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The Effect of Clinician Hardiness on Posttraumatic Growth and Trauma based on
Vicarious Trauma Exposure

By

Maria A. Stevens

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Degree of

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In

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The Effect of Clinician Hardiness on Posttraumatic Growth and Trauma based on
Vicarious Trauma Exposure

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Abstract

There is a gap in the literature that examines posttraumatic growth outcomes in clinical psychologists. Additionally, few studies have explored personality characteristics that can mitigate negative psychological outcomes and foster growth. This study examined if the same model of Posttraumatic Growth (PTG) would be found in clinical psychologists who work with trauma as those who have experienced a traumatic event. Confirmatory Factor Analyses (CFA) indicated moderate model fit. Additionally, the study assessed whether the relationship between cumulative Vicarious Trauma Exposure (VTE) and Secondary Traumatic Stress (STS), and cumulative VTE and PTG would depend on the moderator hardiness, but no significant interactions were found. Yet, a post-hoc analysis indicated an interaction between weekly VTE and hardiness on PTG such that those who reported higher weekly VTE and hardiness scores tended to report higher growth scores, whereas those who reported lower weekly VTE and hardiness did not tend to differ. Implications for training programs are suggested. Limitations of sample distribution, sample characteristics, and measures are addressed. Future research should include larger sample sizes and additional measures to assess for convergent and construct validity.

Key Words: VTE, posttraumatic growth, secondary traumatic stress, hardiness

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Chapter I

The Effect of Clinician Hardiness on Posttraumatic Growth and Trauma based on Vicarious Trauma Exposure

One of the most imperative ethical principles that psychologists strive to follow is “Do no harm” (American Psychological Association, 2010), especially when working with vulnerable populations such as traumatized clients. Although many trauma psychologists do not purposefully intend to harm their clients, research has indicated that neglecting work-life balance, not engaging in proper self-care strategies, and taking on high caseloads (Brady, Guy, Poelstra, & Brokaw, 1999) can threaten the therapeutic relationship by precipitating negative psychological outcomes like Secondary Traumatic Stress (STS), Vicarious Trauma (VT), and Burnout (Figley, 1995; Maslach, Schaufeli, & Leiter, 2001; McCann & Pearlman, 1990). On the contrary, recent literature shows that trauma psychologists also have experienced positive psychological outcomes like Posttraumatic Growth (PTG) and Compassion Satisfaction (Stamm, 2002; Tedeschi & Calhoun, 1995). While several studies found no relationship between working with traumatized clients and negative psychological or positive psychological outcomes (Barrington & Shakespeare-Finch, 2013a; Devilly, Wright, & Varkery, 2009), the majority of studies found that PTG and Compassion Satisfaction outweighed negative psychological outcomes (Barrington & Shakespeare-Finch, 2013b; Bauwens, & Tosone, 2010; Dass-brailsford & Thomley, 2012; Linley, Joseph, Harris, & Meyer, 2003; Linley, Joseph, & Loumidis, 2005). This study aimed to explore PTG in psychologists from working with trauma and characteristics that have suggested to mitigate distress and facilitate growth.

Psychological Outcomes of Working with Trauma

A multitude of studies have examined the relationship between negative psychological outcomes in helping professionals from working with clients who have experienced a high degree of trauma such as sexual assault victims, suicidal patients, sexual offenders, refugees, oncology patients, veterans, and natural disaster victims (Jordan, 2010; Kadambi & Truscott, 2004; Ting, Jacobson, Sanders, 2008; Ting, Jacobson, & Sanders, 2011; Way, Vandeußen, Martin, Applegate, & Jandle, 2004). Moreover, helping professionals who work with traumatized populations are more likely to undergo cognitive intrusions, avoid problems, and engage in maladaptive coping strategies compared to the general population (McGarry et al., 2013; Way et al., 2004).

There are specific risk factors for such negative reactions. Studies have shown those who engaged in maladaptive coping strategies were more likely to have increased suspicions and vulnerability, negative alterations in perception of self, STS, Burnout, Post-Traumatic Stress Disorder (PTSD), anxiety, depression, and stress (Culver, McKinney, & Paradise, 2011; McGarry et al., 2013). Furthermore, women with fearful avoidance attachment styles who work with trauma clients are more likely to experience disrupted cognitive schemas, intrusions, and hyperarousal (Marmaras, Lee, Siegel, & Reich, 2003). In addition, both women and men are likely to experience disruptions in intimacy with this rate being higher in men (VanDeusan & Way, 2006). Other risk factors for experiencing negative psychological outcomes are professionals who are younger, women, and less experienced and those who have diagnostic comorbidities, personal histories of trauma, Type A personalities, higher and more intense caseloads,

and additional occupational stressors (Culver et al., 2011; Sabo, 2011; Voss, Horrell, Holohan, Didion, & Vance, 2011).

Recent literature has also identified more positive outcomes from working with trauma clients than past literature had indicated (Arnold, Calhoun, Tedeschi, & Cann, 2005). These studies found an increase in new relationships, perception of self, appreciation of life, world view, compassion satisfaction, and religious beliefs (Barrington & Shakespeare-Finch, 2013a; Bauwens & Tosone, 2010; Dass-Brailsford & Thomley, 2012; Hatcher & Noakes, 2010; Ray, Wong, White, & Heaslip, 2013; Tedeschi & Calhoun, 1995).

There are certain protective factors that have shown to foster these positive outcomes and mitigate the negative psychological outcomes. Helping professionals who displayed a stronger sense of coherence (Linley, Joseph, & Loumidis (2005) and less occupational risk factors such as concern for environmental safety and role conflict (Hatcher & Noakes, 2010) were more likely to experience positive psychological outcomes. One way growth can outweigh negative psychological symptoms is through the compassion satisfaction found in clients' healing processes (Dass-brailsford & Thomley, 2012). Furthermore, organizational support and healthy coping strategies such as mindfulness meditation have shown to help foster compassion satisfaction and reduce negative psychological factors like burnout and STS (Thompson, Amatea, & Thompson, 2014).

While literature addresses some of the factors that alter the chances of helping professionals developing positive and negative psychological outcomes, there are a limited number of studies that can draw predictive relationships, especially because the

majority of these studies are retrospective and qualitative (Sabo, 2011). Thus, more studies that use mixed methods and prospective research are needed. In addition, few studies investigate personality characteristics that have been suggested to moderate the relationship between these predictors and outcomes.

Characteristics such as hardiness and resiliency have been found to be moderators between degree of trauma exposure and negative and positive changes in Prisoners of War (POWS; Waysman, Schwarzwalrd, & Solomon, 2001), be outcomes of secure attachment (Tosone, Minami, Bettmann, & Jaspersen, 2010), and minimize burnout, STS, and VT. However, only a few studies have examined the relationship between these personality factors, the degree of Vicarious Trauma Exposure (VTE), and negative and positive psychological outcomes (Tosone, McTight, Bauwens, & Naturale, 2011). Furthermore, these studies often have not provided a consistent definition of VTE for clinicians and have failed to use valid and reliable quantitative measurements.

Vicarious Trauma

There is an evolving body of literature that examines specific negative psychological outcomes that can occur from working with traumatized populations (Figley, 1995; Maslach, Schaufeli, & Leiter, 2001; McCann & Pearlman). One of these negative psychological outcomes is Vicarious Trauma (VT). McCann and Pearlman (1990) coined Vicarious Trauma (VT) as a change in worldview that results from the disruptions in cognitive schemas of hearing their traumatized clients' stories. Specifically, many people have reported alterations in their views on safety, power, independence, esteem, intimacy, dependency, and frame of reference (McCann & Pearlman, 1990). A qualitative study of seven clinicians who primarily worked with clients who had

undergone high levels of trauma found reported changes in frame of reference and higher concern over the safety of others (Marriage & Marriage, 2005). Since actual changes in clinicians' cognitive schemas have been found following their work with trauma clients, it is clear the predictors and negative psychological outcomes of VT warrant further investigation in clinical settings.

VT has been found to be prevalent in a variety of clinical settings. Many qualitative studies have found emotional reactions, intrusive images, changes in existing beliefs, new vulnerabilities, and changes in world view in clinical staff who worked with refugees and survivors of sexual assault (Barrington & Shakespeare-Finch, 2013a; Bauwens & Tosone, 2010). Additionally, VT has been shown to be prevalent in clinical psychologists early in their career years who work in community clinic settings (Cann, Calhoun, & Tedeschi, et al., 2010)

Secondary Traumatic Stress/Compassion Fatigue

Figley (1995) coined another one of these negative psychological outcomes as Compassion Fatigue, also known as "the cost of caring," which results from the Secondary Traumatic Stress (STS) that can occur within helping professionals from hearing their clients' traumatic stories. The construct of STS is suggested to have originated from the concept of Posttraumatic Stress Disorder (PTSD) and to exhibit a high overlap of symptoms like avoidance, intrusion, and arousal (Figley, 1995). STS was first introduced following the revision of PTSD in the DSM-IV, which expanded traumatic event criteria to include witnessing or hearing about threatened death or serious injury occurring to another individual (American Psychiatric Association [APA], 2000). More recently, the DSM-5 has expanded this definition to include repeated exposure to

details of something traumatic (APA, 2013). Although STS has been introduced as a separate construct from PTSD, both share symptoms.

Burnout

Another negative psychological outcome that has been suggested to be similar to STS following work with trauma is burnout. Rather than a change in worldview, Freudenberger (1974) indicated that burnout is the emotional wear that occurs from interacting with clients. There is evolving evidence; however, that psychological burnout has several components (Maslach, Schaufeli, & Leiter, 2001). Maslach and Jackson (1986) developed the Maslach Burnout Inventory, which was designed to measure three dimensions of burnout: 1) Exhaustion, which is physical and emotional overextension; 2) Cynicism, which is a depersonalized outlook on daily responsibilities; and 3) Ineffectiveness, which is when people lose their sense of efficacy and begin to feel inadequate. Unlike STS and VT, burnout can occur in professionals who do not primarily work with traumatized populations (Sabo, 2011). However, those who do work with traumatized populations may be at a higher risk.

It is noted that the literature for VT, STS, and burnout and their psychometric properties is mixed. In a meta-analysis of 41 studies and 8,256 workers, high overlap between job burnout and STS was found, especially in women (Cieslak, Shoji, Douglas, Melville, Luszczynska, & Benight, 2014). Furthermore, other studies have found psychometric overlap between measures such that there were no differences in mental health practitioners whether they worked with sexual violence, cancer, or general practice for VT, STS, or burnout and that burnout and STS were highly correlated (Kadambi & Truscott, 2004).

Posttraumatic Growth

On the contrary, helping professionals have also reported positive psychological changes from their work with traumatized populations. Tedeschi & Calhoun (1995) introduced Post Traumatic Growth (PTG) as a phenomenon in which people who have experienced trauma may acquire new beliefs, expand social outlets, and develop a new appreciation for life. Several other studies have found positive changes within helping professionals such as their existing beliefs, relationships, self-understanding, meaning making processes, practices, enrichment in the healing process, religious beliefs, and coherence (Bauwens, & Tosone, 2010; Linley, Joseph, & Loumidis, 2005; Linley, Joseph, Harris, & Meyer, 2003). In addition, positive psychological outcomes like PTG likely have been overlooked in therapists who work with trauma (Arnold, Calhoun, Tedeschi, & Cann, 2005). More specifically, there are five suggested dimensions of PTG: Appreciation for Life, Connection with Others, Personal Strength, New Possibilities, and Spiritual Growth (Tedeschi & Calhoun, 2004).

Appreciation for life. Many individuals who have struggled through trauma often report a new appreciation for life (Tedeschi & Calhoun, 2004). This phenomenon occurs when peoples' views on life are shifted to be more fragile such that life should not be taken for granted. Specifically, a study of 78 women with breast cancer found an association between their adjustment and perceived control such that many of the women reported a new appreciation for life in which they valued their friends and family more (Taylor, Lichtman, & Wood, 1984). Similarly, a study of bereaved parents who had lost a child also found that participants reported a newfound appreciation for life and a greater emphasis on friends and family (Klass, 1986).

Connection with others. Another area of growth is an increased connection with others (Tedeschi & Calhoun, 2004). It is suggested that these stronger relationships occur due to increased empathy, especially toward individuals who are currently experiencing difficult and similar circumstances. Moreover, bereaved elderly, bereaved parents, and males who lost their jobs have reported stronger bonds with others and increased openness in their relationships (Calhoun & Tedeschi, 1989).

Personal strength. People who have undergone trauma have also expressed increased personal strength such that they can more readily take on new challenges because of the struggle through trauma that they already endured (Tedeschi & Calhoun, 2004). This personal strength has been reported in cancer patients who had later gone into remission (Collins, Taylor, & Skokan, 1990). In addition, this perception of strength has also been reported in prisoners of war who had returned from battle (Sledge, Boydstun, & Rabe, 1980).

New possibilities. In addition to the other domains of PTG, individuals have indicated that they developed an awareness of new possibilities such that they more willingly seek out new paths and take on new opportunities (Tedeschi & Calhoun, 2004). These new possibilities have been found in elderly women who had experienced the loss of a significant other. Moreover, these women challenged themselves to take on new skills and responsibilities like undertaking financial tasks and meeting with business professionals (Calhoun & Tedeschi, 1989-1990; Lund, Caserta, & Diamond, 1993).

Spiritual growth. The last domain of PTG that people who have undergone a traumatic event often report is spiritual growth that occurs specifically from their struggle through difficult situations (Tedeschi & Calhoun, 2004). Following the aftermath of a

traumatic event, people frequently express a strong desire to develop a deeper spiritual understanding of the meaning of life. This concept of spiritual growth has been found in bereaved romantic partners, friends, and caregivers who have lost someone to disease (Bower, Kemeny, Taylor, & Fahey, 1998; Cadell, Regehr, & Hemsworth, 2003). Moreover, these individuals reported revived spirituality due to their struggles of coping with the loss of loved ones.

Personality Factors that affect Post Traumatic Growth

One predictor of PTG and the negative impact of trauma are personality factors (Tedeschi & Calhoun, 2004). The Big Five personality dimensions on the Neo Personality Inventory that were most related to PTG were openness to experience and extraversion (Tedeschi & Calhoun, 2004). Furthermore, a study of 85 international therapists found that another personality factor, sense of coherence, has shown to decrease the negative outcomes of VT and increase positive outcomes like growth (Linley, Joseph, & Loumidis, 2005).

The effect of VTE on PTG also has been shown to depend on personality factors such as empathy (Brockhouse, Msetfi, Cohen, & Joseph, 2011). Several personality and environmental factors were observed including sense of coherence, empathy, and perceived organizational support; however, only empathy was found to strengthen the relationship between VTE and PTG. In addition, literature on personality factors and VTE is still mixed such that those with a higher sense of coherence had lower levels of PTG. (Brockhouse et al., 2011). Other personality factors likely to be related to PTG and warrant further investigation are optimism, resilience, and hardiness (Calhoun & Tedeschi, 2004). Furthermore, it is suggested that individuals who are high on these

factors may not experience as much PTG because they would not struggle through trauma as much to begin with. Hence, there would be less room to grow in these five domains. Moreover, a bivariate curvilinear relationship is suggested such that people with a moderate level of these personality factors would experience the most growth, whereas people on the higher and lower ends would not experience as much growth (Calhoun & Tedeschi, 2004).

Hardiness. Kabasa (1979) and Kobasa, Maddi, Puccetti, and Zola (1985) indicate that hardiness is the degree to which a person perceives challenges as an opportunity to grow through three domains: 1) Commitment, 2) Control, and 3) Challenges. Commitment is involvement and interest in one's surroundings. Control is individuals ability to act as if they can influence the events around them. Challenges is motivation to seek out opportunities for growth and personal development.

While the relationship between hardiness and VTE, growth, and negative psychological outcomes have not been studied as often as other personality factors, hardiness should be investigated because it likely mitigates the effects of VTE and fosters growth (Tedeschi & Calhoun, 2004). Several studies have looked at hardiness as a moderator that strengthens the relationship between VTE and PTG. However, these studies have tested the linear relationship between hardiness and PTG (Bregman, 2004), whereas a bivariate curvilinear relationship is suggested between the two variables (Calhoun, 2004). Specifically, those who have a moderate level of hardiness after trauma exposure are suggested to experience the most growth as opposed to those who have extreme high or low levels. This is because there is more room to grow as opposed to those who score on the extreme high end are already likely seeking out opportunities for

growth. In addition, these individuals are capable and open to growth as opposed to those who score on the low end of the scale.

Purpose of the Study

The current study examines PTG and the stress related outcomes of VTE in clinicians. It is noted that PTG is generally a construct found in people who have experienced traumatic events (Bower et al., 1998; Cadell et al., 2003; Calhoun & Tedeschi, 1989; Calhoun & Tedeschi, 1990; Collins et al., 1990; Klass, 1986; Lund et al., 1993; Sledge et al., 1980; Taylor et al., 1984). Specifically, a hierarchical model with a first order of five interrelated factors and associated item pairings and a second order of an underlying latent construct growth has indicated good fit (Cann et al., 2010). Additionally, a single order model of five interrelated constructs and associated item pairings has also shown good fit (Cann et al., 2010). It is hypothesized that when the Posttraumatic Growth Inventory (PTGI) is administered to clinicians with high VTE that the same five subscales and item loadings will exist as those found in individuals who have experienced a traumatic event.

In addition, several indicators known to influence both PTG and negative outcomes are client caseload, duration of therapy sessions, and length of therapy such that it has been found that higher amounts of vicarious trauma exposure leads to higher PTG (Brockhouse et al., 2011) and Secondary Traumatic Stress Scale (STSS) scores (Nimmo & Huggard; 2013). Also, those with a moderately hardy personality are suggested to look at catastrophes as an opportunity for change and growth (Kobasa, 1979; Kobasa et al., 1985). Thus, it is hypothesized that the effects of VTE on PTG will depend on the moderator, curvilinear clinician hardiness, such that those with higher VTE and a

moderate level of hardiness will have higher levels of PTG as opposed to those on the extreme high and low ends of the hardiness scale. It is also hypothesized that the relationship between VTE and STS will depend on the moderator, clinician hardiness, such that clinicians with high hardiness and high VTE will have lower STS.

Chapter II

Method

Participants

Participants consisted of 426 licensed psychologists recruited through State Board Licensure lists, State Psychological Association Directories, and Psychology Today. Emails were either freely available to the public or attainable through lists that could be ordered for a small fee. Participants received an invitation to complete the trauma reactions survey by following a web link that connected them to Qualtrics. Participants' responses were anonymous. Participation was voluntary with no compensation provided. Participants who only completed demographic questions or responded the same scores across all measures were excluded from analyses. The remaining 359 participants consisted of 115 men (31.0%) and 243 women (65.5%). Participants' ages ranged between 27 to 86 ($M = 53.88$, $SD = 12.87$). The majority of the sample was white/Caucasian (81.1%) and reported that they work with clients who have experienced a traumatic event (93.8%). Additionally, many psychologists reported that they had experienced a traumatic event themselves (47.2%) including combat exposure (0.5%), victim of a crime (8.9%), physical assault (9.2%), sexual violence (10.2%), being kidnapped (0.5%), terrorist attack (0.8%), held prisoner (0.5%), life-threatening illness (10.0%), traumatic bereavement (17.3%), near death experience (8.6%), and other (10.2%).

Measures

Vicarious Trauma Exposure. Vicarious Trauma Exposure (VTE) was measured similarly to a method introduced Brockhouse et al. (2011) by calculating cumulative

VTE. The components of VTE consisted of a self-reported weekly percentage of exposure to clients who have experienced trauma and hours of direct client contact per week. The formula for the clinicians' VTE was computed by multiplying the percentage of self-reported VTE per week by the number of hours of direct client contact per week. To calculate cumulative VTE, the weekly hours of VTE was multiplied by the number of self-reported weeks with clients per year and number of clinical career years. Thus, a clinician who reported 40% weekly vicarious trauma exposure, 10 hours of direct client contact, 52 weeks worked in a year, and 10 clinical care years was calculated as follows: [40% VTE per week] x [10 client hours per week] x [52 weeks per year] x [10 career years] = 2,080 hours of cumulative VTE.

Posttraumatic Growth Inventory. The Posttraumatic Growth Inventory (PTGI) is a self-report questionnaire that consists of 21 items used to assess growth suggested to occur following a traumatic event (Tedeschi & Calhoun, 1996). Specifically, the Posttraumatic Growth-Short Form shorter (PTGI-SF; Downey, 2013), with questions adapted for clinicians who work with trauma, was administered to minimize participant fatigue and the number of parameters required to assess model fit. Participants rated specific changes that they have experienced as a result from working with clients who have undergone trauma on a six-point scale. An example of a question is, "I established a new path for my life" in which the participants rated the extent to which they experienced this change from (0) a small degree to (5) a great degree. The PTGI consists of five subscales: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life. The PTGI has shown overall internal consistency ($\alpha = .90$) with the five subscales ranging from $\alpha = .67$ to $\alpha = .85$. The PTGI has also shown test-retest

reliability of .71. The PTGI-SF consists of 10 items with two items per scale and has shown similar factor structure and reliability as the original 21-item PTGI (Kaler, Erbes, Tedeschi, Arbisi, & Polusny, 2011).

Secondary Traumatic Stress Scale. The Secondary Traumatic Stress Scale (STSS) was used to assess STS based on VTE (Bride, Robinson, Yegidis, & Figley, 2004). The STSS is a 17-item five-point frequency scale such that participants rate how frequently the item is true for them within the past seven days. An example of an item is, "I avoided people, places, or things that reminded me of my work with my clients" in which participants rated the frequency for which this statement is true ranging from (1) Never to (5) Very Often. The STSS consists of three subscales: Intrusion, Avoidance, and Arousal. The STSS has shown excellent internal consistency ($\alpha = .94$) with subscales ranging from $\alpha = .83$ to $\alpha = .89$. In addition, the STSS has shown convergent validity such the total score was correlated with anxiety ($r = 0.55$) and depression ($r = .50$). The STSS has also has shown discriminant validity such that the total score was unrelated to demographic variables of age ($r = -.09$), ethnicity ($r = .03$), and income ($r = -.03$).

Dispositional Resilience Scale. The Dispositional Resilience Scale (DRS) was used to assess for clinician hardiness (Bartone, Ursano, Wright, & Ingraham, 1989). The DRS-15 is a 15-item four-point scale in which participants rate the extent to which the item is true for them (Bartone, 1995; Bartone 2007). An example of an item is, "How things go in my life depends on my own actions" in which the participants rated the item from (0) not at all true to (3) completely true. The DRS-15 consists of three subscales: Commitment, Control and Challenge. In addition, the DRS-15 includes six reverse coded items, which has shown to help decrease response pattern bias. The DRS-15 has shown

acceptable internal consistency ($\alpha = .78$) with subscales ranging from $\alpha = .60$ to $\alpha = .80$.

The test-retest correlation coefficient for the DRS-15 is ($r = 0.78$). The scale has also been modified such that idioms were extracted so that the measure is more likely to yield similar results across cultures (Hystad, Eid, Johnsen, Laberg, & Bartone, 2010; Wong et al., 2014).

CHAPTER III

Results

Analyses

Descriptive statistics. Descriptive statistics were conducted on the components of VTE, and aggregated scores for the three measures and outcome variables. Their intercorrelations, means, standard deviations, and psychometric properties can be viewed in Table 1. It is noted that the PTGI-SF showed divergent validity by its low correlation with the DRS, ($r = .24, p < .001$), indicating the two measures are related, but likely are measuring different constructs. It should also be noted that many of the different measures were non-normally distributed at ($p < .05$) such that they displayed a z-score above 1.96 (i.e., skewness or kurtosis divided by standard error). Specifically, cumulative VTE was non-normally distributed, with skewness of 2.55 ($SE = .13$) and kurtosis of 8.50 ($SE = .13$). STSS was non-normally distributed, with skewness of 1.79 ($SE = .13$) and kurtosis of 4.17 ($SE = .13$). Lastly, PTGI-SF was non-normally distributed, with skewness of 0.39 ($SE = .13$) and kurtosis of $-.73$ ($SE = .26$). The sample distributions for the STSS, DRS, and PTGI-SF are shown in Figure 1, Figure 2, and Figure 3, respectively.

Table 1.

Summary of Intercorrelations, Means, Standard Deviations, and Psychometric Properties for Major Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	<i>n</i>	<i>M</i>	<i>SD</i>	α
1. STSS	-	-.19***	.28***	.03	.23***	-.08	.03	-.05	.14**	.18**	344	1.53	.52	.92
2. DRS		-	.24***	.18**	.13**	.07	.02	.18**	-.05	.12*	343	2.11	.33	.77
3. PTGI-SF			-	.22***	.27***	.04	.04	.08	.18**	.25***	359	1.91	1.30	.93
4. VTE				-	.50***	.45***	.03	.44***	.11*	.14**	367	.85	1.04	
5. %VTE/Wk					-	.10	.10	-.18**	.20***	.14**	368	.40	.28	
6. Hrs/Wk						-	.20**	.04	.001	.07	367	24.46	11.37	
7. Wks/Yr							-	-.19**	.17**	-.04	368	47.39	4.42	
8. Career Yrs								-	.05	.08	368	19.07	11.58	
9. Trauma Work									-	.06	392	.92	.38	
10. Trauma Experience										-	418	-.04	1.00	

Note. STSS = Secondary Traumatic Stress; DRS = Dispositional Resilience Scale; PTG = Posttraumatic Growth; VTE =

Vicarious Trauma Exposure; Wk = Week; Hr = Hours; Yr = Year. VTE was divided by 10,000 so that measures (i.e., the first four variables) would have similar scale ranges for analyses. Statistics for STSS, DRS, and PTG-SF are based on the aggregated mean across items. The means for dichotomized Trauma Work and Trauma Event were coded such that -1 = no and 1 = yes. * $p < .05$, ** $p < .01$, *** $p < .001$.

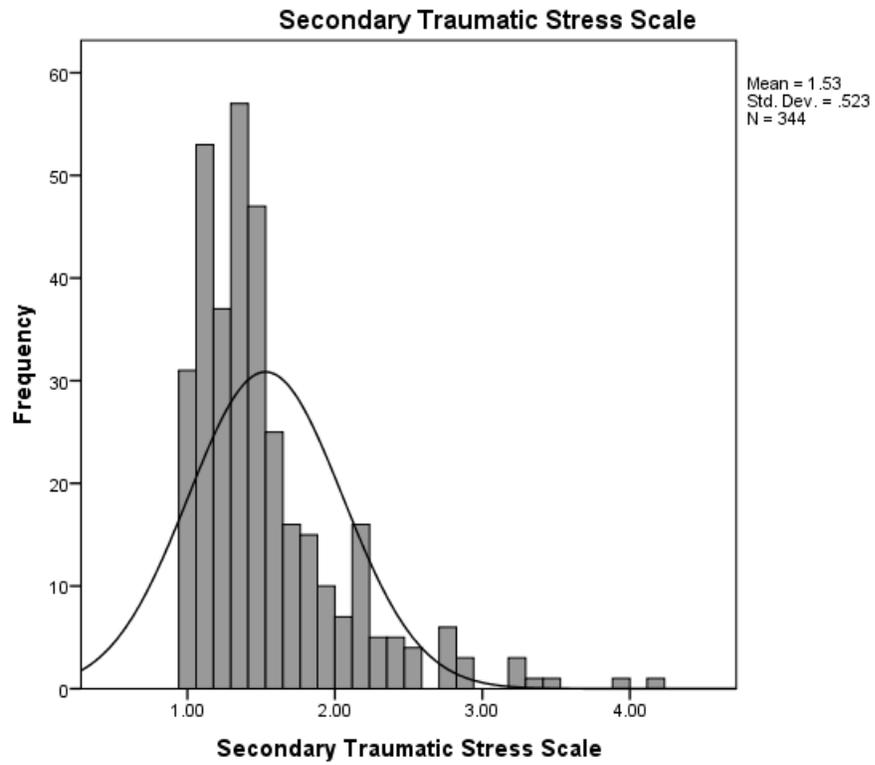


Figure 1. Histogram of STSS distribution based on a sample of psychologists ($N = 344$).

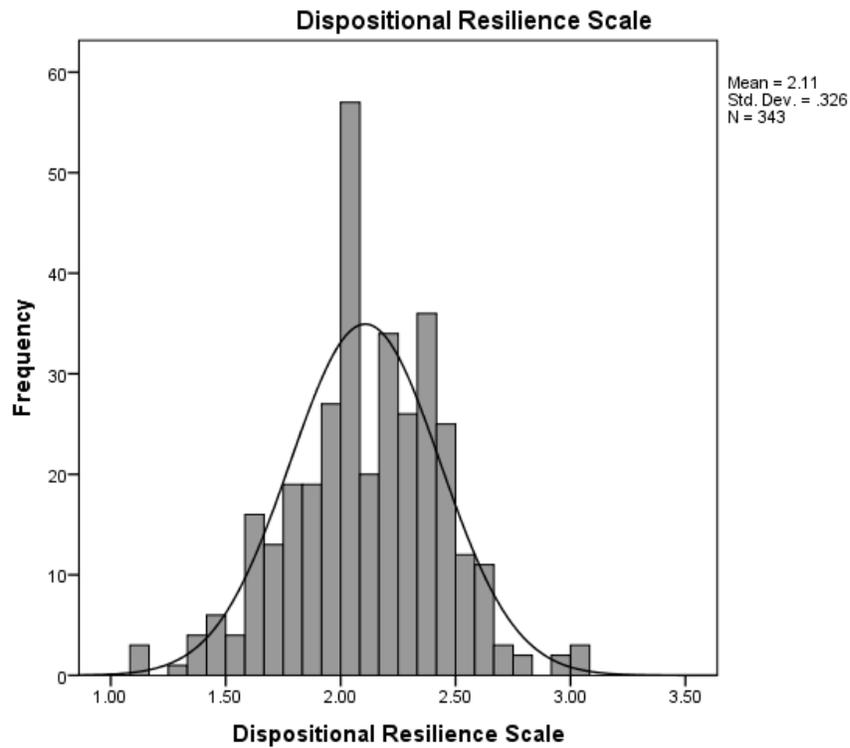


Figure 2. Histogram of DRS distribution based on a sample of psychologists ($N = 326$).

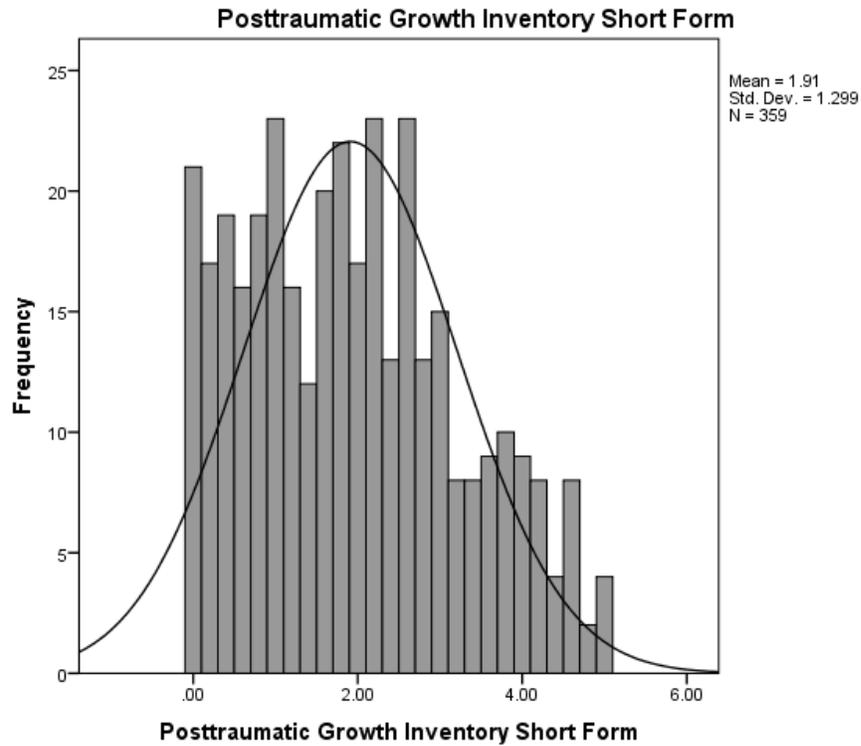


Figure 3. Histogram PTGI-SF distribution based on a sample of psychologists ($N = 359$).

Model fit of growth. Confirmatory factor analyses were conducted with Stata on the PTGI-SF using the maximum-likelihood method of estimation. The hypothesized hierarchical model with a first order of five interrelated factors with associated item pairings and a second order with an underlying latent construct, PTG, could not be tested. It is postulated that the hierarchical model could not be estimated due to a small number of participants and an underidentified model. That being said, the proposed single order model of five present and interrelated exogenous variables with associated item pairings was tested and is displayed in Figure 4.

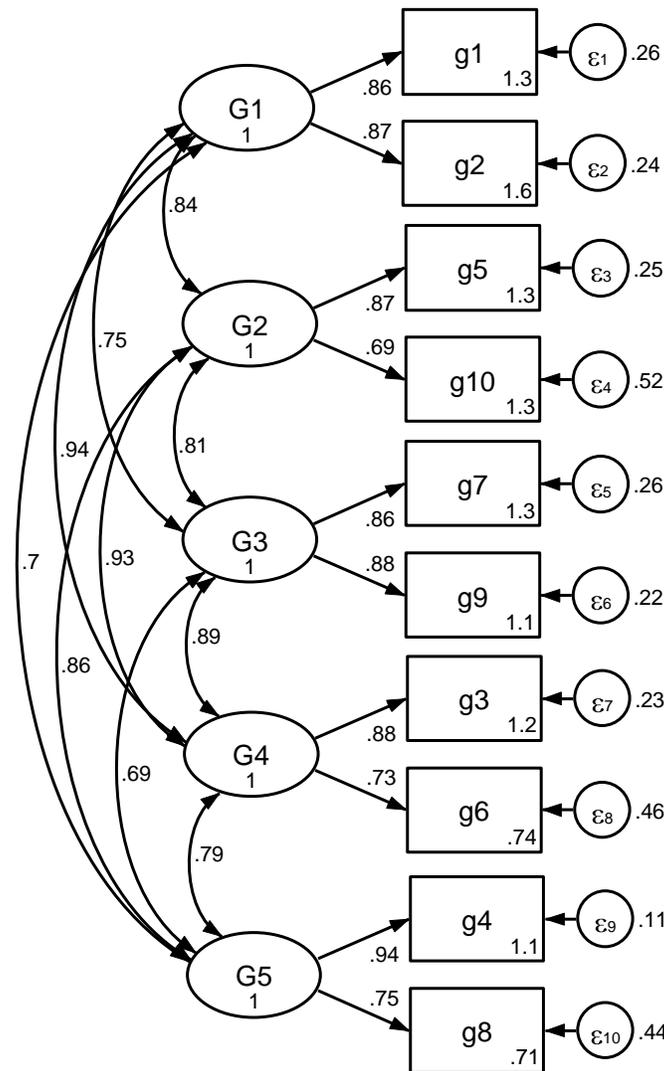


Figure 4. Intercorrelations and regression coefficients of first-order confirmatory factor analysis model, based on a sample of licensed psychologists who work with trauma ($N = 353$). Five correlated latent exogenous variables represented by ovals with item pairs represented by rectangles loading on their predicted factors. G1= appreciation for life; G2= relating to others, G3 = personal strength; G4 = new possibilities; G5 = spiritual change. The error or residual variance is represented by E circles indicating unexplained variance. For each measured variable, $R^2 = (1 - \text{error variance})$. Corresponding items for measured variables: g1, g2, g3, g4, g5, g6, g7, g8, g9, and g10 can be viewed in Appendix A.

Several indices were used to assess model fit. Chi-square was used to assess the overall fit of the model and was significant, $\chi^2(25, N = 353) = 116.22, p < .001$ suggesting a difference between the hypothesized model and the data. That being said, χ^2 has suggested to be sensitive to sample size, correlations, multivariate nonnormality, and unaccounted for variance (Bentler, 1995; Tabachnick & Fidell, 2013). Therefore, other fit indices were examined such that RMSEA = .10, AIC = 11079.57, CFI = .96, and SRMR = .03 indicated moderate model fit. Identification of a better fitting model was not examined due to the likelihood of the model being underidentified and high intercorrelations between variables. Thus, the hypothesis that the same model for PTG would be present in clinical psychologists who work with trauma as those who have experienced trauma was partially supported.

Hardiness and trauma. A hierarchical multiple regression analysis was conducted using forced entry to test the hypothesis that the relationship between VTE and STSS would depend on hardiness. The aggregated mean of VTE and hardiness were centered and an interaction term was created by multiplying the two centered variables to control for multicollinearity (Aiken & West, 1991). In the first step, VTE and hardiness were entered into the regression. A significant amount of the variance of STSS was accounted for by the main effect model, $R^2 = .042, F(2, 317) = 6.96, p \leq .001$, such that hardiness predicted STSS, whereas VTE was non-significant. In the second step, the interaction term (i.e., VTE x Hardiness) was entered into the regression. Consistent with the first step, the second model was significant, but did not account for additional variance, $R^2 = .042, F(3, 316) = 4.64, p < .01$. Thus, there was no interaction found between VTE and hardiness on STSS. Supporting statistics can be viewed in Table 2.

Table 2.

Hierarchical Multiple Regression Analyses Predicting Secondary Traumatic Stress Based on Cumulative Vicarious Trauma Exposure and Hardiness

Predictor	ΔR^2	β	SE B	B	t	95% CI
Model 1	.04**					
VTE		.07	.028	.04	1.27	[-.02, .09]
Hardiness		-.21	.088	-.33	-3.7***	[-.50, -.15]
Model 2	.00					
VTE		.07	.029	.033	1.15	[-.02, .09]
Hardiness		-.21	.089	-.32	-3.7***	[-.50, -.15]
VTE x Hardiness		.012	.094	.02	.20	[-.17, .20]
Total R^2	.04**					
n = 320						

Note. CI = Confidence Interval; VTE = Vicarious Trauma Exposure; Predictor statistics are based on the centered variables. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hardiness and growth. To test whether the relationship between VTE and PTG would depend on hardiness, hierarchical multiple regression analyses were conducted. One analysis was performed similarly to Hypothesis 1; however, a second regression was conducted with the inclusion of a squared variable, hardiness, to test if those with high VTE and a moderate level of hardiness would experience more growth than those with high and low hardiness. Multicollinearity was controlled for by centering the predictor, moderator, and squared moderator (Aiken & West, 1991). Additionally, two interaction terms were created, one with VTE and hardiness, and another with VTE and squared hardiness. In the first analysis, VTE and hardiness were entered into the regression in the first step. A significant amount of the variance of PTG was accounted for by the main effects model, $R^2 = .11$, $F(2, 317) = 19.08$, $p < .001$, such that VTE and hardiness were both predictive of PTG. In the second step, the interaction term (VTE x hardiness) was entered into the regression. Consistent with the first step, Model 2 was significant, but did

not account for additional variance, $R^2 = .11$, $F(3, 316) = 12.77$, $p < .001$. Thus, there was no interaction between VTE and hardiness on PTG. The results are displayed in Table 3.

Table 3.

Hierarchical Multiple Regression Analyses Predicting Posttraumatic Growth Based on Cumulative Vicarious Trauma Exposure and Hardiness

Predictor	ΔR^2	β	SE B	B	t	95% CI
Model 1	.11***					
VTE		.19	.07	.24	3.58***	[.11, .38]
Hardiness		.23	.22	.94	4.30***	[.51, 1.37]
Model 2	.001					
VTE		.19	.07	.23	3.26**	[.09, .37]
Hardiness		.23	.22	.95	4.32***	[.52, 1.38]
VTE x Hardiness		.03	.23	.12	.51	[-.34, .57]
Total R^2	.11***					
n = 320						

Note. CI = Confidence Interval; VTE = Vicarious Trauma Exposure; Predictor statistics are based on the centered variables. * $p < .05$. ** $p < .01$. *** $p < .001$.

In the second hierarchical regression, VTE and squared overall hardiness were entered into the main effects model and accounted for a significant amount of the variance of PTG, $R^2 = .11$, $F(2, 317) = 20.04$, $p < .001$, such that VTE and hardiness predicted PTG. When the interaction term (VTE x hardiness²) was entered in the second step, a significant amount of the variance of PTG was accounted for by model 2, $R^2 = .11$, $F(3, 316) = 13.39$, $p < .001$. However, the inclusion of the interaction term did not produce a better model. Therefore, there was no interaction between VTE and squared hardiness on PTG. The results can be viewed in Table 4.

Table 4.

Hierarchical Multiple Regression Analyses Predicting Posttraumatic Growth Based on Cumulative Vicarious Trauma Exposure and Squared Hardiness

Predictor	ΔR^2	β	<i>SE B</i>	<i>B</i>	<i>t</i>	95% CI
Model 1	.11***					
VTE		.19	.07	.24	3.55***	[.11, .38]
Hardiness ²		.24	.05	.23	4.51***	[.13, .34]
Model 2	.001					
VTE		.19	.07	.23	3.31**	[.10, .37]
Hardiness ²		.24	.05	.23	4.50***	[.13, .34]
VTE x Hardiness ²		.02	.05	.02	.43	[-.08, .12]
Total R^2	.11***					
<i>n</i> = 320						

Note. CI = Confidence Interval; VTE = Vicarious Trauma Exposure; Predictor statistics are based on the centered variables. * $p < .05$. ** $p < .01$. *** $p < .001$.

Post-hoc. A hierarchical regression analysis was conducted to see if the relationship between percentage weekly VTE (i.e., apart from cumulative VTE) and PTG, would depend on the moderator, hardiness. The predictor and moderator were centered to control for multicollinearity and an interaction term was created (% weekly VTE x hardiness) (Aiken & West, 1991). In the first step, % weekly VTE and hardiness accounted for a significant amount of the variance of PTG, $R^2 = .13$, $F(2, 340) = 26.05$, $p < .001$, such that there was a main effect of % weekly VTE and hardiness on PTG. In the second step, the interaction term (% weekly VTE x hardiness) was entered into the regression. The second model was significant and accounted for additional variance, $R^2 = .15$, $F(3, 339) = 19.39$, $p < .001$. Thus, there was an interaction between % weekly VTE and hardiness on PTG. Participants who reported higher hardiness scores and higher % weekly VTE reported more growth than those who reported lower hardiness scores and higher % weekly VTE. However, those who reported lower % VTE did not tend to differ on PTG based on hardiness, except those who reported very high hardiness such that they tended to score higher on PTG overall. Supporting statistics are displayed in Table 5 and

a graphical representation of the interaction between VTE and hardness on growth is displayed in Figure 2.

Table 5.

Hierarchical Multiple Regression Analyses Predicting Posttraumatic Growth Based on Percentage Weekly Vicarious Trauma Exposure and Hardiness

Predictor	ΔR^2	β	SE B	B	t	95% CI
Model 1	.13***					
VTE		.28	.002	.01	5.39***	[.008, .02]
Hardiness		.20	.20	.81	4.00***	[.41, 1.21]
Model 2	.01*					
VTE		.26	.002	.01	5.20***	[.008, .02]
Hardiness		.19	.20	.76	3.71***	[.36, 1.16]
VTE x Hardiness		.12	.01	.02	2.32*	[.002, .03]
Total R^2	.15***					
n = 343						

Note. CI = Confidence Interval; VTE = Vicarious Trauma Exposure; Predictor statistics are based on the centered variables. * $p < .05$. ** $p < .01$. *** $p < .001$.

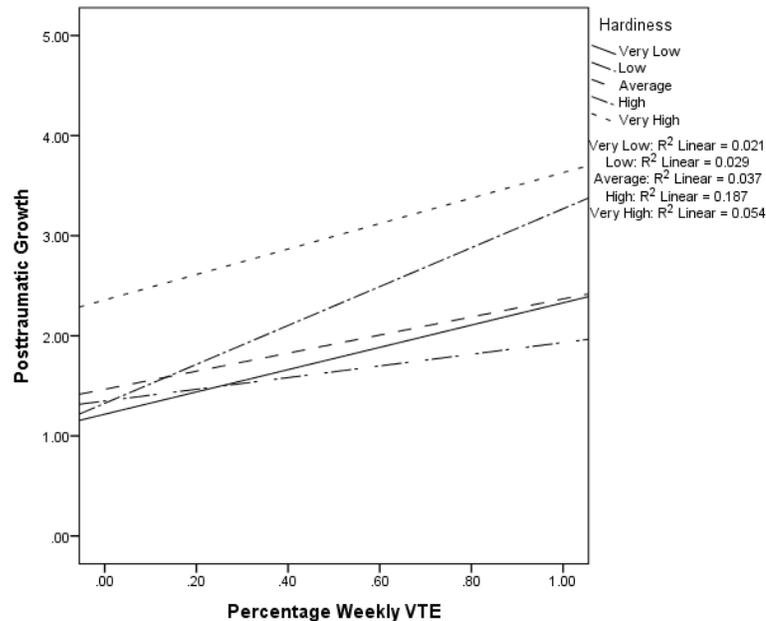


Figure 5. The relationship between % weekly vicarious trauma exposure and growth based on overall hardness norm levels based on a sample of West Point cadets ($N =$

4863) and college students ($N = 312$) in Bartone's (2005-2014) DRS. Very high = 39 and above; High = 34-38; Average = 28-33; Low = 22-27; Very low = 21.

CHAPTER IV

Discussion

The current study aimed to assess model fit of the PTGI-SF when applied to clinical psychologists who work with trauma. The hypothesized hierarchical model of a first order with five interrelated factors and item pairs loading on their associated factor and a second order with an underlying latent construct, PTG, could not be tested. It is posited that this is due to a small sample size or underidentified model (Tabachnick & Fidell, 2013). That being said, the other proposed first order model with five interrelated factors and associated item pairings (Cann et al., 2010), was partially supported by moderate model fit. It is likely that a better model was not produced because some of the fit indices (e.g., χ^2) were sensitive to large sample size (i.e., participants who completed the full PTGI-SF; $N=353$; Tabachnick & Fidell, 2013) and high intercorrelations (i.e., suggested multicollinearity) between factors. Contrary to previous literature (Cann et al., 2010), these high intercorrelations (i.e., $r > .9$) may suggest that some of the subscales of PTG (e.g., Appreciation for Life & New Possibilities) were repeatedly measuring the same construct. Replicated designs may want to administer the full 21-item PTGI to assess for construct validity and collect more participants so that both proposed models can be assessed. In particular, administering both questionnaires would demonstrate whether the PTGI-SF reflects the same factor model as the 21-item PTGI and if the PTGI-SF reflects the same construct, PTG, when administered to clinical psychologists as found in those who have experienced a traumatic event.

Another aim of the study was to assess if the relationship between cumulative VTE and STSS, and cumulative VTE and PTG, would depend on the moderator, hardiness. As can be seen, hardiness did not impact the relationship between VTE and STSS, or VTE and PTG. Additionally, the inclusion of the squared moderator failed to produce a better model. That being said, it is interesting to note that a negative correlation was found between clinical career years and percentage of weekly VTE ($r = -.18, p < .01$); thus, indicating that clinicians earlier in their careers tended to have higher trauma caseloads than those later in their careers. Specifically, psychologists earlier in their career years have shown to be more likely to work in community clinic settings where trauma caseloads tend to be higher (Bruce, 2005). Additionally, supporting literature has suggested that clinical career years can serve as a risk or protective factor for developing psychological outcomes (Voss Horrell et al., 2011). Thus, the cumulative VTE formula may have been limited by the impact of clinical career years on the relationship between vicarious trauma exposure and psychological outcomes.

Post-hoc analyses indicated that hardiness impacted the difference between weekly vicarious trauma exposure (i.e., apart from cumulative VTE) and PTG. This finding supports previous presumptions that hardiness likely acts as a moderator between VTE and PTG (Tedeschi & Calhoun, 2004). One possible explanation why the interaction model for weekly VTE was significant and cumulative VTE was not, is because weekly VTE may be a better estimate of current VTE, and growth and hardiness may be more reflective of the clinician's current VTE. Thus, growth and hardiness may change over time along with the clinician's VTE. To further explore this finding, future research could conduct a longitudinal study and measure how growth and hardiness

change over time in relation to weekly VTE and cumulative VTE. Additionally, future research should continue to explore the impact of characteristics such as hardiness that can mitigate distress and foster growth. Furthermore, these findings could aid in predicting clinicians that may be better equipped to work with trauma and those who may benefit from additional training.

Strengths

Several strengths of the current study are that strong internal consistency was found for the STSS, DRS, and PTGI-SF. Additionally, these findings add to the literature by illustrating a similar (i.e., moderate) model fit of PTG as those who have experienced a traumatic event, based on a sample of clinical psychologists. Moreover, this is one of the first studies to have explored the moderating effect of hardiness on percentage weekly VTE (i.e., apart from cumulative VTE) and PTG.

Limitations

That being said, there were many limitations of the current study. Specific to the sample distribution, histograms displayed slight kurtosis (i.e., DRS) and slight positive skew (i.e., PTGI-SF & STSS). Floor effects and a high distribution around the mean may have made it difficult to assess for a significant interaction and the squared moderator, hardiness, respectively. Although the DRS exhibited slight kurtosis, the aggregated score ($M = 2.11$) was comparable to the aggregated norm score ($M = 1.93$; Bartone, 2005-20014). It may be difficult to compare moderate hardiness scores with the high and low ends when people tend to score in the middle of the distribution. Additionally, STSS is designed to measure shared symptoms between people who work with trauma and people with PTSD and was based off of a sample with social workers (Bride, 2007). Thus, floor

effects in part suggest a low prevalence of shared symptoms; however, future research may want to incorporate a scale that is designed to measure non-clinical levels of STS with established norms that are more widely generalizable to other populations (e.g., clinical psychologists).

Due to the limitations of transformations (e.g., decreasing power & increasing difficulty of interpretation) (Erceg-Hurn & Mirosevich, 2008), the data was retained in its original form for analyses. Additionally, several multivariate outliers were identified; however, outliers were retained in order to meet the parameter demands of analyses. Future research should examine outliers to see whether they are reflective or not of participants' overall data. These studies may want to eliminate outliers that are inconsistent with participants' overall data. Additionally, future research will want to incorporate more participants when conducting analyses such as SEM that require large sample sizes.

Other aspects of the sample (i.e., specific to participant characteristics) posed several limitations. It should also be emphasized that the sample had very few clinical psychologists who did not work with trauma to serve as a control group. However, in part, this is limited to the plethora of diagnoses that clinical psychologists work with. Hence, it may be difficult to find clinical psychologists who have not worked with trauma at some point in their careers. Furthermore, we do not know what settings these clinical psychologists worked in (e.g., outpatient versus community clinics). Also, there is no guarantee that other populations (i.e., other than clinical psychologists) did not complete the survey. Additionally, it should be highlighted that almost half of the sample (47.2%) reported having experienced a traumatic event. Thus, the PTG model may exhibit inflated

correlations in part because of high reported trauma. These sample characteristics could have dramatically influenced the measured and outcome variables.

There were also limitations related to the way the measures were used. Specifically, data and subscales of each measure were lost by using the aggregate mean score of the scale for analyses. Future research may want to incorporate subscale scores in analyses because interactions within each subscale (e.g., personal strength) may have been overlooked. Additionally, participants tended to report similarly across measures; thus, some variance may have been due to the use of a rating scale as opposed to the constructs being measured. In particular, this occurrence of common-method bias has shown to inflate correlations (Tabachnick & Fidell, 2013). The current study also failed to include multiple measures to assess growth. Future studies may want to include the use of multiple measures (e.g., the full 21-item PTGI) to assess for convergent and construct validity. Lastly, in addition to the limitation of VTE being aggregated into a cumulative score, this construct is difficult to quantify due to the inconsistencies in its definition and the complexities of trauma nosology in the traumatology literature (Bruce, 2005). Clinical psychologists may work with clients who have experienced a traumatic event, but are not diagnosed with PTSD, or who have PTSD and several comorbid diagnoses. Thus, further clarification is needed to define VTE.

Implications

A practical implication of this research is that the negative relationship between weekly percentage VTE and clinical career years may highlight a need for specialized training in trauma for clinical psychologists who are early in their career years. Bruce (2003) noted an absence of graduate training programs tailored to the needs of assessing

and working with traumatized populations for graduate and post-doctoral students. Furthermore, specialized didactic training programs have been suggested that incorporate multiple theories and preparation to work with a broad scope of trauma (Bruce, 2003). Another implication is the potential moderating role of hardiness to mitigate distress and foster growth (Tedeschi & Calhoun, 2004). Prospective research is needed to identify whether hardiness is innate or can be shaped through experience and training.

Conclusions

This study sought to examine the overall model of PTG in clinical psychologists and moderating role of hardiness. The negative and positive psychological outcomes of VTE continue to be assessed throughout the literature; however, there are many inconsistencies in study designs and definitions of constructs. Additionally, while other personality characteristics have shown to reduce stress and foster growth, many of these studies are qualitative (Sabo, 2011) and very few examine their moderating role (e.g., hardiness; Calhoun & Tedeschi, 2004). This study sought to address this gap by assessing the relationship between VTE and STSS, and VTE and PTG, based on hardiness. Also, PTG should continue to be examined to test whether a similar model is found in clinical psychologists as in those who have experienced a traumatic event. Additionally, didactic training programs should continue to be explored and research should examine whether these programs can increase competency and hardiness in clinical psychologists, especially those early in their career years (Bruce, 2003).

Chapter V

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