

## **Research Evidence on POSTTRAUMATIC GROWTH AND THE BOULDER CREST FOUNDATION**

Over the past decade, Boulder Crest Foundation has collected data to evaluate the efficacy. A summary of the evidence was published showing significant benefits and long-term outcomes.

The first evaluation of the outcomes of the Boulder Crest Foundation Warrior PATTH/PTG program was conducted with military veterans. Results from this study demonstrated Boulder Crest Warrior PATTH effects improving posttraumatic growth and a wide range of relevant outcomes. **A Preliminary Examination of a Posttraumatic**

### **Growth-Based Program for Veteran Mental Health**

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### Abstract

Prevalence studies of combat veterans from the recent conflicts in Iraq and Afghanistan reveal that up to 20% experience some type of psychiatric disorder as a result of their combat experiences. One of the more notable psychiatric conditions for combat veterans is posttraumatic stress disorder (PTSD). Currently, trauma-focused, manualized psychotherapies are the prominent interventions for PTSD. These interventions, however, have significant limitations related to effectiveness, tolerance, and adherence. Consequently, alternative interventions should be considered. The present study provides longitudinal data over 18-months on an integrative approach that is based on the principles of posttraumatic growth. Outcomes related to psychiatric symptoms, quality of life, stress and emotion management, psychological flexibility, and psychological growth are reported. The application of these principles by practitioners is reviewed.

*Keywords:* Posttraumatic growth; posttraumatic stress disorder; military trauma; evidence-based practice

*Clinical Impact Statement:* Current treatments for PTSD in combat veterans have established efficacy, but a significant portion of those who receive these treatments either discontinue prematurely or experience modest gains. A novel approach to the treatment of trauma in combat veterans has been developed that integrates the interventional model of posttraumatic growth, which is the concept that positive and transformative psychological changes result in the struggle with difficult life experiences.

#### Warrior PATHH: A Preliminary Examination of a Posttraumatic Growth-Based Program for Veteran Mental Health

Although estimates vary, prevalence studies of combat veterans from the recent conflicts in Iraq and Afghanistan reveal that up to 20% experience some type of psychiatric disorder as a result of their combat experiences (Hoge, Auchterlonie, & Milliken, 2006; Hoge et al, 2004; Tanielian & Jaycox, 2008). Considering roughly three million men and women have deployed to these combat theaters since 2001, this translates to over one-half million veterans who have likely experienced significant psychiatric effects associated with their combat experiences. One of the more notable psychiatric conditions for combat veterans is posttraumatic stress disorder (PTSD). PTSD has a relatively wide prevalence range within this population. Lifetime prevalence of PTSD for Vietnam era veterans is approximately 30% when broad criteria are used (Kulka et al., 1988) and approximately 19% when more formal, objective criteria are applied (Dohrenwend et al., 2006). Reported PTSD rates for Iraq and Afghanistan veterans range between 8 and 25% (Hoge, Terhakopian, Castro, Messer, & Engel, 2007; Hoge & Warner, 2014; Wisco et al., 2014; Institute of Medicine, 2014; Tanielian & Jaycox, 2008) with another 8% who experience clinically significant PTSD symptoms, but do not necessarily meet criteria for the

disorder (Bergman, Przeworski, & Feeny, 2017). In the first study to assess rates of PTSD in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) veterans, Hoge and colleagues (2004) found that military service members deployed to Iraq and Afghanistan screened positive for PTSD at the rate of 17% and 11%, respectively. Using the Post-Deployment Health Assessment, a combination self-report instrument and interview focused on physical and psychological health following deployment, Hoge, Auchterlonie, and Milliken (2006) reported that approximately 10% of OIF and 5% of OEF veterans screened positive for PTSD. There is also a high degree of co-morbidity between PTSD and other psychiatric disorders such as anxiety and depression. In a large outpatient civilian sample of individuals diagnosed with PTSD, over 60% met criteria for generalized anxiety disorder, panic disorder, and/or obsessive-compulsive disorder and over three-fourths met criteria for a mood disorder (Meyer, Kimbrel, Tull, & Morissette, 2019). In a sample of veterans, Orsillo and colleagues (1996) found that those veterans diagnosed with PTSD had a greater likelihood of being diagnosed with a mood or anxiety disorder compared to those without a diagnosis of PTSD. High rates of co-morbidity between PTSD and substance use disorders have also been noted (Kruse, Denman, Maness, & Gulliver, 2019). Prior research on Afghanistan and Iraq veterans revealed that up to 75% of those with a documented drug and/or alcohol problem also had a diagnosis of PTSD (Seal et al., 2011). In a study of approximately 13,000 military personnel who completed a combat tour to Iraq and screened positive for PTSD or depression, roughly half acknowledged problem drinking and/or aggressive behavior (a set of behaviors strongly correlated with alcohol and/or drug use) (Thomas et al., 2010). Arguably the most troubling psychiatric issue facing our veterans today is the significant increase in suicide ideation, attempts, and completions over the past decade (Rudd et al., 2015). Between 2001 and 2011, the

suicide rate in active duty military personnel doubled and surpassed the civilian rate (Defense Suicide Prevention Office, 2013) and remains elevated today for both active duty and veteran populations.

### **Evidenced-Based Interventions for PTSD**

Considering the prevalence and burden of psychiatric conditions related to military service, substantial financial resources have been expended on studying evidenced-based interventions and training military and civilian mental health clinicians in those interventions. This is particularly true for PTSD. The most recent manifestation of this emphasis is the 2017 release of the Department of Veterans Affairs and Department of Defense (VA/DOD) Clinical Practice Guideline for the Management of Posttraumatic Stress Disorder and Acute Stress Disorder. An expert consensus work group reviewed the available literature on the most effective psychotherapeutic and pharmacological interventions for PTSD and offered recommendations to clinicians based on this review. Several psychotherapies were noted to have sufficient evidence supporting their use for veterans diagnosed with PTSD. Trauma-focused, manualized therapies (stepwise, scripted interventions that require the veteran to actively confront the trauma through writing or talking about the event or through imaginal or in vivo exposure) were deemed to have the highest level of research support and the strongest recommendation for use. Prolonged exposure therapy (Foa & Kozak, 1986), cognitive processing therapy (Resick & Schnicke, 1992), and eye-movement desensitization and reprocessing (EMDR; Shapiro, 1989) are representative of this category. Non-trauma, manualized therapies (e.g. stress inoculation training, present-centered therapy) were afforded a second-tier recommendation (to be used if trauma-focused therapy is not available or tolerated by the patient). These interventions are beneficial for many veterans diagnosed with PTSD who

seek treatment (see Moore & Penk, 2019 for a review of PTSD interventions with military personnel and veterans) and the research supporting their efficacy is well-established (Watkins, Sprang, & Rothbaum, 2018). However, depending on which study is cited, up to two-thirds of individuals who receive treatment may retain the PTSD diagnosis. Early termination or "dropout" of treatment is another problem, which can be as much as 40 percent (Kehle-Forbes, Meis, Spont, & Polusny, 2016; Schnurr et al., 2007; Steenkamp, Litz, Hoge, & Marmar, 2015). There is also the issue of efficacy. Trauma-focused therapies tend to be about as equally effective as other psychotherapies meaning that there may be little value in using a trauma-focused therapy over others (Steenkamp et al., 2015). This calls into question the notion of recommending trauma-focused psychotherapies as a first-line intervention considering the high potential for treatment dropout.

If a trauma-focused psychotherapy is not available, or if the service member or veteran is not interested in or cannot tolerate a trauma-focused psychotherapy, the VA/DoD guidelines recommend the use of four specific medications: three selective serotonin reuptake inhibitors (paroxetine, sertraline and fluoxetine) and one serotonin norepinephrine reuptake inhibitor (venlafaxine). Indeed, other medications from multiple medication classes (e.g. antipsychotics, antiepileptics, antihypertensives) are used with veterans diagnosed with PTSD, even though the research supporting their efficacy is lacking and/or their risks outweigh their benefits (Charney, Hellberg, Bui, & Simon, 2018). Moreover, a substantial number of veterans may not like using medication to manage their symptoms, and for those who see medication as a viable option, the side effects or lack of efficacy may lead to early discontinuation (Sauve & Stahl, 2019; Tedeschi & Moore, 2018).

### **A Novel, Posttraumatic Growth-Based Approach**

Considering the limitations of prominent psychotherapeutic and pharmacological treatments and the preferences of service members and veterans, it is reasonable to consider more “non-traditional” interventions for PTSD and related conditions (Elkins, Roberts, & Stork, 2019). Specifically, wellness and growth-oriented interventions may offer benefit in-lieu of or combined with standard practices (Tedeschi, Shakespeare-Finch, Taku, & Calhoun, 2018). Progressive and Alternative Training for Healing Heroes (Warrior PATHH) is one such program.

Warrior PATHH is the flagship program of Boulder Crest Foundation (BCF), a community-based, non-profit, multisite organization that is focused on the psychological health of veterans and first responders. Warrior PATHH draws upon evidence-based psychological principles and utilizes complementary and alternative interventions for the mitigation of posttraumatic stress and related conditions as well as improvement in quality of life. The program is based on the theory of posttraumatic growth (PTG), which posits that positive psychological changes can occur in the aftermath of difficult life experiences, specifically in the areas of personal strength, relating to others, new possibilities, appreciation of life, and spiritual/existential matters (Tedeschi et al., 2018). Warrior PATHH is also based on the intervention model of PTG as described by Tedeschi and colleagues (Calhoun & Tedeschi, 2013; Tedeschi & McNally, 2011; Tedeschi & Moore, 2016, 2018). This model includes a relational approach to intervention called Expert Companionship. This approach emphasizes that those providing the intervention, in this case peer “Guides”, focus on learning from each individual about their trauma and life experiences, and deemphasize presenting themselves as experts on the experiences of the participants. This is a humble and empathic way of relating that creates a sense of psychological safety. Expert Companions facilitate progress through five content elements that follow the PTG process model derived from research: 1) psychoeducation about

physiological and psychological trauma response and psychological growth; 2) emotion regulation training, including meditative and mindfulness techniques; 3) constructive self-disclosure about trauma and life in the aftermath of trauma that occurs naturally through casual discourse, unlike deliberate and directed exposure seen in commonly used psychotherapies for PTSD like prolonged exposure; 4) narrative development that integrates perspectives on the past, present, and future, which is distinguished from standard trauma therapies that focus much of the attention on the trauma itself; and 5) "missions" that are developed to transmit the learning about the value of life, living courageously, and other understandings to those in society who have not been exposed to these perspectives.

The Warrior PATHH intervention is delivered as a peer-to-peer training program during a weeklong stay at one of the Boulder Crest facilities, then 18 months of follow-up through a web-based series of meetings and assignments. The 48 modules of the residential portion of the program are described in a 200-page instructors guide developed for internal use by Boulder Crest, and the follow-up to the retreat is laid out for online use by instructors and participants. The peers who deliver the bulk of the program are combat veterans who have undergone several months of training from peer leaders with years of experience delivering the program as well as licensed mental health professionals. Peers receive ongoing training and consultation from these same peer leaders and professionals. A more complete description of the Warrior PATHH program can be found in Tedeschi and Moore (2018).

Warrior PATHH is considered a training program as opposed to a treatment program. Although the program does not offer evidenced-based psychotherapies, some of the literature on interventions supported by multiple randomized controlled trials (RCT; e.g. behavioral, cognitive, mindfulness-based therapies) and those with growing research support (e.g. equine

therapy, exercise, adventure therapy, meditation, yoga) can be applied to understanding how and why Warrior PATHH works. In the following pages, results from an 18-month longitudinal pilot study assessing the effectiveness of Warrior PATHH with combat veterans are provided along with additional description of how Warrior PATHH works and has application to standard psychotherapy.

## **Method**

### **Participants and Procedures**

Participants were 49 United States combat Veterans who were referred to the Warrior PATHH program in Bluemont, VA between August 2016 and May 2017. The participants were self-referred, often based on learning about the center from other veterans who were familiar with the organization and program. The only exclusionary criteria for Warrior PATHH are disorders that might require hospitalization, such as psychosis, substance abuse or active suicidality. Most veterans were male ( $n = 37$ ), ranging in age from 20 to 59 ( $M = 39$ ,  $SD = 6.8$ ). Twenty-three (47%) veterans were married, 16 (33%) were single, and ten (20 %) were either separated or divorced. All veterans served during the Operation Enduring Freedom and/or the Operation Iraqi Freedom era. Twenty-three (47%) veterans served in the Army, 19 (39%) served in the Marine Corps, five (10%) served in the Navy, and two (4%) served in the Air Force. The modal number of combat deployments was two ( $M = 2.4$ ).

Over the course of 18 months, participants were evaluated at multiple time points: prior to start of Warrior PATHH, immediately following the 7-day program, and at the 30-day, 90-day, 180-day, 1-year, and 18-month marks. At the initial time point, all 56 participants entering the program provided data; at the 18 month completion point, all 56 participants completed the program but only 49 provided complete data, for an 87.5% response rate. In this report, data

from the first time point, prior to the start of the program, and the final time point, upon completion of the program, are reported for the 49 participants for whom there are complete data. The formal evaluation comprised approximately 250 questions across 24 measurement tools and was administered via Survey Monkey. A selection of the most important and well-validated measures is reported here. Institutional Review Board approval was obtained for this pilot study.

## **Measures**

The original study consisted of 24 existing and novel measures, which focused on psychiatric symptoms, quality of life, stress and emotion management, psychological flexibility, and psychological growth. Broadly, the study instruments can be categorized into "Symptomology" and "Positive Attributes". The measures of primary interest reviewed in this report are listed below.

### *PTSD*

The PTSD Checklist (PCL-5; Weathers et al., 2013) is a 20-item self-report instrument that aligns with the diagnostic criteria for PTSD in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013). Respondents rate each question on a 5 point frequency scale ranging from *not at all* to *extremely*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 0-4. Prior research has revealed strong construct validity and test-retest reliability in veteran samples (Bovin, Marx, & Schnurr, 2015; Dutra, Hayes, & Keane, 2019). A provisional diagnosis of PTSD can be made based on a total score of 33 (Bovin et al., 2016).

### *Depression, Anxiety, Stress*

The Depression Anxiety and Stress Scales (DASS-21; Antony, Bieling, Cox, Enns, & Swinson, 1998) is a 21-item self-report measure that assesses the presence and degree of depression, anxiety, and stress related symptoms. Respondents rate each question on a 4 point frequency scale ranging from *never* to *almost always*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 0-3. The DASS has shown adequate test-retest reliability and discriminate and convergent validity in clinical samples (Brown, Korotitsch, Chorpita, & Barlow, 1997). The instrument provides a subscale score for each clinical axis.

### *Insomnia*

The Insomnia Severity Index (ISI; Bastien, Vallières, & Morin, 2001) is a 7-item self-report measure that assesses insomnia and is based on DSM-IV and the International Classification of Sleep Disorders criteria. This instrument assesses severity and impact of insomnia over the past two weeks. Respondents rate each question on a 5 point Likert scale ranging from *none* to *very severe*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 0-4. The ISI has shown to be a highly reliable and valid measure for detecting insomnia and assessing response to treatment (Morin, Belleville, Belanger, & Ivers, 2011).

### *Positive and Negative Symptoms*

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, Tellegen, 1988) is a 20-item self-report measure that includes words associated with both positive and negative affect. A positive and negative affect score can be obtained based on the extent a respondent identifies with each word over a specified time period (often a week). Respondents rate each question on a 5 point Likert scale ranging from *not at all* to *extremely*. Scale scores were

computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 1-5. It has been reported that the PANAS has strong reliability and construct validity and substantial available normative data (Crawford & Henry, 2004).

### *Stress Reactivity*

The Perceived Stress Reactivity Scale (PSRS; Schlotz, Yim, Zoccola, Jansen, & Schulz, 2011) is a 23-item measure that assesses a person's response intensity across a variety of stressful situations typically encountered in day-to-day life. The PSRS includes five subscales: Prolonged Reactivity, Reactivity to Work Overload, Reactivity to Social Conflicts, Reactivity to Failure, and Reactivity to Social Evaluation. Respondents rate each question on a 3 point Likert scale. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 0-2. Prior research has revealed strong construct validity and reliability internationally (Schlotz, Yim, Zoccola, Jansen, & Schulz, 2011).

### *Posttraumatic Growth*

The Posttraumatic Growth Inventory-Expanded (PTGI-X; Tedeschi, Cann, Taku, Senol-Durak, & Calhoun, 2017) is a 25-item scale that measures the extent to which individuals report positive psychological change as a result of experiencing a traumatic event. The degree to which individuals experience change is assessed in five domains: new possibilities ("I established a new path for my life"), personal strength ("I discovered that I'm stronger than I thought I was"), relating to others ("A sense of closeness with others"), spiritual-existential change ("A better understanding of spiritual matters"), and appreciation of life ("I can better appreciate each day"). The PTGI-X is based on the original 21-item PTGI (Tedeschi & Calhoun, 1996) except that it adds items representing existential change. Respondents rate each question on a 6 point Likert scale ranging from *I did not experience this change* to *I experienced this change to a very great*

*degree*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 0-5. Research on the expanded version of the PTGI reveals good internal consistency and construct validity (Tedeschi et al., 2017).

### *Psychological Flexibility*

The Acceptance and Action Questionnaire II (AAQ-II; Bond et al., 2011) is a 7-item self-report measure designed to evaluate a person's inability to adapt to changing life demands, ability to shift perspective, and general psychological flexibility. Respondents rate each question on a 7 point Likert scale ranging from *always true* to *never true*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 1-7. Research employing multiple samples revealed satisfactory structure, reliability, and validity of the instrument (Bond et al., 2011).

### *Ego Resiliency*

The Ego Resiliency Scale (ER89; Block and Kremen, 1996) is a 14-item self-report measure of the ability to adapt level of control to situational context, or what is often referred to as adaptive flexibility, and has shown adequate internal consistency and validity across multiple diverse samples (Allessandri, Vecchione, Caprara, & Letzring, 2012). People who are ego-resilient experience more positive affect, self-confidence and psychological adjustment. Respondents rate each question on a 4 point Likert scale, ranging from *does not apply at all* to *applies very strongly*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 1-4.

### *Integration of Stressful Experiences*

The Integration of Stressful Life Experiences (ISLES; Holland, Currier, Coleman, & Neimeyer, 2010) is a 16-item measure designed to assess the extent to which someone has made sense of a problematic life experience. Two subscales can be computed: Footing in the World,

and Comprehensibility. Respondents rate each question on a 5 point Likert scale, ranging from *strongly agree* to *strongly disagree*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 1-5. The ISLES has been shown to have strong internal consistency, moderate test-retest reliability, and strong convergent validity (Holland, Currier, Coleman, & Neimeyer, 2010).

### *Self-Compassion*

The Self-Compassion Scale-Short Form (SCS-SF; Raes, Pommier, and Van Gucht, 2010) is a 12-item measure of six aspects of compassion toward self: Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, Over-identification with Failure. Respondents rate each question on a 5 point Likert scale, ranging from *almost never* to *almost always*. Scale scores were computed as mean scores to retain the meaning of item-level frequency metric. The observed metric is 1-5. As noted by Coroiu and colleagues (2018), the SCS maintains adequate structure and validity across multiple populations.

## **Results**

### **Descriptive statistics**

Descriptive statistics are displayed in Table 1. Descriptive statistics indicate that all means were within a reasonable range (i.e., no obvious floor or ceiling effects) and standard deviations indicated acceptable variability in responses, given the metric for each variable.

At time one (before starting the Warrior PATHH program), the sample reported moderate levels of symptoms of PTSD and negative affect. The sample also reported, to a lesser extent, feelings of stress, stress reactivity, symptoms of depression, and symptoms of insomnia. The magnitude of symptoms reported is consistent with what we would expect given the nature of

Warrior PATHH as a peer-to-peer training program (versus an inpatient or outpatient hospital setting).

At time one the sample also reported moderate levels of ego resiliency and some experiences of positive emotions. The sample reported moderate amounts of integration of stressful life experiences, and a small degree of posttraumatic growth. Participants expressing these positive attributes underlies the fact that this is not a severely disordered clinical population, and thus the population was appropriate to undergo a Warrior PATHH intervention.

#### *Changes in Scores Pre and Post Intervention*

Sample means at time one were compared with sample means at time two (at the 18 month program completion point). Changes in means for all variables are displayed in Table 1.

#### *Reductions in Symptomology*

At time two the sample demonstrated, on average, large reductions in all six symptom areas noted at intake. The largest reductions were seen in PTSD, insomnia, and negative affect. The sample reported a shift from moderate to few PTSD symptoms, as well as a shift from moderate to mild insomnia. The sample shifted from moderate to very slight negative affect, indicating that at completion of PATHH participants were less likely to report feeling distressed, guilty, or ashamed, for example. The sample moved from “sometimes” feeling depressed to “almost never” feeling depressed. Sample means also indicated a change from “usually” feeling reactive to stress to “almost never” feeling reactive to stress.

#### *Increases in Positive Attributes*

At time two large increases were seen in PTG and psychological flexibility. The sample shifted from experiencing a small amount of PTG to experiencing moderate amounts of this positive psychological phenomenon. Participants also reported a large improvement in

psychological flexibility, shifting from only sometimes experiencing it to very often experiencing it. This indicates that at completion of PATHH participants felt more able to face emotions and experienced less worry about painful memories and negative emotions. Integration of stressful life experiences increased at time two, manifesting as increased understanding of beliefs around stressful experiences as well as more feelings of being on track in life. The sample also reported increases to a moderate amount of positive affect, indicating participants felt stronger, more enthusiastic, and more inspired upon completion of PATHH. Lastly, participants reported increases in self-compassion from seldom experiencing it to sometimes or frequently experiencing self-compassion.

### **Zero-Order Correlations**

Given that Warrior PATHH is based on the PTG concept and that the program attempts to facilitate PTG, it is important to test the relationship between PTG and various outcomes of the PATHH program. Strong relationships between PTG and other outcome measures, especially at time two, would suggest that facilitating PTG may work to enhance other outcomes as well.

Pearson product moment correlations were used to explore associations between posttraumatic growth and the outcome variables at time one (See Table 2). This initial cross-sectional look at the data confirms prior findings regarding PTG and its nomological network (Tedeschi, et al, 2018). Taken as a whole, the pattern of correlations between PTG and the other measures confirms that, at time one (before PATTH involvement), variance in PTG was negatively associated with measures of symptomology (e.g., mental health disorders, stress reactivity, negative affect), and positively associated with coping or resiliency type attributes (e.g., ego resilience, integration). Although traditional NHST statistical significance levels were

not always achieved given the low power, it is worth noting that all effect sizes were moderate to large in magnitude with the exception of PTSD and anxiety.

Pearson product moment correlations were used to explore correlations between posttraumatic growth and the outcome variables 18 months later, at time two. (See Table 2). This set of cross-sectional correlations assesses the magnitude of associations between variance in PTG and the outcomes after participants were involved with PATHH. The observed pattern of correlations between PTG and the other measures confirms that, at time two, negative associations between variance in PTG and variance in all measures of symptomology (e.g., mental health disorders, stress reactivity, negative affect) were strengthened. This was particularly true for associations between PTG and PTSD, and PTG and anxiety, where we observed negative associations increase from small and insignificant to large and significant effect sizes. Additionally, negative associations between PTG and depression, as well as PTG and insomnia were strengthened, shifting from medium to large effect sizes.

The observed pattern of correlations between PTG and the other measures at time two also confirms that, at completion of PATHH, positive associations between variance in PTG and variance in all measures positively associated with coping or resiliency attributes were strengthened. This was particularly true for associations between PTG and psychological flexibility, PTG and integration of stressful experiences, PTG and positive affect, and PTG and self-compassion; we observed positive associations increase from medium to large effect sizes across these variables. Additionally, the positive association between PTG and ego resilience held at completion of PATHH. The change in strength of correlations between PTG and other study variables is shown in Table 2.

## **Discussion**

As noted above, strictly speaking, the Warrior PATHH program is not a psychotherapeutic intervention. It was developed as a training program for the purpose of integrating veterans into their communities in the aftermath of combat. Many veterans require training to learn how to translate their valuable skills learned in military service, and to regain the capacity to regulate their thoughts, feelings and actions in a civilian environment. In doing so, they become more capable of serving their communities as sources of enrichment in the lives of others. The program helps to facilitate PTG in its five domains: recognizing personal strength, improved interpersonal relationships, finding new possibilities in life, greater appreciation for life, and spiritual and existential development. The program is also described as a training program because this term resonates with military service members, who can adopt an openness to training more readily than for psychotherapy, which is facilitated by trained mental health professionals rather than peers. The activities in the program mix classroom instruction, discussion, and experiential activities that help participants to see how the principles of the program work in practice.

This program appears to be very different from office-based individual psychotherapy. It is an intensive, residential program that is a training intervention rather than therapy, it has a long-term online follow-up, it is delivered by culturally competent peers, and it uses alternative intervention modalities, some of which require settings and resources unavailable to most therapists. However, since it has a number of elements of empirically-based treatments for PTSD incorporated into the design of the program, it can serve as a basis for effective trauma therapy for various populations. In fact, the Warrior PATHH program was derived from a PTG-based therapy (Calhoun & Tedeschi, 1999; 2013) and in other ways it has been used to treat combat trauma (Tedeschi & McNally, 2011; Tedeschi, 2016).

Psychotherapists who are familiar with standard empirically-based trauma treatment will recognize how this PTG-based approach utilizes many aspects of those therapies. There are clear cognitive, narrative, and existential elements of this therapy that are integrated within a relational approach to intervention termed Expert Companionship (Tedeschi, et al., 2018). Elements of empirically-based treatments for PTSD are found in this process, which makes this model of intervention very accessible to practitioners who do not have the resources used in the Warrior PATHH program.

The therapy relationship emphasizes cultural competence, skilled listening, and empathy, a therapeutic stance that has an empirical basis. This is enacted in five phases of process that is based on studies of how PTG develops, and that integrate various trauma treatment concepts and strategies. The phases of the Warrior PATHH intervention that also form the basis for individual trauma therapy with a PTG approach have similarities and differences from standard trauma treatments such as prolonged exposure and cognitive processing therapy. A key difference is that all these elements of the therapy are denoted within Expert Companionship, meaning that therapists present themselves as learners and listeners, to understand the individual person's trauma experience and its aftermath, rather than operating as technicians with therapeutic interventions to be delivered. As in other trauma therapies an important initial element is *Psychoeducation* about trauma response, but in a way that emphasizes the PTG perspective on core belief disruption as well as the physiological aspects of trauma response. Although expertise about these aspects of trauma are offered, the expert companion collaborates closely to weave the individual's experience into the explanations of the effects of trauma. *Emotional regulation* practices are an integral part of the approach that allows the participant to better tolerate internal and external reminders of trauma as well as interpersonal conflict. Here

the Expert Companion works with the individual to determine which kinds of emotional regulation strategies are most accessible and effective for the person, and therefore a variety of approaches can be discussed and tailored to the individual. *Exposure through disclosure* of memories or situations that trigger PTSD symptoms associated with avoidance and arousal is part of this approach as it also is in other trauma treatments. In this PTG-based approach, there is more of an emphasis on disclosure about life in the aftermath of trauma rather than a focus on the trauma itself. Seldom would there be a repetition of trauma experiences as found in prolonged exposure. In fact, in Warrior PATHH, veterans talk relatively little about combat trauma, but rather the emphasis is placed on a future orientation that moves people toward new meaning and purpose. Exposure occurs naturally during the various program exercises and is not directed or guided by the exercise leaders. It is not unlike exposure that occurs in the discourse between a trauma survivor and someone within his or her social support system. *Narrative development* is encouraged through cognitive processing in order to develop a clearer sense of the events, and how they fit into the developing life story of the trauma survivor. Activities that encourage participants to consider or to reconsider their beliefs about their past, present, and future offer the possibility of PTG by creating a narrative that is a coherent story of the trauma, its context, and how it leads into a future that has a purpose. The orientation here is more future oriented than in other trauma treatments, and this narrative approach is a major portion of the work. The Expert Companion helps the individual see possibilities, and highlights often the emerging areas of posttraumatic growth that begin to be evident in most trauma survivors even in the early aftermath of trauma. The process of bringing these areas of growth into focus is often subtle, as it is important to attribute the changes to the hard work of the individual in the aftermath of trauma rather than to the trauma itself. The final element of the process is the development of a pathway

toward *service to others*. This is a capstone to the narrative where the trauma has been transformed into service in the family, community, or nation with an emphasis on wise and close connections with others who then benefit from the experiences of the trauma survivor. In this way, PTG becomes a way of life that may benefit many people, mitigates the distress of loss and PTSD symptoms that may continue at some level, and represents a sustaining sense of identity and an organization of activities and relationships. This transformation is encouraged by the Expert Companion who points out to the trauma survivor that the posttraumatic growth that has become evident equips them to effectively play important roles in ways they may not have considered previously. The narrative of the trauma experience becomes much more than a reduction of symptoms or mere survival when missions of service are defined and embarked upon.

### **Limitations and future work**

The results of this first attempt to quantitatively evaluate the Warrior PATHH program are promising but indicate that much more work lies ahead in developing effective and efficient interventions for military service members who are struggling with symptoms of PTSD and related problems. Although the response rate for this study was very high, it is useful to be able to gather data from a larger number of participants. How much the apparent success of the program is dependent on specific elements is not clear with this report of change over time. In order to determine what aspects of the program are primarily responsible for the gains reported would require a dismantling strategy, where certain parts of the program were provided only to a subset of participants. If it is to be generally and widely useful, the Warrior PATHH approach as implemented at Boulder Crest would need to be portable and translated to other settings. There are aspects of this program that make this difficult, primarily the use of outdoor activities that

require a physical plant that can support them. However, a number of important aspects of the program can be replicated in many settings: the PTG approach can be learned, and much of the program content can also be translated for other settings.

This pilot program evaluation does not provide a comparison group as Boulder Crest exists primarily to provide services to veterans and first responders and not as a vehicle for research. Therefore, it is not possible with this study to assert that the particular outcomes result from participation in the program. However, changes over several measures that remain stable over a long period of time do suggest that the participants are experiencing a level of successful living that is significantly different from previous functioning, that these changes occurred during the first week in the program, and they continued at least during the 18-month period of further support. If changes such as these typically occurred with veterans spontaneously, we would not be seeing the frequent reports of struggle and disability in this population. It is difficult to logically account for the changes measured here except as effects of the participation in the program.

There are likely to be some common factors at work in producing the gains reported above. The program is free to participants, and the recommendations by other veterans likely sets in motion a high degree of trust in the program and its staff, and expectations for success that lead to investment by the participants. The fact that the program is provided by staff who are veterans themselves is also likely to enhance trust as there is strong cultural competency here. The group approach may also enhance peer support and sense of safety. Optimizing common factors that are primarily relationship-based is a strength of this PTG-based approach to PTSD and related problems, and likely has a great impact on outcomes (Norcross & Wampold, 2019). The data reported here also suggest that the PTG basis for the program enhances outcomes on

variables that are symptom-based as well as those indicative of resilience and overall effectiveness in living.

As mentioned above, there are many ways the Warrior PATHH program is offered at Boulder Crest that are not replicable in most other settings. The question then becomes whether the specific ways the program is offered, in a tranquil natural setting, with many opportunities for outdoor experiences, with a group setting and peer trainers, and in a condensed residential setting, are responsible for much of the effects, or whether the effects can be replicated to an extent in a traditional private office setting. We believe that replicating the positive outcomes from Warrior PATHH is possible, and we have experience in doing this in our work with many individual clients. The five elements of the program previously described can all be offered in a traditional therapy, as noted in a case presented by Tedeschi (2011), and in a workbook that can be used as an adjunct to therapy or as a self-help guide (Tedeschi & Moore, 2016). Familiarity with the culture of the client (e.g. military culture), a relational approach described as Expert Companionship, and encouraging the client to engage in some of the kinds of activities included in the program can all produce effects that mirror those found in the Warrior PATHH program. We see PTG as a process that people naturally aspire to if given opportunity and guidance. At the same time, we also see that many of the people who come to Warrior PATHH respond more rapidly and robustly to the structure and experiences offered in the program, and likely have superior outcomes compared with individual therapies, even those that have a strong PTG component.

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## APPENDIX A

### Tables

*Table 1: Descriptive Statistics and Changes in Means*

Variables	Time One: Intake		Time Two: 18 Month Follow up		Mean Change
	Mean	SD	Mean	SD	
<b>Symptomology</b>					
PTSD	1.94	.83	.89	.79	-1.05 <sup>b</sup>
Depression	1.06	.76	.52	.61	-.54 <sup>b</sup>
Anxiety	.77	.67	.46	.56	-.31 <sup>b</sup>
Stress	1.32	.63	.85	.65	-.47 <sup>b</sup>
Stress Reactivity	1.07	.38	.71	.37	-.36 <sup>b</sup>
Insomnia	2.00	.81	1.20	.88	-.80 <sup>b</sup>
Negative Affect	2.49	.91	1.85	.68	-.64 <sup>b</sup>
<b>Positive Attributes</b>					
Posttraumatic Growth	2.08	1.14	3.24	1.30	1.16 <sup>b</sup>
Positive Affect	2.64	.75	3.27	1.04	.63 <sup>b</sup>
Ego Resilience	2.79	.52	3.17	.52	.38 <sup>b</sup>
Integration	2.91	.73	3.58	.87	.67 <sup>b</sup>
Self-Compassion	2.74	.52	3.35	.64	.61 <sup>b</sup>
Psych Flexibility	4.06	1.36	5.35	1.30	1.29 <sup>b</sup>

Note.  $n = 49$ . <sup>a</sup>  $p < .01$ . <sup>b</sup>  $p < .001$ . Stress Reactivity Scale 0-2; Depression, Anxiety, Stress Scales 0-3; PTSD, Insomnia Scales 0-4; PTG Scale 0-5; Ego Resilience Scale 1-4; Negative Affect, Positive Affect, Integration, and Self-Compassion Scales 1-5; Psych Flex Scale 1-7.

Table 2: Zero-Order Correlations between Posttraumatic Growth & Study Variables over Time

	Posttraumatic Growth		
	T1	T2	Change in r
PTSD	-.19	-.59 <sup>b</sup>	-.40 <sup>a</sup>
Anxiety	-.16	-.52 <sup>b</sup>	-.36 <sup>a</sup>
Depression	-.26	-.51 <sup>b</sup>	-.25
Stress	-.35	-.58 <sup>b</sup>	-.23
Insomnia	-.21	-.39 <sup>a</sup>	-.18
Negative Affect	-.38 <sup>a</sup>	-.53 <sup>b</sup>	-.15
Stress Reactivity	-.44 <sup>b</sup>	-.51 <sup>b</sup>	-.07
Psych Flexibility	.27	.57 <sup>b</sup>	.30
Integration	.36	.51 <sup>b</sup>	.15
Positive Affect	.31	.43 <sup>b</sup>	.12
Self-Compassion	.35	.46 <sup>b</sup>	.11

Ego Resilience	.60 <sup>b</sup>	.63 <sup>b</sup>	.03
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*Note.*  $n = 49$ . <sup>a</sup> $p < .01$ . <sup>b</sup> $p < .001$ . T1 = Time One; T2 = Time Two.  $r$  = Pearson Product Moment Correlation.