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Unique Posttraumatic Growth Expression Among Homeless Males Currently Enrolled in Chemical Dependency Treatment

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Abstract

Posttraumatic growth (PTG) has gained considerable research and clinical attention for the past three decades. While the impact of PTG has been well-researched in relation to trauma exposure, medical ailments, or mood related conditions, there are still a number of mental health conditions requiring further analysis. The current study examined the relationship between PTG and key substance use significance indicators, including diagnostic severity of the use disorder and number of previous substance use treatment attempts, among a sample (N = 136) of adult men who were enrolled in a mental illness/chemical dependency (MICD) intensive outpatient program (IOP). This study also examined how posttraumatic stress disorder (PTSD) symptoms may serve as a moderator of the relationship between PTG and substance use indicators. Results showed that PTG was significantly negatively correlated with both substance use severity and the number of previous substance use treatments. PTSD symptom severity was found to moderate the relationship between PTG and substance use severity for both moderate and high levels of PTSD symptoms, but not for participants with low PTSD symptoms. Specifically, those with high PTSD symptoms showed a significantly more negative relationship between PTG and substance use severity as compared to moderate PTSD symptoms. This same moderation effect of PTSD was not found between the number of previous treatments and PTG. Findings suggest that substance use and trauma exposure appear to correlate with the level of resilience in homeless populations. Findings provide a number of important clinical implications around the importance of addressing substance use concerns with populations who experienced trauma, and the role of mental health care in shelter settings. Future directions based on the present study emphasize the continued need for the inclusion of both positive and negative PTG ratings.

Keywords: Posttraumatic growth, substance use, chemical dependency treatment, PTSD

CHAPTER ONE

Introduction

Research on trauma has often focused on the negative impact of adverse experiences (Silverstein, et al., 2017). However, humans have long sought to understand the many positive outcomes that can occur during challenging experiences (Tedeschi & Calhoun 2004). Today, modern research has begun to explore this concept from an observable lens. Within our current understanding, positive growth that can occur following trauma and adversity has come to be described as posttraumatic growth (PTG; Tedeschi & Calhoun, 1996). Research on PTG has made many strides over the past two decades, with a substantial body of literature emerging to observe the various ways growth can be fostered in adversity.

Despite advances in our understanding of PTG over the past 25 years, recent research has pointed towards a growing number of methodological concerns within the current body of PTG literature (Boals & Schuler, 2018). One of the most concerning of these methodological issues is validity problems for the most commonly used measure for PTG, the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). Whereas earlier validity research on the PTGI found it to be a reliable measure for PTG (Calhoun & Tedeschi, 1998), more recent critiques of this instrument (Boals & Schuler, 2019; Boals & Schuler, 2018; Frazier et al., 2009) have identified a number of concerns related to its overall construct validity.

Another problem in the current literature on PTG is the generalizability of results from the samples being studied. It is common in a large amount of PTG studies (Bernard et al., 2015; Boals et al., 2019; Frazier et al., 2009; Jayawickreme et al., 2018; Kilic et al., 2016; Lindstrom et al., 2013; Park et al., 1996; Sheline, 2015; Silverstein et al., 2017; Taku & McLarnon, 2018) to use convenience sampling through the use of undergraduate introductory psychology students as

a sample population. Even the original study to create the PTGI was normed using a college student sample (Tedeschi & Calhoun, 1996). As such, a common critique of the literature on PTG is the generalizability of this research to groups outside of undergraduate convenience sampling. This is especially relevant when considering that the average college student sample has a dominant representation of white, middle-class individuals (Peterson & Merunka, 2014).

More recent research has gone beyond convenience sampling to assess PTG with the PTGI using other populations and trauma types. These studies have included survivors of various adverse events such as natural disaster (Jin et al., 2014), sexual assault (Frazier et al., 2001; Belknap, 2019), breast cancer (Ruini et al., 2015), and other trauma (Hasselle et al., 2019; Shakespeare-Finch & Armstrong, 2010; Shakespeare-Finch, et al., 2013). These studies have also included samples such as intimate partners (Canevello et al., 2016), war veterans (Kaler et al., 2011), community samples (Karanci et al., 2012; Thomas, 2018), homeless populations (Stump, 2006; Solorzano, 2014), and pregnant or new mothers (Sanford, 2016). In general, these studies corroborated the findings of those that were conducted using college samples. Even with these advancements in generalizability, most of the samples utilized still consisted of predominantly white, female individuals, with a few isolated studies using Turkish (Karanci et al., 2012) and Iraqi (Kilic et al., 2016) samples. Much more work needs to be done in order to improve the generalizability of PTG literature by increasing the use of more diverse samples, particularly around ethnicity and class.

It has been clearly established that ethnicity and class often influence the trajectory and impact of PTSD symptoms for an individual, and as such are likely to influence expression of PTG. Cultural factors play a significant role in the overall understanding of how traumatic exposure impacts an individual's life. Often, ways in which an individual's worldviews are

impacted following traumatic exposure differ, depending on their culturally reinforced beliefs. These include collectivist or individualistic perspectives, beliefs in purpose and fate, or beliefs in spiritual or religious intervention in their lives. Due to these many cultural variables to interpreting and understanding trauma and adversity, there is no "universal foundation" (Kashyap & Hussain, 2018, p. 58) to how individuals are impacted, and as such, cultural components are a necessary variable to include when exploring these concepts.

One important underrepresented group for studying PTG are individuals struggling with chemical dependence, as only a small handful of dissertations (e.g., Sanford, 2016; Stump, 2006) have previously examined this group. A study by the National Survey on Drug Use and Health (NSDUH, 2018) estimated a total of 19.7 million adults in the United States were diagnosed with a substance use disorder (NSDUH, 2018). It is important to expand on our limited understand of PTG expression for individuals with chemical dependence, as it is already widely understood that this group often experiences high rates of traumatic exposure and PTSD symptoms (Khoury et al., 2010; Reynolds et al., 2005). The experience of trauma and adversity oftentimes leads to the development of disorders such as substance use or chemical dependency (Jacobsen et al., 2001). Commonly found among the literature is that trauma and substance use can positively correlate with each other, especially when that trauma is considered interpersonal in nature (Ullman et al., 2013). Interestingly, the presence of PTSD symptoms from traumatic exposure appeared to increase the correlation found among trauma exposure and substance use, especially when examined for alcohol abuse (Ullman et al., 2013).

Even with this understanding of the strong association between PTSD and substance use, the association between PTG and substance use is nearly absent. Studies so far have examined only substance use populations who identify as women when investigating the relationship

between substance use and PTG (Sanford, 2016; Stump, 2006). Additionally, while much is known of the negative effects of substance use as it impacts the severity of PTSD symptoms (Ullman et al., 2013), an understanding of the growth outcomes and resilience should be given equal, if not greater, priority to better benefit this population.

The present study will explore relationships between substance use, PTG, and PTSD in a population of men experiencing homelessness while enrolled in a substance use treatment program. This study is important for several reasons. Because questions related to the validity and generalizability of the PTGI are inhibiting the claims of the broader PTG literature, the present study attempts to address these concerns by exploring how PTG presents in a novel population. Specifically, a unique sample population will be used consisting of homeless men who struggle with chemical dependency concerns who are currently enrolled in a partial hospitalization mental health setting. The use of this sample of men who have experienced homelessness and chemical dependency is of particular interest and value to this proposed study, as these individuals often experience a significant number of traumatic life experiences. While it is common for individuals who are experiencing homelessness to have had traumatic events prior to the onset of homelessness (Kushel et al., 2003), homelessness itself is a significantly traumatizing event that leads to further adversity for individuals, especially in areas of physical assault, exposure to violence, and sexual assault (Deck & Platt, 2015). In addition, substance use is commonly comorbid with homelessness (Kim et al., 2010). While these comorbidities are well understood, there is a significant gap in the current body of literature on the relationship between chemical dependency and PTG, with only a small handful of studies (Moore, 2019; Solorzano, 2014; Stump, 2006) examining this concept.

The present study will also utilize a more recent assessment measure, the Stress Related Growth Scales – Revised (SRGS-R), that has been found to address many of the validity concerns of the more widely used PTGI (Boals & Schuler, 2018). Through the use of this unique participant group as well as the utilization of a measure found to more accurately measure the construct of PTG, this study hopes to support the validity and generalizability of the SRGS-R. Further, this study hopes to build on the limited amount of research examining PTG within the chemical dependency population by being the first to examine this group using the SRGS-R. In addition to this, this study hopes to be the first to study PTG in a male sample of individuals with chemical dependency concerns.

Findings from this proposed research project may be particularly important to clinicians who are working with individuals who experience homelessness and/or chemical dependency. Addressing the growth that an individual has had through traumatic experiences or building insight in a manner that fosters growth among individuals who are homeless could have a lasting impact of healing to a population that is already highly prone to experiencing negativity and hardship in their lives. More specifically, identifying ways in which growth is more commonly manifested and expressed within this population will aid clinicians in more effectively providing care and treatment to these individuals. If it is true that lower substance use severity leads to a higher potential for PTG expression, this will help direct clinicians to addressing the concerns with an individual's chemical dependency needs prior to engaging in their mental health goals related to trauma and resilience.

In the following chapter, the overall history of PTG will be outlined as it is conceptualized from its early beginnings to our most recent understanding. Specifically, a review will be provided of its measures, common sampling groups, and historical conceptualizations of

key areas within the current body of literature. An overview of our current understanding of moderating and additional variables that contribute to PTG will also be examined. Specific gaps in the literature will be highlighted, particularly related to methodology relevant to the proposed study. In addition to this, Chapter Two will include an overview of both homelessness and substance use as they individually relate to trauma and PTG. A rationale will then be provided for how the proposed study will address a number of gaps in the current body of literature. Chapter Three will review the methodologies for addressing the four proposed hypotheses including a description of the population sample, inclusion and exclusion criteria, overall procedures, measures to be used, ethical considerations, as well as a description of how the data will be analyzed. The results of this proposed study will then be presented in Chapter Four. In Chapter Five, these results will be interpreted and placed in the context of other research on PTG. In addition, clinical implications, strengths, limitations, and directions for future research will be identified and discussed.

CHAPTER TWO

Literature Review

Historical Grounding of Posttraumatic Growth (PTG)

Posttraumatic Growth (PTG) is a concept first coined by Tedeschi and Calhoun (1996) and has since gained significant attention in the broader resilience literature (Tedeschi & Blevins, 2015). While the basic premise of PTG as a concept is not a new thought (Tedeschi & Calhoun, 2004), its specific application to the resiliency literature has made a significant impact on our current understanding of suffering and adversity. PTG can be defined as "the experience of positive change that occurs as a result of the struggle with highly challenging life crises" (Tedeschi & Calhoun, 1996, p. 1), or more specifically "*trauma*" (p. 1). While PTG within the context of trauma resilience has gained a significant amount of backing in the literature (Tedeschi & Blevins, 2015), the various components through which that growth is attained have been more closely examined by a wide array of research in areas such as meaning making (Garland et al., 2015; Park, 2010; Tedeschi & Blevins, 2015), personality traits (Karanci et al., 2012; Taku & McLarnon, 2018), personality changes (Jayawickreme & Blackie, 2014), social supports (Belknap, 2019; Canevello et al., 2016; Prati & Pietrantoni, 2009), psychosocial variables (Brooks, 2018), philosophical flexibility (Lindstrom et al., 2013), effective coping strategies (Hasselle et al., 2019), allostatic overload (Ruini et al., 2015), event centrality (Bernard et al., 2015), religious coping (Park, 1996; Tedeschi & Calhoun, 2004), and type of trauma (Benfer et al., 2018; Kilic et al., 2016; Shakespeare-Finch & Armstrong, 2010; Thomas, 2018).

Early research by Tedeschi and Calhoun (1996) described the various "positive changes" (p. 456) that could present in an individual who has experienced trauma. These changes were broken down into categories such as "perceived changes in self" (p. 456), "a changed sense of

relationship with others" (p. 456), and "a changed philosophy of life" (p. 457). These researchers also developed the first measure which was recognized to observe these changes: the Posttraumatic Growth Inventory (PTGI). The PTGI assesses these three concepts: changes in self, relationships with others, and philosophy of life, using five unique "factors" (p. 460): *Relating to Others*, *New Possibilities*, *Personal Strength*, *Spiritual Change*, *and Appreciation of Life*. The PTGI currently stands as the most commonly used measure of PTG (Boals & Schuler, 2018; Shakespeare-Finch et al., 2013), with more recent modifications being made to address current validity concerns (Frazier et al., 2009). A search of "*posttraumatic growth inventory*" into *Google Scholar* yielded 7,290 results, demonstrating the growing body of literature which relied on this measure to observe PTG in many populations and clinical settings.

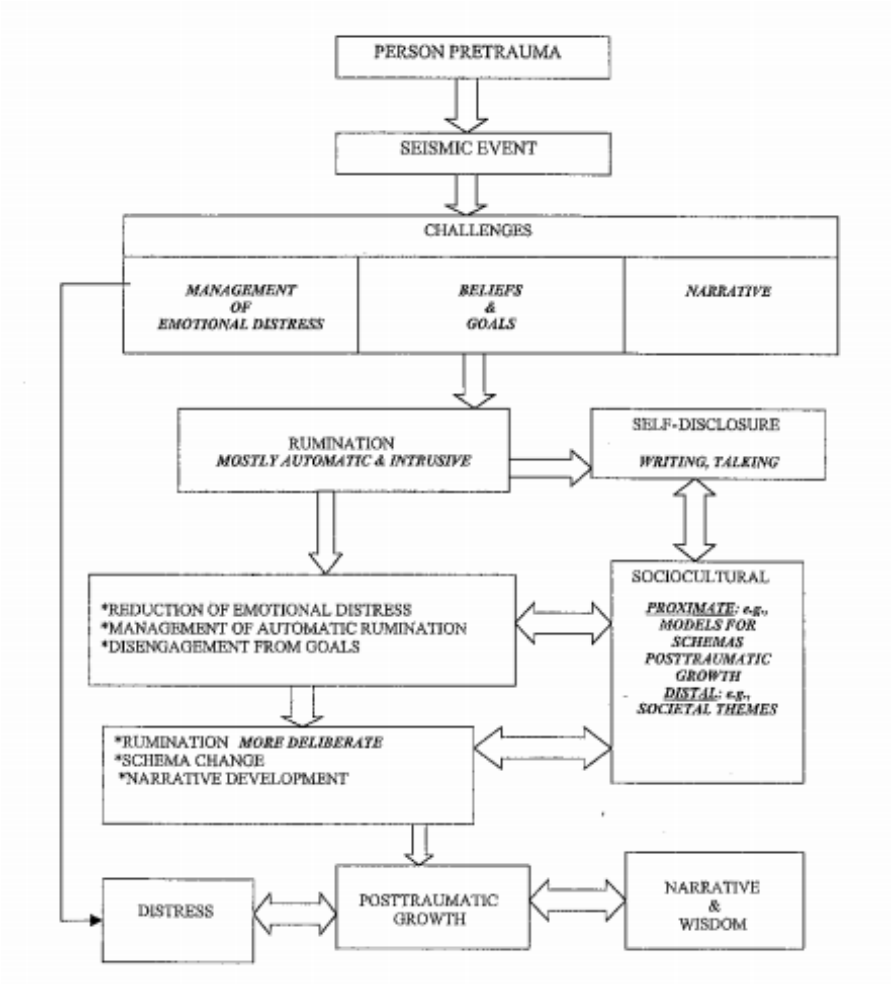
In terms of reliability and validity of the PTGI, there were a number of noteworthy strengths as well as some weaknesses of this instrument as outlined by Tedeschi and Calhoun (1996). With regard to reliability, the 21-item PTGI was originally found to have excellent internal consistency ($\alpha = .90$). When reviewing the individual five factors, the internal consistency was found to be highest for *Spiritual Change* and *Relating to Others* ($\alpha = .85$) and lowest for *Appreciation of Life* ($\alpha = .67$) which was more in the questionable range. Test-retest reliability was assessed using a small sample of 28 individuals with a two-month window between administration times. The total 21-item PTGI was found to be in the acceptable range ($r = .71$). However, *Personal Strength* ($r = .37$) and *Appreciation for Life* ($r = .47$) were found to have unacceptable test-retest reliability with the other factors, which ranged from $r = .65$ and $r = .74$.

With regard to validity, the PTGI was compared with similar constructs that were assumed to have correlations such as social desirability, personality characteristics, or coping

through religious means. These constructs were assessed using measures such as the NEO Personality Inventory (Costa & McCrae, 1985), the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), as well as a brief religious beliefs questionnaire (Pressman et al., 1990). While certain positive correlations were expected within the study such as openness, extraversion, optimism, and religious participation, Tedeschi and Calhoun (1996) initially theorized that social desirability would not correlate with the PTGI and that neuroticism would be negatively correlated. However, neuroticism was found to not correlate with any of the five PTGI factors nor the total PTGI scale score. Ultimately, the PTGI was found not to correlate with social desirability on all factors other than *Appreciation of Life* ($r = -.15$, $p < .01$). Many correlations were found with the PTGI factors and personality traits including extraversion ($r = .31$), positive emotions ($r = .34$), and openness ($r = .28$).

Figure 1

Process of PTG as Described by Calhoun and Tedeschi (1998)



The process by which PTG manifests is described by Calhoun and Tedeschi (1998) in Figure 1. The starting point is the individual prior to the trauma. In the early stages of PTG conceptualization and research, adverse events were described with synonymous terms such as "crisis, highly stressful event" (Tedeschi & Calhoun, 2004, p. 1). These terms often described trauma in a broader sense than how the symptoms are directly related to a clinical diagnosis of Posttraumatic Stress Disorder (PTSD) as described in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; American Psychiatric Association [APA], 2013). Calhoun

and Tedeschi (2006) described their understanding of traumatic events as they pertain to PTG in further detail:

> A good way to judge whether an event is truly traumatic may be to consider the way it disrupts the personal narrative. If a person refers to a negative event as a watershed that divides a life into "before and after" the event, it has been traumatic and it can initiate the cognitive engagement that produces PTG. (p. 9)

A thorough exploration of the definitions of trauma and adverse events as it relates to the current literature on PTG is described in more detail in subsequent sections.

According to Calhoun and Tedeschi (1998), once the crisis occurs, an individual is faced with a number of obstacles, including: the management of one's emotional distress as well as challenges to one's overall beliefs, goals, and previously understood narratives. These challenges can lead to rumination on the crisis that is mostly automatic and intrusive initially, but these challenges can eventually change into more positive ruminations over the event. This positive rumination process then leads to a reduction in the previously held challenges of emotional distress and disengagement from goals, while also beginning to build a more positive narrative of one's experiences around the trauma. Other influential components at this stage of the process include both proximal and distal sociocultural components. Distal components include overall cultural themes within the individual's environment that are not directly related to their immediate experiences but are impacted by the trauma. Proximal cultural components include reference groups within the person's more immediate environment in which to engage with about the traumatic event. As all of these components are played out over time, and when the individual is successful in engaging with the many processes towards growth, PTG is

established. This culminates in a reduction in distress over the traumatic event as well as a more positively altered narrative and increase in wisdom surrounding one's traumatic experiences.

Further research in the conceptualization and empirical basis of PTG continued with Tedeschi and Calhoun's (2004) work. In this study, these researchers outlined the process through which PTG is manifested in the face of adversity. They opined that, while the experience of traumatic life crises usually results in the formulation of "unpleasant psychological reactions" (p. 2), humans have been pointing towards the avenues of positive change for "thousands of years" (p. 2). Tedeschi and Calhoun (2004) described PTG as more of a process and less of an outcome following a traumatic event: "Growth, however, does not occur as a direct result of trauma. It is the individual's struggle with the new reality in the aftermath of trauma that is crucial in determining the extent to which posttraumatic growth occurs" (p. 5). This process, then, is outlined as a specific series of outcomes and challenges following the "seismic event" (p. 7) that is an individual's crisis or trauma.

Domains of Establishing PTG

Changes in Self

As a result of the process by which PTG is manifested, growth is seen within three domains, including changes in self, relating to others, and philosophy of life (Tedeschi & Calhoun, 1996). With regards to changes in self, researchers summarized this overall phenomenon as being "vulnerable yet stronger" (Calhoun & Tedeschi, 2006, p. 5). This feeling of vulnerability is thought to arise out of the threatening nature of the traumatic experience and how this challenges our assumptions about our world. While it is common to experience our world as more unpredictable and dangerous in response to a trauma, the challenges we face in our assumptions about the world also present the opportunity for new possibilities, activities,

interests, or life paths. These new possibilities can come in many forms and often relate directly with the outcome of the traumatic experience. While not being the case for all narratives of crisis, new opportunities or self-understandings not formerly present prior to the trauma are often a guiding light to the pathway to resilience following adversity.

Relating to Others

Calhoun and Tedeschi (2006) explained further the phenomenon of relating to others. These crises or adverse events/experiences are described as potentially producing "the wanting, loss, and sometimes destruction of important relationships" (p. 5) while also having the possibility of creating "highly positive" (p. 5) interpersonal changes. The first change these researchers described is how someone views others, often resulting in a greater compassion for those suffering as well as an increased overall connection. It is important to mention that Calhoun and Tedeschi (2006) described this process as not being guaranteed to all of those experiencing suffering, and that these changes can often be a "double-edged sword" (p. 6) as the disclosure of socially undesirable experiences in the crisis can lead to challenges in relationships.

Philosophy of Life Changes

Finally, Calhoun and Tedeschi (2006) described further the details of philosophy of life changes. Through a crisis situation, they proposed that one's priorities are often shifted from what was once believed to be important to other matters of value. They described an example suggesting that someone may have previously found the pursuit of career success the most important aspect of their life, only to alter their perspective to include a renewed sense of family involvement after the revelation of a new cancer diagnosis. These scenarios are described as common experiences for those undergoing adversity. In addition, greater meaning is also

commonly found in experiences once rarely thought about prior to a crisis, such as spending time with one's children. This domain can, and often does, include a religious or spiritual component, which is consistent with research that has supported religion and spirituality as influential resources in the process of bereavement and PTG (Currier et al., 2013).

Trauma Defined Within PTG Literature

While PTG has been largely described as a process specific to traumatic events, the overall semantics of the term *trauma* should be reviewed as they have been used in the literature. While trauma can be described in a number of ways, and many studies (Brooks, 2018; Calhoun & Tedeschi, 2006; Tedeschi & Calhoun, 1998) often include their own unique working definition of the term, the common consideration provided in these definitions is the level of impact it has on the individual. Where the *DSM-5* (APA, 2013) holds a strict cutoff of the experience needed to be considered a traumatic event for diagnostic clarity for PTSD, what can be considered adverse enough for trauma is often more appropriately categorized by the severity of which the threat impacts the individual in the three areas previously discussed: changes to self, relation to others, and overall life philosophy (Tedeschi & Calhoun, 2006). As such, an event being categorized as traumatic relies less on the actual content of the experience itself and more on how the individual defines and interprets the impact of the experience on their life trajectory and narrative of their environment.

Trauma vs Non-Trauma Examined

The way in which trauma is defined by Tedeschi and Calhoun (2006) is further supported in research that examined the impact of a troubling event both inside and outside of a more clinical, *DSM-5* category A for PTSD (APA, 2013) definition of trauma. Other researchers have

attempted to explore the concept of PTG as it relates to events considered to be both traumatic and non-traumatic. Silverstein et al. (2017) examined this concept in a quantitative study of 666 undergraduate students who completed the Life Events Checklist (LEC-5) and the PTGI. Criterion A for PTSD (APA, 2013) was used as the cutoff for what was considered a traumatic versus non-traumatic event for how the groups were distinguished, with 400 participants classified as having experienced trauma and 266 participants classified as experiencing non-traumatic stressful events. Results suggested that PTG appeared to "not be qualitatively or quantitatively distinct" (Silverstein et al., 2017, p. 553) compared to growth observed from events that were considered to be stressful to the participant but not traumatic. The study found limitations in the high number of excluded participants due to their not providing a "sufficiently detailed" (p. 558) narrative.

While similar levels of PTG among traumatic and non-traumatic events were suggested within Silverstein et al. (2017)'s study, Kastenmüller et al. (2012) found contrasting results. It should be noted that the research studies had different methodologies, with Silverstein et al. (2017) having used a correlational approach and Kastenmüller et al. (2012) having used a more experimental methodology. In the study by Kastenmüller et al. (2012), participants ($N = 66$) were randomly assigned to the trauma group ($N = 33$) or stressor group ($N = 33$) in Study 1 and were asked to write an autobiographical account of their own traumatic or stressful experience depending on their group. Participants were then provided a variety of measures to assess for coping and thoughts surrounding the event. In Study 2 ($N = 40$) participants were randomly assigned much in the same way as Study 1, but then asked to rate the level of their stressful or traumatic event from zero to 10. Results suggested that PTG was found to express more highly with individuals who had experienced a traumatic event than those who do not. In other words,

the type of experience was found to have an impact on the way PTG was expressed rather than the way the experience was interpreted by the individual, as was originally posited by Tedeschi and Calhoun (2006).

While this discrepancy in results is readily apparent when compared to the findings of Silverstein et al. (2017) findings, similarities were noted in that emotion-focused coping appeared to mediate the level of PTG expression (Kastenmüller et al., 2012). Kastenmüller and colleagues' (2012) results appear to weaken the conclusion of similar PTG expression between trauma and stressful events. However, this study had a number of limitations, one being that the researchers randomly assigned participants to each group of traumatic and non-traumatic writing regardless of the severity, type, and frequency of traumatic or adverse event they each experienced. While this may initially be viewed as a more rigorous aspect of their research design, these researchers made no efforts to determine the time the traumatic or stressful event was experienced, nor did they rule out participants from the non-traumatic stressful group who had also experienced trauma. Additionally, the study was reported to use "friends and relatives of the experimenter" (p. 480) which likely introduced inherent bias that was not addressed in the study's conclusions.

Research by Mangelsdorf et al. (2018) helps to further address these discrepancies in the expression of PTG for traumatic and non-traumatic groups. This study provided a meta-analysis of 122 quantitative studies with nearly one half ($N = 60$) of the studies having used prospective data with at least two time points. Effect sizes of the studies were estimated using the available data and missing data was sought out directly from the original authors. Ultimately, results suggested that individuals may not have to experience traumatic suffering, in order to report growth within the context of PTG (Mangelsdorf et al., 2018). Social relationships, spirituality,

meaning, personal strength, self-acceptance, environmental mastery, personal growth, sense of autonomy, self-esteem, and psychological wellbeing were all identified as avenues of study within the research pool of PTG. An overall descriptive analysis of the literature examined in this meta-analysis ultimately expressed that there are not enough high-quality studies to draw a proper conclusion as to the relationship between PTG and traumatic events.

One notable explanation of the difficulties that Mangelsdorf et al. (2018) had in finding a definitive conclusion is the inconsistency with which individual studies define trauma. It can be assumed that many of the discrepancies found in results for PTG are the result of differing approaches to events and whether or not they match the researcher's definition of trauma. The overall definition of the term trauma as it is understood and conceptualized within individual studies suggests that researchers are likely assessing different life experiences with different understandings of their level of impact. A more direct and consensually agreed upon definition of trauma would likely be helpful in bringing together some of these divergent results.

Trauma Type Uniqueness to PTG Expression

Another emerging avenue of PTG research is how it is expressed uniquely to the content and manner of which the trauma is experienced. An important examination in the literature is how PTG is impacted based on whether the trauma was experienced personally or if the trauma was shared collectively by a group of people. One such by Kilic et al. (2016) examined this concept using 203 Iraqi students who had experienced war-related conflict and adversity. The students completed a short questionnaire in which they responded as to whether or not they experienced any of a list of 31 unique traumatic experiences. These participants were then separated into three distinct groups based on which traumas they endorsed: those who had experienced trauma to the self, those who had experienced trauma to another person, and those

who had experienced general adversity not defined to be traumatic within the working definitions of trauma by the study. Results suggested that traumatic events experienced by the self may result in lower PTG expression and growth compared to trauma that is experienced by others or shared collectively in a group.

This difference in PTG expression between more personal traumas compared to shared or community traumas was further examined by Shakespeare-Finch and Armstrong (2010) who studied PTG expression among three specific trauma types: motor vehicle accidents, sexual assault, and bereavement. This study used a sample of 94 participants, including both college students and local community members who participated in an earlier larger study. This study (i.e., Shakespeare-Finch &Armstrong, 2010) found that bereavement demonstrated the highest level of growth among the three groups, whereas sexual assault demonstrated the highest severity of symptoms for PTSD and subsequently the lowest PTG expression. While this study did not directly make similar claims about the interpersonal nature of the trauma type as Kilic et al. (2016) concluded, the results paralleled this idea in a number of ways. Bereavement as an adversity compared to sexual assault or motor vehicle accidents is oftentimes accompanied by shared experiences with others in the same situation of grief. Thus, there is likely a more significant level of community involvement in the grieving situation. Through this, it can be speculated that motor vehicles accidents, while likely not equating to the same level of shared adversity as bereavement in most scenarios, are still far less interpersonal in nature than that of sexual assault which can be viewed as the most personal of the three traumatic experiences.

While there is evidence emerging as to the uniqueness of PTG expression by the type of trauma experienced, there are a number of studies that point towards the limited and statistically insignificant differences among trauma type as it pertains to level of growth found within PTG.

While trauma expression is reported to differ in those who have experienced interpersonal trauma compared to non-interpersonal trauma (Stein et al., 2006), a study by Thomas (2018) using a sample of 158 community participants from a residential program and healthcare agency found different results. This study found that even though individuals who experience more interpersonally based traumatic experiences express higher levels of PTSD symptoms compared to those who experience non-interpersonally based traumas, the resulting PTG expression among these two groups was found to be statistically insignificant.

Another study by Sheline (2015) using a sample of 335 mostly female college students found similar insignificant differences between individual trauma types. This doctoral thesis used the PTGI to compare PTG expression among those who experienced bereavement, accidental injury, and acute or chronic illness as well as how these traumas compared to suicidality. Results found no statistically significant differences across any of the five PTGI domains for the three trauma groups, nor did they differ significantly in their overall suicide risk.

While research is continuing to emerge in this area, the overall body of literature is still in its infancy and has often involved samples with limited generalizability (i.e., college students). One reason for this limitation is the difficulty with which researchers are able to objectively compare trauma types within similar samples in a meaningful way (Thomas, 2018). As a result of this limitation, PTG research studies often tend to examine one specific type of trauma, making it difficult to compare among individual research studies.

Neuropsychology of PTG

Recent research has begun to explore the various neurological implications involved in PTG. Specifically, a study by Pierce et al. (2023) explored the impact of various therapeutic interventions such as eye movement desensitization and reprocessing (EMDR), cognitive

processing therapy (CPT), and prolonged exposure (PE) on the neural activity that underlies PTG in a meta-analysis of 29 studies. Overall results found that PTGI scores appeared to be impacted by all three therapeutic interventions, with EMDR showing the highest positive change on PTG compared to the other two modalities.

While the biological correlates of PTG is still a new concept in the literature (Dell'Osso et al., 2023), various studies have explored certain neurobiological components that can be used to better understand the biology of PTG. One such study by Fujisawa et al. (2015) examined the impact of PTG on activation in certain parts of the central executive network, specifically the rostral prefrontal cortex as well as the superior parietal lobule. They did this by gathering a sample of 33 volunteers who were considered "healthy" (p. 2) and did not have major mental health or medical conditions or who had current chemical dependency concerns. Participants completed the PTGI as well as imaging studies and a multiple regression analysis was conducted. Overall results found that higher "PTGI scores were significantly positively correlated with the strength of the brain activity in the rostral prefrontal cortex … and superior parietal lobule" (p. 7). While this is a novel finding, an important limitation to the findings is that only "healthy" (p. 2) individuals who had no major mental health, medical, or substance use condition were used in the study. As such, it is reasonable to assume that those who may show lower PTG, even in the brain regions outlined in the study, also showed increased risk of adverse effects like mental health or substance use, and as such would be excluded from this study.

Neurobiological factors to PTG were further examined in a study by Anders, et al. (2015) who mapped out specific neural markers that were connected to PTG using imaging studies of veterans diagnosed both with PTSD as well as without. A total sample of 299 (193 with confirmed PTSD and 106 without) were gathered and completed various measures including the

PTGI and then imaging studies were conducted using magnetoencephalography (MEG). Overall results of the study found that "the strongest PTG related modulation was observed in the [right medial prefrontal cortices] in the [non-PTSD group]" (p. 2018) while having "essentially no modulation in the [right medial prefrontal cortices] in the PTSD group" (p. 2018) even though both groups had largely the same PTG scores. As such, those who were not diagnosed with PTSD showed more brain activation in areas of the brain that revolved around "decision making, executive control, reward-guiding, learning, and decision making about risk, reward, and memory" (p. 2018).

The role of the prefrontal cortex to PTG was further examined in a study by Nakagawa et al. (2016) who used a sample of 26 individuals who had experienced a severe earthquake in Japan. The study used the PTGI as well as imaging to examine the gray matter volume in the prefrontal cortex based on the level of PTG expressed in the participants both before and after the disaster. Results of the study found a positive correlation between the increased gray matter in the prefrontal cortex in the right dorsolateral region in those who had a higher PTG score. The results provided evidence to regions of the prefrontal cortex being "the main neural correlate" (p. 1) to PTG.

Pandemic Impact to PTG

The onset of the Covid-19 pandemic, much like other pandemics throughout human history, has shaped and impacted communities on a global scale. While each individual faces unique challenges and hardships from health crises, financial and employment loss, or overall disruption in routine and sense of normalcy, Covid-19 has created a unified community trauma, or "mass trauma" (Chen et al., 2020, p. 109) shared distinctly by everyone across the globe. Covid-19 has been continuing to evolve since its wake in 2020, and as such a wide array of

research is emerging to observe the specific impacts that the pandemic has on resilience and PTG.

Healthcare Workers

One specific demographic of research to Covid-19 impacts for PTG is often considered the *ground zero* of the global health crisis: healthcare workers (Chen et al., 2020; Feingold et al., 2022). It is a reasonable assumption that healthcare workers, including those in direct care settings such as nurses and doctors, are subject to acute and chronic traumatic experiences. This exposure brings fourth many mental health impacts. Biber et al. (2022) observed these impacts in a cross-sectional survey of United Stated healthcare workers. They included a number of various screeners for mental health, sleep patterns, stress, and occupational risks. Results of the study found that the highest cause of stress consistently reported by both direct care providers as well as support staff was uncertainty. While many other elevations were noted such as high anxiety symptoms, inadequate sleep, and increased stress, the uncertainty around when the pandemic will be under control was found to be the largest source of stress among this sample.

While the Covid-19 pandemic has had many negative impacts across a global scale, emerging research has specifically examined the positive impacts and PTG that is also emerging, particularly among healthcare and nurse staff. One such study was conducted by Chen et al. (2020) who conducted a large-scale survey of nurses during the pandemic to observe both burnout, trauma, and PTG. The survey involved a sample of 12,596 providers with over half of whom (52.6%) worked directly in settings designated to respond to the pandemic. Results of the study found that 13.3% of respondents indicated traumatic responses to at least a moderate degree, while 39.3% of respondents indicated some form of PTG. The study found a gender discrepancy where women were reported to have higher scores on mental health measures

compared to men. Specific factors such as gender (women) and working in critical care units compared to supportive care settings were shown to have higher degrees of burnout as well as depersonalization.

PTG among healthcare workers during the Covid-19 pandemic was further researched by Feingold, et al. (2022) through a multivariable logistic regression analysis of the pandemic at its peak in 2020 as it compared to seven months following the peak. In this sample of 787 workers directly picked by hospital administrative staff to be most impacted in their settings by the pandemic, 77% of those workers reported PTG seven months following the peak of the pandemic. The PTG expressed was broken down into the five specific domains previously outlined by Tedeschi and Calhoun (2004)'s original model for PTG: appreciation of life, relating to others, personal strength, new possibilities, and spiritual change. Of those five domains, appreciation of life was found to have the highest positive change seven months following the peak of the pandemic, with spiritual change demonstrating the smallest, yet still positive change.

Homelessness and Unhoused Individuals

While there is no question that homelessness impacts individuals in many different ways, the wake of the global pandemic of Covid-19 introduces continued unique challenges for those facing housing insecurity compared to the already baseline hardships that are introduced in these unprecedented times. Global health emergencies such as the Covid-19 pandemic place a heavy amount of strain on community resources, especially those that are already stretched thin and limited such as those designated for homeless and unhoused individuals. Covid-19 has been impacting communities all across the world since it first onset in 2020, and with it a wide range of research is emerging that has observed this unique impact particularly with homeless individuals.

One such article by Tsai and Wilson (2020) described the many ways in which homeless individuals in the United States and Canada were uniquely impacted by the Covid-19 pandemic compared to housed individuals. Tsai and Wilson (2020) explained that individuals who were experiencing homelessness during the pandemic were often living in environments that were conducive to the spread of infectious disease. Whether in a shelter setting or unhoused and living on the street, homeless individuals are often living in communities with limited access to proper hygiene and social distancing opportunities. In addition to this, Tsai and Wilson (2020) explained that individuals experiencing homelessness are also often forced in positions of being more geographically transient than those with permanent housing who have the option to shelter in place. As such, individuals experiencing homelessness are at increased risk of infection due to being more mobile and exposed to larger populations of potentially positive for Covid-19. When lockdowns are imposed on major cities, there are often limited options available to individuals who are unhoused to adhere to the restrictions put in place, and Tsai and Wilson (2020) emphasized that cities are often unprepared or have limited clear direction on how to offer assistance to individuals in these positions.

The increased risk of individuals experiencing homelessness to be exposed to the negative impact of the Covid-19 pandemic was further emphasized through an article by Lima et al. (2020). They explained that individuals in shelter settings and living on the streets have a myriad of variables that create an increased risk for contracting Covid-19 compared to housed individuals. In particular, lack of proper sanitation, shared amenities, and even limited ventilation all increase the risk of exposure to the Covid-19 virus, and these are all factors that individuals struggling with homelessness are commonly faced with. Lima et al. (2020) also outlined that individuals experiencing homelessness are also at increased risk for having underlying medical

conditions that may leave them more immunocompromised. All of these concerns combined mean that individuals who are homeless and unhoused have many increased risk factors that increase not only their risk of infection to Covid-19 but also the negative side effects of the virus due to the limited access to proper medical care and resources.

The specific impacts of the Covid-19 pandemic on homeless communities were researched by Rodriguez et al. (2021) who conducted 18 semi-structured interviews with representatives in 15 different community organizations such as shelters or other homeless service providers. The study used a qualitative content analysis of the interviews and found that many community organizers shared significant concerns with the homeless communities they served. Common challenges outlined were poor health and hygiene conditions, limited access to proper health care, isolation and its impact on mental health as well as increased behavioral concerns, and crowded conditions. Another consistent concern raised was the lack of organizational level response to the fluctuating demands of the pandemic for homeless communities; where one specific organizer shared “there was no rulebook whatsoever” (p. 5) for how professionals should address the community concerns as they evolved through the various pandemic stages.

One particularly important factor outlined by Rodriguez et al. (2021) was the limited adherence with quarantine practices for individuals experiencing homelessness. Results of their interviews consistently found that unhoused individuals rejected quarantine practices not due to a lack of compliance, but instead due to the inability those individuals had with separating from those they relied on for basic needs. Whereas a securely housed individual may be able to rely on their own resources during times of quarantine, unhoused individuals do not have the option of distancing themselves from others who they rely on for basic needs like food or amenities.

The direct impact of the Covid-19 pandemic on homelessness was further explored through direct semi-structured interviews of 34 individuals experiencing homelessness in a study by Rodriguez et al. (2022). Qualitative themes around individual, interpersonal, community, and societal constructs were gathered using Nvivo12 qualitative coding software and found a multitude of further conclusions to the unique challenges that individuals facing homelessness experience during the Covid-19 pandemic. On an individual level, factors such as pre-existing conditions, inadequate conditions to meet quarantine needs, substance use increasing susceptibility to exposure, further loss of income, and overall limited health literacy were all highlighted by individuals. At the same time, some positive aspects were also highlighted such as increased employment opportunities due to the overall fluctuating job market.

On an interpersonal level, Rodriguez et al. (2022) found that individuals experiencing homelessness during the Covid-19 pandemic expressed common themes around increased exposure risk and community transmission, mistrust in provider and healthcare institutions and communication, and overall isolation fears as being the most prevalent concerns. On a community level, common themes were expressed such as delays and disruptions in previously acquired services, increased discrimination, and limited access to proper health and hygiene resources as being consistent concerns. On a societal level, common themes were highlighted such as limited access and availability of vaccines to homeless individuals, challenges in acquiring federal relief funding, overall quarantine guidelines that rarely or inadequately accounted for the unique context of homelessness, and overall confusion surrounding Covid-19 specific policies and procedures as being overall challenges highlighted in the sample. At the same time, a few positive themes such as increased visibility for homeless communities to the broader society and culture were noted as helpful outcomes to the pandemic.

Overall, the unprecedented challenges of the Covid-19 pandemic, while impacting virtually all communities across the globe, posed a disproportionate array of risks to individuals experiencing homelessness. A wide array of research has consistently outlined a call to action not only for policy holders to take direct action for homeless communities in the wake of the pandemic (Parsell et al., 2023), but that homeless communities were often facing the worst outcomes with the highest risk for exposure. This was shown to commonly be due to the limited resources and proper responses that accounted for the context unhoused individuals experience as compared to the broader community (Rodriguez et al., 2022).

Quantitative Assessment of PTG

Posttraumatic Growth Inventory

As discussed previously, the methods with which PTG has been researched are largely dominated by a single assessment tool, the PTGI (Tedeschi & Calhoun, 1996). The PTGI is a 21-item self-report questionnaire designed to assess PTG in five domains. Each item is rated on a Likert scale from zero to five with zero being "I did not experience this change as a result of my crisis" (p. 459) to five stating "I experienced this change to a very great degree as a result of my crisis" (p. 459). Respondents are prompted to answer each item based on the "degree to which the change occurred in your life as a result of the crisis/disaster" (Calhoun & Tedeschi, 1996, p. 1). The higher the raw score in each of the five domains, the higher the level of PTG is seen to be expressed within that specific factor. Mean scores can also be used to quantify overall PTG scores across the five domains.

Early validity studies on the PTGI have found it to demonstrate good construct validity while being moderately related to constructs associated with optimism (Tedeschi & Calhoun, 1996). This quality has been referred to as "positivity bias" (p. 468) and was not initially

described as impacting the overall validity or reliability of the measure when examined in the original three studies of college students in which this measure was developed. The content validity of the PTGI was further supported through the use of qualitative measures involving 14 trauma survivors (Shakespeare-Finch et al, 2013). The PTGI was even found to be a multidimensional tool (Taku et al., 2008) that can be utilized in conjunction with meaning-making and mindfulness (Tedeschi & Blevins, 2015) using the mindfulness-to-meaning theory (Garland et al., 2015) for the overall application of "cognitive processing" (Tedeschi & Calhoun, 2004, p. 5) for PTG. By cognitive processing, Tedeschi and Calhoun (2004) are referring to the restructuring of beliefs and values following adversity, similar to rebuilding after an earthquake, in a way that increases their resistance to further stressful events.

In addition to the validity considerations for the PTGI described above, Taku et al (2008) used Confirmatory Factor Analysis (CFA) with data from 926 participants experiencing various traumatic events to compare the five-factors of the PTGI with the original three domains outlined by Tedeschi and Calhoun (1996): changes in self, changes in relationships with others, and changes in philosophy of life. Taku et al. (2008) found that the five-factor model present within the PTGI matched well with the three domains outlined in the original research, with correlations ranging from .56 (*Spiritual Change*) to .85 (*Personal Strength*). These findings suggest that the PTGI can be meaningfully interpreted for both its individual factor scores as well as the total overall score of the measure. It is important to note that, while the studies outlined above supported the validity of the PTGI, concerns were raised in later periods of the literature (Boals & Schuler, 2018) that are reviewed later in this chapter.

Stress Related Growth Scales

The Stress Related Growth Scales (SRGS), while being a less commonly used measure for assessing PTG than the PTGI, is another frequently used instrument for assessing growth in adversity. Originally designed by Park et al. (1996), the SRGS was the first attempt by researchers to quantify positive results from stressful situations and was created before the original terminology of PTG was coined by Tedeschi and Calhoun (1996). The SRGS is the second most commonly used instrument used as a measure for PTG other than the PTGI (Boals & Schuler, 2018). The SRGS is a 50 item self-report questionnaire rating dimensions of "(*a*) stressfulness at the time of the occurrence (initial stressfulness); (*b*) current stressfulness; and (*c*) amount of "personal growth" experienced as a result of the event" (p. 76). Each item on the measure is rated from "0 (not at all), 1 (somewhat), or 2 (a great deal)" (p. 76). The SRGS was found to have good internal consistency (Cronbach's Alpha = .94) as well as acceptable test-retest reliability (r = .81) over a 2-week timeframe.

Validity Considerations in Current PTG Research

While PTG has gained considerable backing in the field of resilience research, there is a growing concern regarding the validity of the current body of literature as more thorough evaluation is conducted on the common methodologies and instruments utilized within this area of study. Some of the earlier critiques of PTG literature are identified by Frazier et al. (2009), who explored whether self-reported scores of PTG reflected genuine or real change among research participants. Research on PTG often uses self-reported measures and retrospective methodologies through which to examine its hypotheses. The PTGI, the most commonly used measure for PTG (Boals & Schuler, 2018; Jayawickreme et al., 2018), follows similar patterns. While it can be more challenging for researchers to gather prospective data on an individual's

change following a traumatic event, Frazier et al (2009) suggested in a study of 122 undergraduate students that retrospective measures such as the PTGI do "not appear to measure actual pre- to posttrauma change" (p. 912).

These validity issues have continued to gain attention in the literature, with a surge in studies in more recent years examining specific concerns (Boals & Schuler, 2018; Boals & Schuler, 2019; Boals et al., 2019; Infurna & Jayawickreme, 2019; Jayawickreme et al., 2018). One of the most significant critiques of PTG research is the concept of perceived versus actual growth following a traumatic event. Often referred to as "illusory" (Boals & Schuler, 2018) growth, perceived growth is a concept alluded to by earlier PTG studies (Tedeschi & Calhoun, 1996) as being separate from overall PTG expression. The primary concern noted is how the PTGI may assess illusory forms of growth compared to actual growth through the experience of adversity. Illusory growth is viewed as one having a "positive bias" (Tedeschi & Calhoun, 1996, p. 468) over their experiences in a manner that does not reflect the objective change in lowering traumatic symptoms. While Maercker & Zoellner (2004) indicate that PTG often takes two forms, illusory and actual growth, illusory growth is indicated as often expressing in the earlier stages of adversity with few longstanding benefits to the individual. Even though illusory growth can be viewed as a healthy psychological coping mechanism for short term processing of a trauma, it proves ineffective at lasting change or true resilience for the coping of future adverse or traumatic events.

While Tedeschi and Calhoun (1998) made the claim that growth found to be illusory is "quite real" (p. 468) and should be considered equally impactful to PTG as other forms of growth, illusory growth has been found in more recent studies to not correlate with actual or genuine intrapersonal change following a traumatic event (Frazier et al, 2009). Maercker and

Zoellner (2004) further expressed this notion by separating PTG into two distinct categories of illusory and constructive fields after applying their own model for exploring PTG. Their model suggested that illusory PTG reflected more unhealthy coping skills such as avoidance and constructive PTG indicated more healthy coping skills such as openness.

The role of illusory growth within the PTG literature as well as its disservice to the overall understanding of genuine change has been examined by numerous empirical studies. Boals and Schuler (2019) compared self-reported growth following a non-traumatic event (shattered cell phone) using the PTGI. By this point the literature studying the PTGI was gaining considerable criticism for its role in applying illusory forms of growth to PTG (Jayawickreme et al, 2018). Boals and Schuler (2019) found that individuals who experienced an inconvenient, yet non-traumatic, event of their cell phone screen breaking reported significant levels of PTG surrounding that event when using the PTGI as a measure.

Boals and Schuler (2018) also examined this use of the PTGI using a large (N=614) sample of participants who had experienced a traumatic event. This study compared multiple measures for growth where the PTGI represented many areas of unconstructive and illusory forms of PTG. Results suggested that the PTGI may not be the most appropriate instrument for examining PTG due to a number of validity errors involving illusory growth. Infurna and Jayawickreme (2019) reviewed further concepts of illusory components to PTG and found that validity concerns are widespread throughout PTG literature due to the PTGI being a dominant assessment tool. As such, they recommended future research turn away from the PTGI and implement more longitudinal designs, in order to alleviate many of the limitations found in earlier studies.

Park (2010) further reinforced many of the concerns by Boals and Schuler (2018) where the longstanding discrepancies among empirical studies on stress and trauma research given the methodological validity issues in previous studies described above were outlined. Park (2010) reviewed the literature and found that much of the research pointed towards efforts in finding meaning behind stress and adversity without truly concluding that any meaning was actually made. Essentially, Park (2010) argued that the research behind finding meaning in adversity has continued to develop, yet the empirical studies that supported this literature have failed to adhere to these developments. As such, a large portion of the literature is finding mixed results due to this lack in foundations behind the theories.

Because concerns in assessment measures have become a central theme in critiques among the literature, current research has begun to examine alternative ways in which to measure PTG. One such measure is a revised version of the Stress Related Growth Scales (SRGS-R, Boals & Schuler, 2018) modified from the original Stress Related Growth Scale (SRGS; Park et al., 1996). The SRGS-R was originally compared to the PTGI and the SRGS for individuals who had experienced a traumatic event and was found to be "less prone to reports of illusory growth" (Boals & Schuler, 2018, p. 190). This was further reinforced by Bedford (2018), who evaluated the SRGS-R using a sample of 764 participants. Results replicated many of the findings by Boals & Schuler (2018) and found that the SRGS-R was a more appropriate measure for assessing PTG due to demonstrating better construct validity over the illusory growth that is expressed in the PTGI. While being considered an improvement, the SRGS-R is not perfect (Bedford, 2018). Part of the concern is that the SRGS-R is a new measure, and while the PTGI has several decades of research behind it, the SRGS-R has not yet had rigorous validity and

reliability assessment outside of a few studies (Bedford, 2018; Boals & Schuler, 2018; Boals & Schuler, 2019).

While it is apparent that PTG has been shown to express itself in numerous years of research (Taku et al, 2008), there are increased concerns related to other issues outside of instrument construct validity. A vast majority of the research studies in PTG literature have predominantly used undergraduate college students as participants, with virtually all of the original studies relying solely on these populations as a means of conceptualization (Park et al, 1996; Tedeschi & Calhoun, 1996). This undoubtedly raises concerns as to the etiological foundations from which PTG has been established, as undergraduate convenience samples raise many limitations to the generalizability of study results (Etikan et al., 2016). It is important to note that while undergraduate samples comprise a large majority of the PTG literature, there are also numerous studies that have examined PTG in other populations such as those who experienced combat (Kaler et al., 2011; Kilic et al, 2016), sexual abuse survivors (Belknap, 2019; Frazier et al., 2001), refugees (Powell et al., 2003; Sleijpen et al., 2016; Young & Chan, 2015), women in substance use treatment centers (Sanford, 2016; Stump, 2006), and homeless populations (Moore, 2019; Solorzano, 2014).

Also prevalent amidst PTG literature is the tendency towards retrospective study designs. While there is no clear indication as to why the field has focused on this form of methodologies (Jayawickreme & Blackie, 2014), there is research to suggest these specific approaches correlate modestly with genuine change (Frazier et al, 2009) and well-being (Helgeson et al, 2006). While it is understood that examining trauma is more ethically and financially challenging when using longitudinal methods, a vast number of studies have given recommendations to move in this direction of research (Hasselle et al, 2019; Infurna & Jayawickreme, 2019; Karanci et al, 2012;

Mangelsdorf et al, 2018; Mattei, 2019; Ruini et al, 2015). While this has been strongly advocated in the future directions of the literature, there are only a limited number of studies to date that have used a longitudinal method, with one such example by Dekel et al. (2011). This study examined the PTG and PTSD symptoms of ex-Israeli prisoners of war over the course of 17 years. Measures of their PTSD symptoms were cross lagged with their PTG scores, and results found that individuals who scored higher on PTSD symptoms had a tendency to score higher in PTG. Results pointed to the notion that PTG was maintained even through the presence of distressing symptoms consistent with PTSD, and that the growth expressed stayed consistent over time. A meta-analysis of longitudinal studies on posttraumatic growth conducted by Mangelsdorf et al (2018) found that certain domains of PTG have yet to be analyzed using longitudinal methods, as well as a strong tendency for longitudinal research in PTG to favor medical studies. While it is not within the scope of feasibility to conduct longitudinal research within the present study, an overview of this strongly recommended direction of future studies is important to the overall conclusions of the current body of literature.

Variables that Influence PTG Expression

PTSD Symptoms

A large portion of research on PTG over the past 10 years has attempted to ascertain which variables have an impact on the way that PTG is expressed in an individual following a traumatic or adverse event. One such variable is that of PTSD symptom expression. A meta-analytic review of the relationship between PTG and PTSD was conducted by Shakespeare-Finch and Lurie-Beck (2014) using a sample of 42 (N = 11,469) cross-sectional studies that examined symptoms of PTSD and PTG. Overall results of the meta-analysis found a significantly positive linear relationship (r = 0.315) between PTSD symptoms and PTG. In

addition to this, an even stronger curvilinear relationship was found between these two constructs ($r = 0.372$; $p < 0.001$). The strength of the relationship was found to be higher for children who experienced trauma ($r = 0.401$) than it was for adults ($r = 0.293$). Individual trauma types were also examined. The highest relationship between individual trauma types and PTG was found for those who experienced natural disasters ($r = 0.448$) and lowest for those who experienced sexual abuse ($r = 0.048$). These findings support the importance of including PTSD symptoms when examining the expression of PTG for future research.

Whealin (2020) furthered the conclusions of Shakespeare-Finch and Lurie-Beck (2014) by conducting a longitudinal study on the relationship between PTSD symptoms and PTG. Whealin (2020) examined this using a sample of 2,006 older-adult military veterans over the course of four-years. Researchers used an autoregressive cross-lagged panel regression analysis and found that greater PTSD symptoms were associated with greater PTG expression across three time points over the three-year period. Specific symptoms for PTSD that were found to correlate with the highest expression of PTG were anxious arousal and avoidance coping. Researchers also found that religious coping and active coping were subsequently associated with greater PTG outside of PTSD symptoms. Limitations of this study is the self-reported nature that is common among many areas within the literature. While it is longitudinal in nature, there was still a significant period of time (mean of 23 years) since individuals experienced their traumatic event being assessed in the study.

Taken together, while there are still some studies that argue that PTSD symptoms lead to fewer characteristics that foster PTG such as coping mechanisms (Stappenbeck et al., 2015), the overwhelming body of literature supports the notion of a positive relationship (Shakespeare-Finch & Lurie-Beck, 2014; Whealin, 2020). It can be difficult to ascertain why this relationship

may be present, especially as PTSD symptoms are often associated with negative outcomes (Ullman et al., 2013). One important takeaway from the results of PTG expression from PTSD symptoms is that it parallels with much of the understanding of growth from the original studies by Tedeschi and Calhoun (1996); that a traumatic and stressful event is considered one that shapes the way in which a person views themselves in the world. PTSD symptoms may likely be within the category of altering the overall perception of a person's environment, such as in the categories of *Dissociative reactions*, *Avoidance of stimuli*, *Negative alterations in cognitions and mood*, and especially *Persistent and exaggerated negative beliefs or expectations about oneself* found within the diagnostic criteria for PTSD (APA, 2013). The reason PTG is a likely product of these experiences is explained by Shakespeare-Finch and Lurie-Beck (2014) who emphasize how the presence of both positive (PTG) and negative (PTSD symptoms) resulting from a traumatic experience are often co-occurring, and both should be taken into consideration when reviewing how someone is impacted by and responding to adversity. Even still, it is important to emphasize that the relationship between PTSD symptoms and PTG is not "straight forward" (p. 227) for all trauma-trajectories or timeframes following the trauma, and many individual trauma types, like childhood sexual abuse, share vastly different overall outcomes to other trauma types.

Gender

Over the decades of PTG research, many avenues have been explored from which to identify specific variables that impact PTG expression following an adverse event. While gender differences in PTG expression were suggested in earlier research (Tedeschi & Calhoun, 1996), a later study by Vishnevsky et al. (2010) more closely examined this finding. In this study, a meta-analysis was conducted of 70 studies published prior to May of 2006 that used either the PTGI or the SRGS. In total, 16,076 participants were examined across 70 studies. Results of the meta-

analysis found “modest, but reliable gender differences” (p. 110) in PTG expression, in that women were more likely to report PTG than men. A notable moderating variable in this study was age, in which women were more likely to report PTG as their age increased compared to men. No publication bias was found between published and unpublished results regarding gender differences. Some possible explanations for gender differences in PTG found in this study included possible contrasts in coping strategies as well as ruminating behaviors among genders. More specifically, women were found to engage in more emotion-focused coping, which is a strategy suggested as being more directly related to PTG (Helgeson et al., 2006). Rumination was categorized in both constructive and non-constructive ways towards PTG expression, with women more often engaging in constructive rumination that fosters growth. It is important to note that among many studies not directly examining gender differences for PTG, men are often underrepresented in the samples (Mangelsdorf et al., 2018).

Gender discrepancies in sample populations are another validity issue found within the PTG research literature. In many studies of PTG, women are often represented in larger proportions than men. Early PTG research also raised assumptions as to the overall gender difference found among PTG expression, with women scoring higher than men (Tedeschi & Calhoun, 1996). One potential explanation of these differences was presented in a study (Wu et al., 2006) suggesting that women engaged in more positive and contemplative rumination than men. There have also been a number of empirical studies supporting higher levels of PTG among women samples (Jin et al., 2014; Vishnevsky et al, 2010).

Personality

Another avenue of research on influential variables involved personality changes. While it is alluded to in previous theoretical literature that certain personality approaches tend to

correlate with PTG expression (Park et al, 1996; Tedeschi & Calhoun, 2004), other researchers in the field have more directly examined the relationships between personality and PTG. Taku and McLarnon (2018) compared PTG expression as it relates to the HEXACO personality traits originally presented by Ashton and Lee (2009) to assess the Big Five (McCrae & John, 1992) areas of personality. Taku and McLarnon (2018) examined this concept in two studies using a combined total of 904 college student participants. Results of the two studies found "qualitatively distinct characteristics" (p. 40) among three of the five personality profiles reviewed in the study: spiritual change-minor, spiritual change-major, and individualistic PTG. Essentially, participants who showed less emotionality and greater openness to experiences as reflected in HEXACO personality scores showed higher expression of PTG. In addition, this study provided robust evidence in support of a person-centered model for the examination of PTG with specific predictors and outcomes dependent on the various personality presentations within the individual.

Another important personality trait to highlight within the research is that of optimism. The personality characteristic of optimism has been a key variable in understanding PTG expression from the very beginnings of research on PTG (Tedeschi & Calhoun, 1996). There is a growing body of empirical literature that supports optimism being positively correlated with PTG (Britton et al., 2009; Calhoun & Tedeschi, 2006; Helgeson et al, 2006; Milam, 2004; Taku & Cann, 2014; Tedeschi & Calhoun, 1996), including support from a broad meta-analysis on PTG expression (Prati & Pietrantoni, 2009). However, there is conflicting evidence in the literature, with optimism not being found to correlate with PTG in one meta-analysis of health psychology studies (Bostock et al., 2009).

One possible explanation for this discrepancy was examined by Maercker and Zoellner (2004) who reviewed optimism literature. They highlighted a two-point model of naïve and constructive optimism previously outlined by Epstein and Steil (1989). Maercker and Zoellner (2004) suggested that naïve optimism, which more closely resembled illusory forms of growth suggested by Tedeschi and Calhoun (1996), was associated with negative PTG outcomes and "deteriorating effects on adjustment" (Maercker & Zoellner, 2004, p. 47). Naïve optimism was shown to relate more with "cognitive avoidance and negative effects on adjustment" (p. 47). In contrast, "constructive optimism" (p. 44) was less associated with illusory components of growth and more associated with "openness to experience" (p. 46), or better cognitive adjustment in adversity.

Research has also examined PTG within basic personality traits such as agreeableness, conscientiousness, openness to experience, extraversion, and neuroticism with varying degrees of correlation or evidence within individual personality categories. In terms of agreeableness, significant positive correlations with PTG expression were found among a Turkish sample (Karanci et al., 2012), breast cancer survivors (Önder, 2012), and university students (Tashiro & Frazier, 2003). Some conflicting evidence was found among those experiencing heart disease (Sheikh, 2004), where no statistically significant correlation was found. Conscientiousness was found to significantly correlate with PTG across a number of studies (Garnefski et al., 2008; Karanci et al, 2012; Tedeschi & Calhoun, 1996), but was not found to correlate in samples of patients with heart disease (Sheikh, 2004) and romantic partner relationship termination (Tashiro & Frazier, 2003). Openness to experience was found to correlate with PTG across studies (Karanci et al, 2012; Önder, 2012; Tedeschi & Calhoun, 1996). Extraversion was found to positively correlate with PTG in samples of college students (Garnefski et al., 2008; Tedeschi &

Calhoun, 1996) but was not significant in those who had experienced romantic partner relationship termination (Tashiro & Frazier, 2003). Research on the relationship between neuroticism and PTG has also been shown to have some conflicting evidence in the literature. Studies have found no correlation between neuroticism and PTG (Sheikh, 2004) including one meta-analysis (Helgeson et al, 2006). However, neuroticism was found to correlate with PTG when mediated for posttraumatic stress (PTS) severity (Karanci et al, 2012) with higher PTS severity leading to higher PTG when mediated for agreeableness, extraversion, and openness to experience.

Taken together, the wide array of research that has examined how personality impacts PTG expression appears to support a number of traits for promoting PTG while showing some conflicting evidence to neuroticism as it impacts PTG growth. Specifically, the personality traits that demonstrated the highest support in the literature for fostering PTG were openness to experience and optimism as is defined by Maercker and Zoellner (2004). The results of personality's impact on PTG expression is important to the broader literature as it points towards the notion that PTG is impacted by a number of variables outside of simply the event itself, or how the event is interpreted by the one who it is experienced by. As such, any conclusions made about variables individually examined to impact PTG need to also take into consideration that there are likely many other variables that are impacting the results that are not directly researched within the study.

Event Centrality

There are a number of other variables that have been found to influence PTG, specifically within the realm of event centrality, or "the personal meaning of a negative event in relation to individual identity" (Bernard et al., 2015, p. 11). Bernard et al. (2015) examined this concept in

an undergraduate sample of 214 students who were tasked to describe in a few words the most traumatic experience and the most positive experience in their lives. Participants also completed measures designed to assess for significant life events as well as PTG and symptom measures. Results found that both positive and negative event centrality was associated with higher PTG scores when controlled for the type of trauma exposure. It is also important to note that negative event centrality was associated with higher levels of maladaptive functioning than was positive event centrality. The implications of these findings – that both positive and negative events impacting one's identity fostered higher levels of PTG – raise a variety of interesting assumptions, including that PTG is impacted by a wide range of experiences both positive and negative that are close and meaningful to individuals experiencing the trauma.

Allostatic Overload

Another factor contributing to overall PTG expression that parallels many aspects of event centrality is allostatic overload, or "the chronic, cumulative effect of stressful situations in daily life experienced by the individual as taxing or exceeding his or her coping skills" (Ruini et al., 2015, p. 109). The relationship between allostatic overload and PTG expression was examined by Ruini et al. using a sample of 60 breast cancer survivors as well as 60 "healthy stressed women" (p. 112) who completed several questionnaires about their life experiences as well as the PTGI. Results of the study found that women who were diagnosed with breast cancer but did not exhibit allostatic overload reported the highest PTG levels. An individual's resources, namely their coping skills and ability to overcome adversity, have been shown to have an impact on overall ability to cope and manage with their difficult life experiences (Ben-Zur & Michael, 2020), especially when perceived control and event centrality are factored in (Brooks, et al., 2017).

Intimate Partner Experiences

There are a number of extraneous variables examined in the literature that fall outside of the individual experiencing the trauma that impact PTG. One variable worthy of mention is the concept of mutual PTG among intimate partners and its association with overall responsiveness among the couple. Canevello et al. (2016) examined this concept using 48 intimate partners who had experienced extensive home damage following flooding. Each partner was administered measures of partner responsiveness and PTG at two separate time points from the beginning of the identified stressor to six months following the stressful experience. Their findings suggest that PTG can also involve an "interpersonal process" (p. 339), or responsiveness of a partner towards another partner. They suggest that intimate partners' associated PTG did not correlate with each other's in the wake of a traumatic event. However, six-month follow up data found that intimate partners PTG began to be positively correlated with each other. These findings highlight the significance of the relationship between social support networks and long-term growth following a traumatic event.

Clinician Role

Another extraneous variable examined in the literature was the role of clinicians' promotion of effective coping styles. Hasselle, et al. (2019) examined this concept using a sample of 432 college students who were provided various coping measures following traumatic events. Their findings suggest that individuals who actively engage in certain coping strategies such as "problem solving, cognitive restructuring, expressing emotions, [and] social contact" (p. 636) showed better mental health outcomes than those who participated in disengagement coping strategies such as "avoidance, wishful thinking, self-criticism, [and] social withdrawal" (p. 635).

Ultimately, this study suggests that clinicians should integrate these coping strategies when actively working with individuals recovering from a traumatic event.

Social Support

Another key component that has received some inconsistent support in the literature is the role of general social support as an adaptive strategy for PTG. Social support has been suggested in the foundational studies of PTG research such as Tedeschi and Calhoun (2004) as well as in empirical studies including cancer patients (Lepore, 2001). The impact of social support on trauma symptoms has also been supported prior to the birth of PTG literature in combat veterans (Solomon, et al., 1988). While social support appears to be a plausible component in fostering PTG, studies have found that the two entities appeared to be unrelated when examining cancer survivors (Schmidt, et al., 2012) as well as heart disease patients (Sheikh, 2004). One possible explanation for this discrepancy is the type of social support being received by the individual experiencing adversity. Some studies have suggested social support to be a positive factor in promoting PTG when being targeted as an intervention (Prati & Pietrantoni, 2009), when focused on supporting an individual's autonomy (Scrignaro, et al., 2011), when it involves responsiveness (Canevello et al, 2016), as well as when support is provided during adolescence (Zhou, et al., 2018).

Cultural Considerations of PTG

Another important variable to consider when examining how individuals cope with a traumatic experience is through unique variables of their particular culture. This consideration was explored in an important literature review by Kashyap and Hussain (2018). Specifically, they examined how PTG is expressed when accounting for distal and proximal cultural

components. Proximal influence is defined as "influence that comes from real people with whom the person interacts" (p. 55), and distal influence is defined as "influence that is transmitted through impersonal media like movies, books, television, or podcasts" (p. 55). In addition to these components, Kashyap and Hussain (2018) explained that etic and emic perspective are also important when considering cultural influences on PTG. Etic is defined as an "outsiders' perspective" (p. 54) while emic is defined as an "(insider) perspective" (p. 54). Ultimately, the authors addressed these considerations by pointing out specific cultural biases that are present within the current PTG literature, both in methodological approaches as well as in the measurement tools that are commonly used.

With regard to etic versus emic considerations, the authors stated that a vast majority of PTG literature comes from an etic approach. This is done predominantly through the reinterpretation and translation of assessment tools that were developed and normed to a Western population. As such, this approach does not have the ability to detect the "nuanced understanding of PTG" (Kashyap & Hussain, p. 54) that is present in cultures outside of those considered to be Western. An example provided by the researchers on why this is problematic is with the Mapuche community, a group of Indigenous persons who predominantly reside in Chile, Argentina, and parts of Patagonia, who often view maladaptive mental health as being outside of the individual. Another example being through Tibetan refugees who derive coping mechanisms through an externalized influence of a Dalai Lama. With regard to distal and proximate influences on PTG, Kashyap and Hussain (2018) described how influences both through those within someone's proximal immediate environment as well as through media or other distal factors impact the way they approach adversity. The authors provide examples of proximal messages such as "everything happens for a reason … God never gives you more than you can

handle … [and] random shit happens" (p. 55) as influencing one's approach. Distal factors were outlined as being a culture's general collectivist or individualistic view that can have an influence on a person's approach to their adversity.

There were a number of cultural biases that Kashyap and Hussain (2018) found to be inherent in the theories behind PTG. Specifically, numerous Western beliefs are foundational to many of the claims presented in the PTG literature, such as the belief in a just world as well as a sense of agency or control over your surroundings. Traumatic events tend to significantly challenge, or even shatter, previously held worldviews of the individual regardless of the cultural framework they reside in. As these assumptions differ by culture, assuming the generalizability of more Western dominated worldview assumptions only hinders the use of PTG research outside of this perspective. One way that authors proposed addressing these biases is to employ the use of qualitative measures with quantitative measures. In doing so, you employ data that offers more space for a linguistically and culturally sensitive information for interpreting the adverse experience of someone within the context of their diverse environment. Another method of addressing these biases is through proper reinterpretation of measurement tools to the culture examined. Through this, the quantitative measures used can more directly match with the individual culture outside of its often-westernized student norming group. Addressing these biases was theorized to positively impact PTG by reducing the use of a "universal foundation" (p. 58), or homogenous approach that may overlook the subtler differences in cultures. They also theorized that addressing these concerns would foster a more culturally sensitive and relevant approach to research, that local and traditional interventions can be preserved within the context of the PTG approach, and that the measures used to assess PTG can be more cross-culturally applicable.

Understanding cultural variables is especially important when conducting PTG research on specific populations, such as those who are homeless or struggling with substance abuse. The western demographic of homelessness consists of a wide and heterogenous group of individuals from various cultural and ethnic backgrounds, with many ethnic and minority groups having an over-representation within homeless communities. A review of literature regarding the specific populations of focus in the current study – those experiencing homelessness and struggling with substance use – is provided below.

Homelessness

As of a 2017 national data collection through the Housing and Urban Development (HUD) Exchange, there were an estimated 553,742 individuals experiencing homelessness on any given night in the United States (HUD Exchange, 2017). Minority groups have been shown to be disproportionally represented in this demographic. Specifically, even though African Americans represent 13% of the United States general population, they account for 40% of those experiencing homelessness. Those who identify as having more than one race as well as Native American and Pacific Islanders represent five percent of the general population, yet they account for 11% of those experiencing homelessness. Conversely, white individuals and Asian Americans are largely under-represented in the homeless populations. White individuals account for only 47% of the homeless population even though they represent 75% of the general population. Asian Americans account for just over one percent of the homeless population even though they represent 7% of the general population (Racial Disparities in Homelessness, 2018). Given the statistics reported by *End Homelessness* (2018) on the demographic representation of minority groups experiencing homelessness, more effort should be given to researching resilience in minority groups due to the higher rates in which PTSD is experienced among them.

A review by Asnaani & Hall-Clark (2017) examined PTSD literature within the past five years and found that "African Americans, Latino Americans and Native Americans tend to present with the highest rates of PTSD" (p. 99).

Homelessness can often be attributed to a number of individual and community factors that increase risk. Specific to individual factors, a meta-analysis completed by Nilsson, et al. (2019) explored predictors both for entering into and exiting out of homelessness. The meta-analysis included 116 studies that examined risk factors for becoming homeless. The meta-analysis also examined factors for exiting homelessness using 18 studies. Results of research for entering homelessness found that traumatic and adverse events such as physical abuse, experience in the foster care system, incarceration history, suicide ideation, substance use problems, and a psychiatric history were all found to significantly associate with an increased homelessness risk. In terms of factors impacting exiting homelessness, identifying as cis-female and having an intimate partner both related with higher chances of discontinued homelessness. Problems in an intimate partner relationship, clinical diagnosis of a psychiatric disorder, and substance use problems were all related with a lower chance of discontinued homelessness.

Risk factors for entering into and exiting homelessness are not the only important considerations for negative outcomes for an individual, as being homeless itself has been evidenced to lead to a wide array of both physical (Aldridge et al., 2018; Al-Shakarchi, et al., 2019) and mental (Hopper, et al., 1997; Smartt, et al., 2021) health concerns. With regard to physical health risks for homeless individuals, Aldridge et al. (2018) examined the morbidity and mortality rates of homeless persons with other populations considered to be high risk such as those experiencing a substance use disorder, sex workers, and prisoners. This meta-analysis reviewed a total of 337 studies and found that individuals who are homeless "experience extreme

health inequities across a wide range of health conditions" (p. 241). These health inequities contributed to increased mortality rates for the homeless as a result of a higher frequency of disease, infection, mental health concerns, cardiovascular conditions, and respiratory conditions. Risk factors for cardiovascular disease were examined in greater detail by Al-Shakarchi, et al. (2019) who conducted a systematic review of the literature. Nine articles were used that compared cardiovascular risk for homeless and non-homeless individuals in North America and Europe (N = 765,459; 32,721 reporting to be homeless). Results of the study suggested that individuals experiencing homelessness were three times more likely to develop cardiovascular disease than those who had housing.

While risk factors to physical illness have been shown in the literature, risk factors to mental illness also appear to be present for those experiencing homelessness. One such study by Hopper, et al. (1997) argued that many shelter settings often act as a hybrid housing option for individuals diagnosed with a Severe and Persistent Mental Illness (SPMI). For these individuals, homeless shelters were shown to often serve as a "temporary source of transitional housing … a surrogate for exhausted support from kin, and as a haphazard resource in essentially nomadic lives" (p. 659). Many of these roles that shelter settings play appear to be in part due to the lack of alternative resources for these individuals. A more recent study by Smartt et al. (2021) examined common pathways that individuals who struggle with a severe mental illness have for entering into and out of homelessness. This qualitative study examined 15 individuals in Ethiopia who were currently experiencing homelessness and who were diagnosed with a severe mental illness such as "schizophrenia, schizoaffective disorder or bipolar disorder" (p. 1). Results of the study found that common pathways into homelessness included family resources to care for the individual being overwhelmed, as well as worsening mental health symptoms and family

conflict. The most common pathway for entering out of homelessness focused predominantly around receiving support for physical and mental health care.

Research that examined the relationship between trauma and homelessness has commonly used veteran samples, with veterans accounting for a disproportionate representation within homeless populations (Hamilton, et al., 2011). The pathway in which trauma leads to homelessness was examined by Hamilton, et al. (2011) using a population of 29 homeless veteran women. Results of the study found a total of five common pathways that lead to homelessness: "childhood adversity … trauma and/or substance abuse during military service … post military abuse, adversity, and/or relationship termination … post-military mental health, substance abuse, and/or medical problems … [and] unemployment" (p. S203). Homelessness itself can be considered a trauma which oftentimes compounds the overall adversity and stress the individual is already experiencing prior to homelessness through aspects such as loss of security and safety (Guarino & Bassuk, 2010).

A study by Kim et al. (2010) further examined the relationship that trauma has with homeless populations using a sample of 239 homeless men using a self-reported survey. Within the survey, over half (68.2%) reported physical abuse in childhood while an even larger percentage (71.1%) reported physical abuse in adulthood. Sexual abuse also appeared to be common within the sample, with over half (55.6%) who reported sexual abuse experienced in childhood and nearly as many (53.1%) who reported sexual abuse that was experienced in adulthood. For those individuals who experienced a trauma either in childhood or adulthood, mental health problems appeared to be strongly associated.

Defining Homelessness

One important factor to consider is the general definition of what it means to be *homeless*. There are varying definitions that vary slightly in what can be considered homeless, with each state establishing individual criterion for the purposes of public assistance and census data. Tipple and Speak (2005) reviewed this concept in a study reviewing how the definition of homelessness differs in 10 specific developing countries. Some common definitions of homelessness include an overall lack of adequate or consistent residence or housing. Common definitions also tend to include whether that residence is intended for private use as well as how long that residence is used. Some assistance programs specifically include shelter and transitional housing within the definition of homeless, while others do not make a specific claim to these categories. Tipple and Speak (2005) went on further to state that the definition of homeless oftentimes had to be varying in order to meet the specific needs of the individuals who fall into particular categories, as well as what can be considered generally problematic or endangering to an individual's wellbeing and safety through their homelessness status. It is understandable that many factors play into a working definition that are impacted by various societal, cultural, and economic contributors, and the specific definition of homeless has to be specific to the context in which it is being placed.

For the purposes of this study, the definition of homelessness will be Title 42 US Code §11302 which includes a number of specific categories that are considered homeless for the purposes of government data. One particular definition that is important given the present study is article 3 which considers homelessness as "an individual or family living in a supervised publicly or privately operated shelter designed to provide temporary living arrangements" (p.

7649). This code is often referred to for the purposes of Minnesota state regulation and assistance and as such it is a proper definition to use, given the purposes of the study.

Homelessness and PTG

There are a limited number of studies that have examined homeless populations despite the plethora of research outlined above on the impact of trauma and homelessness. One example of these studies is a master's project conducted by Solorzano (2014) that explored PTG within homeless populations. This quantitative research study examined PTG by collecting data from a nonprobability purposive sample of 30 professionals working with the homeless community of the Sacramento area. The study design used non-random purposive sampling and relied on the subjective reporting of the service providers rather than the direct observation or reporting of the homeless populations. Service providers completed a 28-item questionnaire aimed at gathering specific information on demographics, PTG components, and specific traumatic experiences. Findings suggested homeless individuals experienced a wide range of past and current traumatic experiences as well as expressing many areas of PTG as reported by their service providers. Limitations of this study included its use of a fairly small sample as well as PTG being assessed by using information from professional care providers rather than direct reporting of the population of interest. While these results are promising towards the connection between homelessness and PTG, more research is needed that ideally gathers information directly from those who are homeless rather than second-hand from their providers.

Challenges and Benefits of Studying Homeless Populations

Effectively and ethically studying homeless populations poses many unique barriers compared to other demographics. One major challenge that researchers commonly face when

studying homelessness is the lack of resources required to locate and gather the necessary information for these groups in a way that is not potentially coercive or impeding of their ability to meet their needs. An example of this could be offering financial incentives, a common compensation in research, where someone with limited to no income struggling with homelessness would be more inclined to agree to participate when they would not otherwise if financial hardship was not a factor. Another example could be taking time away from someone struggling with homelessness to conduct research in a way that impedes them from focusing on other basic needs like temporary shelter for the night or nutrition.

The various challenges in research on homeless populations were further explored in a study by Umamaheswar (2018). Umamaheswar (2018) explored these challenges with populations that are considered hard to reach in research using a grounded theory approach with both incarcerated individuals as well as homeless persons. Using a sample of 31 participants, Umamaheswar (2018) emphasized that there were commonly many factors outside of the control of the researcher when examining hard to reach populations that require a lot of gatekeeping measures to reach, such as homeless populations inside of a facility as compared to outside of a facility. Oftentimes, the vulnerable status of these individuals creates far more ethical and legal considerations for researchers. In addition to this, Umamaheswar (2018) also noted how common it is for other barriers such as limited literacy levels, high levels of instability in their daily lives and routines, and difficulty obtaining proper informed consent to engage participants, may all impact a researcher's ability to gather information from this population. In addition, possible risks of safety may be present for both researchers and participants, especially in less restricted areas such as field research outside of a prison or residential facility.

While Umamaheswar (2018) outlined a number of unique challenges to studying homeless persons, it was noted that there were many benefits to researching this population. The first major benefit is that the facilities that oversee the study oftentimes import significant safeguards and gatekeeping measures for the study purpose and design. As such, research that is completed in these settings is often heavily vetted for ethical considerations. In addition to this benefit, it was discussed that willing participants in these settings often provide a wealth of qualitative information through structured interviews. Researching these groups can normally provide a wide range of helpful qualitative data through observations and unstructured conversations. One final benefit outlined in Umamaheswar's (2018) study was that, when they are residing in more strict facilities such as shelters and prisons, available participants often have a wide range of collateral documentation and other information to gather given their various supportive and tertiary services. So long as appropriate gatekeeping measures are in place, these facilities can offer a wealth of collateral information to support the research being conducted.

Substance Use and Trauma

As there is a noticeably increased prevalence of trauma and substance use in homeless populations relative to the general public (Johnson & Chamberlain, 2008), it is important to provide an understanding of the relationship between these factors. Individuals who experience a traumatic event can oftentimes struggle with a myriad of symptoms from fear-based or anxiety responses to presentations of dysphoria and anhedonia (APA, 2013). With the large impact that trauma can have on reshaping the way an individual views their environment, (Tedeschi & Calhoun, 1996) there is no question why research has long supported the co-occurring nature of traumatic exposure with a substance use disorder (Jacobsen et al., 2001), especially when that traumatic event occurred in one's childhood years (Dube et al., 2006). Due to the co-occurring

nature between trauma and substance use, it has often been encouraged to address both substance use and trauma in a clinical setting, as leaving either of them out often has a negative impact on treatment outcomes (Peterson & Zettle, 2009).

Literature examining the relationship between traumatic exposure and substance use has predominantly involved veteran populations (Teeters et al., 2017). However, a number of studies have attempted to examine this relationship with other groups as well. On such study by Khoury et al. (2010) who examined the relationship between childhood trauma exposure and substance use with an urban civilian population of 587 participants who were mostly unemployed (77.7%) and had a monthly income that was less than $1,000 (71.8%). Participants were recruited from a local area hospital waiting room and were previously participating in another research study. Participants were given a multitude of self-reported questionnaires that assessed for PTSD symptoms, lifetime history of traumatic exposure, specific history of childhood abuse, exposure to substance abuse, and depression symptoms. With regards to childhood abuse, subsequent substance use in adulthood was positively correlated among many different substance use types, with heroin being the only substance that did not correlate with sexual and emotional abuse. This study confirmed findings that there was a "strong relationship between adverse childhood experiences and subsequent substance use and poor mental health outcomes, particularly PTSD" (p. 1082).

Another study by Ullman et al. (2013) examined the relationship between trauma histories, PTSD symptoms, and substance use as a coping mechanism for women who experienced sexual assault. This study used a sample of 1,863 volunteer women from the Chicago area who were provided a mail survey that assessed for sexual victimization and abuse, overall traumatic exposure, PTSD symptoms, and substance use. Results of the study found a

significant correlation between lifetime trauma exposure, specifically around sexual abuse, and using substances as a coping mechanism. In addition to this, non-interpersonal trauma and interpersonal trauma were also found to correlate with substance use as a primary coping mechanism within this population. Limitations to this study, however, were that non-sexual abuse related traumas were only assessed with a single item, limiting the breadth and depth of the findings.

Homelessness, Substance Use, and Trauma

Because homelessness is often associated with a series of traumatic and adverse events (Hamilton et al., 2011), it is important to review studies that specifically examined the relationship that homelessness has on subsequent substance abuse as well. One study by Johnson and Chamberlain (2008) examined whether homelessness preceded or succeeded an individual's substance abuse. Of the individuals in the study who reported substance use (N = 1,940), roughly one third (N = 656; 34%) of them reported substance abuse concerns prior to their entering into homelessness, while two thirds (N = 1,284; 66%) reported problematic substance abuse after they entered into homelessness. Johnson and Chamberlain (2008) used narrative analysis of qualitative interviews to examine trends and provide further in-depth reasoning to these results. Common trends in the interviews were that individuals who were either experimenting with substance use beforehand or who had significant substance abuse prior to homelessness predominantly had their overall use increase when entering homelessness. Oftentimes, this was seen as a way of coping with the difficult, oppressive, or dangerous environments they were subjected to while homeless. Another common reason for substance use was the "subculture" (p. 350) that is often present in homeless communities. Substance use was oftentimes an initiation into various subcultures for individuals early in their homeless experience and partaking in the

behavior increased a sense of belonging that was often missing with these individuals. Ultimately, Johnson and Chamberlain (2008) argued that for many, substance use was a precursor to homelessness. However, those who were not already abusing substances prior to homelessness were significantly more likely to do so when they became homeless, due to a number of factors including homelessness subculture and resources to cope.

Further relationships between substance use, homelessness, and trauma/other mental health symptoms were examined in a study by Kim et al., (2010). This study examined homeless men ($N = 239$) who had experienced either physical or sexual trauma. Participants were recruited from four different shelters that provided mental health and substance abuse treatment. While the study found that trauma exposure was not a significant indicator of substance abuse, it was considered an indicator for mental health outcomes. One likely explanation for the lack of an association between increased substance use and trauma exposure was the need to "make assessment as brief as possible" (p. 44) which reduced the level of depth to the overall assessment of substance use exposure. In order to make the assessment brief, authors only used a small section (four items) from a larger substance use assessment, limiting their findings.

Relapse and Treatment History

History of substance use relapse is another important variable to consider when examining the impact that trauma has on overall substance use severity and recovery. A study by Farley et al. (2004) examined the relationship between relapse history and trauma in a sample of 959 participants who were enrolled in two chemical dependency clinics. Participants were asked to fill out two questionnaires designed to assess their previous experiences of traumatic exposure. Participants also reported their number of previous treatment attempts. Results of the study found that as many as 90% of participants who were enrolled in the study reported previous exposure to

at least one traumatic event. Those who reported at least two or more traumatic events were found to have a higher chance of relapse than those who reported 0-1 traumatic events, which was consistent with previous literature (Wadsworth et al., 1995). Results of Farley et al. (2004) suggested that trauma history is an important factor to consider when researching substance use disorder, especially as it relates to overall treatment history and treatment retention (i.e., the need for future treatment attempts following a relapse). However, one important weakness to the study is that the authors did not directly differentiate when the onset of substance abuse occurred in comparison to their exposure to trauma. Specifically, the authors did not differentiate whether or not the substance abuse was present prior to the traumatic event or if the substance abuse occurred afterwards or was further exacerbated following the trauma exposure.

The relationship between treatment retention and exposure to traumatic events was examined further by Jaycox et al. (2004) with a sample of 212 adolescents who were enrolled in a long-term substance abuse treatment program. Participants were administered a series of questionnaires upon admission into the program and then examined for treatment retention at six months following the first administration. Participants were assigned to three groups: Those who had not experienced a traumatic event (21%), those who had experienced a traumatic event but had not met full criteria for PTSD (59%), and those who had experienced a traumatic event and had met full criteria for PTSD (20%). Using a survival analysis, results of the study found that those who had experienced a traumatic event, yet had not met full criteria for PTSD, completed treatment sooner than the other two groups. This is a noticeable discrepancy from the Farley et al. (2004), which found that those who had experienced zero or one traumatic experiences had the lowest relapse rates compared to higher rates of traumatic exposure. One possible explanation for this discrepancy is that Farley et al. (2004) examined only exposure of traumatic

events and not actual symptomology of PTSD, whereas Jaycox et al. (2004) examined the severity of PTSD symptoms and not the rate of traumatic exposure.

Covid-19 Pandemic Impacts to Substance Use

Among many of the specific impacts on the Covid-19 pandemic outlined previously in this literature review, chemical dependency risks are also a factor that has been explored in recent literature. One such review by Kumar et al. (2022) outlined the current literature on the topic using 111 previous studies from 2020 to 2021. Kumar et al. (2022) emphasized that the current body of literature has consistently reported increased risk of exposure to the negative impacts of Covid-19 for those who abuse substances. In addition to this, Black Americans were found to have worse outcomes when diagnosed with Covid-19 compared to white Americans with the same risk factors. Anxiety around the pandemic was also found to increase risk of substance abuse. Increased risk of overdose was found to increase specifically for those who abused opioids. Alcohol abuse was also found to increase in response to stress around the pandemic across multiple age groups of younger adults as well as those over the age of 40.

The impact of the Covid-19 pandemic on substance use disorders was also explored through a propensity score matched double-cohort study by Baillargeon et al. (2021). 5,562 participants were selected for each cohort for a total of 11,124. Participants were confirmed to have been diagnosed with Covid-19 at a specific time in 2020. In addition, one cohort was also selected for having been diagnosed with a substance use disorder in the past 12 months. Results of the study found an increased risk of hospitalization (32.5% compared to 17.4% for the non-substance abuse cohort), ventilation use (6% compared to 3.1% for non-substance abuse cohort), as well as overall mortality rates (4.9% compared to 2.8% for non0substance abuse cohort).

These differences were found to be significant even when accounting for other risk factors such as COPD, hypertension, and various other heart and vascular diseases.

Substance Use and PTG

Even though it is well understood that PTSD symptoms and PTG have a positive relationship with each other (Jin et al., 2014), and that PTSD symptoms or exposure to trauma is a common predecessor to the development of a substance use disorder (Johnson & Chamberlain, 2008; Khoury et al., 2010; Ullman et al., 2013), the three constructs of trauma symptoms, PTG, and substance abuse are frequently unexplored, as it is common practice to exclude those who engage in substance abuse in research studies on PTG. One study examining PTSD literature by Leeman et al. (2017) found that upwards of one third of a sample of 156 randomized controlled trials directly stated that those with a substance use disorder were excluded from the research. In addition, only a small fraction (7.7%) of studies directly reported any outcomes related to the presence of substance use symptoms. Overall, the current body of literature on PTSD and treatment intervention largely neglect the relationship between PTSD and a substance use disorder, inhibiting the applicability of the literature to individuals with co-occurring disorders even though it is found to be so commonly prevalent (Johnson & Chamberlain, 2008; Khoury et al., 2010; Ullman et al., 2013).

Similar to the limited body of literature on homelessness and PTG, the interaction between substance use and PTG has had an equally minimal level of exploration. One study found was a master's thesis completed by Stump (2006) that examined PTG, substance use and avoidance coping among 50 homeless and pregnant women from shelters who had experienced trauma. Findings suggested a negative correlation among substance use severity and overall PTG scores while having overall high levels of growth within the sample. In addition to these results,

the frequency of substance use impacted general coping strategies, and subsequent PTG expression, with those who engaged in more frequent substance use experimentation demonstrating more avoidance, or unhealthy, coping strategies and subsequently lower PTG expression. More research is needed in order to further support the claim that severity of substance use is negatively correlated with PTG expression.

Another study in the homelessness literature examined the relationship between substance use and PTG. This dissertation by Sanford (2016) explored overall change in substance use severity through treatment and if higher degrees of change from beginning to end of treatment reflected higher levels of PTG. A sample of 104 homeless pregnant women and new mothers enrolled in a residential six-month treatment program that offered chemical dependency recovery, mental health and trauma care, as well as parenting education services. While the vast majority (98%) of the study reported at least minimal growth, there was no significant correlation found between PTG scores and level of change in substance use severity from the beginning of treatment to the end of treatment.

Overall, more research is needed to better understand the relationship between substance use and PTG, as substance use is commonly an excluding variable for the vast majority of PTG research. Of the limited studies currently exploring PTG and substance use (Sanford, 2016; Stump, 2006), there are a variety of noteworthy findings. Stump (2006) found a negative correlation between substance use severity and PTG expression. At the same time, Sanford (2016) found that while minimal PTG growth is achieved for the vast majority of those in substance use treatment facilities, there appears to be no significance in the level of change in substance use severity from beginning of treatment to end of treatment on PTG.

Rationale

PTG has been a widely researched phenomena that has evolved in many ways from its early beginnings. Researchers have begun to understand a number of factors that influence PTG expression and how PTG is fostered among individuals who have experienced traumatic or adverse events. While difficult life experiences can elicit negative social, emotional, and physical outcomes for people, growth also appears to be a natural process for many in which individuals can learn to interpret, analyze, and cope with their world in order to manage future events while also finding resilience in previously experienced hardships.

However, there are a number of avenues of further research on PTG that have yet to be clearly outlined or explored given our current understanding of methodological concerns (Boals & Schuler, 2018) and largely homogenous sampling found in previous studies which primarily utilized undergraduate college students as participants. While efforts have been made to identify some of the specific directions for increasing the validity of PTG research (Bedford, 2018; Boals & Schuler, 2019; Brooks, 2018; Infurna & Jayawickreme, 2019), the literature is still recent enough that many of these new directions are in early stages of implementation. As such, the proposed study is meant to address a number of specified gaps in the current body of research. Specifically, this study is designed to examine PTG within the context of a previously uninvestigated sample population of homeless men in an IOP mental illness/chemical dependency (MICD) program. Additionally, the present study will examine PTG using the SRGS-R (Boals & Schuler, 2018), an assessment tool that has recently been found to adjust for many of the validity concerns of the more widely used PTGI (Bedford, 2018; Boals & Schuler, 2018; Boals & Schuler, 2019). Severity of trauma will also be evaluated as a potential moderator

to the impact that PTG has on substance use populations both in relation to the severity of the substance use disorder as well as the number of previous substance use treatment experiences.

In addition, there is still much to be understood about how growth is expressed within specific populations, specifically as they relate to chemical dependency groups and the homeless community found to commonly struggle significantly with traumatic and adverse events. Previous research on substance use populations, specifically with low-income and homeless persons, has established the negative consequences and lack of effective coping strategies within these groups (Sy & Hechanova, 2020). As such, the proposed study is aimed at addressing the positive aspects of these individuals' traumatic experiences in an effort to shed light on the ways in which they have shown resilience in the face of their numerous adverse life experiences. Continuing our understanding of resilience with homeless individuals is important to include in this study because, while there is some research on PTG with homeless populations and substance use, the attention provided in these areas are minimal with only a handful of master's theses (Solorzano, 2014; Stump, 2006) that have examined these groups in particular. This is problematic to both the generalizability of the PTG literature as well as the beneficial clinical implications that these results could have given the significantly high level of trauma exposure that these two groups experience.

Due to the limited research in this area of PTG, specifically with the relative absence of samples involving homeless men, it is imperative to examine this group as research has suggested PTG is expressed differently among genders with women reporting higher levels of growth than men in multiple areas (Jin et al, 2014; Tedeschi & Calhoun, 1996; Vishnevsky et al, 2010; Young & Chan, 2015). In addition, studies involving similar samples rely on measures that have been found to have significant concerns in validity, or they have not relied on the direct

reporting of the participants themselves. As such, the proposed study could be of significant benefit to the population of interest in numerous ways with a specific emphasis on identifying potential areas of growth among homeless men currently receiving intensive outpatient MICD treatment, who have in previous research been seen as lacking in positive attributes such as coping skills or resilience.

With the above considerations in mind, the primary purpose of the present study is to examine PTG expression among homeless men currently enrolled in an IOP MICD program. This will be achieved through the analysis of four individual hypotheses described below, which explore the relationships between severity of substance use disorder, overall history of substance use treatment, as well as PTSD symptoms as a moderator to PTG expression. In addition to these hypotheses, descriptive statistics will be presented in detail due to the limited research specific to this population within the PTG literature:

Hypothesis 1: Individuals who have lower severities of substance use disorders will report higher levels of PTG.

Hypothesis 1 is supported by a wide range of previous research both within the PTG literature as well as outside of this literature suggesting that those who have higher severities of substance use report lower coping skills and means of adapting (Stump, 2006; Ullman et al., 2013) while also reporting lower areas of growth (Tedescshi & Calhoun, 1996). As such, Hypothesis 1 is meant to further the current understanding of PTG within a less understood population of chemically dependent individuals as there is some early research to suggest the positive impact of growth that can be observed within this group (Stump, 2006).

Hypothesis 2: Individuals who have a longer history of substance use treatment exposure will report lower levels of PTG.

While there has yet to be any direct research that has examined this specific hypothesis, there is evidence to support this hypothesis when examining other characteristics of treatment retention for individuals with chemical dependency. Specifically, while relapse and readmission to substance use treatment programs is common, especially when exposed to trauma (Farley et al., 2004) or when trauma symptoms met the criteria for PTSD (Jaycox et al., 2005), the continued readmission to subsequent treatment programs is a possible sign of a reduced ability to cope and manage with the distressing experiences in one's life outside of the use of a chemical (Nower et al., 2004). As such, it is possible to assume that the overall number of previous treatment attempts would be reflective of generally lower levels of PTG due to PTG potentially representing a number of abilities that would mitigate the need for continued chemical dependency treatment. This assumption is derived from the understanding in previous literature of the connection between substance use and coping ability (Stump, 2006).

Hypothesis 3: At higher levels of PTSD symptoms, the negative relationship between substance use severity and level of PTG expression will be stronger than at lower levels of PTSD symptom severity.

Hypothesis 3 is meant to analyze PTSD symptoms as a moderator to the negative relationship between severity of substance use disorder and level of PTG expression as observed in hypothesis 1. While the relationship between PTG expression and PTSD has been widely researched in the literature (Jin et al, 2014), substance use is often within the exclusion criteria of the population examined (Leeman et al., 2017), even though PTSD symptoms have long been understood as impacting substance use (Ouimette et al., 2010). As such, accounting for this potential moderator could be a valuable addition to the literature. This moderator is supported in previous literature where trauma symptoms that presented with higher degrees of PTSD

symptoms severity (i.e., sexual assault or intimate traumas) demonstrated the lowest degree of PTG expression (Shakespeare-Finch &Armstrong, 2010). While this relationship was shown, higher degrees of PTSD symptoms have also been shown to demonstrate fewer coping mechanisms (Stappenbeck et al., 2015), especially in environments such as shelters that foster a lower perceived control over their environment (Brooks et al., 2017).

Hypothesis 4: At higher levels of PTSD symptoms, the negative relationship between number of previous treatment attempts and level of PTG expression will be stronger than at lower levels of PTSD symptom severity.

Hypothesis 4 is meant to analyze PTSD symptoms as a moderator to the negative relationship between number of previous treatment attempts and PTG expression as observed in hypothesis 2. Hypothesis four is following along many of the assumption presented in hypothesis two in that those who have continued readmission to subsequent treatment programs demonstrate fewer characteristics that are shown to be important in fostering PTG (Stump, 2006). PTSD is an important moderating variable to this in that evidence has suggested the impact that trauma has on the recovery process for those in substance use treatment (Farley et al., 2004; Jaycox et al., 2005). Accounting for this potential influencing moderator to this relationship of number of previous treatments and PTG expression could be a valuable addition to the literature.

CHAPTER THREE

Method

Participants

Participants consisted of 136 individuals. Participants were recruited from a clinic that offers chemical dependency and mental health services to homeless populations. This clinic is located in Minneapolis, Minnesota and is designated as a Mental Illness Chemical Dependency (MICD) clinic with lodging. Clients participate in all-day programming that consists of both group and individual therapy, Alcoholics Anonymous (AA) and other chemical dependency groups, medication management services, and social services. Most clients are enrolled in this site's IOP level of programming at the beginning of their treatment and then "step down" to reduced programming over time as their progress and treatment goals are met. Participants for the current study were gathered from all levels of treatment within programming.

Eligibility Criteria

Inclusion criteria for this proposed study included: 1) Participants must have been receiving services at either site at any level of care at the time of data collection. This was assessed by direct reporting of the participant within their Eligibility Screener (See Appendix A). Potential participants were only solicited on clinic grounds to further support this eligibility criteria. 2) Participants must have experienced a traumatic event. This was assessed by their response of 'yes' to the preliminary question found on the PC-PTSD-5: *Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic: For example* [listed examples]. *Have you ever experienced this kind of event?* (See Appendix B). This question was provided on the Eligibility Screener (See Appendix A). 3) Participants must have

been adults aged 18 years or older at the time of study participation. This was assessed through direct reporting of the participant's age within their Eligibility Screener (See Appendix A). 4) Participants must have identified as male. This was assessed through direct reporting of the participants' identified gender as reported in their Eligibility Screener (See Appendix A). 5) Participants must have had a reported history of substance abuse. This was assessed by direct reporting of the participant's substance use experimentation on their Eligibility Screener (See Appendix A).

Exclusion criteria for this proposed study included: 1) Participants who were using or who had used substances in the past week at the time of data collection. This exclusion criterion was present so as to avoid having any participants being in an acute withdrawal state during the time of the data collection. This was assessed through direct reporting by the participant on the Eligibility Screener (See Appendix A). 2) Participants who were not able to understand written and spoken English. This exclusion criterion was present in order to avoid any participants who would struggle to understand the components necessary for providing accurate data. This was assessed through direct response to the statement on the Eligibility Screener (See Appendix [A) *Are you fluent in English?* 3) Participants who were in an actively psychotic mental state at the time of data collection. This exclusion criterion was present to ensure participants were of an appropriate mental status to understand the material presented to them. Because those currently experiencing psychosis were often either hospitalized or were readily observable, this exclusion criteria was assumed based on the clinical judgement of the principal investigator.

Procedures

Data collection began on 6/9/2022 and was completed on 9/6/2022. All participants were recruited by the principal investigator. This was done in order to avoid any possible coercion that

participants could experience if recruitment was conducted by individuals actively providing services at their site. The primary contact of the site by the principal investigator was through the clinical director to help mitigate contact with any providers who may have been working with clients who were choosing to participate in the study.

Advertising for the research project was conducted in two ways: via fliers (See Appendix C) set up in common areas of the clinic, as well as through verbal solicitation by the principal investigator when he was present at each site. The flier notified potential participants of the dates and times that the principal investigator was on site to conduct the study. The flier directed potential participants to appear at the designated space for research from each site during the times outlined. Participants were then directed to a private room where the administration of the measures took place. Upon appearing for the study, participants were provided an Eligibility Screener (See Appendix A) to determine eligibility status. Potential participants were directed to return a completed Eligibility Screener to the principal investigator to confirm eligibility. Once eligibility was confirmed, participants were provided with the informed consent paperwork. The principal investigator then verbally walked through the informed consent paperwork (See Appendix D) prior to administering the assessment measures.

Once informed consent was completed, participants had the option of completing the assessment measures through paper copies or electronically through a tablet if one was available. Electronic administrations of the assessment were completed through *Survey Monkey* and had the exact same format and questions as the paper copies. Participants completed the assessments in the same location as other participants and were unable to be provided a private location due to logistics of the research site. To protect confidentiality by ensuring participants did not view the

responses of other participants, six feet of space was provided between respondents. Where possible, dividers were also used to separate one participant from another.

Once each participant completed the assessments, they returned the paper copies or electronic tablet to the principal investigator. Compensation was provided to participants immediately following the completion of their study material. Please review the *Incentive* section of Chapter Three for more information on the use of incentives. Once the participant completed the assessment measures and was given their compensation, the principal investigator provided a briefing document (See Appendix E) that included an expression of written gratitude from the principal investigator as well as a list of contact numbers for crisis resources including instructions to contact their primary therapist in the unlikely event that they experienced any adverse reactions or symptoms in relation to their participation in this project. In addition, the direct contact information of the principal investigator was provided should they have further questions or concerns.

Measures

Stress Related Growth Scales – Revised (SRGS-R)

The SRGS-R is a 15-item self-report questionnaire originally created by Boals and Schuler (2018) and is designed to assess for areas of PTG (See Appendix F). The SRGS-R is scored using a 7-point Likert scale format ranging from +3 to -3 with +3 corresponding to *A very positive change* to -3 reflecting *A very negative change* as a result of the negative event they have outlined in the demographic questionnaire. The SRGS-R has been shown to have "improved construct validity" (Boals & Schuler, 2018, p. 192) to the PTGI due to being "less prone to reports of illusory growth" (p. 191). The SRGS-R does not have any specific scales within the assessment instrument. As such, raw scores will be used when interpreting results of

this instrument. Additionally, the SRGS-R has been shown to effectively detect PTG in a number of empirical studies (Boals & Schuler, 2018; Boals & Schuler, 2019; Bedford, 2018). When compared to the original five domains of PTG as outlined by Tedeschi and Calhoun (1996), Boals and Schuler (2018) found the SRGS-R to correlate significantly on all domains ranging from *Religious Commitment* ($r = .23$; $p < .01$) to *Gratitude* ($r = .52$; $p < .001$). While being a more recently developed, less established measure than the PTGI, the SRGS-R effectively addresses many of the shortcomings and validity concerns that the PTGI has demonstrated, making it the most appropriate measure for the current study. In the current study, the SRGS-R was found to have a Cronbach's Alpha of 0.938, which is considered to be an excellent level of internal consistency.

Primary Care PTSD Screen for DSM-5 (PC-PTSD-5)

The PC-PTSD-5 "is a 5-item screen designed to identify individuals with probable PTSD" (Prins et al., 2015, p. 1). Participants are first asked if they have experienced an event that was "unusually or especially frightening" (p. 2) and they are provided with a number of examples such as "serious accident or fire … a physical or sexual assault or abuse … an earthquake or flood … a war … seeing someone be killed or seriously injured … having a loved one die through homicide or suicide" (p. 2). If the respondent replies *Yes* to any of the above considerations, they are then asked a series of five questions involving experiences they may have had in the past month that directly relate to PTSD symptoms found within the *DSM-5* including nightmares, avoidance of reminders or situations surrounding the event, hypervigilance, numbing, and guilt.

Prins et al. (2016) examined the validity and reliability of the PC-PTSD-5. They found the measure to have good test-retest reliability ($r = 0.83$) and predictive validity when compared

to the Clinician Administered PTSD Scale (CAPS; $r = .83$). It has also been used with a wide range of populations including veterans (Kaler et al., 2011), children (Jina et al., 2019), college students (Hawn et al., 2020) as well as substance use populations (Van Dam et al., 2010). The PC-PTSD-5 does not have any specific scales within the assessment instrument. As such, raw scores will be used when interpreting results of this instrument. As a result of its strong validity and reliability as well as its history of applicability with this study's targeted research population, the PC-PTSD-5 is considered the most appropriate measure for this study. In the current study, the PC-PTSD-5 scores were found to have a Cronbach's Alpha of 0.798, which is considered to be an acceptable level of internal consistency.

Drug Use Questionnaire (DAST-20)

The Drug Use Questionnaire (DAST-20) is a 20-item self-reported questionnaire developed by Skinner (1982) to assess for the presence and severity of substance use concerns (See Appendix G). Participants are asked to indicate *yes* or *no* on whether or not they have experienced a wide range of potential behaviors or circumstances that relate to problematic drug use within the past 12 months. Once completed, all answers of *yes* are assigned a score of 1 and all answers of *no* are assigned a score of 0. A raw score is collected and is interpreted using a severity guide where 0 is categorized as *N/A*, 1 to 5 is categorized as *Low*, 6-10 is categorized as *Intermediate (Likely meets DSM criteria)*, 11 to 15 is categorized as *Substantial*, and 16 to 20 is categorized as *Severe*.

The DAST-20 was evaluated by Villalobos-Gallegos et al. (2015) to examine the psychometric and diagnostic properties of the assessment measure. The DAST-20 was assessed using a sample of 565 participants who were enrolled in a residential addiction treatment center. Participants were provided the measure and results were compared to the "gold standard" (p. 89)

of diagnosis for a substance use diagnosis, the *Mini International Neuropsychiatric Interview 5.0* (Sheehan et al., 1998). Results of the study by Villalobos-Gallegos et al. (2015) yielded a Cronbach's α of .89 with item-total significance correlations that were above .40 for all items other than item 4 and 5. Overall, the DAST-20 was considered a reliable and valid measure that maintained its psychometric properties even for being a reduced item assessment compared to other measures of its kind. The DAST-20 is used in place of using a *DSM-5* (APA, 2013) severity category as it is likely most participants will fall in the severe category for their use, limiting the interpretability of the research. In the current study, the DAST-20 was found to have a Cronbach's Alpha of 0.821, which is considered to be a good level of internal consistency.

Brief Demographic Questionnaire

A demographic questionnaire was created by the principal investigator for the purposes of this study (see Appendix H). The demographic questionnaire was designed to provide information characteristics specific to Hypothesis 2 (Question 4: *Number of Previous Treatments*) as well as including general demographic information helpful in contextualizing the sample. Specifically, the demographic questionnaire included information on age, race/ethnicity, time in current treatment, number of previous treatments, report of traumatic experiences, timeline of traumatic event, and exposure to substance use. The use of an individual's most impactful trauma was specifically used due to research support and to simplify the data analysis. Specifically, previous research suggested that one's index, or most significant, trauma type is more beneficial in examining the impact of traumatic experiences on participants (Priebe et al., 2018). This was further supported through research on event centrality, or closeness of the traumatic experience to the individual, and its effect on PTG (Bernard et al., 2015; Brooks et al., 2017). While the definition of trauma within the current body of literature often falls outside of

the standard definition of trauma as conceptualized by *DSM-5* (APA, 2013) criteria A of PTSD, using this specific coding as a working definition of trauma as it is outlined in the PC-PTSD-5 will help to more easily clarify and interpret the results within a more concrete definition.

Data Analysis

Research Design

Hypothesis 1: Individuals who have lower severities of substance use disorders will report higher levels of PTG. A correlation analysis was conducted to test hypothesis 1. A correlation was the most appropriate statistic to use as the relationship between one independent (predictor) continuous variable and one dependent (outcome) continuous variable was analyzed. The predictor variable was one continuous (ratio, where zero is meaningful as it represents the experience of PTG not occurring) score from the DAST-20 as a measure for substance use severity. The outcome variable was PTG expression and consisted of one continuous (ratio, where zero is meaningful as it represents the experience of PTG not occurring) score from the SRGS-R as a measure of growth.

Hypothesis 2: Individuals who have longer substance use treatment exposure will report lower levels of PTG. A Pearson's correlation coefficient was used to test hypothesis 2. This statistic was most appropriate to use as the relationship between a single continuous predictor variable with a single continuous outcome variable was analyzed. The predictor variable was the number of previous chemical dependency treatment attempts (ratio, where zero is meaningful as it represents no previous treatment). The outcome variable was PTG expression and consisted of one continuous (ratio, where zero is meaningful as it represents the experience of PTG not occurring) score from the SRGS-R as a measure of growth.

Hypothesis 3: At higher levels of PTSD symptoms, the negative relationship between substance use severity and level of PTG expression will be stronger than at lower levels of PTSD symptom severity. A linear multiple regression analysis was conducted for hypothesis 3. A linear multiple regression analysis was chosen as the most appropriate statistical measure to use when assessing how one continuous variable may moderate the relationship between one independent (predictor) continuous variable and one dependent (outcome) continuous variable. The predictor and outcome variables was consistent with those of hypothesis 1. The moderator variable was PTSD scores and was one continuous (ratio, where zero is meaningful as one can report the absence of symptoms expression based on the measure) variable. This variable was measured through the PC-PTSD-5 using the five-item raw score scale.

Hypothesis 4: At higher levels of PTSD symptoms, the negative relationship between number of previous treatment attempts and level of PTG expression will be stronger than at lower levels of PTSD symptom severity. A linear multiple regression analysis was conducted for hypothesis 3. A linear multiple regression analysis was chosen as the most appropriate statistical measure to use when assessing how one continuous variable may moderate the relationship between one independent (predictor) continuous variable and one dependent (outcome) continuous variable. The predictor and outcome variables was consistent with that of hypothesis 2. The moderator variable will be PTSD scores and was one continuous (ratio, where zero is meaningful as one can report the absence of symptoms expression based on the measure) variable. This variable was measured through the PC-PTSD-5 using the five-item raw score scale.

Power and Effect Size

Hypothesis 1 and 2. An *a priori* power analysis was conducted using *G*Power: Statistical Power Analysis* (Faul et al, 2007). The statistical test that fit the analyses for hypotheses 1 and 2 was a *Correlations: Two independent Pearson r's* due to wanting to find a correlation between one continuous predictor and one continuous outcome variable. Tails were set to two in order to yield more robust information as to the relationship between the two measures. Effect size was set to .5 in order to represent a large effect. While not being ideal, a large effect was chosen in order to fit within the applicability of the study based on the availability of the study sample. Power was set to .8 as this is a common set point for this type of analysis. Allocation ratio was set to 1. Ultimately, the *a priori* power analysis concluded that an *N* of 132 would be required based on the parameters chosen.

Hypothesis 3 and 4. An *a priori* power analysis was conducted using *G*Power: Statistical Power Analysis* (Faul et al, 2007). The statistical test that fit the analyses for hypotheses 3 and 4 was a *Linear multiple regression: Fixed model, single regression coefficient* due to wanting to determine the moderation effect of one continuous moderator with one continuous predictor and one continuous outcome variable. Tails were set to two in order to yield more robust information as to the relationship between the two measures. Effect size was set to .25 in order to represent a medium effect. Alpha was set to .05 and my power was set to .95. Number of groups was set to 1 to reflect the one continuous variable of number of total treatment attempts. Ultimately, the *a priori* power analysis concluded that an *N* of 54 would be required based on the parameters chosen.

Based on the *a priori* power analyses conducted on each hypothesis, a total minimum sample size of $N = 132$ was required to demonstrate a large effect size for hypothesis 1 and hypothesis 2 as well as a medium effect size for hypothesis 3 and hypothesis 4.

Software

Data was analyzed using IBM-SPSS Statistics version 25. Power and effect size were analyzed using *G*Power: Statistical Power Analysis* (Faul et al, 2007). Data was collected from the participants using *SurveyMonkey*.

Ethical Issues

Consent

Participants were provided with an informed consent form (See Appendix D) upon reporting their interest in participating in the study. The informed consent included the purpose of the research, expected duration, procedures, rights of participants (including the ability to decline from continuing participation in the study), foreseeable consequences of declining, reasonable foreseeable factors such as risk of harm, discomfort, or adverse effects, prospective benefits of research, limitations to confidentiality and procedures to maintain confidentiality, incentives to participate in the study, and contact information of the principal investigator should they have further questions. Any questions from participants relating to procedures of this study was directed to the principal investigator. Signed written consent forms were collected in hard-copy format by the principal investigator and were stored in a secure locked device behind a locked door, separate from the data collected.

Risks

As with many avenues of research involving disclosure of traumatic events, common risks foreseeably experienced by participants included re-traumatization. This could involve adverse mental, physiological, or spiritual harm that can occur when disclosing an event that has involved intense distress or pain. At a minimum, some discomfort may have been experienced by participants who reported a history of traumatic experiences within this study. Individuals who participated in the study may have also experienced trauma related symptoms such as intrusive thoughts or feelings, as well as negative alterations in mood or affect.

These risks were mediated by the procedures through which the data was collected. Individuals who participated in the study were actively engaging in both mental health and chemical dependency treatment. Participants were encouraged to seek guidance from their individual therapists should these symptoms present and were also provided a list of county crisis referral agencies. In addition, participants were not asked to disclose specific details related to their traumatic experience(s). The extent of information asked about their trauma involved only that which was necessary to understand the type of trauma symptoms experienced as collected by the PC-PTSD-5 and their responses to the demographic questionnaire. Due to the potential benefits of this study as well as the limited information participants needed to disclose about their experience of traumatic events, the risks were deemed justified in order to complete the study. Any potential risks were further mediated as the disclosure of traumatic experience through the PC-PTSD-5 and demographic questionnaire were done within the same building as their individual therapist who could have been notified quickly if the need arose.

In addition to the present risks in this proposed study, it is also worthy of noting the vulnerability of the sample population. Participants who engaged in the study were experiencing

homelessness while actively seeking out chemical dependency and mental health treatment at the time of data collection. The status of homeless brings many adverse environmental challenges to an individual which ultimately increases stress to those who are experiencing it. While their overall stress may have been elevated compared to what would be typical of someone who was not homeless at the time of research participation, participation in the study was still deemed an appropriate course of action to willing participants and likely did not cause any undue harm or stress to those participating outside of what was typical in their already established programming. The overall time required of the participants was generally less than 30 minutes which was a minimal level of time taken away from their scheduled breaks.

Deception

No deception was required for the purposes of this study.

Incentive

Participants were compensated with five dollars following the completion of their questionnaires. Compensation was provided via a five-dollar bill for convenience to the participant. Compensation was given to the participant immediately following the completion of the questionnaires once the materials were reviewed by the principal investigator for accuracy. Any participants who had incomplete or improperly completed material were prompted to finish or asked for clarification of their responses. Participants were still provided compensation had they chose not to answer all questions following a prompt by the principal investigator.

Confidentiality

Once the data was collected by the participant, paper copies were manually entered into *Survey Monkey* in the same way that participants who had access to the tablet directly entered

their own information. The paper copies were then stored in a secure locked container behind a secure locked door. The information gathered from *SurveyMonkey* was maintained on a secure network where "respondents' information is securely stored in … SOC 2 accredited data centers that adhere to security and technical best practices" (SurveyMonkey, 2021, para. 2). Data was then pulled from *SurveyMonkey* where it was transferred to a spreadsheet on SPSS-IBM software for analysis and storage. The spreadsheet was stored on a password protected laptop that was kept in a secure locked room when not in use.

In order to maintain optimal confidentiality, *SurveyMonkey* was used to ensure the data collected from the participants did not contain any identifying information and was stored on a secured server. Paper copies and electronic mediums of the research procedures did not require the participant to write their name or any other identifying information outside of what was being asked of them in the demographic questionnaire (See Appendix H, e.g., age, ethnicity, etc.). All raw data completed by the participants was stored in a secure locked container behind at least one secure locked door at all times when not in use.

Information and Debriefing

Participants were provided contact information of the principal investigator and CRP chair if they had inquiries about the conclusions of the study. Primary means of participants accessing study results were through contact with the principal investigator, CRP chair, and associated academic institution. Notice was provided to the research site upon completion of this study for any remaining participants still involved in programming to have ready access to a summary of the research findings, and a formal presentation of the findings will be provided to the individual site's clinical teams.

Retention of Data

During and upon completion of the study, the principal investigator will maintain access to the raw data completed by participants for a minimum of five years after study submission. If publication is pursued by the principal investigator, access to the raw data completed by participants will be maintained for a minimum of five years following publication. Following either of these two criteria, all data will then be destroyed by securely erasing it from any remaining electronic devices or shredding any hard copies of research participant materials.

Permissions

Permission to use the SRGS-R was obtained on 11/10/2020 through email correspondence (See Appendix I) with the assessment instrument's author, Adriel Boals (2018). The author of the assessment measure did not require any specific documentation of permission for use of the measure and stated the measure is available for anyone to use in their own research. Study results will be made available to Adriel Boals as a courtesy for providing access to the measure. Permission to use the DAST-20 was obtained on 08/07/2021 through email correspondence (See Appendix J) with the assessment instrument's author, Harvey Skinner (1982). Permission to collect data from PAC was obtained on 12/21/2020 and was provided in written format signed by the clinical director, Joshua Weiler, Psy.D LP (see Appendix K). No other permissions were required for the purpose of this study. No permissions were required to use the PC-PTSD-5 as it was developed by staff at the VA's National Center for PTSD and is in the public domain and not copyrighted.

CHAPTER FOUR

Results

The following section describes the results of the present study, including an overview of the descriptive statistics as well as the statistical conclusions of each of the four hypotheses. Detailed descriptions of how data was entered and analyzed as well as a statement regarding any attrition concerns and other statistical limitations are reviewed. Specific statistical findings and confidence intervals will be reviewed below.

Descriptive Statistics

A review of the sample demographics was done in order to identify the generalizability of the sample as it relates to the general population of homeless men in Minnesota. Table 1 compares the present sample with a general census conducted by Wilder (2018). The Wilder study is a homelessness study conducted by the Wilder foundation every three years[1] to give a detailed overview of the status of homelessness in Minnesota. It would appear that the present sample can be effectively generalized to the overall population of homeless men in Minnesota.

Table 1

Demographic Distribution of Participants Compared to Minnesota State Averages

Race/Ethnicity	*N*	Percentage	Minnesota Homelessness Average*	Minnesota Population Average**
American Indian or Alaska Native	6	4.3	12	1
Asian	2	1.4	2	5

[1] It should be noted that the Wilder Foundation has paused their research on homelessness following the Covid-19 pandemic, meaning the 2018 study is the most recent revision of their research. Wilder Foundation has announced that they will begin their latest census study on October 26th of 2023.

Black or African American	64	45.4	37	6
White	44	31.2	34	83
Mixed or Biracial	15	10.6	(7)***	(1)***
Other	10	7.1		

*Data based on Wilder (2018)
**Data based on 2014 U.S. Census Bureau, 2014 American Community Survey
***Demographics combined in Census and Wilder (2018) study

Table 1 represents the overall distribution of participants by race/ethnicity along with how this distribution compares to the state averages of Minnesota as per a study conducted by Wilder (2018). Overall, racial/ethnic representation of the present study's participants appears to be largely comparable to that of the state average. Black and African American individuals appear to make up the largest percentage both in the study sample as well as in the stage average while slightly passing white individuals. Of particular note, regarding this representation for Black or African American individuals, is the large discrepancy between Minnesota population representation with homelessness average. Black or African American individuals represent only 6 percent of Minnesota's population, and yet make up 37 percent of Minnesota's homeless population, with 45.4 percent of the present study's sample identifying as Black or?? African American. White and Asian populations are also the only representative racial/ethnic groups with a homelessness percentage that is less than the overall population representation. It is also worth noting that the representation of mixed, biracial, and other participants in the present study had a noticeably larger demographic representation than the 2014 Census average or the Wilder (2018) study's totals.

Table 2 shows the minimum, maximum, mean, and standard deviation of all variables used in the four hypotheses.

Table 2

Minimum, Maximum, Mean, and Standard Deviation of Study Variables

Variable	Minimum	Maximum	Mean	Standard Deviation
SRGS-R Average Rating	-2.07	3.00	1.40	1.23
DAST-20 Score	0	20	14.33	4.13
Number of Previous Treatments	0	19	4.67	3.83
PTSD Scores	0	5	3.00	1.82

Distribution of Data Across Measures

Analyzing the skew of the data distribution will be important for each of the hypotheses. Each measure from the four hypotheses will be explored in the below figures using various scatterplots, histograms, and P-P plots to determine if the data can be confidently normally distributed. Specifically, skewness or outliers will be identified and discussed. If there are challenges with normal distribution, bootstrapping will be performed to account for the level of skewness identified.

History of Previous Treatments Data Distribution

Figure 1 represents a histogram observing the distribution of previous treatments.

Figure 1

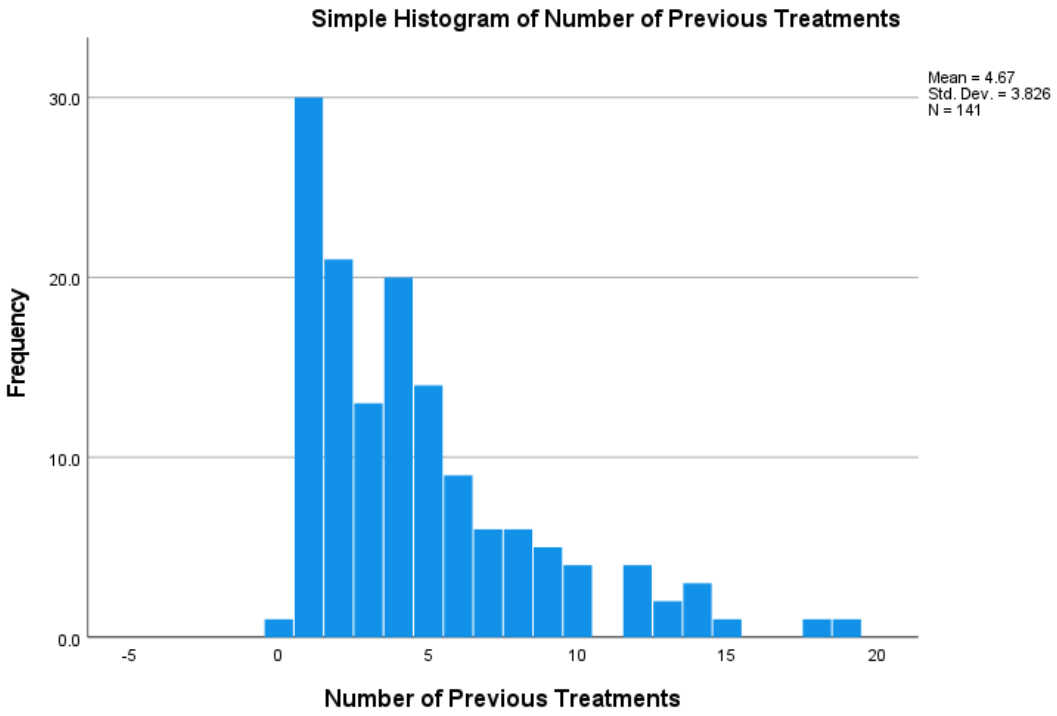


Figure 1 appears to trend towards lower frequencies of individuals having a lower number of previous treatments in comparison to a higher number of previous treatments. As such, the data appears to demonstrate a possible positive skew given this trend towards a lower number of previous treatments. Specifically, the number of previous treatments was shown to have a positive skew (S = 1.408).

Figure 2 represents a P-P plot examining the normality of the distribution of number of previous treatments.

Figure 2

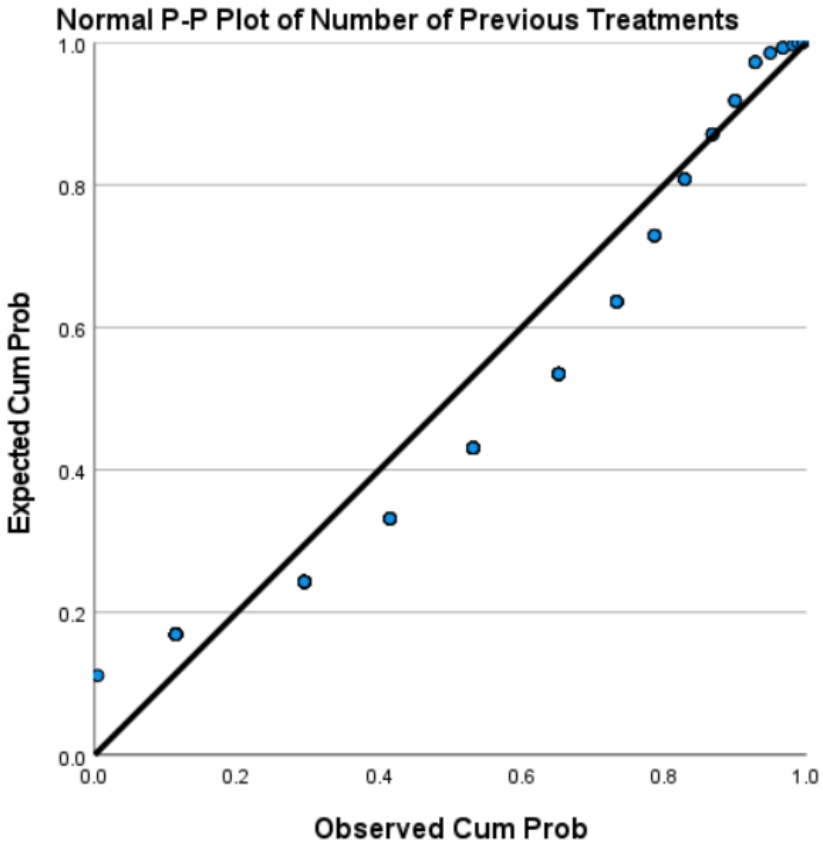


Figure 2 appears to further represent a possible skew in the data that may impact normality. This is present as the overall distribution of data appears to deviate from the y = x line of what would be considered a normal distribution. This figure appears to support the observations made in Figure 8 that the number of previous treatments is positively skewed which would indicate that more participants had fewer previous treatments than a higher number of previous treatments. Despite evidence that the variable may not be normally distributed, parametric tests such as correlations and linear regressions can still be used due to the central limit theorem and the sample being of sufficient power for the proposed hypotheses.

SRGS-R Data Distribution

Figure 3 represents a histogram observing the distribution of SRGS-R average ratings.

Figure 3

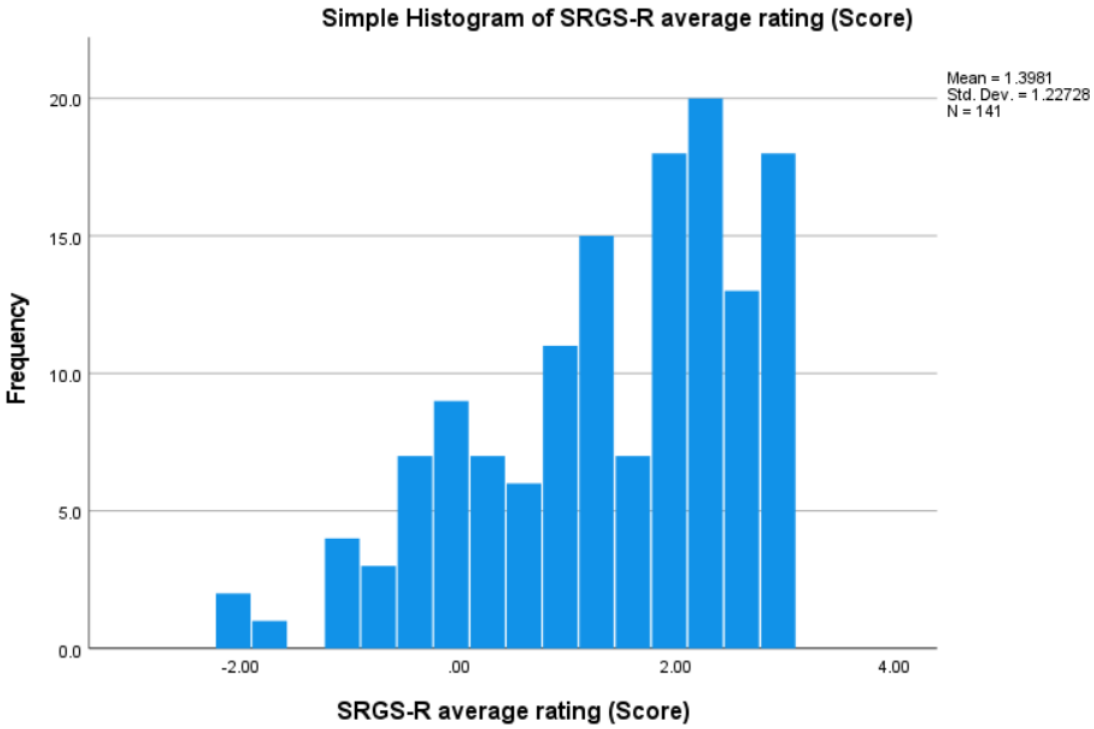


Figure 3 appears to trend towards higher frequencies of individuals scoring higher on the SRGS-R in comparison to the lower SRGS-R ratings. As such, the data appears to demonstrate a possible negative skew in the data given this trend towards a higher frequency of higher SRGS-R scores. Specifically, SRGS-R scores were shown to have a negative skew (S = -0.705).

Figure 4 represents a P-P plot examining the normality of the distribution of SRGS-R average ratings.

Figure 4

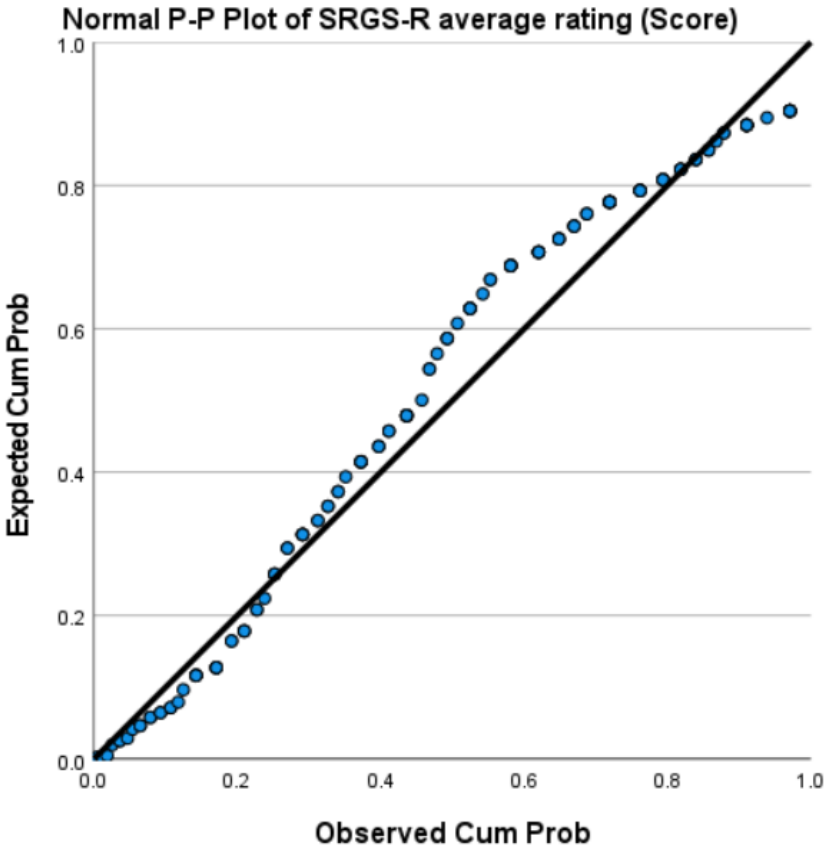


Figure 4 appears to further represent a possible skew in the data that may impact normality. This is present as the overall distribution of data appears to deviate from the y = x line of what would be considered a normal distribution. This figure appears to support the observations made in Figure 3 that the distribution of SRGS-R scores is negatively skewed which would indicate that more participants showed higher SRGS-R scores than lower SRGS-R scores. Despite evidence that the variable may not be normally distributed, parametric tests such as correlations and linear regressions can still be used due to the central limit theorem and the sample being of sufficient power for the proposed hypotheses.

DAST-20 Data Distribution

Figure 5 represents a histogram observing the distribution of DAST-20 scoring.

Figure 5

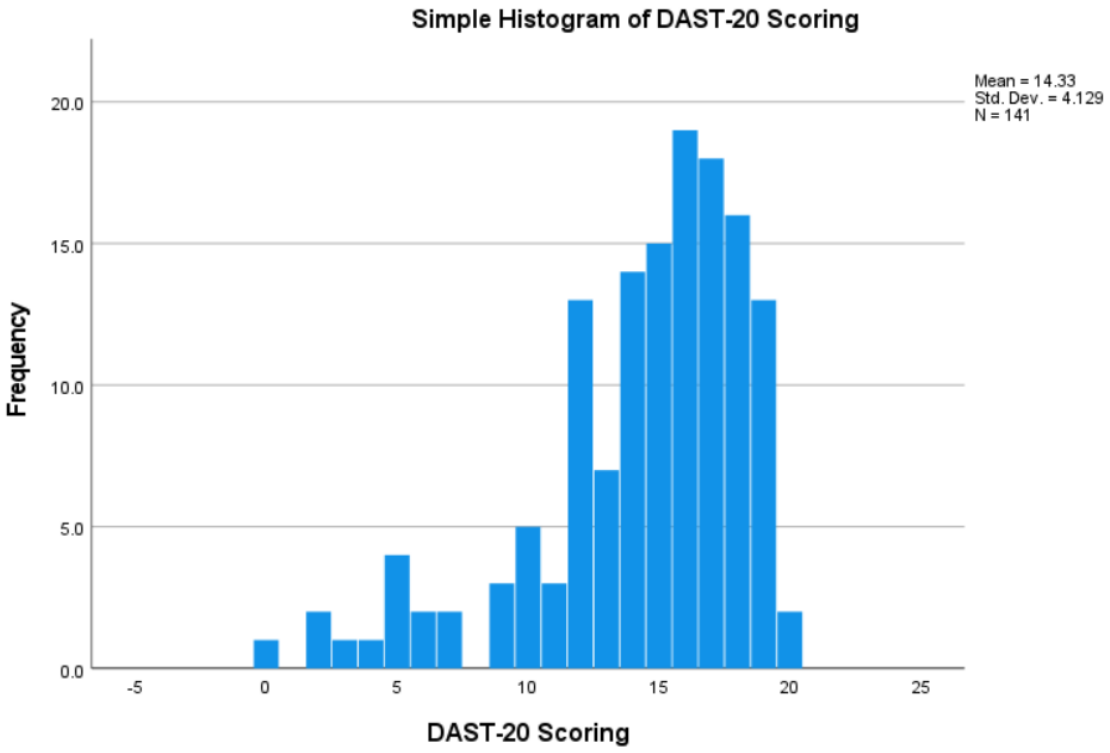


Figure 5 appears to trend towards higher frequencies of individuals scoring higher on the DAST-20 in comparison to the lower DAST-20 ratings. As such, these data appear to demonstrate a possible negative skew given this trend towards a higher frequency of higher DAST-20 scores. Specifically, DAST-20 scores were shown to have a negative skew (S = -1.302). Regarding possible outliers, a review of the data found that the bottom five participants who scored with a raw score ranging from *0* to *4* are all outside of two standard deviations of the mean score on this measure. As such, these scores are considered outliers and were removed from the final analysis. Eliminating these data points lessens, but does not eliminate, the negative skew.

Figure 6 represents a P-P plot examining the normality of distribution of DAST-20 scoring.

Figure 6

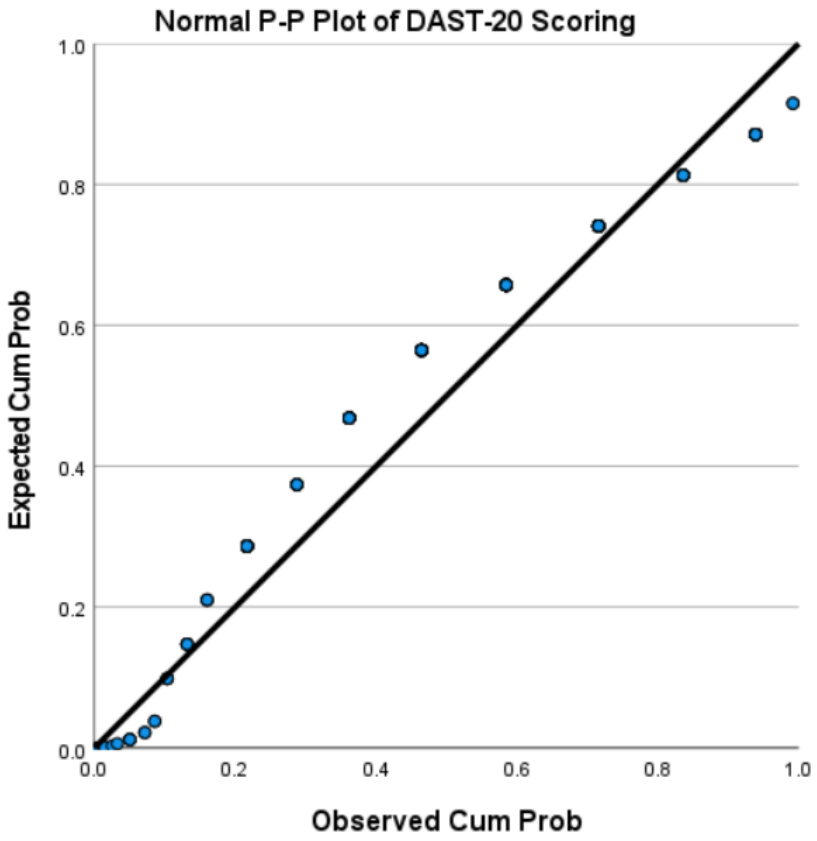


Figure 6 appears to further represent a possible skew in the data that may impact normality. This is present as the overall distribution of data appears to deviate from the y = x line of what would be considered a normal distribution. This figure appears to support the observations made in Figure 5 that the distribution of DAST-20 scores is negatively skewed which would indicate that more participants showed higher DAST-20 scores than lower DAST-20 scores. Despite evidence that the variable may not be normally distributed, parametric tests such as correlations and linear regressions can still be used due to the central limit theorem and the sample being of sufficient power for the proposed hypotheses.

Hypothesis 1 Results

A Pearson's correlation was conducted in order to analyze hypothesis 1, which stated that individuals who have lower severities of substance use disorders will report higher levels of PTG. On average, SRGS-R ratings were significantly and negatively correlated with DAST-20 scores ($r = -0.213$, $p = 0.013$), BCa 95% CI [-0.377, -0.046]. These data suggest that as the severity of substance use increased, posttraumatic growth scores decreased. These results support hypothesis 1.

Hypothesis 2 Results

A Pearson's correlation was conducted in order to analyze hypothesis 2, which stated that individuals who have a longer history of substance use treatment exposure will report lower levels of PTG. Results of the correlation found that the number of previous treatments was negatively correlated with SRGS-R ratings ($r = -0.261$, $p = 0.002$), BCa 95% CI [-0.456, -0.051]. These data suggest that as the number of previous treatments increased, posttraumatic growth decreased. These results support hypothesis 2.

Hypothesis 3 Results

A multiple linear regression was conducted in order to analyze hypothesis 3, which stated that at higher levels of PTSD symptoms, the negative relationship between substance use severity and level of PTG expression will be stronger than at lower levels of PTSD symptom severity. Results of this analysis found that as PTSD scores increase, PTG also increases as measured by the SRGS-R rating. Results also showed the PTSD had a significant moderation effect ($p = .0001$) on the relationship between DAST-20 scores and SRGS-R ratings. Follow-up analyses displayed in Figure 7 show that, while there is no significant relationship between PTG

and substance use at low PTSD symptom severity, there are significant findings for those who report moderate and high levels of PTSD.

Table 3

Moderation Analysis of Hypothesis 3

	Coefficient	SE	t	p	LLCI	ULCI
Constant	.3574	.6891	.5187	.6049	-1.0057	1.7206
DASTM	.0904	.0503	1.7977	.0745	-.0091	.1899
PTSDM	.9609	.2672	3.5965	.0005	.4324	1.1894
Int_1	-.0675	.0173	-3.9121	.0001	-.1017	-.0334

Figure 7

PTSD Interaction at Low, Moderate, and High Intensity

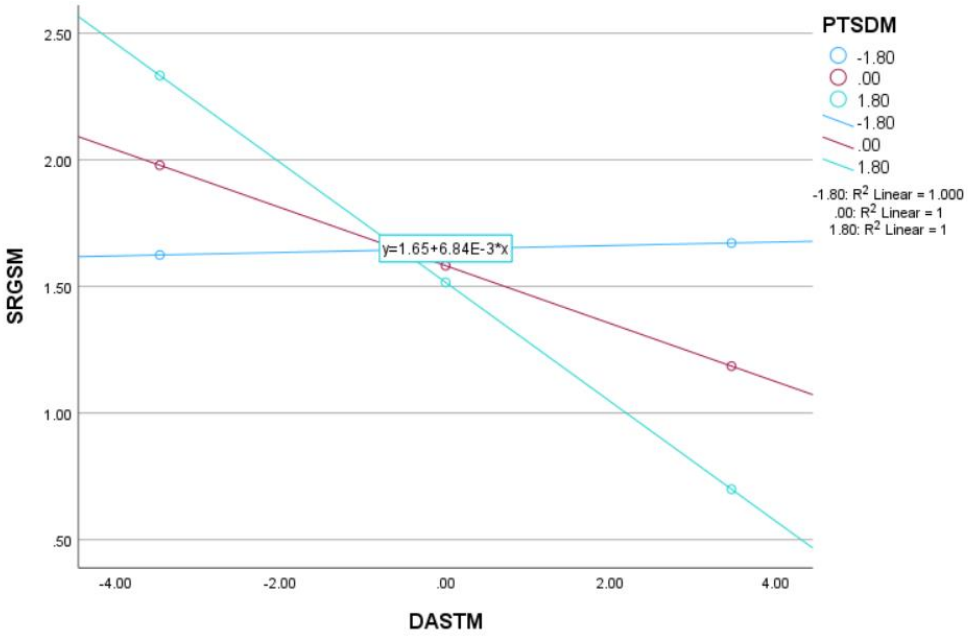


Figure 7 appears shows that the relationship between PTG (SRGSM) and substance use (DASTM) becomes consistently more negative as the severity of PTSD symptoms (PTSDM)

increases. At low levels of PTSD symptoms (-1.80) there appears to be no general relationship between PTG and substance use. At moderate levels of PTSD symptoms (00) there appears to be a slightly negative relationship between PTG and substance use severity. At high levels of PTSD symptoms (1.80) there appears to be a more significant negative relationship between PTG and substance use. Overall, the relationship between PTG and substance use appears to become more negative as the severity of PTSD symptoms increases, whereas moderate PTSD symptoms show a slight negative relationship and high PTSD symptoms show a much stronger negative relationship between PTG and substance use.

Hypothesis 4 Results

A multiple linear regression was conducted in order to analyze hypothesis 4, which stated that at higher levels of PTSD symptoms, the negative relationship between number of previous treatment attempts and level of PTG expression will be stronger than at lower levels of PTSD symptom severity. Results of hypothesis 4 found that PTSD scores did not significantly moderate the relationship between number of previous treatments and post-traumatic growth ($p = 0.1670$).

Table 4

Moderation Analysis of Hypothesis 4

	Coefficient	SE	t	p	LLCI	ULCI
Constant	1.6364	.3068	5.3331	.0000	1.0295	2.2434
Previous Treatments	.0105	.0664	.1580	.8747	-.1208	.1418
PTSDM	.0290	.0910	.3184	.7507	-.1510	.2089
Int_1	-.0238	.0171	-1.3896	.1670	-.0576	.0101

CHAPTER FIVE

Discussion

The present study aimed at addressing four specific research questions involving PTG expression among homeless males enrolled in a chemical dependency treatment program. A summary of those results is provided below, as well as overall comparisons of these results to the current body of literature on PTG and substance abuse. Limitation of the study results are discussed as well as overall clinical implications.

The present study appears to improve our current understanding of the literature based on demographic representation. Demographic comparisons between the present study and the next closest study (Stump, 2006) demonstrated many similarities with the exception of those participants who identified as Black/African American. The present study had a much higher proportion (45.4%) compared to Stump (2006) which had a much smaller representation of Black/African American participants (8%).

Another noteworthy finding was the average scoring on the DAST-20 as it related to the current level of care that the sample in the present study represented. Each participant examined was in an IOP level of care. The DAST-20 incorporates a helpful severity interpretation that offers a suggested level of care based on the overall raw score. The level of care indicator on the DAST-20 ranges from *Level 0: NA* (or no care needed) to *Level 4: Severe/Intensive Care*. Based on the mean average DAST-20 scoring from the present sample, the average participant fell into a *Level 3: Substantial/Intensive Care* which parallels that of the IOP level of care in which the participants were enrolled. The observation that the present sample, having objectively demonstrated to be in an intensive level of care, matches the results of the DAST-20 of being consistent with an intensive level of care provides support for the concurrent validity of the

measure. This finding provides further support for the utility of the DAST-20 in the present study as the general population matched with the level of care they were receiving at the time the study took place.

Summary of Results

The first hypothesis in this study was that individuals who had lower severities of substance use disorders would report higher levels of PTG. Based on the results of the present study, substance use severity was found to correlate significantly with PTG expression, where the lower the level of substance use severity, the higher the level of PTG expression. Current study results are supported by previous research on PTG. In particular, these results parallel the claims made by Stump (2006), who found the same relationship between substance use severity and PTG in their sample of 50 homeless and pregnant women from shelter settings.

Findings from the current study are also supported by a previous study conducted by Ullman et al. (2013) on a sample of 1,863 women who experienced sexual assault. While Ullman et al. (2013) did not directly research PTG, the findings of that study apply to the present findings in several ways. Ullman et al. (2013) explored specific factors around PTSD symptoms and substance use severity. One of these factors was maladaptive coping strategies, which were found to increase an individual's risk of substance use following a trauma. Maladaptive coping has already been explored in the literature to have a negative impact on PTG (Stappenbeck et al., 2015). As such, it is reasonable to assume that maladaptive coping's impact on PTG would apply to Ullman et al.'s (2013) findings as well. The connection between limited coping ability with limited PTG expression sheds light on the connection between substance use severity with PTG expression, as limited healthy coping strategies are found to lead to higher levels of substance use severity in research literature examining PTG with these variables (e.g., Stump, 2006). As

such, the results of hypothesis 1 appear to further support the literature on the negative relationship between substance use severity and level of PTG expression.

The second hypothesis in the present study was that individuals who had a longer history of substance use treatment exposure would report lower levels of PTG. Consistent with this hypothesis, a significant correlation was found between the number of previous treatments for chemical dependency concerns with level of PTG expression, where the higher the number of previous treatments, the lower the expression of PTG. While there has yet to be a study that directly examined this relationship in previous research, the results of the present study appear to be supported by literature on similar factors. For example, relapse and readmission rates to substance use treatment facilities were more common among individuals who were exposed to trauma (Farley et al., 2004) and especially for those who met criteria for a PTSD diagnosis (Jaycox et al., 2005). A lack of appropriate coping skills (Stump, 2006) as well as allostatic overload (Ruini et al., 2015) are all factors that can increase the readmission rates for chemical dependency treatment in a manner that could support the results of hypothesis two.

The third hypothesis in this study was that at higher levels of PTSD symptoms, the negative relationship between substance use severity and level of PTG expression will be stronger than at lower levels of PTSD symptom severity. Based on the results of the present study, low levels of PTSD symptoms appear to show no relationship between SRGS-R and DAST-20 scores. However, moderate levels of PTSD symptoms showed a negative relationship between SRGS-R and DAST-20 scores, and high levels of PTSD symptoms showed a significantly more negative relationship than moderate PTSD symptoms. These results are consistent with hypothesis 3. While there are no known previous studies that examine PTSD as a direct moderating variable to PTG and substance use severity, the present study supports the

current body of literature in a number of ways. In particular, these results support the findings of Quimette et al. (2010) in that PTSD symptoms have been understood to have a significant impact on chemical dependency risks. Level of PTSD severity has also been shown to impact various resilience factors in PTG, such as coping mechanisms (Stappenbeck et al., 2015). As such, results of the current study support our current understanding of these constructs in the literature.

The fourth and last hypothesis in the current study was that at higher levels of PTSD symptoms, the negative relationship between number of previous treatment attempts and level of PTG expression would be stronger than at lower levels of PTSD symptom severity. Contrary to this hypothesis, PTSD scores did not have a significant impact on the negative relationship between number of previous treatments and SRGS-R ratings. While there are no known previous studies that examine PTSD as a direct moderating variable to PTG and number of previous treatments, the present study contributes to the current body of literature even if results are not considered significant. PTSD symptoms were shown in previous research to negatively impact the recovery process for those struggling with substance abuse (Farley et al., 2004; Jaycox et al., 2005).

Utility of the SRGS-R

Another noteworthy finding of the present study, related to the overall PTG literature, was the utility of the SRGS-R. Boals and Schuler (2018) originally claimed that the SRGS-R was a better measure for examining PTG as it included a range for both positive and negative changes, whereas other common measures such as the PTGI only contained a range for positive changes. This increased basal in the SRGS-R may be beneficial as it offers room to observe possible negative outcomes related to traumatic experiences. The present study was able to demonstrate that some participants show negative resilience expression, meaning they had

overall ratings on the SRGS-R that were below 0, or in the *Negative Change* category to their trauma compared to the *Positive Change* category which would demonstrate resilience. Of the total participants ($N = 136$) who responded to the SRGS-R, 22 reported total growth in the negative margin, meaning, on average, they had a negative resilience impact as a result of their trauma. Had a measure been used that did not offer room for negative resilience expression in the present study, these participants' scores would have been a 0, or no change, compared to a negative change, given they would not have had the option of having a negative score. As such, the original conclusions of Boals and Schuler (2018) are supported by the present findings in that negative growth is also worth observing and can be present following trauma and adversity.

The value of the SRGS-R as an accurate measure of change after trauma supports the use of a scale that provides both a positive and negative rating of traumatic event resilience response in the current literature. Future research that explores PTG should strongly consider using the SRGS-R over other measures that do not account for negative change as the ability to observe possible negative change, in addition to positive change. provides the potential for more robust and meaningful findings for the conclusions being derived in future research. Lack of this observation can undermine the true expression of growth and change following traumatic events, and ultimately skew results towards only positive change, as well as confirmation bias by the evaluators.

Contributions to the Overall Body of Literature

There are a number of contributions that the present study has to the limited body of literature on PTG and substance use in homeless populations. First, the present study is the only known study to examine specifically homeless men rather than homeless women, with the other two studies (Sanford, 2016; Stump, 2006) solely examining homeless women. This contribution

is vital to the overall body of literature, as 53% of the total population of homeless adults in Minnesota identify as male (Wilder, 2018). While the overall distribution of homelessness by gender is largely equal in this regard, men and women often have noticeably different services they either qualify for or pursue. Wilder (2018) found that women are more likely to seek out or qualify for longer term options such as transitional housing or domestic violence shelters, whereas men are more likely to seek out or qualify for emergency shelters or non-shelter settings. Because men may more likely be involved in short-term emergency shelter settings, or no shelter at all, they may have less access to resources or other community support networks. As such, research focusing specifically on male populations, such as this study, is important in calling attention to the resources, services, and care homeless men require.

In addition, the current study is also the largest study to date exploring the relationship of PTG with chemical dependency for homeless populations. The present study was able to accrue a total of 136 participants who were shown to effectively represent the demographic makeup of the Minnesota homelessness population. While all studies in the current body of literature had a large enough sample size to effectively examine their hypotheses, the present study was large enough that it was able to effectively represent the demographic makeup of the Minnesota homelessness population. Given this, the present study makes a unique contribution to the research literature on PTG with substance use and homelessness, with a particular emphasis on research completed with a Minnesota-based sample. Regarding demographic representation, particularly with racial and ethnic groups, the present study had a much larger representation of non-white individuals than previous research. Whereas previous research studies had only small percentages of Black individuals (8%; Stump, 2006), the present study had a total of 45.4% of its sample size represented who identified as Black or African American.

Given the demographic representation of the sample in this study matching well with the racial and ethnic makeup of individuals facing homelessness in Minnesota, it is helpful to highlight how these results contribute to our understanding of resilience in homelessness more directly. This understanding is especially important given that this is the first study on PTG and homelessness and substance use that provides an accurate racial representation of the local homeless community. Another notable characteristic of the demographics of the sample in present study is the disproportionate representation of Black and African American individuals to the Minnesota homelessness population (37% of homeless compared to 6% of total Minnesota population). The inequity of these racial disparities coupled with these individuals' other intersecting identities, such as low socioeconomic status, provide additional impetus for efforts to address the ongoing racial injustice in Minnesota. These demographic findings can hopefully serve as a wake-up call for the housing needs of these individuals to be more fully addressed to combat homelessness in our urban and rural communities in Minnesota.

While the present study did not examine specific racial differences in PTG, nearly half (45.4%) of the sample comprised of Black and African American males, indicated they comprise a large representation of the conclusions of this study. As such, given the high degree of PTG expressed in the sample, even when the challenges of substance use were present, it is important to state the level of resilience expressed by those in the Minnesota community facing a myriad of challenges from socioeconomic, racial injustice, and chemical dependency. Even through these variables were not directly explored in the present study, it is worth highlighting as an overall contribution to the resilience literature in terms of the expression of PTG within minority communities, particularly in Minnesota.

Given the findings of the current study supporting how substance use concerns can have a negative impact on PTG expression within homeless communities, the present study helps to support the need for continued research in this area. An important contribution to the literature is the emphasis placed on the negative impact that substance use has on resilience overall and, as such, it is helpful for future researchers to understand the importance of continuing to factor in chemical dependency risks when examining PTG in their samples. Because the present study further emphasizes the impact that substance use has on PTG expression, it will be essential for future research to include these variables in their studies, even when not directly examining substance use as a variable. PTG research is still in its infancy, and factors such as substance use are often ignored, or even ruled out altogether, as an exclusion variable in current PTG literature.

A final contribution of the present study is that it is the first of any study in the current body of literature to examine the relationship between PTG and substance use in homeless populations with updated and more accurate measures. The present study used the SRGS-R over the PTGI, which has been found to more accurately assess PTG due to its inclusion of both positive and negative impacts of trauma and adversity to resilience, as described above (Boals & Schuler, 2016). This finding is a vital contribution to the body of literature, especially as it relates to research studying trauma and adversity as exposure to these experiences can elicit a wide range of responses in individuals. Lowering the basal floor?? of the items being administered to include scores beyond simply positive or neutral impacts of traumatic experiences offers far greater range to accurately, and more effectively, observe the impact of negative and adverse events. Boals and Schuler's (2016) research in addressing this matter was an important signal for the research community to shift away from what was previously

considered the status quo, and the present study is the first one to make this shift and not shy away from the inclusion of negative outcomes, even when examining resilience.

Limitations

While there were many significant findings from the present study, there are a number of factors to consider that may limit the conclusions and generalizability of the study. First, the information gathered is from self-reported data with a vulnerable population. While every known study to date on resilience with homeless populations (Sanford, 2016; Stump, 2006) has used this form of data collection, self-report measures still inherently bring their own challenges. It is understood that experimental design is the most robust method of research and relying on self-reported information has the potential to introduce a noticeable degree of bias (Giovannucci et al., 1993). However, particularly with vulnerable populations, self-reported data collection is the most feasible alternative given the nature of the research with individuals who have experienced adversity and trauma. Even still, acknowledgment of these limitations is necessary to weigh the conclusion of the results.

Similar to many other studies researching homelessness, the population itself presented with a number of limitations. Research on homelessness has historically experienced a number of challenges and adding in the factor of chemical dependency further increases the difficulty in accurately assessing the variables in question. This is due to the wide array of noise from common factors present for individuals struggling with chemical dependency such as financial struggles, family conflict, and general addiction concerns. All of these factors understandably introduce a wide array of stress for these individuals, and it can be challenging to ascertain whether their current stress and resilience is stemming from historical adversity or present environmental stress.

An important element to note is that the present study, while using a sample of individuals considered to be homeless, only explored a specific subsection of the homeless population. This sample of individuals were, at the time of the study, placed in temporary housing situations where they were undergoing treatment. The present study would likely have yielded different results than a sample of homeless individuals who were fully unhoused and living on the streets while not currently participating in treatment. As such, the results of the present study cannot be generalized to all subcategories of homelessness due to the unique challenges faced by those who are fully unhoused and not in temporary shelter settings.

The differences in generalizability between sheltered and unsheltered individuals experiencing homelessness can be supported through research as well. The challenges in generalizing research of all homeless individuals as a population were reviewed by Umamaheswar (2018). Umamaheswar (2018) argued that homeless individuals who are actively engaged in treatment display a number of resilience factors that can be noticeably different from homeless individuals outside of treatment. More specifically, homeless individuals who are actively seeking treatment may display more motivation for change as well as having additional resources with which to acquire this change. These differences indicate that homeless populations researched within a treatment setting may not accurately reflect the general homeless population outside of treatment.

The difficulties in objectively conceptualizing homelessness as a category were another noteworthy limitation of this study. The present study defined homelessness based on Title 42 US Code § 11302 which includes “an individual or family living in a supervised publicly or privately-operated shelter designed to provide temporary living arrangements” (p. 7649) of which the present population resides. While these characteristics are commonly attributed to how

we understand homelessness, individuals may have their own specific definition, as previously reviewed by Tipple and Speak (2005). Noteworthy in the current study was the way in which participants engaged with the inclusion criteria when completing the measures. There were a number of participants who asked the principal investigator if their own specific circumstance considered them homeless, and as such made them eligible for the study, or if they were ruled out. Some specific examples provided by participants included "couch hopping" between friends or extended family, various non-permanent residence circumstances, or the overall timeline of how long they had transitioned to transitional housing and if there was a timeline to fit the definition. While the study itself gave a specific definition of homelessness, it is understandable that each participant may have used their own definition of homelessness, and some of those individual definitions may not have been accurately screened. At the same time, their enrollment in programming and status in transitional housing placed them within the accepted definition of homeless based on the present study.

One final limitation of note, based on the present study, was the incentive provided for participants and the implications this incentive may have had on their self-reported data. It is understandable to assume that some participants may have felt compelled to complete the measures regardless of their content to receive the compensation provided at the end. When reviewing the overall results of participants, there were a few concerns noted that draw into question the validity of those participants' results, and a brief review of them may be helpful in further understanding these results as a limitation of this study. The first concern came from responses on the SRGS-R, where some participants answered *A Very Positive Change* on each of the 15 total items in the assessment. A total of eight participants responded in this manner on the SRGS-R. A second concern came from the response to item 20 on the DAST-20: *Have you ever*

been involved in a treatment program specifically related to drug use. Given that each participant was currently involved in a chemical dependency treatment program, this status would naturally have led to the conclusion that each participant would inherently respond *Yes* to the item. However, there were a total of 10 participants who responded in this manner, one of which responded *No* to every item on the DAST-20 despite being currently enrolled in chemical dependency treatment.

In order to assess whether or not these responses would raise enough concern about the accuracy of these item responses, the data was reviewed to determine if any participants who answered all 15 SRGS-R responses with *A Very Positive Change* also responded *No* on Item 20 of the DAST-20. Because each of the participants who answered in either of these two assessments in a potentially concerning manner did not respond to both in a concerning way, it was determined that there was not enough concern to remove these data from the overall results based on this conclusion. However, five participants were eventually removed due to being found to be outliers based on their DAST-20 score falling outside of two standard deviations.

Future Directions

Given the contributions of the present study to the early and developing research exploring the impact of PTG and substance use on homeless populations, there is a wide range of directions that future research can go to further expand our understanding in the role of PTG and substance use with homeless individuals. Of all of the possible future directions in the current body of literature, it is vital that research include measures that observe both positive and negative aspects of change through trauma and adversity, such as the SRGS-R. While the PTGI has a long history of use in the overall PTG literature, Boals and Schuler (2018) provided compelling arguments, that were supported in the present study, for the need to include negative

aspects of change for a more accurate picture of PTG. While there are many potential ways to observe this phenomenon, using measures such as the SRGS-R or an equivalent measure is strongly recommended for use in all future studies examining PTG, not just those studies on homeless populations.

Another important future direction for research is to explore further moderating variables that are likely to be present for those currently experiencing homelessness and how these variables impact PTG for homeless persons. Given the tumultuous nature of homelessness and the wide range of variables that impact an individual who is displaced from their housing, it is likely that there are a wide range of factors that impact an individual's ability to show resilience. Outside of substance abuse variables, looking at how unique trauma factors impact resilience in homelessness is a likely beneficial future contribution. In particular, looking at resilience expression with trauma exposure both while homeless, as well as prior to homelessness, could be a helpful moderating variable to explore. In addition, moderating variables around veteran status and criminal history may be fruitful avenues to explore as these factors can commonly impact an individual's experience with homelessness and subsequent PTG (Umamaheswar, 2018).

Of note in the current body of literature is that all current studies gather data from formal facilities such as homeless and domestic violence shelters. Umamaheswar (2018) outlined that there can be many differences in presentation for those in a shelter or treatment facility compared to those living on the streets. The present study, as well as the two previous studies on homelessness and substance use (Sanford, 2016; Stump, 2006), utilized homeless individuals currently seeking treatment as participants. While it is understandably more challenging to research homeless individuals outside of a treatment setting, doing so would likely add valuable insight into these differences given the conclusions drawn from Umamaheswar (2018). It is

recommended that future studies make efforts to include a representation of homeless individuals who are not currently in treatment, or are in a shelter setting, to make sure that the representation of those considered *homeless* in the research represents a more diverse range of facets within that wide sweeping definition.

Another important recommendation to consider for future research is that researchers should explore other methods of data collection beyond self-report measures to diversify the overall data pool for this population. Currently, research in this area has focused on structured surveys (Sanford, 2016) and structured interviews (Stump, 2006) as the primary means through which data is collected. While it is understandable that these two methods are far more feasible given the many gatekeeping difficulties and other obstacles to study this population, incorporating more robust research methodologies will be valuable to draw more appropriate implications and conclusions with the results. Of these possible future methodological approaches, incorporating more direct observations of resilience, especially in a field setting outside of a facility, would provide a novel approach to our understanding of resilience with homelessness. Incorporating further quantitative measures outside of survey data could also be highly beneficial. One alternative methodology could be quantifying the various resilience factors proposed by Tedeschi and Calhoun's (1996) original research on PTGI (changes to self, relating to others, and philosophy of life changes) and directly observing these domains in various settings. Using outside observers' perceptions of these resilience factors quantitatively would also likely yield unique results compared to direct perceptions of an individual that may be skewed by acute contextual factors that impact these various domains, particularly sense of self or relating to others.

The vast majority of research on PTG gathers information either through direct self-report quantitatively, or qualitatively through an outside observer such as the staff within a particular facility. Oftentimes, the individual's context is not taken into consideration when observing their level of PTG. Factors such as the timeframe around their traumatic event, the stage of treatment they are in, and various intersecting identities such as race and socioeconomic status are normally left out when interpreting how PTG is expressed. As such, future research will likely benefit significantly by accounting for these variables in order to better understand how PTG is expressed and maintained given as many contextual factors for the individual as possible outside of already understood variables such as type of trauma (Benfer et al., 2018; Kilic et al., 2016; Shakespeare-Finch & Armstrong, 2010; Thomas, 2018) or coping skills (Hasselle et al., 2019).

Given that the present study looked at homeless individuals currently enrolled in a chemical dependency treatment program, it is worth noting that one variable not considered was the stage of recovery in which the client was in during their treatment program. Participants were recruited at all stages of their treatment, and it is reasonable to assume that those in the early stages of treatment may express both their substance use severity as well as their stress and resilience factors differently than those at the later stages of treatment. As such, it will be valuable to future researchers on substance use and PTG within treatment settings to consider this variable.

Clinical Implications

Given the significant findings in the present study, there are many clinical implications that can be suggested based on the results. Specifically, the current findings provide significant clarity to the degree that substance abuse and chemical dependency concerns have on the ability

to express resilience following a traumatic event. Due to each of the two hypotheses that directly observed substance use and chemical dependency treatment having a significant negative impact on PTG expression to a large effect, addressing substance abuse concerns is an important factor for clinicians to consider prior to intervening in other ways. Given the wide range of needs that homeless individuals have, it can be difficult for clinicians and wider care teams to effectively triage which interventions and mental health services to pursue initially for these individuals. Given the present study's findings, starting treatment with services that directly address chemical dependency concerns will likely increase the resilience expression in clients as the severity of the substance use decreases.

Another important clinical implication that can be concluded from the present study is the role of PTSD symptoms as they impact the mental health needs of homeless individuals. Because the negative relationship between PTG and substance use appeared to increase as PTSD symptoms increased, utilizing chemical dependency services that incorporate mental health and trauma treatment components such as in MICD programming is likely to be a more efficacious direction for clients in these circumstances. Results of the present study support previous assertions in the literature on chemical dependency treatment being far more effective when mental health components, particularly with trauma and adversity, are included in care (Peterson & Zettle, 2009). This literature further asserts that substance use treatment programs that do not incorporate mental health treatment may likely be a disservice to a wide range of individuals who are seeking treatment for chemical dependency concerns. In addition, results of the present study indicate that addressing PTSD symptoms should be an early and elevated priority in the treatment of substance use, particularly as the negative relationship between PTG and substance use appears to decrease as PTSD symptoms decrease.

One final important clinical implication to consider is the role that mental health and chemical dependency treatment play in shelter settings. There is a wide array of available research that points towards the correlation between mental health concerns, trauma exposure, and risk for homelessness (Hopper, et al., 1997; Nilsson, et al., 2019; Smartt, et al., 2021). All of these findings, consistent with the results of the present study, further emphasize the likely benefit that homeless persons will gain when having access to proper and effective mental health and chemical dependency treatment directly from their shelter setting. While many government agencies and community care organizations offer some degree of referral channels or direct treatment for homeless individuals based on the type of shelter setting they are in, continued resources to fortify this is an invaluable pursuit. This can be pursued both on the large scale through policy reform, as well as on the smaller community scale, through individual mental health organizations allocating resources and clinical hours directly to individuals who are residing in shelter settings.

Conclusion

The present study aimed at addressing four specific research questions involving PTG expression among homeless males enrolled in a chemical dependency treatment program. Overall, the study results found that PTG played a significant impact on chemical dependency concerns for homeless men, specifically around severity of substance use concerns and number of treatment experiences. Moderate and high PTSD symptoms also appeared to impact this negative relationship between PTG and substance use severity, as the negative relationship between PTG and substance use severity appeared to strengthen as PTSD symptoms increased. At the same time, PTSD symptoms were not found to significantly moderate the relationship between PTG and number of previous treatment attempts. The present study is currently the

largest known study to examine these interactions within homeless populations, and the first to do so with specifically male participants. The present study is also the first study on PTG and homelessness to use more updated and accurate measures for PTG. There were numerous parallels to the present study with previous research, particularly with impacts of PTG on substance use severity.

References

Aldridge, R. W., Story, A., Hwang, S. W., Nordentoft, M., Luchenski, S. A., Hartwell, G., Tweed, E. J., Katikireddi, S. V., & Hayward, A. C. (2018). Morbidity and mortality in homeless individuals, prisoners, sex workers, and individuals with substance use disorders in high-income countries: A systematic review and meta-analysis. *The Lancet*, *391*(10117), 241-250. https://doi.org/10.1016/S0140-6736(17)31869-X.

Al-Shakarchi, N. J., Evans, H., Luchenski, S. A., Story, A., & Banerjee, A. (2019). Cardiovascular disease in homeless versus housed individuals: A systematic review of observational and interventional studies. *Healthcare Delivery, Economics, and Global Health*, *106*, 1483-1488. http://dx.doi.org/10.1136/heartjnl-2020-316706.

American Psychological Association. (2013). *The Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, DC: Author.

Anders, S. L., Peterson, C. K., James, L. M., Engdahl, B., Leuthold, A. C., & Georgopoulos, A. P. (2015). Neural communication in posttraumatic growth. *Experimental Brain Research*, *233*(7), 2013-2020. https://dx.doi.org/10.1007/s00221-015-4272-2.

Ashton, M. C., & Lee, K. (2009). The HEXACO-60: A short measure of the major dimensions of personality. *Journal of Personality Assessment*, *91*(4), 340-345. http://dx.doi.org/10.1080/00223890902935878.

Asnaani, A., Hall-Clark, B. (2017). Recent development in understanding ethnocultural and race differences in trauma exposure and PTSD. *Current Opinion in Psychology*, *14*, 96-101. http://dx.doi.org/10.1016/j.copsyc.2016.12.005.

Baillargean, J., Polychronopoulou, E., Kuo, Y., & Raji, M. A. (2021). The impact of substance use disorder on COVID-19 outcomes. *Brief Reports*, *72*(5), 578-581. https://doi.org/10.1176/appi.ps.202000534.

Bedford, L. (2018). *The revised stress-related growth scale: Improving the measurement of posttraumatic growth* [Unpublished master's thesis]. University of North Texas.

Belknap, M. (2019). *Life after sexual assault: Posttraumatic growth and quality of life in survivors*. [Unpublished master's thesis]. University of Toronto.

Benfer, N., Bardeen, J. R., Cero, I., Kramer, L. B., Whiteman, S. E., Rogers, T. A., Silverstein, M. W., Weathers, F. W. (2018). Network models for posttraumatic stress symptoms across trauma types. *Journal of Anxiety Disorders*, *58*, 70-77. https://doi.org/10.1016/j.janxdis.2018.07.004.

Ben-Zur, H., & Michael, K. (2020). Positivity and growth following stressful life events: Associations with psychosocial, health, and economic resources. *International Journal of Stress Management*, *27*(2), 126-134. http://dx.doi.org/10.1037/str0000.142.

Bernard, J. D., Whittles, R. L., Kertz, S. J., & Burke, P. A. (2015). Trauma and event centrality: Valence and incorporation into identity influence well-being more than exposure. *Psychological Trauma: Theory, Research, Practice, and Policy*, *7*(1), 11-17. https://doi.org/10.1037/a0037331.

Biber, J., Ranes, B., Lawrence, S., Malpani, V., Trinh, T. T., Cyders, A., English, S., Staub, C., McCausland, K., Kosinski, M., Baranwal, N., Berg, D., & Pop, R. (2022). Mental health impact on healthcare workers due to the COVID-19 pandemic: a U.S. cross-sectional survey study. *Journal of Patient-Reported Outcomes*, *6*(1), 1-14. https://doi.org/10.1186/s41687-022-00467-6.

Boals, A., Bedford, L. A., Callahan, J. L. (2019). Perceptions of change after a trauma and perceived posttraumatic growth: A perspective examination. *Behavioral Sciences*, *9*(1), 1-12. https://doi.org/10.3390/bs9010010.

Boals, A., & Schuler, K. L. (2018). Reducing reports of illusory posttraumatic growth: A revised version of the stress-related growth scale (SRGS-R). *Psychological Trauma: Theory, Research, Practice and Policy*, *10*(2), 190-198. https://doi.org/10.1037/tra0000267.

Boals, A., & Schuler, K. (2019). Shattered cell phones, but not shattered lives: A comparison of illusory posttraumatic growth on the posttraumatic growth inventory and the stress related growth scale – revised. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*(2), 239-246. http://dx.doi.org/10.1037/tra0000390.

Bostock, I., Sheikh, A. I., & Barton, S. (2009). Posttraumatic growth and optimism in health-related trauma: A systematic review. *Journal of Clinical Psychology in Medical Settings*, *16*, 281-296. https://doi.org/10.1007/s10880-0099175-6.

Britton, M., LaLonde, L., Oshio, A., & Taku, K. (2019) Relationships among optimism, pessimism, and posttraumatic growth in the US and Japan: Focusing on varying patterns of perceived stressfulness. *Personality and Individual Differences*, *151*, 1-6. https://doi.org/10.1016/j.paid.2019.109513.

Brooks, M., Graham-Kevan, N., Lowe, M., & Robinson, S. (2017). Rumination, event centrality, and perceived control as predictors of posttraumatic growth and distress: The cognitive growth and stress model. *British Journal of Clinical Psychology*, *56*, 286-302. http://dx.doi.org/10.1111/bjc.12138.

Brooks, M. (2018). *Rethinking posttraumatic growth: Psychological processes, outcomes, and individual differences between survivors of multiple types of adverse events* [Unpublished doctoral dissertation]. University of Central Lancashire.

Calhoun, L. G., & Tedeschi, R. G. (1996). Post traumatic growth inventory [Data file]. Charlotte, NC. Retrieved from https://www.careinnovations.org/wp-content/uploads/Post-Traumatic-Growth-Inventory.pdf

Calhoun, L. G., & Tedeschi, R. G. (1998). Posttraumatic growth: Future directions. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive change in the aftermath of crisis* (pp.215-238). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Calhoun, L. G., & Tedeschi, R. G. (2006). Foundations of posttraumatic growth: An expanded framework. In L. G. Calhoun & R. G. Tedeschi (Eds.), *Handbook of posttraumatic growth: Research and practice* (pp. 3-23). Psychology Press.

Canevello, A., Michels, V., & Hilaire, N. (2016). Supporting close others' growth in trauma: The role of responsiveness in romantic partners' mutual posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *8*(3), 334-342. https://doi.org/10.1037/tra000084.

Chen, R., Sun, C., Chen, J., Jen., H., Kang, X. L., Kao, C., & Chou, K. (2020). A large-scale survey on trauma, burnout, and posttraumatic growth among nurses during the COVID-19 pandemic. *International Journal of Mental Health Nursing*, *30*(1), 102-116. https://doi.org/10.1111/inm.12796.

Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory Manual*. Odessa, FL: Psychological Assessment Resources.

Crowne, D. R, & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, *24*, 349-354. https://doi.org/10.1037/h0047358.

Currier, J. M., Mallot, J., Martinez, T. E., Sandy, C., & Neimeyer, R. A. (2013). Bereavement, religion, and posttraumatic growth: A matched control group investigation. *Psychology of Religion and Spirituality*, *5*(2), 69-77. http://dx.doi.org/10.1037/a0027708

Deck, S. M., & Platt, P. A. (2015). Homelessness is traumatic: Abuse, victimization, and trauma histories of homeless men. *Journal of Aggression, Maltreatment & Trauma*, *24*(9), 1022-1043. https://doi.org/10.1080/10926771.2015.1074134.

Dekel, S., Ein-Dor, T., & Solomon, Z. (2011). Posttraumatic growth and posttraumatic stress: A longitudinal study. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(1), 94-101. https://doi.org/10.1037/a0021865.

Dell'Osso, L., Carpita, B., Nardi, B., Bonelli, C., Calvaruso, M., & Cremone, I. M. (2023). Biological correlates of posttraumatic growth (PTG): A literature review. *Brain Sciences*, *13*(2), 1-15. https://doi.org/10.3390/brainsci13020305.

Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. *Jama*, *286*(24), 3089-3096. http://dx.doi.org/10.1001/jama.286.24.3089.

Epstein, S., & Steil, R. (1989). Constructive thinking: A broad coping variable with specific components. *Journal of Personality and Social Psychology*, *57*, 332-350. https://doi.org/10.1037/0022-3514.57.2.332.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1-4. http://dx.doi.org/10.11648/j.ajtas.20160501.11.

Farley, M., Golding, J. M., Young, G., Mulligan, M., & Minkoff, J. R. (2004). Trauma history and relapse probability among patients seeking substance abuse treatment. *Journal of substance abuse treatment*, *27*(2), 161-167. https://doi.org/10.1016/j.jsat.2004.06.006.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods, *39*, 175-191. https://doi.org/10.3758/BF03193146.

Feingold, J. H., Hurtado, A., Feder, A., Peccoralo, L., Southwick, S. M., Ripp, J., Pietrzak, R. H. (2022). Posttraumatic growth among health care workers on the frontlines of the COVID-19 pandemic. *Journal of Affective Disorders*, *296*(1), 35-40. https://doi.org/10.1016/j.jad.2021.09.032.

Frazier, P., Conlon, A., & Glaser, T. (2001). Positive and negative life changes following sexual assault. *Journal of Consulting and Clinical Psychology*, *69*(6), 1048-1055. http://dx.doi.org/10.1037//0022-006x.69.6.1048.

Frazier, P., Tennen, H., Gavian, M., Park, C., Tomich, P., & Tashiro, T. (2009). Does self-reported posttraumatic growth reflect genuine positive change? *Psychological Sciences*, *20*(7), 912-919. https://doi.org/10.1111/j.1467-9280.2009.02381.x.

Fujisawa, T. X., Jung, M., Kojima, M., Saito, D. N., Kosaka, H., & Tomoda, A. (2015). Neural basis of psychological growth following adverse experiences: a resting-state functional MRI study. *PLOS One*, *10*(8). e0136427.

Garland, E. L., Farb, N. A., Goldin, P. R., & Fredrickson, B. L. (2015). The mindfulness-to-meaning theory: Extensions, applications, and challenges at the attention-appraisal-emotion interface. *Psychological Inquiry*, *26*, 377-387. http://dx.doi.org/10.1080/1047840X.2015.1092493.

Garnefski, N., Kraaij, V., Schroevers, M. J., & Somsen, G. A. (2008). Posttraumatic growth after a myocardial infraction: A matter of personality, psychological health, or cognitive coping? *Journal of Clinical Psychology in Medical Settings*, *15*, 270-277. https://doi.org/10.1007/s10880-008-9136-5.

Giovannucci, E., Stampfer, M. J., Colditz, G. A., Manson, J. E., Rosner, B. A., Longnecker, M. P., … & Willett, W. C. (1993). Recall and selection bias in reporting past alcohol consumption among breast cancer cases. *Cancer Causes & Control*, *4* 441-448. https://doi.org/10.1007/BF00050863.

Guarino, K., & Bassuk, E. (2010). Working with families experiencing homelessness: Understanding trauma and its impact. *Zero to Three*, *30*(3), 11. https://perspectives.waimh.org/wp-content/uploads/sites/9/2017/05/5-Working-with-Families-Experiencing-Homelessness.-Understanding-Trauma-and-its-Impact.pdf

Hamilton, A. B., Poza, I., & Washington, D. L. (2011). "Homelessness and trauma go hand-in-hand": Pathways to homelessness among women veterans. *Women's Health Issues*, *21*(4s), S203-S209. https://doi.org/10.1016/j.whi.2011.04.005.

Hasselle, A. J., Schwartz, L. E., Berlin, K. S., & Howell, K. H. (2019). A latent profile analysis of coping responses to individuals' most traumatic event: Associations with adaptive and maladaptive mental health outcomes. *Anxiety, Stress, & Coping*, *32*(6), 624-640. https://dx.doi.org/10.1080/10615806.2019.1638733.

Hawn, S. E., Cusack, S. E., George, B., Sheerin, C. M., Dick, D., & Amstadter, A. B. (2020). Diagnostic validity of the PC-PTSD screen in college student, *Journal of American College Health*, 1-11. https://doi.org/10.1080/07448481.2020.1841768.

Helgeson, V. C., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology*, *74*(5), 797-816. https://doi.org/10.1037/0022-006X.74.5.797.

Hopper, K., Jost, J., Hay, T., Welber, S., Haugland, G. (1997). Homelessness, severe mental illness, and the institutional circuit. *Psychiatric Services*, *48*(5), 659-664. https://doi.org/10.1176/ps.48.5.659.

Housing and Urban Development Exchange (2017). 2017 AHAR: Part 1 – PIT estimates of homelessness in the U.S. https://www.hudexchange.info/resource/5639/2017-ahar-part-1-pit-estimates-of-homelessness-in-the-us/

Infurna, F. J., & Jayawickreme, E. (2019). Fixing the growth illusion: New directions for research in resilience and posttraumatic growth. *Current Directions in Psychological Sciences*, *28*(2), 152-158. https://doi.org/10.1177/0963721419827017.

Jacobsen, L. K., Southwick, S. M., Kosten, T. R. (2001). Substance use disorders in patients with posttraumatic stress disorder: A review of the literature. *American Journal of Psychiatry*, *158*(8), 1184-1190. https://doi.org/10.1176/appi.ajp.158.8.1184.

Jayawickreme, E., & Blackie, L. E. R. (2014). Posttraumatic growth as positive personality change: Evidence, controversies and future directions. *European Journal of Personality*, *28*(4), 312-331. https://dx.doi.org/10.1002/per.1963.

Jayawickreme, E., River, J., & Rauthmann, J. M. (2018). Do we know how adversity impacts human development? *Research in Human Development*, *15*(3-4), 294-316. https://doi.org/10.1080/15427609.2018.1495515.

Jaycox, L. H., Ebener, P., Damesek, L., & Becker, K. (2004). Trauma exposure and retention in adolescent substance abuse treatment. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, *17*(2), 113-121. https://doi.org/10.1023/B:JOTS.0000022617.41299.39.

Jin, Y., Xu, J., & Liu, D. (2014). The relationship between post traumatic stress disorder and post traumatic growth: Gender differences in PTG and PTSD subgroups. *Social Psychiatry and Psychiatric Epidemiology*, *49*, 1903-1910. https://dx.doi.org/10.1007/s00127-014-0865-5.

Jina, L., Weijun, Z., Wenrui, C., Hui, Y., Shengfa, Z., Meng, T., & Zhiyong, Q. (2019). Applications of the Chinese version of the primary care PTSD screen for DSM-5 (PC-PTSD-5) for children. *Journal of Affective Disorders*, *254*, 109-114. https://doi.org/10.1016/j.jad.2019.05.021.

Johnson, G., & Chamberlain, C. (2008). Homelessness and substance abuse: Which comes first. *Australian Social Work*, *61*(4), 342-356. https://doi.org/10.1080/03124070802428191.

Kaler, M. E., Erbes, C. R., Tedeschi, R. G., Arbisi, P. A., & Polusny, M. A. (2011). Factor structure and concurrent validity of the Posttraumatic Growth Inventory-Short Form among veterans from the Iraq War. *Journal of Traumatic Stress*, *24*(2), 200-207. https://doi.org/10.1002/jts.20623.

Kastenmüller, A., Greitemeyer, T., Epp, D., Frey, D., & Fischer, P. (2012). Posttraumatic growth: Why do people grow from their trauma? *Anxiety, Stress, and Coping*, *25*, 477-489. http://dx.doi.org/10.1080/10615806.2011.571770

Kashyap, S., & Hussain, D. (2018). Cross-cultural challenges to the construct "posttraumatic growth." *Journal of Loss and Trauma*, *23*(1), 51-69. https://doi.org/10.1080/15325024.2017.1422234

Karanci, A. N., Isikli, S., Aker, A. T., Gül, E. I., Erkan, B. B., Özkol, H., & Güzel, H. Y. (2012). Personality, posttraumatic stress and trauma type: Factors contributing to posttraumatic growth and its domains in a Turkish community sample. *European Journal of Psychotraumatology*, *3*(1), 1-14. https://dx.doi.org/10.3402/ejpt.v3i0.17303.

Khoury, L., Tang, Y. L., Bradley, B., Cubells, J. F., Ressler, K. J. (2010). Substance use, childhood traumatic experience, and posttraumatic stress disorder in an urban civilian population. *Depression and Anxiety*, *27*, 1077-1086. https://doi.org/10.1002/da.20751.

Kilic, C., Magruder, K. M., & Koryürek, M. M. (2016). Does trauma type relate to posttraumatic growth after war? A pilot study of young Iraqi war survivors living in Turkey. *Transcultural Psychiatry*, *53*(1), 110-123. https://dx.doi.org/10.1177/1363461515612963.

Kim, M. M., Ford, J. D., Howard, D. L., & Bedford, D. W. (2010). Assessing trauma, substance abuse, and mental health in a sample of homeless man. *Health & Social Work*, *35*(1), 39-48. https://doi.org/10.1093/hsw/35.1.39.

Kumar, N., Janmohamed, K., Nyhan, K., Martins, S. S., Cerda, M., Hasin, D., … & Khoshnood, K. (2022). Substance, use in relation to COVID-19: A scoping review. *Addictive Behaviors*, *127*, 107213. https://doi.org/10.1016/j.addbeh.2021.107213.

Kushel, M. B., Evans, J. L., Perry, S., Robertson, M. J., & Moss, A. R. (2003). No door to lock: Victimization among homeless and marginally housed persons. *Archives of Internal Medicine*, *163*, 2492-2499. http://dx.doi.org/10.1001/archinte.163.20.2492.

Leeman, R. F., Hefner, K., Frohe, T., Murray, A., Rosenheck, R. A., Watts, B. V., & Sofuoglu, M. (2017). Exclusion of participants based on substance use status: Findings from randomized controlled trials of treatments for PTSD. *Behaviour Research and Therapy*, *89*, 33-40. https://doi.org/10.1016/j.brat.2016.10.006.

Lepore, S. J. (2001). A social-cognitive processing model of emotional adjustment to cancer. In A. Baum & B. L. Andersen (Eds.), *Psychosocial Interventions of Cancer* (pp. 99-116). Washington, DC: American Psychological Association. http://dx.doi.org/10.1037/10402.006.

Lima, N. N. R., de Souza, R. I., Feitosa, P. W. G., de Sousa Moreira, J. L., de Silva, C. G. L., & Neto, M. L. R. (2020). People experiencing homelessness: Their potential exposure to Covid-19. *Psychiatry Research*, *288*, 112945.

Lindstrom, C. M., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2013). The relationship of core belief challenge, rumination, disclosure, and sociocultural elements to posttraumatic growth. *Psychological Trauma: Theory, Research, Practice, and Policy*, *5*(1), 50-55. https://dx.doi.org/10.1037/a0022030.

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, *17*(1), 11-21. https://doi.org/10.1023/B:JOTS.0000014671.27856.7e

Maercker, A., & Zoellner, T. (2004). The janus face of self-perceived growth: Towards a two-component model of posttraumatic growth. *Psychological Inquiry*, *15*(1), 41-48. https://www.jstor.org/stable/20447200.

Mangelsdorf, J., Eid, M., & Luhmann, M. (2018). Does growth require suffering? A systematic review and meta-analysis on genuine posttraumatic and postecstatic growth. *Psychological Bulletin*, 1-37. http://dx.doi.org/10.1037/bul0000173.

Mattei, G. M. (2019). *Improving construct validity and measurement of post-traumatic growth* [unpublished doctoral dissertation]. Bowling Green State University.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, *60*(2), 175-215. https://doi.org/10.1111/j.1467-6494.1992.tb00970.x

Milam, J. E. (2004). Posttraumatic growth among HIV/AIDS patients. *Journal of Applied Social Psychology*, *34*, 2353-2376. http://dx.doi.org/10.1111/j.1559-1816.2004.tb01981.x.

Moore, J. J. (2019). *An examination of experiences of self-compassion and posttraumatic growth in previously chronically homeless individuals* [unpublished doctoral dissertation]. Alliant International University.

Nakagawa, S., Suguira, M., Sekiguchi, A., Kotozaki, Y., Miyauchi, C. M., Hanawa, S., … & Kawashima, R. (2016). Effects of post-traumatic growth on the dorsolateral prefrontal cortex after a disaster. *Science Reports*, *6*(1), 1-9. https://dx.doi.org/10.1038/srep34364.

Nilsson, A. F., Nordentoft, M., & Hjorthøj, C. (2019). Individual-level predictors for becoming homeless and exiting homelessness: A systematic review and meta-analysis. *Journal of Urban Health*, *96*(5), 741-750. http://dx.doi.org/10.1007/s11524-019-00377-x.

Nower, L., Derevensky, J. L., & Gupta, R. (2004). The relationship of impulsivity, sensation seeking, coping, and substance use in youth gamblers. *Psychology of Addictive Behaviors*, *18*(1), 49-55. http://dx.doi.org/10.1037/0893-164X.18.1.49.

Ouimette, P., Read, J. P., Wade, M., & Tirone, V. (2010). Modeling associations between posttraumatic stress symptoms and substance use. *Addictive Behaviors*, *35*(1), 64-67. http://dx.doi.org/10.1016/j.addbeh.2009.08.009.

Önder, N. (2012). *The mediating role of coping strategies in the basic personality traits – PTG and locus of control – PTG relationships in breast cancer patients* [unpublished master's thesis]. Middle East Technical University.

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, *64*(1), 71-105. https://doi.org/10.1111/j.1467-6494.1996.tb00815.x

Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin*, *136*(2), 257-301. http://dx.doi.org/10.1037/a0018301.

Parsell, C., Clarke, A., Kuskoff, E. (2023). Understanding responses to homelessness during COVID-19: an examination of Australia. *Housing Studies*, *38*(1), 8-21. https://doi.org/10.1080/02673037.2020.1829564.

Peterson, R. A., & Merunka, D. R. (2014). Convenience samples of college students and research reproducibility. *Journal of Business Research*, *67*(5), 1035-1041. https://doi.org/10.1016/j.jbusres.2013.08.010.

Peterson, C. L., & Zettle, R. D. (2009). Treating inpatients with comorbid depression and alcohol use disorders: A comparison of Acceptance and Commitment Therapy and treatment as usual. *The Psychological Record*, *59*, 521-536. https://doi.org/10.1007/BF03395679.

Powell, S., Rosner, R., Butollo, W., Tedeschi, R. G, & Calhoun, L. G. (2003). Posttraumatic growth after war: A study with former refugees and displaced people in Sarajevo. *Journal of Clinical Psychology*, *59*(1), 71-83. https://doi.org/10.1002/jclp.10117.

Prati, G., & Pietrantoni, L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: A meta-analysis. *Journal of Loss and Trauma*, *14*(5), 364-388. https://doi.org/10.1080/15325020902724271.

Priebe, K., Kleindienst, N., Schropp, A., Dyer, A., Krüger-Gottschalk, A., Schmahl, C., Steil, R., & Bohus, M. (2018). Defining the index trauma in post-traumatic stress disorder patients with multiple trauma exposure: Impact on severity scores and treatment effects of using worst single incident versus multiple traumatic events. *European Journal of Psychotraumatology*, *9*(1), 1-11. https://doi.org/10.1080/20008198.2018.1486124.

Prins, A., Bovin, M. J., Kimerling, R., Kaloupek, D. G., Marx, B. P., Pless Kaiser, A., & Schnurr, P. P. (2015). *Primary Care PTSD Screen for DSM-5 (PC-PTSD-5) [Measurement instrument]*. Available from http://www.ptsd.va.gov.

Prins, A., Bovin, M. J., Smolenski, D. J., Marx, B. P., Kimerlng, R., Jenkins-Guarnieri, M. A., Kaloupek, D. G., Schnurr, P. P., Kaiser, A. P., Leyva, Y. E., & Tiet, Q. Q. (2016). The primary care PTSD screen for DSM-5 (PC-PTSD-5): Development and evaluation within a veteran primary care sample. *Journal of General Internal Medicine*, *31*, 1206-1211. https://doi.org/10.1007/s11606-016-3703-5.

Pressman, P., Lyons, J. S., Larson, D. B., & Strain, J. J. (1990). Religious belief, depression, and ambulation status in elderly women with broken hips. *American Journal of Psychiatry*, *147*, 758-760. https://doi.org/10.1176/ajp.147.6.758.

Racial Disparities in Homelessness in the United States. (June 6, 2018). *End Homelessness*. https://endhomelessness.org/resource/racial-disparities-homelessness-united-states/.

Reynolds, M., Mezey, G., Chapman, M., Wheeler, M., Drummond, C., & Baldacchino, A. (2005). Co-morbid post-traumatic stress disorder in a substance misusing clinical population. *Drug and Alcohol Dependence*, *77*, 251-258. https://doi.org/10.1016/j.drugalcdep.2004.08.017.

Rodriguez, N. M., Lahey, A. M., MacNeill, J. J., Martinez, R. G., Teo, N. E., & Ruiz, Y. (2021). Homelessness during Covid-19: challenges, responses, and lessons learned from homeless service providers in the Tippecanoe County, Indiana. *BMC Public Health*, *21*(1), 1-10. https://doi.org/10.1186/s12889-021-11687-8.

Rodriguez, N. M., Martinez, R. G., Ziolkowski, R., Tolliver, C., Young, H., & Ruiz, Y. (2022). "COVID knocked me straight into the dirt": perspectives from people experiencing homelessness on the impacts of the COVID-19 pandemic. *BMC Public Health*, *22*(1), 1-11. https://doi.org/10.1186/s12889-022-13748-y.

Ruini, C., Offidani, E., & Vescovelli, F. (2015). Life stressors, allostatic overload, and their impact on posttraumatic growth. *Journal of Loss and Trauma*, *20*, 109-122. http://dx.doi.org/10.1080/15325024.2013.830530.

Sanford, A. E. (2016). *Trauma-related distress and growth: A study of pregnant and post-partum women in residential mental health and substance use treatment* [unpublished doctoral dissertation]. University of California.

Schmidt, S. D., Blank, T. O., Bellizzi, K. M., & Park, C. L. (2012). The relationship of coping strategies, social support, and attachment style with posttraumatic growth in cancer survivors. *Journal of Health Psychology*, *17*, 1033-1040. http://dx.doi.org/10.1177/1359105311429203.

Scrignaro, M., Barni, S., & Magrin, M. E. (2011). The combined contribution of social support and coping strategies in predicting post-traumatic growth: A longitudinal study on cancer patients. *Psycho-Oncology*, *20*, 823-831. http://dx.doi.org/10.1002/pon.1782.

Shakespeare-Finch, J., & Armstrong, D. (2010). Trauma type and posttrauma outcomes: Differences between survivors of motor vehicle accidents, sexual assault, and bereavement. *Journal of Loss and Trauma*, *15*, 69-82. http://dx.doi.org/10.1080/15325020903373151.

Shakespeare-Finch, J., & Lurie-Beck, J. (2014). A meta-analytic clarification of the relationship between posttraumatic growth and symptoms of posttraumatic distress disorder. *Journal of Anxiety Disorders*, *28*, 223-229. https://doi.org/10.1016/j.janxdis.2013.10.005.

Shakespeare-Finch, J., Martinek, E., Tedeschi, R. G., & Calhoun, L. G. (2013). A qualitative approach to assessing the validity of the posttraumatic growth inventory. *Journal of Loss and Trauma*, *18*, 572-591. http://dx.doi.org/10.1080/15325024.2012.734207.

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., & Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of clinical psychiatry*, *59*(20), 22-33.

Sheikh, A. I. (2004). Posttraumatic growth in the context of heart disease. *Journal of Clinical Psychology in Medical Settings*, *11*(4), 265-273. http://dx.doi.org/10.1023/B:JOCS.0000045346.76242.73.

Sheline, K. T. (2015). *Posttraumatic growth and suicide risk in college students according to trauma type: A failure to replicate* [unpublished doctoral dissertation]. Colorado State University.

Silverstein, M. W., Lee, D. J., Witte, T. K., & Weather, F. W. (2017). Is posttraumatic growth trauma-specific? Invariance across trauma- and stressor-exposed groups. *Psychological Trauma: Theory, Research, Practice, and Policy*, *9*(5), 553-560. http://dx.doi.org/10.1037/tra0000236.

Skinner, H. A. (1982). Guide for using the drug abuse screening test (DAST). *Toronto: Centre for Addiction and Mental Health*.

Sleijpen, M., Haagen, J., Mooren, T., Klever, R. J. (2016). Growing from experience: An exploratory study of posttraumatic growth in adolescent refugees. *European Journal of Psychotraumatology*, *7*(1), 1-10. https://doi.org/10.3402/ejpt.v7.28698.

Smartt, C., Ketema, K., Frissa, S., Tekola, B., Birhane, R., Eshetu, T., Selamu, M., Prince, M., Fekadu, A., & Hanlon, C. (2021). Pathways into and out of homelessness among people with severe mental illness in rural Ethiopia: A qualitative study. *BMC Public Health*, *21*(568), 1-13. https://doi.org/10.1186/s12889-021-10629-8.

Solomon, Z., Mikulincer, M., & Avitzur, E. (1988). Coping, locus of control, social support, and combat-related posttraumatic stress disorder: A prospective study. *Journal of Personality and Social Psychology*, *55*(2), 279-285. https://doi.org/10.1037/0022-3514.55.2.279.

Solorzano, S. (2014). *Post-traumatic growth within the homeless population* [unpublished master's thesis]. California State University, Sacramento.

Stein, D. J., Van Der Kolk, B. A., Austin, C., Fayyad, R., & Clary, C. (2006). Efficacy of sertraline in posttraumatic stress disorder secondary to interpersonal trauma or childhood abuse. *Annals of Clinical Psychiatry*, *18*, 243-249. http://dx.doi.org/10.1080/10401230600948431.

Stroebe, M., Stroebe, W., & Schut, H. (2003). Bereavement research: Methodological issues and ethical concerns. *Palliative Medicine*, *17*, 235-240. http://dx.doi.org/10.1191/0269216303pm768rr.

Stump, M. J. (2006). *The relationship between posttraumatic growth and substance abuse in homeless women with histories of traumatic experience* [unpublished master's thesis]. University of New Mexico Albuquerque, New Mexico.

Substance Abuse and Mental Health Services Administration (2018). *National survey on drug use and health* [Data set]. Substance Abuse and Mental Health Services Administration. Retrieved https://www.samhsa.gov/data/report/2017-nsduh-annual-national-report.

SurveyMonkey (2021). Maintain data security with a trusted survey platform. https://www.surveymonkey.com/mp/data-security-and-compliance/

Sy, T. R. L., & Hechanova, M. R. (2020). Family support as moderator of the relation between coping skills and substance use dependence among Filipinos who use drugs. *Asia-Pacific Social Science Review*, *20*(1), 91-108. http://apssr.com/wp-content/uploads/2020/03/RA-8.pdf

Taku, K., Cann, A., Calhoun L. G., & Tedeschi, R. G. (2008). The factor structure of the posttraumatic growth inventory: A comparison of five models using confirmatory factor analysis. *Journal of Traumatic Stress*, *21*(2), 158-164. https://doi.org/10.1002/jts.20305.

Taku, K., & Cann, A. (2014). Cross-national and religious relationships with posttraumatic growth: The role of individual differences and perceptions of the triggering event. *Journal of Cross-Cultural Psychology*, *45*, 601-617. https://doi.org/10.1177/00220022113520074.

Taku, K., & McLarnon, M. J. W. (2018). Posttraumatic growth profiles and their relationship with HEXAGO personality traits. *Personality and Individual Differences*, *134*, 33-42. https://doi.org/10.1016/j.paid.2018.05.038.

Tashiro, T., & Frazier, P. (2003). "I'll never be in a relationship like that again": Personality growth following romantic relationship breakups. *Personality Relationships*, *10*(1), 113-128. https://doi.org/10.1111/1475-6811.00039.

Tedeschi, R. G., & Blevins, C. L. (2015). From mindfulness to meaning: Implications for the theory of posttraumatic growth. *Psychological Inquiry*, *26*(4), 373-376. https://doi.org/10.1080/1047840X.2015.1075354.

Tedeschi, R. G., & Calhoun, L. G. (1996). Posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, *9*(3), 455-471. https://doi.org/10.1007/BF02103658.

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, *15*(1), 1-18. https://doi.org/10.1207/s15327965pli1501_01.

Teeters, J. B., Lancaster, C. L., Brown, D. G., & Back, S. E. (2017). Substance use disorders in military veterans: prevalence and treatment challenges. *Substance abuse and rehabilitation*, *8*, 69. http://dx.doi.org/10.2147/SAR.S116720.

Thomas, E. A. (2018). *Relationship among trauma type, posttraumatic stress, and posttraumatic growth* [unpublished doctoral dissertation]. University of Tennessee, Knoxville.

Tipple, G., & Speak, S. (2005). Definitions of homelessness om developing countries. *Habitat International*, *29*(2), 337-352. http://dx.doi.org/10.1016/j.habitatint.2003.11.002.

Tsai, J., & Wilson, M. (2020). COVID-19: a potential public health problem for homeless populations. *The Lancet Public Health*, *5*(4), 186-187. https://doi.org/10.1016/S2468-2667(20)30053-0.

Ullman, S. E., Relyea, M., Peter-Hagene, L., & Vasquez, A. L. (2013). Trauma histories, substance use coping, PTSD, and problem substance use among sexual assault victims. *Addictive behaviors*, *38*(6), 2219-2223. https://doi.org/10.1016/j.addbeh.2013.01.027.

Umamaheswar, J. (2018). *Studying homeless and incarcerated persons: A comparative account of doing field research with hard-to-reach populations*.

Van Dam, D., Ehring, T., Vedel, E., & Emmelkamp, P. M. (2010). Validation of the Primary Care Posttraumatic Stress Disorder screening questionnaire (PC-PTSD) in civilian substance use disorder patients. *Journal of Substance Abuse Treatment*, *39*(2), 105-113. https://doi.org/10.1016/j.jsat.2010.05.005.

Villalobos-Gallegos, L., Pérez-López, A., Mendoza-Hassey, R., Graue-Moreno, J., & Marín-Navarrete, R. (2015). Psychometric and diagnostic properties of the Drug Abuse

Screening Test (DAST): Comparing the DAST-20 vs. the DAST-10. *Salud mental*, *38*(2), 89-94. https://www.medigraphic.com/pdfs/salmen/sam-2015/sam152b.pdf.

Vishnevsky, T., Cann, A., Calhoun, L. G., Tedeschi, R. G., Demakis, G. J. (2010). Gender differences in self-reported posttraumatic growth: A meta-analysis. *Psychology of Women Quarterly*, *34*, 110-120. https://doi.org/10.1111/j.1471-6402.2009.01546.x.

Wadsworth, R., Stampneto, A. M., & Halbrook, B. M. (1995). The role of sexual trauma in the treatment of chemically dependent women: Addressing the relapse issue. *Journal of Counseling and Development*, *73*, 401-406. https://doi.org/10.1002/j.1556-6676.1995.tb01772.x.

Weber, J. E., Maio, R. F., Blow, F. C., Hill, E. M., Barry, K. L., & Waller, P. F. (2002). Alcohol and/or other drug use among adult non-occupant motor vehicle crash victims. *Alcohol and alcoholism*, *37*(5), 468-471. https://doi.org/10.1093/alcalc/37.5.468.

Whealin, J. M., Pitts, B., Tsai, J., Rivera, C., Fogle, B. M., Southwick, S. M., & Pietrzak, R. H. (2020). Dynamic interplay between PTSD symptoms and posttraumatic growth in older military veterans. *Journal of affective disorders*, *269*, 185-191. https://doi.org/10.1016/j.jad.2020.03.020.

Wilder (2018). Minnesota Homelessness Study. Wilder Research. https://www.wilder.org/mnhomeless/results

Wu, H. C., Chou, P., Chou, F. H. C., Su, C. Y., Tsai, K. Y., Ou-Yang, W. C., Su, T. T., Chao, S., Sun, W., & Chen, M. C. (2006). Survey of quality of life and related risk factors for a Taiwanese village population 3 years post-earthquake. *Australian & New Zealand Journal of Psychiatry*, *40*(4), 355-361. http://dx.doi.org/10.1111/j.1440-1614.2006.01802.x.

Young, M. Y., & Chan, K. J. (2015). The psychological experience of refugees: A gender and cultural analysis. *Psychology of Gender Through the Lens of Culture*, 17-36. https://doi.org/10.1007/978-3-319-14005-6_2.

Zhou, X., Wu, X., & Zhen, R. (2018). Self-esteem and hope mediate the relationship between social support and post-traumatic stress disorder and growth in adolescents following the Ya-an earthquake. *Anxiety, Stress, and Coping*, *31*(1), 32-45. https://doi.org/10.1080/10615806.2017.1374376.

Appendices

Appendix A: Eligibility Screener

Eligibility Screener

Thank you for your interest in participating in my research study. Before we begin, I have to ask you a few questions to ensure you are eligible to participate. Please answer the following questions below and present this form completed to the principal investigator. Then, if you are determined to be eligible, the principal investigator will begin the study and provide you with the rest of the materials.

1. Are you currently receiving services at Park Avenue Clinic?
    a. Yes
    b. No
2. Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic: For example
        i. A serious accident or fire
        ii. A physical or sexual assault or abuse
        iii. An earthquake or flood
        iv. A war
        v. Seeing someone be killed or seriously injured
        vi. Having a loved one die through homicide or suicide
    b. Have you ever experienced this kind of event?
        i. Yes
        ii. No
3. Are you at least 18 years or older?

   a. Yes
   b. No

4. Do you identify as male?
   a. Yes
   b. No
5. Have you ever had a problem with abusing substances?
   a. Yes
   b. No
6. If you have had a history of substance use experimentation, have you not used any substance outside of a medication prescribed to you in the past week?
   a. Yes
   b. No
7. Are you fluent in English?
   a. Yes
   b. No

Appendix B: PC-PTSD-5

PC-PTSD-5

Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example:

- a serious accident or fire
- a physical or sexual assault or abuse
- an earthquake or flood
- a war
- seeing someone be killed or seriously injured
- having a loved one die through homicide or suicide.

Have you ever experienced this kind of event?

YES NO

If no, screen total = 0. Please stop here.

If yes, please answer the questions below.

In the past month, have you…

1. had nightmares about the event(s) or thought about the event(s) when you did not want to?

   YES NO

2. tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)?

   YES NO

3. been constantly on guard, watchful, or easily startled?

   YES NO

4. felt numb or detached from people, activities, or your surroundings?

   YES NO

5. felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the event(s) may have caused?

   YES NO

Appendix C: Advertising Flier

IRB:2022-01-05 Date Approved: 02/25/2022 Expiration Date: 02/25/2023

PARTICIPANTS NEEDED

For Study Investigating Posttraumatic Growth from Trauma and Substance Use

Are You Eligible?

- Are you enrolled in a program at this organization?
- Have you had an experience that has been traumatic?
- Are you 18 years or older?
- Do you identify as male?
- Have you ever had a problem with abusing substances?
- Have you not used a substance in the past week?

Want the Chance to Win a Visa Gift Card?

All participants Will Be Compensated $5 for their Participation

When?

Tuesdays and Thursdays 9AM-3PM

Where?

Patio/Break Area

What Will You Do?

Eligible participants will be asked to complete a series of four brief questionnaires that will require approximately 15 minutes. Content will include themes of substance use and trauma experiences. No other follow up necessary!

Questions?

Please contact the principal investigator at:

mordt@augsburg.edu

612-222-7359

AUGSBURG UNIVERSITY

Appendix D: Informed Consent

Unique Posttraumatic Growth Expression Among Homeless Males Currently Enrolled in Chemical Dependency Treatment

You are invited to participate in a research study on the impact that substance use has on expressions of posttraumatic growth following traumatic and adverse experiences. You were selected as a possible subject because you are currently enrolled in a program that provides substance use treatment and you have experienced an adverse or traumatic event. Please read this form and ask any questions you may have before agreeing to participate in the study.
This study is being conducted by Travis Mord, Doctoral Candidate, as part of the degree requirements for obtaining a doctorate in clinical psychology at Augsburg University and in cooperation with Park Avenue Center of which I have had previous practicum training. My advisor is Jim Theisen, Ph.D LP who is the Director of Training for the Doctorate of Clinical Psychology program who is also my committee chair for this research project. My two committee advising members are Abby Hughes-Scalise Ph.D LP, and Marcia Bennett, Ph.D LP.

PROCEDURES
If you agree to be in my study, I will ask you to complete a series of four brief questionnaires: the Stress Related Growth Scale – Revised, the Primary Care – PTSD Screen for DSM-5, the Drug Abuse Screening Test (DAST-20), and a brief demographic questionnaire that should take no more than 15 minutes in total. Content of these questionnaires will include themes of substance use and traumatic experiences.

MONETARY COMPENSATION
Participants will be provided a five-dollar compensation as a thank you gift for participating in the study.

RISK AND BENEFITS OF PARTICIPATING IN THIS STUDY
The risks to participation are intrusive thoughts or feelings, negative alterations in mood or affect, or re-traumatization. As with any disclosure of traumatic or stressful events, thoughts of death or dying may also occur. While the probability of these risks is low, any stress or discomfort experienced should be discussed with a mental health provider immediately. There are no direct benefits for participating in the study. Indirect benefits are: Expanding the larger field of posttraumatic growth literature that currently has a limited understanding of substance use and growth in trauma and adversity for homeless men.

In the event that this research actively results in distress, please consult with the individual mental health provider assigned to you in your program for counseling and follow-up care as needed.

CONFIDENTIALITY
The records of this study will be kept confidential, unless required by law. All electronic data will be kept on a secured server and only accessed by the researcher and his advisor, Jim Theisen Ph.D, LP or his committee members: Abby Hughes-Scalise Ph.D LP, and Marcia Bennett, Ph.D LP. Any physical data through hard copy forms will be kept in a secure locked container behind a door that is securely locked and is only accessed by the researcher. The results will be

disseminated in a clinical research paper and presented to the faculty in the clinical psychology doctorate department for the requirements of graduation. The paper will be placed in the Lindell Library and a copy will be given to the researcher and the clinical director of Park Avenue Center. The results may also be published in a professional journal or at a local, regional, national, or international conference via a poster or oral presentation. In any form of dissemination, I will not include any information that will make it possible to identify you because the data will not contain any identifying information.

VOLUNTARY NATURE OF THE STUDY

Your decision about whether or not to participate in this study will not affect your current future relations with Augsburg University, the researcher, or Park Avenue Center. If you decide to participate, you are free to skip questions in the questionnaires or withdraw at any time, without affecting those relationships.

CONTACT AND QUESTIONS

You may ask any questions you have now. If you have questions later, you may contact me, Travis Mord, at 612-222-7359 or mordt@augsburg.edu. You may also contact my advisor, Jim Theisen, Ph.D P at 612-330-1190 or theisej@augsburg.edu. If you have any questions about your rights as a research subject or want to discuss problems/complaints about the research study, send an e-mail to IRB@augsburg.edu. You will be given a copy of this form to keep for your records.

STATEMENT OF CONSENT

I have read the above information or have had it read to me. I have received answers to questions asked. I consent to participate in the study.

Participant Printed Name_____

Participant Signature_____

Investigator Printed Name_____

Investigator Signature_____

Appendix E: Participant Debriefing Form

Debriefing Form

Thank you very much for your participation in this study. Your involvement was greatly appreciated and will serve to better the overall field of resilience research.

Purpose of the Study

As previously mentioned in the informed consent, the purpose of this study was to examine the impact that substance use has on expressions of posttraumatic growth following traumatic and adverse experiences. The goal of this study is to determine if substance use severity and/or number of previous treatment attempts significantly impacted the overall expression of posttraumatic growth. In addition, our goal was to study if PTSD symptoms moderated the relationship between these two comparisons.

While we hope you were able to complete the testing items with minimal distress to you, as you reflect on your traumatic or adverse experience, it may be possible that you feel any number of the risk factors previously described (intrusive thoughts or feelings, negative alterations in mood or affect, or sudden thoughts of death). Should this occur, we want to stress the importance of contacting a mental health provider promptly.

Participant Rights

You have the right to, for any reason, discontinue your participation in the study. Should you decide to no longer continue participation, you are welcome to exit the study administration and your data will not be used in the overall research analysis.

Confidentiality

We ask that you please refrain from discussing the testing procedure or questions to other residents in programming in order to maintain the integrity of the study for other individuals who may wish to participate.

Contact Information

If you have any additional questions regarding this study, please do not hesitate to contact the principal investigator or faculty chair:

Principle Investigator: Travis T. Mord
Principle Investigator phone: 612-222-7359
Principle Investigator email: mordt@augsburg.edu

Faculty Chair: Jim Theisen, PhD LP
Faculty Chair phone: 612-330-1190
Faculty Chair email: theisej@augsburg.edu

Community Resources

Hennepin County Adult Crisis Line: 612-596-1223
Dakota County Crisis Response Unit: 952-891-7171
Ramsey County Adult Crisis Line: 651-266-7900

Appendix F: SRGS-R

SRGS-R

For each of the following statements, indicate how much change you experienced, if any change at all, as a result of the negative event that you nominated earlier. Please use the following scale:

+3 = A very positive change
+2 = A mediate positive change
+1 = A somewhat positive change
0 = No change
-1 = A somewhat negative change
-2 = A mediate negative change
-3 = A very negative change

Because of this event…

1. I experienced a change in how I treat others.

2. I experienced a change in the extent to which I feel free to make my own decisions.

3. I experienced a change in my belief that I have something of value to teach others about life.

4. I experienced a change in the extent to which I can be myself and not try to be what others want me to be.

5. I experienced a change in the extent to which I work through problems and not just give up.

6. I experienced a change in the extent to which I find meaning in life.

7. I experienced a change in the extent to which I reach out and help others.

8. I experienced a change in the extent to which I am a confident person.

9. I experienced a change in the extent to which I listen when others talk to me.

10. I experienced a change in the extent to which I am open to new information and ideas.

11. I experienced a change in the extent to which I communicate honestly with others.

12. I experienced a change in my desire to have some impact on the world.

13. I experienced a change in my belief that it's OK to ask others for help.

14. I experienced a change in the extent to which I stand up for my personal rights.

15. I experienced a change in my belief about how many people care about me.

Appendix G: DAST-20

These questions refer to the past 12 months.

	Circle your response
1. Have you used drugs other than those required for medical reasons?	Yes No
2. Have you abused prescription drugs?	Yes No
3. Do you abuse more than one drug at a time?	Yes No
4. Can you get through the week without using drugs?	Yes No
5. Are you always able to stop using drugs when you want to?	Yes No
6. Have you had "blackouts" or "flashbacks" as a result of drug use?	Yes No
7. Do you ever feel bad or guilty about your drug use?	Yes No
8. Does your spouse (or parents) ever complain about your involvement with drugs?	Yes No
9. Has drug abuse created problems between you and your spouse or your parents?	Yes No
10. Have you lost friends because of your use of drugs?	Yes No
11. Have you neglected your family because of your use of drugs?	Yes No
12. Have you been in trouble at work because of drug abuse?	Yes No
13. Have you lost a job because of drug abuse?	Yes No
14. Have you gotten into fights when under the influence of drugs?	Yes No
15. Have you engaged in illegal activities in order to obtain drugs?	Yes No
16. Have you been arrested for possession of illegal drugs?	Yes No
17. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	Yes No
18. Have you had medical problems as a result of your drug use (e.g. memory loss, hepatitis, convulsions, bleeding, etc.)?	Yes No
19. Have you gone to anyone for help for a drug problem?	Yes No
20. Have you been involved in a treatment program specifically related to drug use?	Yes No

Appendix H: Brief Demographic Questionnaire

Demographic Questionnaire

1. **Age**:_____

2. **Race/Ethnicity: Please check one**

____: American Indian or Alaska Native
____: Asian
____: Black or African American
____: Native Hawaiian or Other Pacific Islander
____: White
____: Mixed or Bi-Racial
____: Other

3. **Time in Treatment (In Weeks)**:_____

4. **Number of Previous Treatments**

Please list the number of total treatment attempts you have engaged with, including your current treatment. Please include both completed and non-completed treatment attempts. If you are unsure, please give your best guess.

_____

5. **Experience of Traumatic Event**

Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic: For example

c. A serious accident or fire, A physical or sexual assault or abuse, An earthquake or flood, A war, Seeing someone be killed or seriously injured, Having a loved one die through homicide or suicide
d. Have you ever experienced this kind of event?
    i. Yes
    ii. No

*Please continue to next page

6. **Timeline of Traumatic Event**

Please indicate how long ago you experienced the trauma (If you have experienced more than one traumatic event, please answer based on the event you consider most impactful for you)

____: 1-2 months
____: 2 months to 1 year
____: 1-2 years
____: 2-5 years
____: 5+ years ago

7. Substance Use Disorder

Please place a check by the substance(s) which you have experimented with before AND that has been considered a problem for you. If you check more than one, please circle the substance that you see as your most significant/current drug of choice

____: Alcohol
____: Marijuana/hashish
____: Cocaine/crack
____: Meth/amphetamines
____: Heroin
____: Other opiates/synthetics
____: Inhalants
____: Benzodiazepines
____: Hallucinogens
____: Barbiturates/sedatives/hypnotics
____: Over-the-counter drugs
____: Other
____: Nicotine

Appendix I: Author Permission for SRGS-R

Mord, Travis <mordt@augsburg.edu> Tue, Nov 10, 2020, 8:37 AM
to adriel

Hello Adriel Boals,

My name is Travis Mord and I am a doctoral student in clinical psychology at Augsburg University in Minneapolis, Minnesota. I am conducting research on posttraumatic growth.

I am reaching out to you because I came across your publication in 2018 about the SRGS-R. I have been researching this measure's application to posttraumatic growth for my own study and believe it would be an ideal instrument for use in my doctoral project that avoids some of the validity concerns of illusory growth found in similar assessments.

I would be very thankful to have your permission in using this instrument and should you approve this request, I would be happy to share with you any of my research findings as well as provide acknowledgements to your generosity within the write-up of my project.

Look forward to hearing from you soon,

--
Travis T. Mord
Clinical Psychology Doctoral Student
Augsburg University

Boals, Adriel <Adriel.Boals@unt.edu> Tue, Nov 10, 2020, 8:41 AM
to me

Travis-

Anyone is welcome to use the measure. Good luck in your research.

Adriel

•••

Appendix J: Author Permission for DAST-20

Harvey A Skinner Aug 7, 2021, 1:34 PM (1 day ago)
to Andrew, me, Harvey

Dear Travis

Thank you for your interest in the Drug Abuse Screening Test (DAST).

The DAST-10 and DAST-20 versions are published by the Center for Addiction and Mental Health (CAMH), Toronto. I am the test author and copyright holder along with CAMH.

You have my permission to use the DAST for your research study as long as you acknowledge my authorship and respect my copyright along with CAMH. Please use this copyright statement:

© Copyright 1982, 2019 by the test author Dr. Harvey Skinner, York University, Toronto, Canada and by the Centre for Addiction and Mental Health, Toronto, Canada.

Attached is a Manual that describes the test development, instructions for using the DAST and supporting research.

Regards

Harvey

Harvey Skinner PhD, CPsych, FCAHS
Professor of Psychology & Global Health
Founding Dean 2006-2016, Faculty of Health
York University, 4700 Keele Street,
Toronto, ON, Canada M3J 1P3
Mobile: 416-520-7615
Email: harvey.skinner@yorku.ca
Website: https://stressbusting.info.yorku.ca/

Situated on the ancestral and treaty territories of the Anishinabek Nation, the Haudenosaunee Confederacy, the Wendat and the Mississaugas of the Credit First Nation, subject to the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lake Region.

Pronouns: he/his.

Appendix K: PAC Data Collection Permission Form

Permission to access participants for a Clinical Research Project

Name of Student: Travis Mord

Name of Agency: Park Avenue Center

Name(s) of Agency staff responsible for permitting access to participants: Joshua Weiler, Psy.D LP

Title of Project: Individual PTG expression by interpersonal trauma type within MICD intensive outpatient populations

Brief Description of purpose or the hypothesis/hypotheses of the study

While PTG has been shown to be present among individuals who have experienced trauma, little research has examined the differences between trauma type and PTG expression. Interpersonal trauma has been found to express differently than community-based trauma for a multitude of variables (community support, stigma, etc.). I hypothesize that, within interpersonal trauma, PTG will express in unique ways given the type of interpersonal trauma experienced. Little research has been done to examine this within a substance use treatment population.

Description of the participants who will be accessed: Adult males currently enrolled in an intensive outpatient substance use treatment program.

Description of the procedure(s) used to access the participants: Participants will be gathered through fliers advertised around the facility.

Description of the potential benefits and risks of this study for the participants, the program, Augsburg University, or the community:

Potential risks: Re-traumatization of participants, disruption of therapeutic progress

Potential benefits: Better understanding of the growth patterns of certain trauma types which can help to facilitate understanding and direction in therapy. Further reinforce the direction the academic community needs to take with regards to trauma research. Participants can better understand their own growth among their trauma.

Procedure for ensuring anonymity or confidentiality of the data provided by the participants [include any processes/procedures to limit access to agency from which the participants are accessed]:

Each participant will be assigned a number upon completion of their assessments and all electronic records of their score results will correspond with that number only. All completed assessments will be stored in a locked container at all times unless being directly monitored by the principle investigator. All recordings of traumatic events will refrain from containing any identifiable information that could lead back to those involved in the trauma.

Park Avenue Center requests that **Travis Mord** conduct the research project described above on behalf of the agency. **Travis Mord** is granted permission to access the potential participants and to use the results of his analysis as the basis for a Clinical Research Project at Augsburg University. The student

will submit a copy of the completed CRP to **Park Avenue Center**. The student will also prepare additional summaries, reports, and analyses of the data for the agency as requested.

The Chair of this CRP along with the Clinical Psychology Program Director agree to supervise the data collection process, and to ensure that the process conforms to applicable ethical and legal requirements. Final permission to access the participants is contingent upon approval by the Augsburg University Institutional Review Board. (If the agency requires approval of their IRB first before submitting the CRP proposal to the Augsburg IRB or clearance by the Augsburg IRB before approval by the agency IRB, indicate this here)> [and, if appropriate, certification by an Institutional Review Board or similar body at the agency/school. – delete this last clause if it is not applicable to your study, i.e., there are no other IRBs or similar approval/certifying entities that need to review your study.]

Signature of Program Director, Clinical Psychology — Date: 12/21/20

Signature of Dean of Graduate Studies — Date

Signature of Student — Date

AUGSBURG UNIVERSITY

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Title: Unique Posttraumatic Growth Expression Among Homeless Males Currently Enrolled in Chemical Dependency Treatment

Author(s) of Work(s): Travis T. Mord

Depositor's Name (Please Print): Michael Bloomberg

Author's Signature: [signature] Date: 11/28/23

If the Deposit Agreement is executed by the Author's Representative, the Representative shall separately execute the Following representation.

I represent that I am authorized by the Author to execute this Deposit Agreement on the behalf of the Author.

Author's Representative Signature: [signature] Date: 11/28/23