Posttraumatic Distress and Growth: An Empirical Study of Police Officers

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Few studies have examined the experience of posttraumatic growth, among police officers following traumatic incidents. Additionally, research examining the relationship between posttraumatic distress (e.g., posttraumatic symptoms) and posttraumatic growth among various populations has been inconsistent. Consistent with the need to gain enhanced understanding in the area of posttraumatic growth, this study investigated the relation between posttraumatic distress (using the Impact of Events Scale-Revised) and posttraumatic growth (using the Posttraumatic Growth Inventory) among 183 police officers. Results of Pearson Correlations showed that posttraumatic distress was significantly and positively related to the Posttraumatic Growth Inventory full-scale and all sub-scale scores. Multiple regression analyses revealed that being involved in a duty-related shooting was the most significant predictor of posttraumatic growth. Implications for mental health providers are discussed.

KEYWORDS: posttraumatic distress; posttraumatic growth; empirical study of PTG

POSTTRAUMATIC DISTRESS AND GROWTH: AN EMPIRICAL STUDY OF POLICE OFFICERS

Police officers commonly experience high levels of occupational stress (Morash, Haarr, & Kwak, 2006; Stinchcomb, 2004). A common type of stressor experienced by police officers is acute stress derived from sudden events, usually of short duration, and it produces almost immediate psychological and physiological reactions. Traumatic or critical incidents are acute stressors that are dramatic, overwhelming, and can easily overcome a person's normal ability to cope (Mitchell & Bray, 1990). Trauma-related events experienced by officers may include physical injury while on

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duty, an officer-involved shooting, the death of a coworker, hostage situations, and officer suicides (Cross & Ashley, 2004).

In addition to being in situations in which they are at risk of being injured or killed, officers are often exposed to persons who have been injured or killed because of traffic accidents, murders, suicides, and other incidents. Exposure to dead bodies has been found to be a significant psychological stressor among officers when the incident is traumatic and unexpected (Chopko, 2008) as well as routine exposure common to the work of funeral directors (Gomila, 2007). Police officers who handle dead bodies can also be traumatized by visual, tactile, and olfactory sensations. Karlsson & Christianson (2003) note that officers report feelings of powerlessness and despair following incidents involving injury or death to children.

The acute stress of critical incidents or traumatic events can become the catalyst for the development of posttraumatic reactions, including posttraumatic stress disorder (PTSD) (American Psychiatric Association, 2000). As a result of occupational traumatic exposure, it is estimated that 12% to 35% of police officers meet the diagnostic criteria for PTSD at any given time (Boyle, 1987; Carlier, Lamberts, & Gersons, 1997; Maia et al., 2007). For example, a sample of police officers who where first responders to Pentagon after the 9/11 attacks were found to meet the diagnostic criteria for PTSD (Robbers & Jenkins, 2005). Police officers exposed to traumatic situations commonly experience long-lasting depression, fear when reminded of the event, guilt, tension, feelings of withdrawal, irritability, and nightmares (Karlsson & Christianson, 2003). Police officers involved in shootings report a variety of psychological reactions, such as disturbed time perception, sleep problems, fear of legal consequences, anger, elation, and bouts of crying (Stratton, 1984). Some reports indicate that without professional help up to 70% of officers involved in the use of deadly force leave the job within five years (Kureczka, 2002). Posttraumatic Stress Disorder is often accompanied by another disorder such as depression, anxiety, or substance abuse (Van der Kolk, McFarlane, & Weisaeth, 1996).

Despite the experience of negative and distressing posttraumatic reactions, exposure to traumatic events has the potential to create positive outcomes as well (Zoellner & Marchker, 2006). While much of the trauma literature to date has focused on the presence or absence of negative trauma-related aftereffects, theorists and clinicians have begun to point out exposure to traumatic events may also have the potential to generate

growth-oriented reactions. The positive impact of trauma to the individual's quality of life has only recently gained attention (Schorr, 2006).

Posttraumatic growth (PTG) describes this aspect of trauma, and is defined as positive changes resulting from an event that disrupts one's view of the world. In this regard, PTG does not occur as a direct result of the trauma. Rather, the new reality experienced in the aftermath of the trauma determines the degree of PTG. Cognitive processing, therefore, produces new schemas that incorporate the trauma into the world view of the individual (Tedeschi & Calhoun, 2004). These authors note that posttraumatic growth is not the absence of suffering or the disappearance of distress but can be can be manifested as a greater appreciation for life, more meaningful interpersonal relationships, enhanced spiritual beliefs, new direction and purpose in life, and an increased sense of personal strength. Posttraumatic growth has been shown to occur in assault victims (Kleim & Ehlers, 2009), traumatized children (Cryder, Kilmer, Tedeschi, & Calhoun, 2006), clinicians affected by vicarious trauma (Arnold, Calhoun, Tedeschi, & Cann, 2005), HIV/AIDS patients (Milam, 2004), cancer patients (Mystakiou, et al., 2007), disaster survivors (Tang, 2006), and combat soldiers (Benetato, 2008).

One aspect of PTG that has been studied by researchers is the relationship with posttraumatic distress (e.g., PTSD symptoms). The results have been mixed. The link between PTG and psychopathology is not clearly understood, and the research findings have been inconsistent, for example, regarding whether posttraumatic symptomatology is reduced or increased by PTG (Hobfoll, et al., 2007). Past studies seem to show growth may be a response to distress, other studies show growth may lead to a reduction in distress, or may have completely independent outcomes (Park & Helgeson, 2006). Some researchers indicate that no reliable relationship exists between PTG and posttraumatic distress as they are essentially separate dimensions (Cordova et al., 2007; Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003; Tedeschi & Calhoun, 1995). Other research indicates PTG is related to decreased posttraumatic distress (Ai, Cascio, Santangelo, & Evans-Campbell, 2005; Frazier, Conlon, & Glaser, 2001; McMillen, Smith, & Fisher, 1997). Yet others indicate a positive relationship between traumatic distress and PTG (Helgeson, Reynolds, & Tomich, 2006; Hobfoll et al., 2007; Laufer & Soloman, 2006).

Due to the incongruence of the study results, additional research is needed to provide enhanced uuderstanding of this complex relationship. Few studies have been conducted examining PTG and police officers. In particular, no studies examining the relationship between PTG and cur-

rent posttraumatic distress in law enforcement officers has been found. Considering that police officers are repeatedly exposed to traumatic incidents, additional research on PTG in police officers is warranted. Overlooking the positive aspects of trauma recovery limits understanding of client well-being. It is hoped that knowledge about posttraumatic distress and PTG can help mental health professionals better intervene clinically with first responders. The purpose of this study was to investigate the relationship between posttraumatic distress and posttraumatic growth in a sample of police officers. The research question posed was: "To what extent is current amount of posttraumatic distress associated with perceived posttraumatic growth among law enforcement officers"?

METHOD

Participants

Participants in this study included 183 police officers drawn from city police departments across a Midwestern state. Size of the police departments involved varied from about 30 to 1,800 officers; 170 (92.9%) were male and 13 (7.1%) female. Their ages ranged from 23 to 67 (M = 37.9, SD = 8.4). Self-identified race of participants was 153 (83.6%) European Americans, 24 (13.1%) African Americans, 2 (1.1%) Asian Americans, 2 (1.1%) Native Americans, and 1 (.5%) who identified as Other. Years of education ranged from 12 to 20 (M = 14.7, SD = 2.0). Regarding current relationships, 127 (69.4%) were married, 11 (6.0%) were separated, 16 (8.7%) were divorced, 19 (10.4%) were single, and 10 (5.5%) were involved in a committed relationship.

Law enforcement experience ranged from 1 year to 40 years (M = 12.6, SD = 7.8). Ranks were 147 (80.3%) patrol officers, 16 (8.7%) sergeants, 7 (3.8%) lieutenants, 3 (1.6%) captains, and 10 (5.5%) detectives. Of these 163 (89.1%) were on patrol duty and there were 4 (2.2%) homicide detectives, 2 (1.1%) vice detectives, 1 (0.5) SWAT officer, and 13 (7.1%) general detectives. The population of the cities in which participants worked consisted of 70 (38.3%) with 15,000 to 50,000 residents, 12 (6.6%) with 50,000 to 100,000 residents, 62 (33.9%) with 100,000 to 300,000 residents, 4 (2.2%) with 300,000 to 500,000 residents, and 35 (19.1%) with more than 500,000 residents. Number of months since exposure to a self-perceived work-related traumatic event ranged from less than 1 to 123 (M = 9.1, SD = 18.5). The sample was delimited to active-duty "frontline" police officers and police supervisors because they are more likely to have experienced work-related traumatic events than officers not working primarily in the field.

Procedures

The author contacted the chief of police or a senior ranking officer in the selected police departments for permission to recruit police officers for the study during roll call at the beginning of each shift. Targeted police departments throughout a Midwestern state were selected by convenience. The project was introduced by the author to all police officers during roll call. The benefits, potential risks, and voluntary nature of participation were explained. All officers provided informed consent by agreeing to participate in the study and were given researcher-related contact information. All data collection was anonymous and no identifying information was requested to protect the confidentiality of respondents. The research was approved by the Institutional Review Board.

Most officers completed the assessment instruments during roll call. Participants not having enough time to do so were asked to complete them before the end of the shift, seal them in envelopes, and submit them to a supervising officer. Officers who did not have time to complete the assessments before the end of their shifts were given addressed and stamped envelopes for mailing. Once received, the completed assessments were stored in a locked cabinet until all police departments had been surveyed and data analysis could begin.

Instruments

Demographic questionnaire

A researcher-developed demographic questionnaire was used to gather factual information about participants. Questions requested information related to age, gender, race, years of education, years in law enforcement, current rank, job assignment, current relationship status, and month and year of the most recent work-related traumatic event. In addition, participants self-reported the number of times they, while on-duty, were accidentally and severely injured, were seriously injured during an assault, witnessed scenes involving terrible death or injuries, recovered or handled dead bodies, were involved in hostage situations, experienced events involving harm to children, and were involved in a duty-related shooting. Total number of traumas experienced throughout career was calculated from this list.

Posttraumatic Growth Inventory (PTGI)

The PTGI (Tedeschi & Calhoun, 1996) is a 21-item survey designed to assess positive outcomes in the aftermath of traumatic stress. Five subscales assess growth related to new possibilities, ability to relate to others,

personal strength, appreciation for life, and spiritual change. The PTGI was developed in 1996 as a 34-item questionnaire that was administered to approximately 600 college students who had experienced significant trauma. Thirteen items from the original questionnaire were removed after factor analysis (Finch, 2003).

The PTGI requires a response on a 6-point Likert-type scale ranging from "I did not experience this change as a result of my crisis" (1) to "I experienced this change to a very great degree as a result of my crisis" (6). Intermediate scores were "to a very small degree" (2), "to a small degree" (3), "to a moderate degree" (4), and "to a great degree" (scored 5). The PTGI yields a total score obtained by summing the scores across all items and the scores on the five subscales (Tedeschi & Calhoun, 1996). The range of scores is 0 to 105. Higher scores indicate increased PTG (Sheikh & Marotta, 2005).

Trauma is defined on the PTGI as an event in which the individual was confronted that involved actual or threatened death or serious injury or a threat to self or others' physical well-being, and also induced fear, helplessness, or horror. Tedeschi and Calhoun (1996) reported a high Cronbach's alpha coefficient of .90 for the full scale. Test-retest reliability for the full scale was performed over two months and was an acceptable r = .71. Reliability statistics for the PTGI administered in the present study were good. Cronbach's alpha was .96 for the full scale.

Impact of Events Scale-Revised (IES-R)

The IES-R is a 22-item self-report survey designed to measure subjective distress following a traumatic event. The intrusion, hyperarousal, and avoidance clusters of symptoms assessed by the IES-R parallel the DSM-IV criteria for PTSD (Morris, Shakespeare-Finch, Rieck, & Newberry, 2005). Intrusion includes the trauma being reexperienced through symptoms, such as disturbing recollections of the trauma, distressing dreams of the event, and dissociative flashback episodes. Hyperarousal includes symptoms such as difficulty falling asleep, irritability, and exaggerated startle response. Avoidance includes symptoms such as efforts to avoid thoughts, feelings, or places that arouse recollections of the trauma and detachment from others (APA, 2000). The original Impact of Event Scale (IES) consisted of 15 items that tapped the intrusion and avoidance clusters of symptoms. The IES-R was designed to include the assessment of hyperarousal symptoms. Numerous studies have demonstrated robust reliabilities of the assessment (Morris, Shakespeare-Finch, Rieck, & Newberry, 2005).

Respondents were asked to rate each item in the IES-R on a scale of 0 (not at all), 1 (a little bit), 2 (moderately), 3 (quite a bit), and 4 (extremely) according to the level experienced in the past seven days. The hyperarousal subscale holds good predictive validity in regards to trauma. The avoidance and intrusion subscales have been shown to detect change in respondents' clinical status over time. In regards to content validity, the subscales had high endorsements of up to 85%. Internal consistency of the subscales were found to be high with intrusion alphas ranging from .87 to .92, avoidance alphas ranging from .84 to .86, and hyperarousal alphas ranging from .79 to .90. The IES-R full scale score is achieved by summing the subscale scores. Higher scores indicate increased levels of posttraumatic distress (Weiss & Marmar, 1997). Reliability statistics for the IES-R scale utilized in this study were satisfactory. Cronbach's alpha was .95 for the total score in this study. The IES-R was not designed to make a categorical diagnosis although a cut-off total raw score of 24 has been identified in the literature to indicate significant PTSD symptoms of clinical concern (Asukai & Kato, 2002) and a cut-off score of 33 has been noted to indicate probable PTSD (Creamer, Bell, & Failla, 2003).

RESULTS

Data were initially prescreened for missing values and outliers (Mertler & Vannatta, 2002), and descriptive statistics (means and standard deviations) were obtained for all variables. Next, Pearson correlations were obtained for the dependent and independent variables. Finally, to assess the relationship between PTG and type of trauma, a standard multiple regression analysis (all independent variables entered simultaneously) was conducted.

Descriptive statistics revealed average PTGI full-scale ratings (1 to 6 scale) of 2.9 (SD = 1.1). The most growth among participants was related to Appreciation for Life (M = 3.6, SD = 1.4), followed by Personal Strength (M = 3.3, SD = 1.3), Relating to Others (M = 2.7, SD = 1.2), Spiritual Change (M = 2.6, SD = 1.6), and New Possibilities (M = 2.4, SD = 1.2). Posttraumatic distress as measured by the IES-R full scale (0 to 4 scale) showed a mean score of .76 (SD = .73) including the subscales Intrusion (M = .89, SD = .88), Avoidance (M = .79, SD = .75), and Hyperarousal (M = .60, SD = .76). Frequencies for type of trauma include number of times involved in a duty-related shooting (M = .97, SD = 1.16), being accidentally and severely injured while on-duty (M =.82, SD = 2.00), being seriously injured during an on-duty assault (M = .37, SD = 1.20), witnessing scenes on-duty involving terrible death or injuries (M =

46.55, *SD* = 89.76), handling or recovering dead bodies on-duty (*M* = 39.28, *SD* = 69.11), experiencing on-duty hostage situations (*M* = 4.33, *SD* = 15.75), and experiencing incidents involving harm to children while on duty (*M* = 31.08, *SD* = 56.47).

Initially, total amount of posttraumatic distress (as measured by the IES-R total score) and amount of posttraumatic growth (as measured by the PTGI full-scale score) was examined. A significant and positive relationship was found ($r = .267$, $p < .01$). As a result of this finding, the relation between the PTGI subscale scores and the IES-R full scale was studied. A Pearson correlation matrix showed that the total posttraumatic distress rating was significantly related to all of the PTGI subscale scores. The most significant correlation was found with the PTGI Appreciation for life subscale ($r = .360$, $p < .01$), followed by Personal Strength ($r = .232$, $p < .01$), Spiritual Change ($r = .198$, $p < .01$), New Possibilities ($r = .193$, $p < .01$), and Relating to Others ($r = .148$, $p < .05$). Concerning the IES-R subscales, Appreciation for Life showed the strongest relationship with Intrusion ($r = .368$, $p < .01$), followed by Hyperarousal ($r = .322$, $p < .01$), and Avoidance ($r = .299$, $p < .01$). The relation between the PTGI full scale score and the IES-R subscale score was studied. The total posttraumatic growth score was also significantly related to all three IES-R subscales including Intrusion ($r = .285$, $p < .01$), Hyperarousal ($r = .242$, $p < .01$), and Avoidance ($r = .207$, $p < .01$). Table 1 shows the bivariate

Table 1. BIVARIATE CORRELATIONS BETWEEN RESEARCH VARIABLES (N = 183)

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. PTGI Total Score	—	.850**	.858**	.876**	.878**	.833**	.267**	.285**	.242**	.207**
2. PTGI Relating to Others	—	—	.624**	.791**	.703**	.588**	.148*	.180*	.117	.094
3. PTGI Appreciation for Life	—	—	—	.628**	.742**	.661**	.360**	.368**	.322**	.299**
4. PTGI New Possibilities	—	—	—	—	.745**	.651**	.193**	.191*	.194**	.157*
5. PTGI Personal Strength	—	—	—	—	—	.599**	.232**	.239**	.189*	.203**
6. PTGI Spiritual Change	—	—	—	—	—	—	.198**	.227**	.200**	.126
7. IES-R Total Score	—	—	—	—	—	—	—	.939**	.920**	.886**
8. IES-R Intrusion	—	—	—	—	—	—	—	—	.831**	.709**
9. IES-R Hyperarousal	—	—	—	—	—	—	—	—	—	.741**
10. IES-R Avoidance										

Note: PTGI = Posttraumatic Growth Inventory; IES-R = Impact of Events-Revised
** $p < .01$
* $p < .05$

Table 2. SUMMARY OF MULTIPLE REGRESSION ANALYSIS FOR VARIABLES PREDICTING POSTTRAUMATIC GROWTH INVENTORY SCORES (N = 183)

Variable	*B*	β	*t*	*p*
Officer Involved Shooting	.142	.153	2.009	.046*
Accidentally and Severely Injured	.075	.139	1.817	.071
Severely Injured During Assault	.040	.045	.594	.553
Seeing Scenes of Death/Injury	.000	−.068	−.693	.489
Handling Dead Bodies	.001	.092	.795	.428
Hostage Situations	.004	.052	.493	.623
Incident Involving Harm to Children	.001	.063	.572	.568

* $p < .05$

correlations for these variables. Total number of traumatic events experienced at work, number of years in law enforcement, and length of time since last traumatic event were not significantly correlated with posttraumatic growth.

Of the 175 participants who answered all questions on the IES-R, 18 (approximately 10%) scored between 24 and 32 (total raw score) indicating posttraumatic symptoms of clinical concern (Asukai & Kato, 2002) and 29 participants (approximately 17%) scored over 32 indicating probable PTSD (Creamer, Bell, & Failla, 2003). Combined, approximately 27% of the participants were experiencing clinically significant posttraumatic symptoms.

The significant relationship between the total distress score and all PTGI subscale scores warranted further examination to determine how the type of traumatic event might be related to PTG. An exploratory multiple regression analysis was conducted to determine if any of the 7 specific types of traumas predicted PTG. The overall model, including all 7 predictors, was statistically significant F (7, 174) = 2.24, $p < .05$; $R^2 = .086$. All 7 variables accounted for approximately 8.6% of the variance in PTG, therefore, approximately 91% of what predicted growth were related to variables other than the 7 types of traumas studied here. A review of beta weights in the regression model revealed that only one predictor variable significantly contributed to the model, that is number of times involved in duty-related shooting ($t = .046$, $p = .05$). Table 2 presents the regression coefficients for the full model.

DISCUSSION

Posttraumatic distress as measured by the Impact of Events Scale-Revised full scale was significantly positively correlated with the Posttrau-

matic Growth Inventory full scale and all subscale scores in this study. Additionally, all three IES-R subscales were significantly related to the PTGI full scale. The present research study does not support the absence of consistent relations among PTG and posttraumatic distress. Although some past studies have found no reliable relationship between distress and PTG and others a negative association between the two (Tedeschi & Calhoun, 2004; Zoellner & Maercker, 2006), the finding of this study was consistent with research that found a positive relationship between distress and PTG. For example, Laufer and Soloman (2006) reported a positive correlation between posttraumatic symptoms and PTG among Israeli youth exposed to terror incidents. While the correlational nature of this research cannot be interpreted as causality, the results do not contradict much of the past research and existing literature examining PTG development. Helgeson, Reynolds, and Tomich (2006) found in a meta-analysis that benefit finding, or posttraumatic growth, was related to intrusive and avoidant thoughts:

> Experiencing intrusive thoughts about a stressor may be a signal that people are working through the implications of the stressor for their lives, and those implications could lead to growth. In fact, some might argue that a period of contemplation and consideration of the stressor is necessary for growth to occur. (p. 810)

Researchers suggested that intrusive thoughts about a traumatic event may be indicators of cognitive processing (Park & Helgeson, 2006; Pryzgoda, 2005; Updegraff & Marshall, 2005). Tedeschi & Calhoun (2004) note that during the post-trauma experience, cognitive processing likely occurs automatically in the form of intrusive thoughts, images, and negative intrusive ruminations. Disengagement from previous assumptions occurs as it becomes clear that past views no longer apply, leading to new ways of looking at the world. According to these authors, the period of time in which distress persists may be required for the maximum degree of PTG to develop. As such, quick recovery from the traumatic event may prevent cognitive processing of the experience to occur, allowing for the assumptive world of the individual to remain largely unaltered. Examining the IES-R subscales, Intrusion showed the strongest correlation to the PTGI full scale and all but one of the subscales in this study.

Moderating variables can affect the development of PTG (Helgeson, Reynolds, & Tomich, 2006) and inconsistencies in the PTG and distress research findings may be partially explained by these factors. Differences between the population examined in the current study and those in other

studies must be considered. For example, police officers tend to not only be exposed to multiple traumas throughout their career, but also are often exposed to many different types of traumas as well. A problem with the conflicting results is that some used sudden short-term events, for example, plane crashes, and others used long-term stressors, such as foreseeable death of family members (Zoellner & Maercker, 2006). As the authors note "it is quite possible that the adaptation processes to these different kinds of traumatic events differ from one another and that the perception of benefits or growth may play a different role for different kinds of traumata" (p. 638).

Considering that police officers typically experience many types of traumatic experiences during their careers, an exploratory multiple regression analysis was performed to determine if any of the seven types of traumas examined predict PTG. The regression model with all seven trauma types was statistically significant. However, after all predictors were controlled for, the only predictor of significance was involvement in a duty-related shooting. The use of deadly force by an officer is justified as a last resort when an officer is faced with imminent threat of being killed (Tennenbaum, 1994), and some officers are themselves shot and injured during these life and death situations. A common thread among the two experiences is the immediate threat of death to self. Traumatic events are more or less linked to a life threat, and the life threatening situations may make individuals more aware of his or her mortality and the fragility of life (Zoellner & Maercker, 2006). Researchers have suggested that the greater life threat may prompt more distress and ultimately growth (Mystakidou, et al. 2007; Thornton, 2002). For example, research conducted by Smith, Dalen, Bernard, and Baumgartner (2008) found that a more advanced cancer stage predicted more PTG. Perhaps it is the mortal threat to self, compared to reminders of the fragility of life, such as viewing others who have been killed or seriously injured, that is related to more internal conflict and, ultimately, a greater shift in existing world views. This is in contrast to situations, where, for example, injury is caused by an accident or assault, but the core belief that life is about to be lost may not be as strong as situations involving deadly force (e.g. shootings).

Additional factors differentiating deadly force situations from other types of traumas experienced by officers should also be considered. Officers often report the post-shooting legal and social ramifications to be highly distressing. The stressors that can contribute and compound the distress of a life and death encounter include inundation by intense media coverage of the shooting incident, fear of retaliation by friends and family

of those injured or killed in the shooting, anxiety about departmental and/or criminal investigations to determine the appropriateness of the shooting, apprehension about possible civil actions seeking punitive damages, and in some cases, concerns about increased racial tensions (Bohrer, 2005; Kurecka, 2002). In addition to producing additional distress, post-shooting experiences, such as testifying in court may force officers to further cognitively process memories of the event. A police officer who fatally shot a suspect after being shot himself in the leg wrote "My doubts began to intensify. I replayed the shooting over and over in my mind, questioning if I could have done anything differently and wondering why this happened to me" (Kurecka, 2002, p. 19).

Counterfactual rumination is not an uncommon experience often occurring in the face of evidence attributing blame primarily to others in causing the trauma. The distressing thoughts ultimately contribute to the reevaluation of world assumptions leading to growth (Davis & Lehman, 1995). Additionally, the officer wrote "six years after the incident, the legal process finally ended", attesting to the duration officers are often forced to deal with post-shooting legal proceedings. Considering that total number of traumas experienced and number of years on the job was not significantly related to PTG, the results may suggest that the incident(s) that produce the greatest distress and rumination are most related to PTG when compared to the accumulation of less distressing traumas spanning a career in police work.

As noted, all of the PTGI subscales were found to be significantly and positively correlated with posttraumatic distress attesting to the dimensional ability of police officers to experience growth. Of these, Appreciation for Life was found to be most highly correlated with posttraumatic symptoms and Relating to Others, the least. Additionally, the most growth measured among the subscales according to mean score was Appreciation for Life. A changed sense of what is important in life is a common element in the experience of many persons who have struggles with life difficulties and is part of the newly developed appreciation for life (Tedeschi & Calhoun, 2004). A radically changed sense of priorities can accompany the increase in appreciation.

Additionally, things that were taken for granted in the past or considered "the little things in life" are now deemed as important and embraced. Based on the results of this study, an increase in appreciation for life, including reorganization of priorities in life and enhanced interpersonal relationships have been dominant forms of growth observed in advanced cancer patients with other dimensions less frequently identified (Cordova,

2007; Thornton, 2002), possibly indicating occupational exposure to death and threat to life is also most associated with appreciation and reevaluation of life priorities by police officers. In regards to relating to others, the personality type of many police officers tends to be one that finds it hard to confide in others (Kureczka, 2002) and the police subculture is one that leads to social alienation from those outside of police work. The social-cognitive processing model (Lepore, 2001) in application to posttraumatic distress and PTG posits that alienation from social networks, such as feeling unsupported or misunderstood diminishes cognitive processing and increases avoidance of the experience, possibly leading to decreased growth in officers. While PTG in this area was found to be notable among officers in this study, perhaps the alienation effects of police work are related to a lesser degree of growth compared to other dimensions following the most distressing events.

Implications

The recent attention devoted to PTG in the literature by mental health professionals is largely theoretical in nature with little consensus or direction towards application in practice. In fact, some professionals discourage implementing PTG concepts into clinical work due to the infancy of our understanding in this area (Calhoun & Tedeschi, 1999). Others note that while PTG is not a new treatment but a new perspective, clinicians can incorporate the knowledge we do hold while implementing existing treatment modalities (Zoellner & Maercker, 2006). For example, Zoellner and Maercker note clinicians should be aware of how working through and cognitively processing the aftermath of the trauma is linked to the revision of worldviews required for PTG to develop. In addition, professionals should be able to help identify PTG as it emerges in the treatment session. Knowledge of PTG may be beneficial when guiding others through their own meaning-making and interpreting of events following traumatic situations.

Police officers come into contact with mental health professionals through a number of avenues. Officers are often provided mental health services, such as employee assistance programs (EAP's) offered through their department, post-incident psychological debriefing programs, and crisis-intervention team (commonly referred to as CIT) training programs. Some officers seek treatment through providers not associated with the department to avoid associated stigma and for fear of colleagues and supervisors learning they are receiving assistance. Also, police officers are often required to speak with a department arranged mental health profes-

sional following involvement in a shooting. In addition to providing psychoeducation and addressing any negative reactions or symptoms, clinicians working with police officers should understand how posttraumatic distress displayed by the client is a sign of cognitive processing and is related to PTG. Clinicians should also understand how post-shooting legal and social stressors may compound the distress resulting from the potential trauma of the shooting incident. Based on existing literature, the additional distress may actually facilitate more PTG by inducing increased cognitive processing of the event, resulting in the rebuilding of shattered assumptions. Professionals working with officers should have an understanding of the police subculture and especially the effects of this subculture on relationships with family, friends, and coworkers. Addressing relationship issues with a focus on enhancing communication skills may lead to increased cognitive processing of the event and ultimately better mental health outcomes. Writing exercises involving memories of the trauma may be beneficial in promoting mental processing with officers who have indicated low social support.

Much of the literature addresses the facilitation of PTG post-trauma although pre-crisis training programs with the goal of preparing officers for future PTG development has also been suggested. Paton and Burke (2007), with the goal of promoting future PTG, suggest that specialized police training may reduce risk by increasing the scope of schema to render challenging events meaningful. For example, the authors note that training to develop adaptive capacity should address three areas: 1. educating officers about realistic outcome and performance expectations such as understanding how the magnitude of incidents place limits on what they can do as a means to reduce guilt from feelings of failure; 2. training officers to review experiences as learning opportunities that enhance future competence; 3. preparing officers for the sights, sounds, and smells associated with events such as disasters. Educating officers about the stress response, stress management, and awareness of normal reactions and feelings under atypical circumstances is also noted. Applying these principles specifically to training officers for shooting incidents may be examined in relation to PTG based on the findings of this study.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study had several limitations that should be addressed to help promote additional research and understanding in this area. First, the correlational nature of the study is lacking in ability to identify causal

mechanisms. Longitudinal or experimental research designs are recommended to examine the casual relationship between the variables examined in this study. In doing so, more accurate models of PTG and enhanced treatments for police officers may be developed. A repeated-measures design obtaining baseline traumatic distress measurements with police recruits and tracking the developmental course of posttraumatic symptoms and PTG spanning their career would be beneficial.

Another limitation of this study was the use of a convenience sample. This sampling approach makes it difficult to determine demographic or psychological differences between officers who completed the survey instruments and those who did not. Additionally, and in consideration of the sample population, caution should be used when generalizing these results beyond white male patrol officers working in the Midwestern United States. Differences may exist between the officers examined in this study and those in other areas of the country.

Considering that the seven trauma types accounted for only 8.6 percent of the variance in PTG, approximately ninety one percent of what predicts growth are variables other than the 7 types of traumas and are not accounted for in the results. Furthermore, due to low variability in certain sample characteristics, how such variables as race, religion, and sex correlate with PTG could not be analyzed. The experience of PTG has been found to differ in women and minorities compared to other populations according to past studies (Helgeson, Park, & Tomich, 2006). With a more demographically diverse sample it would have been possible to ascertain whether participant demographic characteristics impacted PTG and posttraumatic distress. Many of the potential mechanisms that might have affected PTG in law enforcement officers were not investigated. Mediating variables, such as social support, personality, cognitive processing, comorbidity, previous trauma experience, religion, spiritual views, and humor have been suggested to affect PTG development (Jackson, 2007) and should be examined in police officers. For example, Tedeschi and Calhoun (2004) suggest individual differences such as personality characteristics including extroversion and openness to experience may impact facilitation of PTG.

Involvement in a shooting was found to be a significant predictor of PTG, however a more detailed examination of these experiences would be useful to better understand the underlying mechanism at work. For example, being shot, being shot at, or shooting another human being was not differentiated in this study, nor were the effects of post-shooting social and legal stressors examined. Understanding the effect of each on post-

traumatic distress and PTG is needed, such as examining officer perceptions of fear, helplessness, horror and feelings of imminent threat of death to self and others during the various types of shooting situations. Examining intrusive versus deliberate rumination following shooting incidents may also be useful. Sensory depravations during shootings, such as tunnel vision, slow-motion time, memory loss for parts of the event or actions taken, and perceptual distortions are common. As an example, it is not uncommon for officers to not remember how many shots they fired during a shooting (Bohrer, 2005). Peritraumatic disassociation is described as subjective feelings of emotional numbness, detachment from others, reduced responsiveness to one's surrounding, depersonalization, and derealization experienced during the trauma and has been identified as a risk-factor for PTSD (Breh & Seidler, 2007). Experiences such as these during police shootings should be examined to determine effect on PTG.

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