and 15% married; 80% were Caucasian, 13% African American, and 7% were Asian or Native Americans. The traumatic events experienced included being the victim of a serious crime (e.g., robbery, mugging, $n = 4$), sudden death of a loved one because of accident, homicide or suicide ($n = 10$), motor vehicle accident resulting in serious injury ($n = 12$), injury or major property loss from a disaster ($n = 2$), home evacuation because of serious hazard ($n = 1$), and a large miscellaneous category of events written in by participants, that included being in combat, in an earthquake, in the crossfire of a gang related shootout, among others ($n = 18$). Mean stressfulness rating for the most recent trauma, about which the participants were responding, was $M = 5.7$, $SD = 1.3$, on a 7-point scale (1 = not at all stressful, 7 = extremely stressful).

Measures

The Traumatic Stress Schedule (Norris, 1990) screens for a personal history of events severe enough to place the person at risk for posttraumatic stress disorder.

The Quest Scale “was designed to measure . . . the degree to which an individual’s religion involves [a] . . . responsive dialogue with existential questions” (Batson, Schoenrade, & Ventis, 1993, p. 169), e.g., “As I grow and change, I expect my religion to grow and change” and “Questions are far more central to my religious experience than answers.” The scale has three subgroupings of items: (a) readiness to face existential questions (Readiness), four items, (b) self-criticism and perception of religious doubt as positive (Doubt), four items, and (c) openness to religious change (Openness), four items. In the present sample, Cronbach’s alpha reliabilities for each of these factors were .69, .77, and .59, respectively.

Rumination related to the traumatic event was measured by using items from several other instruments developed to assess various aspects of posttraumatic cognitive processing. The present set of items was selected to reflect several content areas common in posttraumatic rumination (Calhoun & Tedeschi, 1998; Martin & Tesser, 1996), reflecting both deliberate and intrusive thinking. The items were

focused on the degree to which the individual reported intrusive thoughts (Sanavio, 1988; Zilberg, Weiss, & Horowitz, 1982), deliberately thinking about the event to try to make sense out of it (Barrett & Scott, 1989), deliberately trying to make something good come out of the struggle with the event (Carver, Scheier, & Weintraub, 1989), deliberately trying to see benefits in the event (items suggested by Tennen & Affleck, 1998), and thinking, either deliberately or automatically, about the meaning or purpose of life (Yalom & Lieberman, 1991). Seven of the items asked about rumination soon after the event (then), and another seven asked about the degree of event related ruminations within the last 2 weeks (now). Internal consistency, as measured by Cronbach's alpha was .81 and .88, respectively, for the two (then and now) rumination scales.

Religious participation was measured by three items (Wuthnow, 1994) asking whether the respondent was currently attending religious services, how often they attend religious services, and how important religion was in their lives. Cronbach's alpha for this three item index was .67. Seventy-two percent reported attending religious services at least several times a year.

The Posttraumatic Growth Inventory (PTGI) (Tedeschi & Calhoun, 1996), is a 21-item scale that measures the degree of reported positive changes experienced in the struggle with major life crises. The scale includes items that assess the degree to which the individual reports specific positive changes attributed to the struggle with trauma. For example, an increase in "A feeling of self-reliance," and "A sense of closeness with others." The inventory has acceptable construct validity, internal consistency (.90), and test-retest reliability over a 2-month interval (.71).

Procedure

Following the prescreening, the 54 persons who had experienced a traumatic event were tested further in small groups. They signed an informed consent form that indicated they would be asked to complete "a few inventories that reflect your own life experiences and perceptions." The sequence of inventories was randomized to control for any potential order effects.

Results

The three subscales of the Quest Scale (Readiness, $M = 15.8$, $SD = 6.9$; Doubt, $M = 19.4$, $SD = 8.0$; Openness, $M = 20.0$, $SD = 6.8$), each of the two groups of rumination items (soon after the event, $M = 20.7$, $SD = 4.5$; within the past 2 weeks, $M = 14.0$, $SD = 5.6$), and the religious participation index ($M = 7.2$, $SD = 2.9$), were entered at once in a simultaneous multiple regression equation with the total score on the Posttraumatic Growth Inventory ($M = 76.5$, $SD = 22.0$), as the dependent variable. Table 1 summarizes the Pearson correlations among this set of variables. Two of the measures emerged as significantly

Table 1. Intercorrelations Among Measures

	RT	RR	RP	QR	QD	QO
Posttraumatic Growth Inventory	.57**	.45**	-.25	.38**	.07	.28*
Rumination Then (RT)		.64**	-.10	.45**	.02	.07
Rumination Recent (RR)			-.15	.31	.11	-.02
Religious Partic. (RP)				-.04	.39**	.06
Quest—Readiness (QR)					.40**	.58**
Quest—Doubt (QD)						.48**
Quest—Openness (QO)						—

* $p < .05$.

** $p < .001$.

associated with posttraumatic growth: the degree of self-reported rumination soon after the event (beta = .47), and the degree of openness to religious change (beta = .29), as measured by the cluster of items from the Quest scale. The overall model yielded a significant Multiple R ($R = .66$), $F(6, 47) = 6.26$, $p < .001$ and adjusted $R^2 = .37$. The significant semi-partial correlations were .32 for self-reported rumination soon after the trauma, and .22 for openness to religious change. The standardized beta coefficients for other predictors were as follows: religious participation index, $-.21$; recent rumination, $.14$; readiness, $-.06$; and doubt, $.01$.

Discussion

The present findings are cross-sectional and correlational, so longitudinal direction of effect cannot be readily determined. In addition, some potential statistical matters must be considered. The sample size does not provide for high power (post hoc power assessment indicates power = .48), so some smaller effects in the regression might be missed. However, an adjustment of alpha to .10 would not lead to any other significant semi-partial correlations. Lack of power, then, does not appear to diminish the importance of those significant effects reported. Collinearity might also have been a problem in the present context. However, an examination of the tolerances for the six predictors (all $> .46$) indicates that multicollinearity is not a serious concern.

The results indicate a relationship between event-related rumination and the amount of posttraumatic growth reported. The more rumination participants reported experiencing soon after the event, the greater the degree of posttraumatic growth reported. These findings suggest that early event related rumination, as theoretical predictions suggest (Calhoun & Tedeschi, 1998), is related to posttraumatic growth. However, when the ruminations are primarily intrusive, negative, and continue unabated for extended periods of time, both low levels of growth and high levels of distress would be expected (Nolen-Hoeksema, et al., 1997; Tedeschi & Calhoun, 1995). Although the general amount of reported religious participation did not independently predict growth, one aspect of a quest orientation

to religious belief did. The openness to religious change items from the Quest Scale also were independently predictive of the amount of growth reported. The present correlational results provide support for the expectation that persons whose posttraumatic cognitive processing includes significant thinking about the event and its potential meaning and significance, are more likely to report experiencing posttraumatic growth (Tedeschi & Calhoun, 1995; Tennen & Affleck, 1998).

Although there is some apparent similarity in the semantics of the PTGI and rumination items, the rumination items, including those that focus on positive elements, are focused on cognitive *processes*, and the PTGI items are focused on *outcomes*. Not everyone who attempted to find benefits did so, and some people who did not report engaging in such cognitive processes still experienced growth outcomes. It is important to distinguish between the meaning of *rumination* as it was investigated in this study, and the exclusively negative connotations that the word and the concept have acquired in some areas of psychology (e.g., Nolen-Hoeksema, et al., 1997). Exclusively negative self-focused cognitive processing can produce negative psychological results. Present data indicate, however, that more neutral, or even constructive cognitive processing, where the individual ruminates, cognitively “chews the cud” about the event, its meaning, and what sense might be made of it, is related not only to posttraumatic growth, but might also reasonably be expected to be predictive of improved functioning. The present results, however, do not allow for an exact evaluation of the impact of different kinds and qualities of posttraumatic thinking. Future investigations of such cognitive processing/rumination should clearly and explicitly attend to a variety of characteristics of recurrent event related thinking, including the following: the general valence of the recurrent thoughts (positive or negative), whether or not thoughts are intrusive, the duration and timing of the thoughts, the content and domain of the thoughts (problem solving, reminiscence, meaning making, etc.), and whether the cognitive processing is deliberate or automatic.

Further study of the relation of posttraumatic growth and the cognitive processing of traumatic events is clearly warranted. The present data suggest that a clear point of focus for additional research should be the longitudinal investigation of the impact of cognitive processing assessed early in the post-trauma time period on posttraumatic growth assessed at later times. Such future investigations should also evaluate the role of openness to change in one’s religious beliefs and experience as potential contributors to posttraumatic growth.

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