

Posttraumatic Growth and Its Relationship to Depressive Symptomatology in Veterans With PTSD

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The purpose of the study was to examine the relationship of posttraumatic growth (PTG) on symptoms of depression. Previous research has demonstrated a curvilinear relationship between PTG and stress response. It was hypothesized that there would be a curvilinear relationship between domains of PTG on symptoms of depression. A sample of 269 veterans being treated for PTSD was used for this study. All subjects were administered the Posttraumatic Growth Inventory (PTGI), and Beck Depression Inventory—II (BDI–II) as part of the patient’s treatment in a residential trauma-focused treatment program for Veterans. Unlike previous studies that have found either curvilinear or no relationship between PTG and depression, the results of this study revealed a negative linear relationship between BDI–II and PTGI domain scores. A quadratic relationship was also explored and did not provide a better explanation for the data. The findings suggest that there was a negative linear relationship between depression symptoms and self-reported PTG. Higher scores on the BDI–II were related to lower PTGI scores. One possibility for the linear relationship findings compared with the previous studies is the use of a larger clinical sample with a greater range of depressive symptomatology and of reported growth in this study. Another factor is the measurements were obtained right after residential treatment. Recent treatment may have accentuated the relationship of depression to growth.

Keywords: posttraumatic growth, PTSD, veterans, depression, Posttraumatic Growth Inventory

Posttraumatic stress disorder (PTSD) has become one of the most prevalent mental health conditions facing veterans of the United States who have returned from combat zones where they served in the conflicts of Operation Iraqi Freedom (OIF), Operations Enduring Freedom (OEF), and Operation New Dawn. It is estimated that 13% of OEF/OIF Veterans who experienced combat have PTSD (Kok, Herrell, Thomas, & Hoge, 2012; Steenkamp, Litz, Hoge, & Marmar, 2015). Although symptom reduction is essential to treatment of PTSD, posttraumatic growth (PTG) is also an indicator of recovery and healing.

In recent years, research has focused on understanding the psychological characteristics that foster growth as a result of traumatic events. The research is giving direction on ways to strengthen the ability to be resilient in the face of adversity and to recover from adversity. The term “posttraumatic growth” has been coined as a way to describe the positive psychological change individuals may experience as the result of struggles with highly challenging life circumstances (PTG; Calhoun & Tedeschi, 1999;

Tedeschi & Calhoun, 1995, 1996, 2004). Predictors of PTG include the ability to use social supports, the capacity to make meaning out of life events, and the availability and use of a variety of coping skills (Benetato, 2011; Forstmeier, Kuwert, Spitzer, Freyberger, & Maercker, 2009). Several other factors can contribute to PTG including, but not limited to, personality traits, religious beliefs, and severity of the trauma event (Calhoun & Tedeschi, 2004, 2006; Taku, Tedeschi, & Cann, 2015).

Investigating the PTG process has led to the development of new models of trauma impact and healing among combat veterans that incorporate psychiatric and psychosocial variables (Marotta-Walters, Choi, & Shaine, 2015). Recent studies suggest that PTG is a protective factor from the traumatic experiences of combat (Tedeschi & McNally, 2011). PTG offers increased resilience following combat, including reported decrease in suicidal ideation (Bush, Skopp, McCann, & Luxton, 2011). The topic of PTG is very relevant for veterans, particularly as combat veterans and families attempt to cope with the aftermath of trauma (Tedeschi, 2011). Assessment of posttraumatic growth is used more frequently with clinical populations, such as veterans with PTSD, to monitor progress and to evaluate effectiveness of treatment interventions.

Tedeschi and McNally (2011) point out that PTG theorists do not celebrate trauma itself but merely indicate traumatic experiences can set the stage for meaningful psychological changes. The authors caution that it is not their intention to increase the expectation that trauma survivors *must* achieve growth or to inflate expectations about pronounced growth, as some individuals may experience undue shame when PTG does not occur. A related understanding is that anyone can experience post traumatic distress in response to trauma, despite the prior strength of their resiliency.

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Individual differences contribute to rate and degree of PTG. Therefore, highly resilient individuals may experience less PTG than less resilient individuals faced with similar life challenges/circumstances. This is based on the understanding that resilience and growth are related yet independent. The role and relationship of resilience and PTG offers insight into the heterogeneity of trauma responses. Our knowledge regarding the impacts of resilience and PTG on trauma recovery, and how we can facilitate both, is becoming more evident. Clinicians can utilize this knowledge to enhance the effectiveness of trauma treatments.

Several measures have been developed in an attempt to assess positive change (Linley, Andrews, & Joseph, 2007). One of the most widely used measures for assessing PTG is aptly named the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). Research studies examining the PTGI have shown that the inventory is a valid and reliable instrument for measurement of PTG. Most of the initial research pertaining to the PTGI was conducted in Western countries. The PTGI has recently been studied with several groups including other cultural groups (Powell, Rosner, Butollo, Tedeschi, & Calhoun, 2003; Schroevers & Teo, 2008; Taku et al., 2007; Weiss & Berger, 2006), veterans (Palmer, Graca, & Occhietti, 2012), and children (Salter & Stallard, 2004).

Confirmatory factor analysis with a sample of veterans with PTSD demonstrated that a five-factor model and five-factor model with one higher-order factor provided adequate fits for interpretation of the measure (Palmer et al., 2012). The factors initially identified and verified through confirmatory factor analysis include Relating to Others, New Possibilities, Personal Strength, Spiritual Change, and Appreciation of Life. Recently, research on the PTGI has shifted from reliability, validity, and factor structure of the PTGI to clinical utility of the instrument for various groups. For example, clinical utility of the PTGI for measurement of PTG has been demonstrated in areas including acquired brain injury (Collicutt McGrath & Linley, 2006), Internet-based cognitive-behavioral treatment for complicated grief (Wagner, Knaevelsrud, & Maercker, 2007), and women who were postsurgery cancer patients (Posluszny, Baum, Edwards, & Dew, 2011).

It is common for both posttraumatic stress symptoms and PTG to coexist following exposure to stress (Sheikh & Marotta, 2005; Tedeschi & Calhoun, 2004; Wu, Xu, & Sui, 2016), further supporting the need to explore the relationship of psychiatric and psychosocial factors with PTG. Several studies have examined the relationship for the PTGI on psychological distress, and the majority of findings to date have reported a curvilinear relationship between PTG and psychological distress. Research findings suggest that the relationship between PTG and posttraumatic stress can be represented by an inverted U-shape (Joseph, 2011; McCaslin et al., 2009; Kleim & Ehlers, 2009; Taku et al., 2015). Thus, when symptoms of PTSD are minimal and when they are very elevated, the potential of PTG diminishes.

Although many studies have suggested a curvilinear relationship between PTG and symptoms of PTSD, few studies have been conducted to examine the relationship of PTG and other psychiatric symptoms, such as symptoms of depression. In fact, findings have been discrepant in regards to research examining the relationship between PTG and depression. For example, Kleim and Ehlers (2009) conducted two studies with samples of adult assault survivors that produced discrepant results pertaining to the rela-

tionship of depression and PTG. In the first study, survivors were assessed shortly after being assaulted ($M = 17$ days, $SD = 8$ days); and in the second study, survivors were assessed between 3 months and 6 years after being assaulted ($M = 468$ days, $SD = 341$ days). In the first study a similar curvilinear relationship was found with growth and depression symptom severity, yet there was no relationship identified in the second study. Kleim and Ehlers speculated that, because depression has a fluctuating course and correlations with other variables may have decreased with time since trauma, depression levels in the second study may have been influenced by further life events and adversity to a larger extent than in first study. In the first study, mean PTGI scores were reportedly very low (i.e., $M = 1.59$, $SD = 1.27$) and mean depression scores on the Beck Depression Inventory (BDI, Beck & Steer, 1987) were well at the lower range (i.e., score of 10 indicates mild depressive symptoms on the BDI) for mild depression symptom severity (i.e., $M = 10.25$, $SD = 11.55$). For the second study, mean PTGI total scores were again very low (i.e., $M = 1.56$, $SD = 1.21$) and mean depression scores were within the range of mild depressive symptomatology (i.e., $M = 14.94$, $SD = 11.40$). Findings were similar to a previous study, where there was no significant relationship between PTGI (i.e., total and factor) scores and depression in a sample of survivors of intimate partner violence (Cobb, Tedeschi, Calhoun, & Cann, 2006). Sattler et al. (2006) also reported no significant relationship between PTG and depression in a sample of earthquake survivors.

The purpose this study was to examine the relationship between PTG and depression in a sample of veterans. In some previous studies, mean scores of PTG have been very low. Therefore, it is unclear whether a curvilinear versus no relationship might be present with higher scores. Veterans who have completed treatment would, hopefully, be expected to experience increased PTG and decreased depressive symptoms. Although discrepant findings in previous research suggesting an inverted U-shape versus no relationship between PTG and depressive symptoms, there is ample research to suggest a curvilinear relationship between PTG and psychological distress. Further, veterans in the current sample all met criteria for PTSD and were completing residential treatment for PTSD. Therefore, the authors hypothesized that there would be a curvilinear relationship between PTG and depressive symptoms. The examination of the relationship between depression and PTG is important as depression often accompanies PTSD. Further, Taku et al. (2015) pointed out that most studies examining the relationship between PTG and distress have compared only the PTGI total score with other measures of psychological distress. Examination of the relationship between factor scores of the PTGI (i.e., Relating to Others, New Possibilities, Personal Strength, Spiritual Change, and Appreciation of Life) and depression scores would also prove valuable, as factor scores might produce either curvilinear or no relationship with depression scores.

Method

Participants

This study involved use of retrospective data collection from a sample of 285 veterans' records in a VA medical center located in the Midwest. All veterans in the sample met diagnostic criteria for PTSD. Sixteen cases were excluded due to extreme outliers for

PTGI and/or BDI-II scores observed on a scatterplot, leaving a sample of 269. The sample of veterans used in this particular study were comprised of veterans receiving treatment for PTSD in a residential rehabilitation treatment program (R RTP). All of the subjects for this study were administered a variety of self-report screening measures as part of the evaluation process. All screening instruments were administered, scored, and interpreted by licensed psychologists. Pre- and posttreatment scores were obtained for all subjects. The posttreatment scores were used to assess the relationship between PTG and depressive symptoms. Pre- and post-treatment scores with the BDI-II (Beck, Steer, & Brown, 1996) and the PTGI (Tedeschi & Calhoun, 1996) were compared via use of paired samples *t* tests to determine if there was improvement on self-report measures for the sample. The authors chose to look at one set of data to examine the relationship between PTG and depression, which was consistent with previous studies published on the subject. The posttreatment data was selected for this study because one would expect to see optimal posttraumatic growth at the end of a treatment. In contrast to several published studies that have reported minimal PTGI scores when examining if a curvilinear relationship exists, the current study chose to examine scores after treatment in order to explore the impact of symptoms for individuals who might experience more substantial PTG.

This research protocol for retrospective data collection was reviewed and approved by the facility's affiliate institutional review board (IRB), as well as the local medical center's Research and Development Committee. A thorough review of the research protocol was conducted by the both committees, and human subjects' protections were carefully considered. The affiliate IRB granted waiver of informed consent for this minimal risk study, and all data containing personally identifiable health information was removed prior to analysis.

Measures

The BDI-II (Beck et al., 1996) is a screening measure for depression that has 21 items assessing affective, cognitive, and physiological symptoms. The BDI-II, a self-report screening measure, asks the patient to evaluate symptoms based on a series of items rated on a scale from no symptoms (i.e., *Not at all* = 0) to severe symptoms (i.e., *Severely* = 3). The patient is asked to rate symptoms in the context of experiences within the past two weeks. The instrument has been demonstrated to have good reliability and validity (Beck et al., 1996; Palmer et al., 2014). The range on the BDI-II for mild depressive symptoms is slightly higher, with a minimal cutoff score of 14 recommended for mild depressive symptomatology, and a minimum score of 20 for moderate symptoms.

The PTGI (Tedeschi & Calhoun, 1996) is perhaps the most widely used measure for assessing growth following a traumatic event. The PTGI is a self-report measure consisting of 21-items that reportedly quantify the degree of positive change experienced in the aftermath of a traumatic event. Each item is rated on a six-point Likert scale ranging from no change (i.e., *I did not experience change as a result of my crisis* = 0) to very substantial reports of change (i.e., *I experienced this change to a very great degree as a result of my crisis* = 5). Higher scores suggest a higher degree of PTG. Research studies examining the PTGI have shown that the inventory is a valid and reliable instrument for measure-

ment of PTG (Tedeschi & Calhoun, 1996). Further, the underlying five-factor structure has been demonstrated in several studies (Palmer et al., 2012; Taku, Cann, Calhoun, & Tedeschi, 2008). The factors initially identified and verified through confirmatory factor analysis include Relating to Others, New Possibilities, Personal Strength, Spiritual Change, and Appreciation of Life.

Statistical Analysis

Descriptive statistics were calculated with IBM/SPSS Statistics. There was very little missing data (i.e., < 1%). Therefore, missing data was accounted for by replacement of the missing item with the median of nearby points. The data was examined for extreme outliers on the self-report measures, and 16 cases were eliminated from further analysis (*N* = 269).

Pre- and posttreatment scores were compared for the sample on PTGI and BDI-II measures by the use of *t* tests. Linear and quadratic relationships were compared between posttreatment total PTGI scores and BDI-II scores using curve estimation regression analysis. Similar analyses were also conducted for each of the five factor scores with the Total BDI-II score. Posttreatment scores were believed by the investigators to be most appropriate to examine the relationship of PTG and depressive symptomatology as treatment would most likely accentuate growth while decreasing depression scores. Hobfoll et al. (2007) proposed that action is necessary for growth to occur. One could argue that committing to trauma focused treatment constitutes a form of "action" necessary for growth. The trauma focused treatment was intended to lower depressive symptomatology (i.e., lower BDI-II scores) and enhanced growth (i.e., increased PTGI scores). We would expect negative relationships between PTGI and BDI-II scores.

Results

Information regarding characteristics of the sample for this study are presented in Table 1. The sample was predominantly male (*n* = 252; 93.7%). Mean age of the sample was 44.16 years

Table 1
Demographics of the Sample

Characteristic	<i>n</i> (%) or <i>M</i> (<i>SD</i>)	Range
<i>N</i>	269	
Male	252 (93.7%)	
Female	17 (6.3%)	
Ethnicity		
White	239 (88.8%)	
African American	16 (5.9%)	
Hispanic	2 (0.7%)	
Native American	11 (4.1%)	
Asian/Pacific Islander	1 (0.4%)	
Age	44.16 (14.22)	22–71
Combat exposure	211 (78.4%)	
Psychiatric diagnosis		
Posttraumatic stress disorder	269 (100%)	
Alcohol use disorder	94 (34.9%)	
Depression	84 (31.2%)	
Anxiety	9 (3.3%)	
Other mental health	14 (5.2%)	
Other Substance	31 (11.5%)	
Comorbid conditions	184 (68.4%)	

($SD = 14.22$, range = 22–71 years), and ethnicity of this particular sample was predominantly white ($n = 239$; 88.8%). Information provided from patient self-report measures revealed the majority of the veterans had seen combat ($n = 211$; 78.4%). As is common in VA PTSD treatment programs the majority of subjects had other psychiatric diagnoses besides PTSD.

Pre- and posttreatment scores were compared for the sample on PTGI and BDI-II measures. With respect to the PTGI, results revealed a significant improvement between pretreatment PTGI ($M = 40.04$, $SD = 21.03$) and posttreatment ($M = 52.21$, $SD = 22.46$) administrations of the self-report instrument, $t(266) = -8.31$, $p < .001$, 95% CI = -15.05 to -9.29 . Improvements were also noted on the BDI-II from pretreatment ($M = 31.43$, $SD = 11.23$) to posttreatment ($M = 23.87$, $SD = 12.12$) administrations, $t(268) = 10.85$, $p < .001$, 95% CI = 6.19 to 8.93 . Mean total scores on the BDI-II fell from the severe to moderate range of depressive symptoms.

Linear and quadratic relationships were compared between posttreatment total PTGI scores and BDI-II scores using curve estimation regression analysis. Similar analyses were also conducted for each of the five factor scores with the total BDI-II score. Posttreatment scores were believed by the investigators to be most appropriate to examine optimal PTG on depressive symptomatology. Means and standard deviations for the PTGI totals and factor scores, as well as BDI-II total score can be found in Table 2. Factor and total scores for the PTGI were relatively high for Relating to Others (Factor 1, 7 items; $M = 15.71$, $SD = 9.08$), New Possibilities (Factor 2, 5 items; $M = 12.23$, $SD = 5.94$), Personal Strength (Factor 3, 4 items; $M = 10.92$, $SD = 4.54$), Spiritual Change (Factor 4, 2 items; $M = 4.04$, $SD = 3.19$), Appreciation of Life, Factor 5, 3 items; $M = 9.17$, $SD = 3.33$), and PTGI total score ($M = 52.21$, $SD = 22.46$). The mean score of the BDI-II was also somewhat high, and was consistent with moderate depressive symptomatology ($M = 23.87$, $SD = 12.12$).

Correlations between factors and total score of the PTGI ranged from moderate to strong ($r = .46$ to $.90$), and correlations are represented in Table 3. The smallest correlation was found between the Personal Strength and Spiritual Change ($r = .46$), and the strongest correlation was found between New Possibilities and the PTGI total score ($r = .90$). Small to modest negative correlation were found between the BDI-II and PTGI factors/total scores ($r = -.20$ to $-.44$). The smallest correlation was found between Spiritual Change and BDI-II total score ($r = -.20$), and the

highest correlations was between PTGI and BDI-II total scores ($r = -.44$).

Finally, linear and quadratic (i.e., curvilinear) relationships were explored between PTGI factor/total scores and BDI-II total scores to determine if a curvilinear relationship existed. Findings of linear and quadratic regression analyses are found in Table 4. Figures 1 through 6 show scatterplot diagrams of the different relationships between BDI-II and PTGI scores. A significant linear relationship was found between BDI-II total score and Relating to Others ($F = 46.17$, $p < .001$, Adj. $R^2 = 0.14$). The quadratic relationship did not better explain the data (Δ Adj. $R^2 = 0$), and the data produced a negative relationship (see Figure 1). Similar findings were found with New Possibilities ($F = 56.50$, $p < .001$, Adj. $R^2 = 0.17$). The quadratic relationship did not better explain the data (Δ Adj. $R^2 = 0$), and the data produced a negative relationship (see Figure 2). The Personal Strength factor also produced a negative linear relationship with the BDI-II total score ($F = 52.73$, $p < .001$, Adj. $R^2 = 0.16$; see Figure 3). Again, the quadratic relationship did not better explain the data (Δ Adj. $R^2 = 0$). A significant linear relationship was found between BDI-II total score and Spiritual Change ($F = 11.05$, $p < .01$, Adj. $R^2 = 0.04$). The quadratic relationship did not better explain the data (Δ Adj. $R^2 = -.01$). Figure 4 provides a scatterplot of the data. The Appreciation of Life factor revealed a negative linear relationship with the BDI-II total score ($F = 51.92$, $p < .001$, Adj. $R^2 = 0.16$; see Figure 5). As with other comparisons, the quadratic relationship did not better explain the data (Δ Adj. $R^2 = 0$). Finally, a significant linear relationship was found between BDI-II and PTGI total scores ($F = 63.17$, $p < .001$, Adj. $R^2 = 0.19$; see Figure 6). The quadratic relationship did not better explain the data (Δ Adj. $R^2 = 0$).

Discussion

Previous research within areas of PTG has indicated a curvilinear relationship between PTG and symptoms of distress. At least one previous study has also indicated a curvilinear relationship between PTG and depression, and other studies suggest no relationship. In contrast to previous research, a significant negative linear relationship better explained the data in our study than a quadratic relationship. As depression scores increased on the BDI-II, PTGI factor and total scores decreased. Given that the relationship held for all PTGI factors, it appears robust. Unlike findings in previous studies, it appears that depression and PTG have a more linear relationship in our sample of veterans in treatment for PTSD.

On measures of depression and PTSD symptoms, our veterans had higher levels of depression and PTSD symptoms compared with previous studies. For example, subjects in the Kleim and Ehlers (2009) study had substantially lower mean BDI depression scores and some variability between Study 1 (i.e., $M = 10.25$, $SD = 11.55$) and Study 2 (i.e., $M = 14.94$, $SD = 11.40$). Further, the reported mean PTGI scores were extremely low for Study 1 (i.e., $M = 1.59$, $SD = 1.27$) and 2 (i.e., $M = 1.56$, $SD = 1.21$) compared with the current study (i.e., $M = 52.21$, $SD = 22.46$). Clearly, our study differed in regards to degree of depressive symptoms, as well as degree of PTG. Individuals in this study were veterans who met criteria for PTSD and attended a residential rehabilitation treatment program. This sample produced a much

Table 2
Means and Standard Deviations of Factor and Total Scores
($N = 269$)

Variable	Range	<i>M</i> (<i>SD</i>)
Factor 1	0–35	15.71 (9.08)
Factor 2	0–25	12.23 (5.94)
Factor 3	0–20	10.92 (4.54)
Factor 4	0–10	4.04 (3.19)
Factor 5	0–15	9.17 (3.33)
PTGI total	7–99	52.21 (22.46)
BDI-II total	2–53	23.87 (12.12)

Note. Factor 1 = Relating to Others; Factor 2 = New Possibilities; Factor 3 = Personal Strength; Factor 4 = Spiritual Change; Factor 5 = Appreciation of Life; PTGI = Posttraumatic Growth Inventory; BDI-II = Beck Depression Inventory—II.

Table 3
Correlations for Factor and Total Scores

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	PTGI Total	BDI-II Total
Factor 1	—	.77**	.71**	.57**	.63**	.63**	-.38**
Factor 2		—	.77**	.49**	.64**	.90**	-.42**
Factor 3			—	.46**	.67**	.86**	-.41**
Factor 4				—	.49**	.67**	-.20**
Factor 5					—	.78**	-.40**
PTGI total						—	-.44**
BDI-II Total							—

Note. Factor 1 = Relating to Others; Factor 2 = New Possibilities; Factor 3 = Personal Strength; Factor 4 = Spiritual Change; Factor 5 = Appreciation of Life; PTGI = Posttraumatic Growth Inventory; BDI-II = Beck Depression Inventory—II.

** $p < .01$.

higher range of scores and thus accentuated any relationship that may be present.

Low and high levels of PTSD symptoms have been found to be associated with less PTG than moderate levels. PTSD symptoms may be the catalyst for PTG if in a manageable dose. Too few or too many PTSD symptoms limit growth, yet depressive symptoms appeared to have a more direct dose effect in our study. Clinically, a curvilinear relationship would be more difficult to explain in that no or minimal depressive symptoms would be associated with less

growth than moderate depressive symptoms. If low levels (or the absence) of depression as well as high levels of depression were found to be associated with lower levels of PTG, then moderate symptoms of depression would be expected to produce the most growth. However, in our study there was a direct relationship between PTG and depressive symptoms among veterans who had completed trauma focused residential treatment.

The present study cannot establish a causal inference, yet does indicate depressive symptoms are related to growth in a linear way. As mentioned in previous studies, we caution as that depressive symptoms, although associated with PTSD, also occur in response to other life events and adversity other than the trauma(s). If PTG is a growth process, then our study suggests reduction in depressive symptoms are associated with

Table 4
Linear and Quadratic Regression Analyses for PTGI Factor/Total Scores With BDI-II Total Scores as Predictor Variable

Factor/total score	B	F	R ²	Adj. R ²	95% CI
Factor 1 (Relating to Others)					
Linear	-.38***	46.17***	.15	.14	[-.37, -.20]
Quadratic	-.50*				
	.12	23.18***	.15	.14	
Factor 2 (New Possibilities)					
Linear	-.42***	56.50***	.18	.17	[-.26, -.15]
Quadratic	-.52*				
	.10	28.30***	.18	.17	
Factor 3 (Personal Strength)					
Linear	-.41***	52.73***	.17	.16	[-.19, -.11]
Quadratic	-.61**				
	.21	26.88***	.17	.16	
Factor 4 (Spiritual Change)					
Linear	-.20**	11.05**	.04	.04	[-.08, -.02]
Quadratic	-.12				
	.09	5.58**	.04	.03	
Factor 5 (Appreciation of Life)					
Linear	-.40***	51.92***	.16	.16	[-.14, -.08]
Quadratic	-.26				
	-.15	26.18***	.16	.16	
PTGI total score					
Linear	-.44***	63.17***	.19	.19	[-1.01, -.61]
Quadratic	-.51*				
	.08	31.56***	.19	.19	

Note. BDI-II = Beck Depression Inventory—II; PTGI = Posttraumatic Growth Inventory; CI = confidence interval.

* $p < .05$. ** $p < .01$. *** $p < .001$.

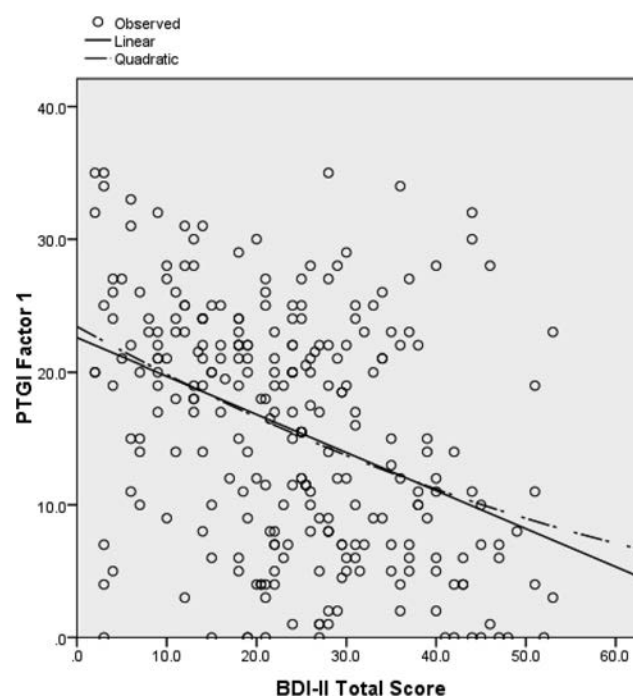


Figure 1. Scatterplot of Posttraumatic Growth Inventory (PTGI) Factor 1 (Relating to Others) and Beck Depression Inventory—II (BDI-II) total scores.

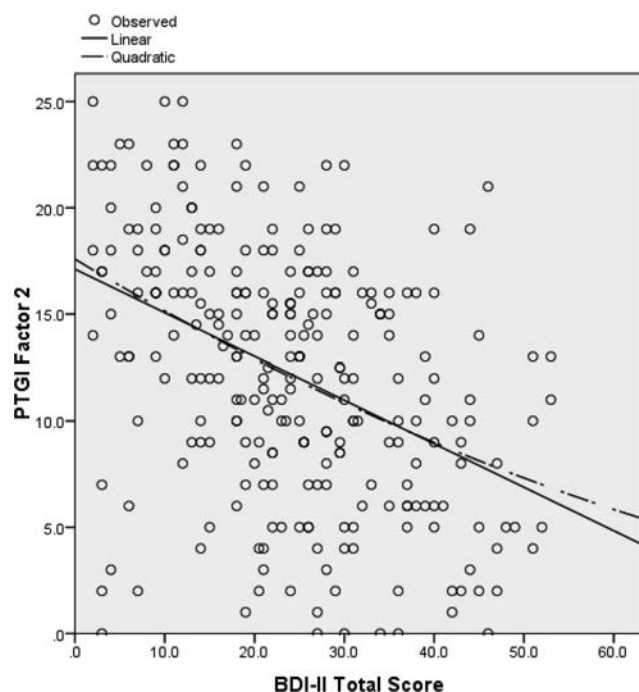


Figure 2. Scatterplot of Posttraumatic Growth Inventory (PTGI) Factor 2 (New Possibilities) and Beck Depression Inventory—II (BDI—II) total score.

growth when measured at a given time. It also suggests that unresolved depression hampers growth among combat veterans with PTSD who had committed to treatment (sought growth). Others have cautioned that PTSD among veterans who have

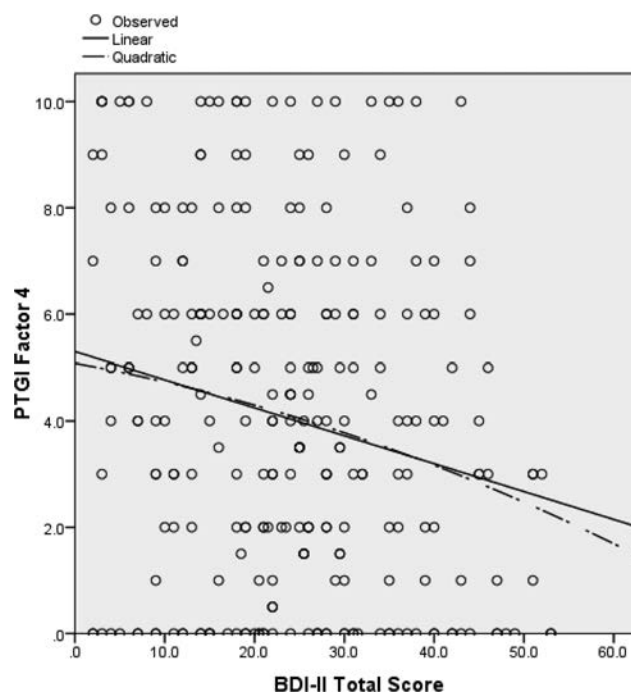


Figure 4. Scatterplot of Posttraumatic Growth Inventory (PTGI) Factor 4 (Spiritual Change) and Beck Depression Inventory—II (BDI—II) total score.

been in combat is more challenging to treat. The effects of combat PTSD and PTG in regards to our sample are unknown. Unfortunately, there are often comorbid conditions present in combat veterans (e.g., depression, anxiety, mild traumatic brain

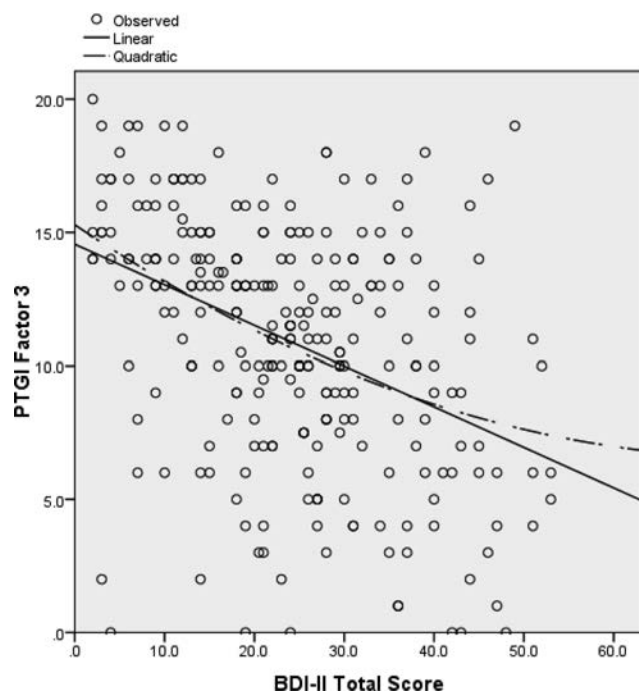


Figure 3. Scatterplot of Posttraumatic Growth Inventory (PTGI) Factor 3 (Personal Strength) and Beck Depression Inventory—II (BDI—II) total score.

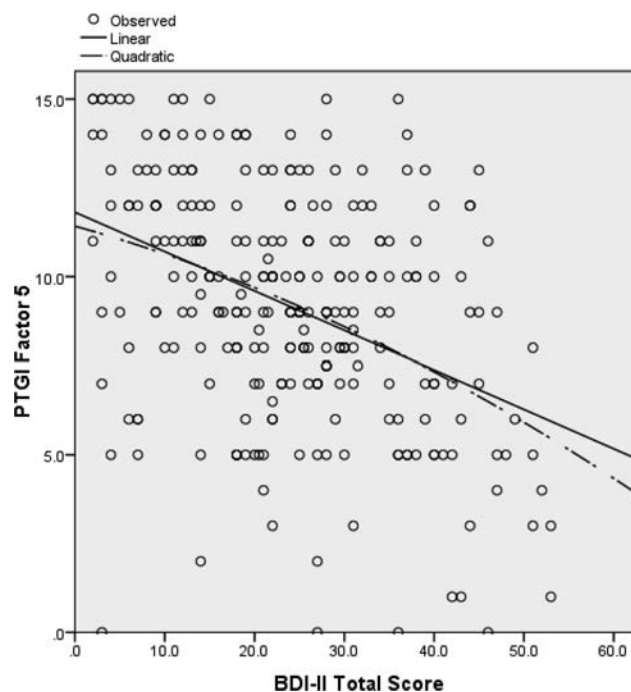


Figure 5. Scatterplot of Posttraumatic Growth Inventory (PTGI) Factor 5 (Appreciation of Life) and Beck Depression Inventory—II (BDI—II) total score.

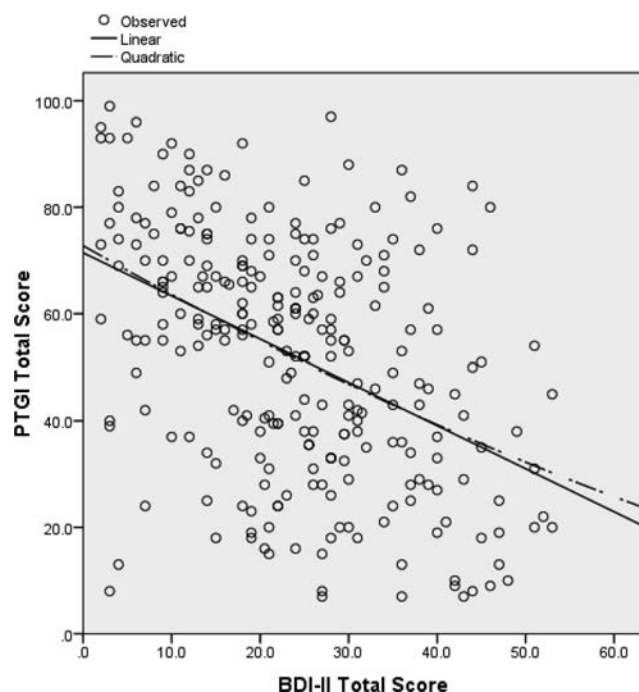


Figure 6. Scatterplot of Posttraumatic Growth Inventory (PTGI) total score and Beck Depression Inventory—II (BDI-II) total score.

injury, and substance abuse; Palmer et al., 2016) that further complicate treatment.

The majority of individuals were Caucasian, male veterans. Replication of our study with noncombat and civilian subjects with lack of comorbid mental health concerns would address this issue yet, as previously noted, the subjects should have a full range of depression symptomatology and PTG. This study supports that the relationship of PTG to posttraumatic stress may vary depending on which psychiatric symptoms are measured.

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