

PSYCHOLOGICAL DISTRESS AND GROWTH
AMONG YOUNG ADULTS FOLLOWING
CHILDHOOD TRAUMA EXPOSURE:
A LATENT PROFILE ANALYSIS

By

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Abstract: Psychological distress and growth have received extensive attention within the literature as distinct outcomes; however, the relationship between these two constructs yields mixed findings. The present study examines the patterns of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and posttraumatic growth among young adults following experiences of childhood trauma. Participants were 341 young adults who completed an online, anonymous survey, including (PDS-5), Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder (GAD-7), Posttraumatic Growth (PTG), and demographic information. An LPA was conducted to examine patterns of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and posttraumatic growth among young adults following experiences of childhood trauma. Results revealed four profiles— High Distress-Moderate Growth, Low Distress-Moderate Growth, Low Distress-High Growth, and Low-Distress-Low Growth. Multinomial logistic regressions were conducted in SPSS to examine whether type of trauma exposure, social support, and sex could predict membership in the latent profiles of distress and growth. Trauma type, social support, and sex did not significantly predict group membership, which is likely a function of large standard errors from a relatively small sample. However, the odd ratios for the predictors, often considered a measure of effect size, were notable in many instances, warranting description as they provide important directions for future research. This study advances the literature by expanding upon previous studies that use LPA to examine the co-occurrence of distress and growth, using a more comprehensive approach to distress and trauma type. However, further research is needed to examine a broader range of predictors among more diverse trauma experiences.

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CHAPTER I

INTRODUCTION

Overview

Exposure to trauma during childhood is a major public health concern affecting approximately 62% of youths in the United States (McLaughlin et al., 2013; McLaughlin & Lambert, 2017). Experiences of childhood trauma include but are not limited to experiences of interpersonal violence (i.e., physical and sexual abuse), as well as non-interpersonal experiences of traumatic events (i.e., natural disasters and motor vehicle accidents) (McLaughlin et al., 2013). The majority of children will experience at least one traumatic event prior to reaching adulthood, and approximately 20% of children will have experienced three or more traumatic events during their childhood (Finkelhor, Ormrod, Turner, & Hamby, 2005).

Due to the high prevalence of traumatic experiences during childhood, researchers have taken particular interest in understanding the ramifications of trauma (e.g., Seballos, Tanner, Tarazona, & Gallegos, 2011). As such, the psychological effects of traumatic experiences have been broadly distinguished into two outcomes: psychological distress and posttraumatic growth. Consistent with a pathologic model, a considerable body of empirical work provides evidence to suggest that traumatic events increase risk for the development of a wide range of physical and mental health impairments. Several studies

examining the pathogenic effects of trauma have documented increased rates of posttraumatic stress disorder (PTSD), depression, and anxiety, (e.g., Breslau, Davis, Andreski, & Peterson, 1991; Copeland, Keeler, Angold, & Costello, 2007; De Bellis, Hooper, Woolley, & Shenk, 2009). Alternatively, trauma has also been proposed to be associated with positive outcomes, referred to as posttraumatic growth (PTG) (Frazier, Conlon, & Glaser, 2001; Tedeschi & Calhoun, 2004). Consistent with positive psychology theory, individuals who experience trauma may obtain psychological benefits at the same time (Seligman & Csikszentmihalyi, 2014). Over the past decade, research has documented individual increases in personal strength, relational intimacy, and appreciation of life following a variety of traumatic experiences (Calhoun & Tedeschi, 2014; Linley & Joseph, 2004; Zoellner & Maercker, 2006).

Although there is evidence for both negative and positive outcomes following exposure to traumatic events, the patterns of psychological distress and posttraumatic growth remain unclear. Studies that examine this relationship have reported inconsistent findings following three general patterns: a negative relationship, a positive relationship, and no relationship. These inconsistent patterns leave questions about whether distress and growth exist on the same continuum whereby posttraumatic growth may buffer negative outcomes (Frazier et al., 2001; Johnson, Wood, Gooding, Taylor, & Tarrier, 2011); whether distress and growth co-occur, with distress typically preceding growth (Butler et al., 2005; Hall et al., 2010; Taku, Cann, Calhoun, & Tedeschi, 2008); or whether distress and growth are independent, unrelated constructs (Hobfoll, Tracy, & Galea, 2006; Maercker & Herrle, 2003; Salsman, Segerstrom, Brechting, Carlson, & Andrykowski, 2009).

One way to clarify this relationship is to consider potential predictors of growth and distress. Prior research suggests individual characteristics, such as perceived levels of social support and sex, have indicated broad variability in individual responses following a traumatic event (La Greca, Silverman, Lai, & Jaccard, 2010). However, most of the literature focuses on examining the correlates of posttraumatic distress, and very few studies examine correlates of psychological growth or correlates of the co-occurrence of distress and psychological growth.

In addition to the inconsistent findings, several other limitations exist in the current literature examining predictors of growth and distress. For instance, few studies simultaneously measure both positive and negative outcomes at the same time despite theoretical arguments for the importance of examining individual differences in positive circumstances in the context of adverse conditions (Belsky & Pluess, 2009; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2011). Additionally, much of the literature that examines distress uses PTSD as the outcome of interest, whereas fewer studies explore additional psychological markers of distress including depression or anxiety. Finally, previous work has primarily used variable-centered approaches, which may minimize or mask potential differences among heterogeneous groups. Thus, these gaps in the literature warrant additional studies that examine predictors that contribute to patterns of psychological distress and posttraumatic growth in young adults following experiences of childhood trauma, using statistical approaches that do not assume homogeneity across individuals.

The overall objective of the current study was to examine the patterns of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and

posttraumatic growth among young adults following experiences of childhood trauma, and explore factors that may predict membership into profiles of distress and growth. Results revealed four profiles— High Distress-Moderate Growth, Low Distress-Moderate Growth, Low Distress-High Growth, and Low-Distress-Low Growth. Results also indicated that trauma type, social support and sex did not significantly statistically differentiate classification into the four profiles of distress and growth. The current study contributes to the overall understanding of the relationship between distress and growth and advances the literature by expanding upon previous studies that use LPA to examine the co-occurrence of distress and growth, while using a more comprehensive approach to distress and trauma type. However, further research is warranted to examine a broader range of predictors among more diverse trauma experiences.

Review of the Literature

This chapter provides a review of the literature for the proposed study. The review of the literature begins with a description of childhood trauma and adversity exposure and its associated outcomes, including psychological distress and growth. Then, the relationship between distress and growth is discussed. This is followed by a discussion of potential predictors of distress and growth, focused on static risk factors, including the type of trauma and sex, and dynamic risk factors, such as perceived level of social support. Finally, the chapter will include a summary and the benefits for using a person-centered approach to examine outcomes associated with childhood trauma, as well as discuss the aims of the current study.

Childhood Trauma and Exposure to Adversity

Childhood trauma is defined as exposure to actual or threatened death, serious injury, or sexual violence from birth to 18 years of age (*Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*; American Psychiatric Association (APA), 2013). Childhood trauma may be experienced directly by the child, or the child may witness or learn that a traumatic event has occurred to others. Exposure to childhood trauma represents a public health concern affecting approximately six in every ten children in the United States (McLaughlin et al., 2013). In fact, an overwhelming majority of children will experience a traumatic event prior to turning 18 years old (Breslau, Wilcox, Storr, Lucia, & Anthony, 2004; Macdonald, Danielson, Resnick, Saunders, & Kilpatrick, 2010). Findings from the National Survey of Children's Exposure to Violence (NatSCEV) (2014) concluded that more than 60% of children in the US were exposed to violence, and that multiple victimizations were common, with about one-third of children

experiencing two or more direct victimizations in the past year. Approximately 87% of children who reported being exposed to violence over the course of their lifetime also reported experiencing violence within the past year. These findings are consistent with other studies that suggest that individuals with a trauma history are more likely to experience several episodes of traumatic exposures (Kessler, 2000) Particularly during childhood, it is common for children to experience sustained, repeated, and multiple traumas (McLaughlin, 2017). Researchers have proposed that as the number of different types of trauma increase, the greater the likelihood of experiencing negative symptomology and outcomes (Briere, Kaltman, & Green, 2008; Van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005).

Although childhood experiences such as parental divorce, witnessing domestic violence, emotional neglect, or having a family member incarcerated may not be captured in the traditional definition of childhood trauma exposure, these adverse childhood experiences have been shown to have similarly detrimental effects. In fact, the cumulative burden of childhood adversity has been associated with a number of negative effects with implications for psychological and behavioral functioning including mental health challenges (e.g., depression and anxiety) and health-risk behaviors (e.g., substance use, unintended pregnancy) (Oral et al., 2016). The National Study of Child and Adolescent Well-Being indicated that the most prevalent Adverse Childhood Experience among child welfare involved youth was physical neglect (20.3%), which was followed by domestic violence (26.7%) (Garcia et al., 2017).

Due to the alarming prevalence of traumatic and adverse experiences that occur during childhood, researchers have taken particular interest in understanding the long-

term psychological outcomes of childhood trauma (e.g., Johnson & Thompson, 2008; Nickerson, Bryant, Steel, Silove, & Brooks, 2010). The ramifications of traumatic experiences have been broadly distinguished into two outcomes: psychological distress and posttraumatic growth.

Psychological Distress

It is widely accepted that traumatic and adverse experiences are associated with negative psychological effects, with a growing literature documenting the risks for negative psychological outcomes associated with childhood trauma exposure (Johnson & Thompson, 2008; Nickerson, Bryant, Steel, Silove, & Brooks, 2010). In concordance with a pathologic model, exposure to potentially traumatic events during childhood, such as experiences of maltreatment or natural disasters, has been identified as a major risk factor to the emergence of psychosocial difficulties during childhood and into adulthood (Johnson & Thompson, 2008; Nickerson et al., 2010), including mental health concerns and psychopathology (Green et al., 2010; Kessler et al., 2010; MacMillan et al., 2001).

Although several studies have made important contributions to the implications of childhood trauma and adversity, arguably one of the most influential studies is the CDC-Kaiser Adverse Childhood Experiences (ACE) study. This study was of the first to examine the impact of traumatic experiences during childhood on health outcomes in adulthood (Felitti, 1998). The CDC-Kaiser ACE study examined ten broad categories of possible adverse experiences: emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, witnessing violence against the mother, household member with mental illness, household substance abuse, parental separation/divorce, and household member with history of incarceration. Among the many salient findings,

researchers not only found that there were markedly high rates of childhood trauma experiences, but that there were also short- and long-term health and social consequences associated with trauma exposure (i.e., depression, heart disease, risky health behaviors). Additionally, Felitti and colleagues (1998) also identified a dose-response relationship, suggesting that as the number of childhood adversity exposures increase, so does the risk for negative health outcomes in adulthood, including psychopathology.

The ACE Pyramid was developed to serve as the conceptual framework for the ACE study. This framework aims to explain how adverse childhood experiences influence health and well-being across development. More specifically, it describes specific mechanisms by which adverse childhood experiences may be linked to increased risk for social disadvantage and reduced opportunity (e.g., socioeconomic status, education, employment, and income), or early death. The framework suggests that early adverse experiences impact brain development as well as the neuroendocrine system, which in turn affect a variety of domains including social, emotional, and cognitive functioning. Impairments within these domains are associated with high-risk health behaviors, increasing the risk for chronic diseases and harmful health outcomes (i.e., smoking, diabetes, heart disease) associated with early death (CDC, 2012). This framework has helped researchers and policy makers better understand the connections between childhood trauma experiences and physical and mental illness. For instance, several studies that followed focused on the relationship between childhood trauma exposure and the emergence of psychiatric conditions, with evidence that Posttraumatic Stress Disorder (PTSD), depression, and anxiety are among the most common psychiatric conditions to develop following a traumatic experience during childhood (Flory &

Yehuda, 2015; Ginzburg, Ein-Dor, & Solomon, 2010; Raboni, Alonso, Tufik, & Suchecki, 2014).

Posttraumatic Stress Disorder. Posttraumatic Stress Disorder (PTSD) is among the most common negative psychological responses to trauma, particularly among individuals with childhood trauma. Compared to individuals with no early life trauma exposure, adults with a history of childhood trauma are at a significantly greater risk for developing PTSD (Kessler et al., 2005; McLaughlin, 2017). Researchers have been particularly interested in understanding the associations between childhood trauma exposure and the emergence of PTSD, in part due to its debilitating nature as well as the number of negative consequences associated with the condition. For instance, PTSD impairs functioning in social, cognitive, behavioral, occupational, and physical domains, making it more difficult for individuals to maintain interpersonal relationships, regularly attend work, and make financial, occupational, and educational advances (APA, 2013).

The impairments associated with PTSD stem from a number of symptoms and criteria specific to the disorder. Of particular importance, Posttraumatic Stress and Related Disorders, including Posttraumatic Stress Disorder (PTSD), differ from other psychiatric conditions because they are the only classification of disorders in the Diagnostic and Statistical Manual, 5th Edition (DSM-5) that require identification of a traumatic event for diagnosis. It is suggested that the traumatic event alters and conditions the fear circuitry in the brain and results in conditioned fear responses to trauma-related stimuli and generalized over-reactivity to intense, novel, and fear-related stimuli (Careaga, Girardi, & Suchecki, 2016). Impairments across domains of functioning are associated with the defining features of the disorder, including re-experiencing

symptoms, avoidance, hyperarousal, and changes in cognition and mood. For instance, as a way to cope with re-experiencing symptoms, such as intrusive memories of the traumatic event, individuals may avoid situations or people, which can lead to interpersonal or occupational problems. In the physical domain, the symptoms of PTSD contribute to alterations in arousal and reactivity, known as hyperarousal. Hyperarousal can impact mood, behavior, startle response, concentration, and sleep, making it more challenging to meet daily demands. Impairments across domains may also be associated with negative changes in cognition and mood, such as memory impairments or persistent and exaggerated negative beliefs about themselves, others, or the world (APA, 2013).

It is estimated that approximately 16% of children and adolescents develop PTSD as a response to childhood trauma (Alisic et al., 2014). Notably, not all individuals develop PTSD following a traumatic experience. Although five in every six children exposed to trauma do not develop symptoms of PTSD, some may demonstrate subclinical yet impairing symptoms of PTSD and other psychopathology, such as symptoms of mood and anxiety disorders. Several studies have documented a strong relationship between childhood trauma and the emergence of Major Depressive Disorder and Generalized Anxiety Disorder (Ginzburg et al., 2010). With these findings in mind, it is important to consider a broader range of negative psychological outcomes to obtain a more comprehensive understanding of psychological distress that may result from childhood trauma (Flory & Yehuda, 2015; Hoven et al., 2005).

Depression. There is a large consensus that experiences of childhood trauma contribute to increased risk for depressive symptoms in adulthood (Kendler et al., 2000; Molnar, Buka, & Kessler, 2001; Tanskanen et al., 2004; Widom, DuMont, & Czaja,

2007). Although not all children exposed to trauma develop Major Depressive Disorder (MDD), the burden of trauma may still be associated with elevated symptoms of depression, which contribute to overall distress. The increased risk for depressive symptoms is associated with a variety of childhood trauma experiences including but not limited to life-threatening accidents, victimization by violent crime, and sexual abuse (Tanskanen et al., 2004). Indeed, one study found that individuals exposed to trauma as children were significantly more likely to be characterized as “persistent depressives,” suggesting a strong impact of childhood trauma on later depressive symptoms (Tanskanen et al., 2004). Several areas of functioning are impaired in individuals with MDD symptoms, such as the ability to complete daily living tasks, to develop and maintain interpersonal relationships, and to perform in work-related areas (Greer, Kurian, & Trivedi, 2010; McKnight & Kashdan, 2009). Considering the evidence that links childhood trauma exposure to depressive symptoms, as well as the long-term impairments, symptoms of MDD represent an important dimension of negative psychological distress to explore.

Anxiety. In addition to increased risk for PTSD and MDD symptoms, childhood trauma exposure also increases the risk for the development of a variety of anxiety disorder-related symptoms, particularly symptoms of Generalized Anxiety Disorder (GAD) (Costa, Weems, & Pina, 2009; Roemer, Molina, & Borkovec, 1997). Although few studies explore GAD as a distinct outcome of childhood trauma, symptoms of anxiety represent a unique experience that may contribute to general psychological distress following a childhood trauma exposure. In fact, some researchers have suggested that childhood trauma initially increases the risk for the emergence of anxiety symptoms

(Hovens et al., 2010). The anxiety symptoms are then thought to increase the risk for depressive symptoms, and ultimately comorbid anxiety and depressive disorders (Hovens et al., 2010). Anxiety is suggested to disrupt an individual's ability to accurately identify an actual threat, leading to excessive fear and behavioral disturbances, which increases the risk for depressive symptoms (McLaughlin & Lambert, 2017). Additional support for examining the emergence of anxiety symptoms following childhood trauma exposure can be found within the literature that examines post-trauma hypothalamic-pituitary-adrenal (HPA) axis functioning. For instance, childhood trauma is associated with alterations in HPA axis functioning that contribute to excessive anxiety and worry which may persist into adulthood (Heim & Nemeroff, 2001). Although a minority of individuals exposed to childhood trauma demonstrate clinical levels of GAD in adulthood, some may demonstrate impairing symptoms of anxiety, leading to diminished quality of life and impairments at work and within interpersonal relationships (Bourland et al., 2000; Henning, Turk, Mennin, Fresco, & Heimberg, 2007). In comparison to PTSD and MDD symptoms, symptoms of GAD have received much less attention as a contributor to overall distress following childhood trauma exposure; however, theoretical arguments and consideration of the degree of impairment associated with symptoms of GAD provide a strong rationale to examine the anxiety symptoms as a distinct contributor to distress following a traumatic childhood event.

Comorbidity. Despite the importance of considering symptoms associated with each disorder as distinct outcomes, the high rates of comorbidity among PTSD, MDD, and GAD symptoms should not be ignored (Ginzburg et al., 2010). For example, individuals with PTSD are highly likely to develop at least one other psychiatric disorder,

with more than 80% of individuals with PTSD meeting criteria for lifetime incidence of depressive, anxiety, or substance use disorders (Chilcoat & Breslau, 1998; Raboni et al., 2014). More specifically, approximately half of people with PTSD will also meet criteria for Major Depressive Disorder (MDD) (Flory & Yehuda, 2015) and approximately 39% to 97% also meet for comorbid anxiety (Ginzburg et al., 2010). Additionally, it is important to note that of all mood and anxiety disorders, GAD and MDD have the highest rates of comorbidity (40%-80%) (Zbozinek et al., 2012). Considering the high rates of comorbidity and individual associations with childhood trauma, it is important to consider varying presentations of psychopathology in response to childhood trauma exposure to more fully capture the experience of negative psychological distress.

Psychological Growth

Despite decades of research that have extensively documented the negative long-term consequences associated with childhood trauma exposure, some researchers have shifted from an exclusive focus on negative consequences to include the potentially positive consequences of trauma exposure (Frazier et al., 2001; Tedeschi & Calhoun, 2004). This shift in the literature is described as Posttraumatic growth (PTG), which refers to the positive psychological outcomes associated with coping with a highly stressful event (Tedeschi & Calhoun, 1996). Previous research has reported evidence for posttraumatic growth following a variety of childhood trauma exposures, including interpersonal exposures, such as sexual abuse and physical abuse, and non-interpersonal experiences such as exposure to natural disasters (Cryder, Kilmer, Tedeschi, & Calhoun, 2006; Kilmer & Gil-Rivas, 2010; Ying, Wu, Lin, & Jiang, 2014). In contrast to resilience, posttraumatic growth refers to a process that goes beyond returning to baseline

functioning following a trauma, leading to a positive change or transformation. Not only has the individual survived, they have experienced an improvement in one or more areas.

The process of posttraumatic growth, posited by some to be more common than reports of psychiatric disorders, is theorized to emerge as a result of attempting to cope with the aftermath of trauma (Tedeschi & Calhoun, 2004). A traumatic event can disrupt an individual's understanding of the world, which can impact their assumptions or beliefs about themselves, others, and their environment (Kilmer, 2006). However, growth is thought to occur as one begins to understand the ramifications of the trauma and process what the consequences may mean for their future (Calhoun & Tedeschi, 2006). Some researchers believe that as individuals grapple with continuing distress, they begin the cognitive healing process, known as productive rumination. Productive rumination is the process that allows one to make sense of the traumatic experience and the changes in their beliefs about themselves, others, and the world (Calhoun & Tedeschi, 2006), which may initiate change in at least one of the five distinct domains of growth (Calhoun & Tedeschi, 2004).

Measure of Growth. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) was developed to assess five distinct domains of growth, which include: greater appreciation of life and changed sense of priorities; increased intimate relationships with others; a greater sense of personal strength; acknowledgement of new possibilities or paths for one's life; and spiritual development. A greater appreciation of life and changed sense of priorities are common themes among individuals exposed to adversity. It is not uncommon for individuals to report "feeling lucky" or finding special meaning in the "little things" (Jordan, 2001). This shift is often associated with changes

in priorities which increases appreciation for life. Increased intimate relationships can also be an element of growth. Many individuals report feeling closer with and more appreciative of the relationships they have following a traumatic experience. A greater sense of personal strength may also emerge as a component of growth. Individuals may report feeling better equipped to deal with additional crises, as they have already dealt with one. In other words, individuals gain a sense of “if I got through this, I can get through anything” (Tedeschi & Calhoun, 2004). Another component of growth includes the recognition of new possibilities or new directions that can be taken with their life. For instance, individuals affected by adversity may be inspired to go on to provide comfort to others facing similar suffering. Lastly, growth in the spiritual and existential domain represents an emergence in deeper faith (Tedeschi & Calhoun, 2004). Many individuals turn to spirituality and faith in the event of adversity as a way to cope and make sense of the experience.

As the process of posttraumatic growth is hypothesized to be dependent on cognitive and emotional processing, children and adolescents who experience trauma may demonstrate different reactions and responses to trauma compared to adults (Osofsky, 2004). Posttraumatic growth may thus be limited by children’s level of cognitive development, making it difficult to understand if the process of growth among children presents the same as it does among adults (Cryder et al., 2006). Additionally, it has been argued that growth takes time to emerge. Although assessing growth soon after the event is important in understanding when growth begins, it is equally if not more important to assess growth more distal to the event to understand its stability and long-term effects (Marshall, Frazier, Frankfurt, & Kuijer, 2014; Tedeschi & Calhoun, 1996).

Distal measures of growth may provide more accurate depictions of actual change or growth, whereas the assessment of growth proximal to the event may only lend support to an immediate coping strategy (Helgeson, Reynolds, Tomich, 2006).

Growth in the Context of Distress

Although there is extensive research on psychological distress and growth following exposure to traumatic experiences, an imperative, understudied issue is how the two outcomes relate. Of the few studies that do examine this relationship, they have revealed three general patterns of this relationship. The first pattern suggests that growth and distress are on opposite ends of the same continuum. Johnson and colleagues (2008) indicated a negative relationship between the outcomes, where higher levels of distress, as measured by PTSD, were associated with lower levels of growth. These findings support the notion that distress and growth exist on the same continuum, and posttraumatic growth may serve as a protective factor, buffering negative outcomes (Dekel, Ein-Dor, & Solomon, 2012; Frazier, Conlon, & Glaser, 2001). Growth has been found to be associated with less distress and greater well-being, demonstrated by increased positive mood (Carver & Antoni, 2004) and fewer anxious and depressive symptoms (Park & Fenster, 2004). Longitudinal research has found that adolescents who reported more growth demonstrated better emotional adjustment up to 18-months following the traumatic event (Ickovics et al., 2006).

The second pattern suggests that growth and distress are not on two ends of the same spectrum, but rather co-occur. This co-occurrence has been demonstrated by findings suggesting either a positive linear relationship (Butler et al., 2005; Hall et al., 2010; Taku, Calhoun, Cann, & Tedeschi, 2008) or a curvilinear relationship (Butler et al.,

2005; Solomon & Dekel, 2007). Specifically, individuals with moderate levels of PTSD tend to report the highest levels of growth. These findings carry the assumption that distress precedes growth and may be essential to setting growth in action and maintaining growth (Tedeschi & Calhoun, 2004). This temporal assumption that distress is a precursor to growth is one of the defining features that sets this pattern apart from the others. This pattern most closely aligns with arguments that individuals must grapple with distress following a trauma, in order to begin the cognitive healing process. Without this process set in motion by the initial distress, one would not be able to make sense of the traumatic experience and make changes in their beliefs about themselves, others, and the world (Calhoun & Tedeschi, 2006). Individuals who demonstrate positive growth as a result of their struggle were also more likely to report symptoms of distress following their trauma (Calhoun & Tedeschi, 2006; Kilmer & Gil-Rivas, 2008). For example, Salter and Stallard (2004) found that among children diagnosed with PTSD following childhood trauma, nearly all experienced growth. Additionally, some studies have demonstrated significant positive correlations between growth and distress, suggesting that distress and growth can jointly exist as a response to childhood trauma (Alisic et al., 2014; Kilmer & Gil-Rivas, 2008). It is possible that those who experience posttraumatic growth may still struggle emotionally and have a harder time adjusting compared to those demonstrating resiliency (Cryder et al., 2006). Overall, these findings suggest that distress initiates the process of growth and is an important element in maintaining growth (Tedeschi, Calhoun, & Cann, 2007).

The third pattern suggests growth and distress are not related, as demonstrated by lack of significant associations (Hobfoll et al., 2006; Maercker & Herrle, 2003; Salsman

et al., 2009). Several studies found no associations between growth and distress (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Grubaugh & Resick, 2007). Inconsistent findings suggest that the relationship between distress and posttraumatic growth is complex, and that there may be particular aspects of growth that are more or less adaptive in relation to distress.

Just as it is important to explore multiple dimensions of distress, it equally as important to explore multiple dimensions of growth. As mentioned, growth consists of several categories including perceived change in the self, change in interpersonal relationships, and a change in one's perspective on life. Thus, it may be important to consider different domains of growth in the context of distress. For example, studies have shown that lower symptoms of PTSD tend to be associated with greater growth in the personal strength domain, whereas higher distress is associated with greater growth in the appreciation of life and spiritual change domains (Nishi, Matsuoka, & Kim, 2010). Findings that take a more nuanced approach of distress and growth may begin to clarify the lack of significant findings in previous studies.

Predictors of Distress and Growth

One way to clarify the relationship between psychological distress and growth is to consider and compare potential predictors of each outcome (Dekel, Mandl, & Solomon, 2011; García, Cova, Rincón, & Vázquez, 2015). Static risk factors are characterized as variables that cannot be changed and dynamic risk factors represent risk factors that can be influenced or changed such as perceived social support (Chung & Breslau, 2008; Dunn et al., 2017). Since adjustment to childhood trauma significantly

varies based on static and dynamic risk factors it is essential to examine these predictors as they may independently or jointly influence distress and growth.

The majority of the literature examines independent predictors of either distress or growth; however, few studies examine predictors that may influence co-occurring outcomes. Further, of the limited literature that assesses for predictors of both distress and growth, little consensus exists. For instance, some findings suggest that certain predictors like individual coping strategies are associated with elevated growth and low distress (Dikel, Engdahl, & Eberly, 2005; Maes, Delmeire, Mylle, & Altamura, 2001). In turn, other predictors like chronicity are linked to distress and growth in the same direction (Linley & Joseph, 2004), with greater distress (e.g., PTSD symptoms) and more growth (Dikel, Engdahl, & Eberly, 2005) associated with more chronic traumatic experiences. Inconsistent conclusions leave several questions to consider, including: Which predictors (static and dynamic risk factors) are related to growth and distress?

Static Risk Factors

Type of Trauma. Trauma type plays an important role in predicting varying levels of distress and growth (Helgeson, Reynolds, & Tomich, 2006). As there is a wide range of traumatic childhood events that an individual could potentially experience, it is important to first acknowledge the broad distinction between events that are interpersonal from those that are non-interpersonal (Fowler, Allen, Oldham, & Frueh, 2013). Interpersonal trauma is characterized by acts of aggression, exploitation, and omission, whereas non-interpersonal trauma lacks the context of a power-abusive relationship and tends to disrupt larger systems (McGruder-Johnson, Davidson, Gleaves, Stock, & Finch, 2000). Notably, this study will distinguish between two types of interpersonal trauma:

threat versus deprivation. Threat includes experiences involving harm or threat of harm, whereas deprivation involves an absence of expected inputs from the environment, such as cognitive or social stimulation (Miller et al., 2018). For instance, interpersonal trauma such as experiences of maltreatment, including physical abuse, sexual abuse, and emotional abuse are characterized as threat, whereas interpersonal trauma such as impaired family functioning (emotional neglect, household member with mental illness, household substance abuse, parental separation/divorce, and household member with history of incarceration) is characterized as deprivation. On the other end of the spectrum, non-interpersonal trauma experiences include experiences of natural disasters, motor vehicle accidents, and crime-related events.

There have been mixed findings in the literature in terms of patterns of distress and growth specific to types of trauma. There is a general consensus that events that are interpersonal and intentional are associated with more distress (e.g., greater PTSD symptoms) compared to non-intentional acts (Santiago et al., 2013). Additionally, traumatic events that are characterized by higher degrees of threat are more likely to trigger psychiatric conditions among children, which may occur with either interpersonal or non-interpersonal events (Forbes et al., 2012). However, the role of trauma type in relation to growth is not as well understood within the literature. Although it is broadly accepted that children exposed to trauma in general report more growth than those without trauma experiences (Alisic, Van der Schoot, van Ginkel, & Kleber, 2008), growth has been reported in relation to both interpersonal experiences (Fritz, Williams, & Amylon, 1988) and non-interpersonal experiences of trauma (Salter & Stallard, 2004). The limited research has documented growth following exposure to both types of trauma,

suggesting that it may not be the type of trauma that is predictive of growth, but other factors that may characterize the trauma, such as the degree of perceived threat associated with the traumatic experience (Maguen, Vogt, King, King, & Litz, 2006).

Interpersonal Trauma: Threat. Childhood exposure to interpersonal trauma with intent is extremely common and often examined in the literature as a predictor of negative psychological distress (Crusto et al., 2010). Child maltreatment, which includes interpersonal experiences of physical abuse, emotional abuse, sexual abuse, and neglect, is estimated to affect more than 670,000 children in the US (Weisz & Kazdin, 2017). Child maltreatment of all forms is strongly associated with negative psychological outcomes that may persist into adulthood. Indeed, physically abused children present with higher rates of emotional problems including depression and anxiety than non-abused children (Weisz & Kazdin, 2017). Child sexual abuse is also associated with significant mental health problems such as substance use disorders, social anxiety, depression, and suicide attempts (Nelson et al., 2002). Additionally, children who experience sexual abuse have been reported to have the highest rates of distress, as evidenced by the high rates of PTSD symptoms (McLaughlin et al., 2013). Emotional abuse has also been found to be associated with elevated levels of depression in adulthood (Colman & Widom, 2004). Overall, interpersonal trauma with intent, such as child maltreatment, is associated with psychological distress that may persist into adulthood (Copeland et al., 2007; Nooner et al., 2012).

Although there has been relatively little research examining psychological growth following experiences of interpersonal trauma with intent, several studies have investigated growth as it pertains specifically to childhood sexual abuse (Hartley, Johnco,

Hofmeyr, & Berry, 2016; Shakespeare-Finch & Lurie-Beck, 2014; Wright, Crawford, & Sebastian, 2007). For example, in a study of female adults with a history of childhood sexual abuse, 87% of the women reported experiencing personal growth as a result of their childhood abuse (Wright, Crawford, & Sebastian, 2007). Overall, the lack of research on growth and child maltreatment is problematic, especially in relation to physical and emotional abuse and neglect. Thus, there is a need for more research on growth outcomes associated with child maltreatment.

Interpersonal Trauma: Deprivation. Adverse family circumstances, such as financial strain, familial instability, or dysfunction, represent an additional dimension of interpersonal childhood trauma exposure (Copeland et al., 2007; Suliman et al., 2009). Although these experiences are distinct from child maltreatment, findings suggest that experiences of interpersonal trauma without intent to harm are associated with adult psychiatric disorders and functional outcomes in a similar manner as childhood maltreatment (Copeland et al., 2018). Although often overlooked as a predictor of distress, adverse childhood experiences within the family system may increase exposure to direct and indirect risky health behaviors, potentially increasing the risk for PTSD, depression, and negative health attitudes and beliefs (Kendall-Tackett, 2002).

Considering how commonly experiences of interpersonal trauma without intent occur, it is unclear why so little research examines positive psychological growth as a potential outcome. Of the limited research documenting these associations, there is evidence to suggest that growing up with a family member who is experiencing adversity, such as an illness or injury, is associated with the development of posttraumatic growth (Wong, Cavanaugh, MacLeamy, Sojourner-Nelson, & Koopman, 2009). Although more

research is needed in this area, this finding is important because it may suggest that growth can occur not only as a result of one's own direct traumatic experiences, but potentially as a result of witnessing or learning about another's. In a related vein, more research is needed that explores the impact of experiences of interpersonal trauma without intent on both outcomes of distress and growth.

Non-interpersonal trauma. Childhood exposure to non-interpersonal trauma, including exposure to natural disasters, motor vehicle accident (MVA), and crime-related events is prevalent and has been shown to contribute to substantial immediate and long-term psychological distress. Several studies examining non-interpersonal experiences of childhood trauma report significant impairments in mental health, regardless of the specific type of non-interpersonal trauma. For instance, natural disasters, which impact millions of children each year, have been shown to be associated with symptoms of posttraumatic stress and mood and anxiety disorders (La Greca & Silverman, 2012; La Greca et al., 2010). Similarly, research has demonstrated that the effects of MVAs and crime-related events extend beyond physical injuries, and significantly impair psychological functioning, including greater symptoms of PTSD and depression (Blanchard & Hickling, 2004; Finkelhor, Ormrod, & Turner, 2007; Keppel-Benson, Ollendick, & Benson, 2002).

In addition to findings that support the negative sequelae of non-interpersonal trauma, there is also a growing body of evidence to suggest that non-interpersonal trauma is also associated with psychological growth. The majority of the studies that examine growth following non-interpersonal trauma consistently demonstrate that individuals experience growth regardless of the specific non-interpersonal type of trauma

experienced. For instance, research suggests that growth is common after exposure to natural disasters, MVAs, and shootings, with the majority of individuals reporting benefits in at least one area (e.g., changes in philosophy of life, enhanced relationships, and more positive self-perceptions) (Salter & Stallard, 2004). In fact, some studies suggest that individuals who experience non-interpersonal experiences of trauma are more likely to report growth compared to those who experience ‘human-made’ or interpersonal trauma (Ickovics et al., 2006; Shakespeare-Finch & Armstrong, 2010).

Trauma Type in Relation to Patterns of Distress and Growth. Recent work has examined distress and growth as joint outcomes, with growing evidence that distress and growth may co-occur. However, the majority of the studies that examine both distress and growth tend to focus on non-interpersonal traumatic experiences, such as natural disasters and terrorist attacks, neglecting patterns that may emerge in a sample with exposure to interpersonal trauma. Findings from a meta-analytic study suggest that patterns of distress and growth may differ based on trauma type. Specifically, results suggested that individuals who experienced natural disasters reported a stronger relationship between distress and growth compared to those who experienced sexual assault, where little to no relationship was found (Shakespeare-Finch & Lurie-Beck, 2014). These findings suggest that non-interpersonal experiences of trauma may be more likely to contribute to the co-occurrence of distress and growth. Further research in other types of trauma are needed to clarify the role of trauma type in predicting patterns of distress and growth.

Summary. Until recently, much of the literature has examined the effects of trauma type on negative psychological distress, with fewer studies exploring the

relationship of trauma type and positive psychological growth. Findings suggest that interpersonal trauma may be associated with higher levels of distress compared to non-interpersonal trauma (Santiago et al., 2013). In turn, non-interpersonal experiences of trauma are more likely to be considered unpreventable and uncontrollable, which may be more likely to be associated with growth than interpersonal trauma (Ickovics et al., 2006; Shakespeare-Finch & Armstrong, 2010). Despite research documenting the role of trauma type on distinct outcomes of distress or growth, much less is understood about the influence of trauma type on patterns of co-occurring distress and growth. Results from a meta-analysis reported that non-interpersonal experiences of trauma may be more likely to contribute to the co-occurrence of distress and growth than interpersonal types of trauma (Shakespeare-Finch & Lurie-Beck, 2014). These findings suggest that trauma type may be an important factor in predicting patterns of distress and growth and would benefit from further investigation with consideration to additional characteristics of trauma, such as chronicity and developmental timing of occurrence, as well as individual characteristics.

Chronicity and Developmental Timing. In addition to the type of traumatic event experienced, the extent and continuity of the exposure is also an important predictor of psychological adjustment. For instance, a traumatic event may occur as an isolated, one-time incident, or it may recur multiple times across multiple developmental periods, resulting in trauma that is complex and chronic (Van der Kolk, 2017). Much of the literature on the influence of chronicity and developmental age on posttraumatic outcomes has focused on its relation to negative psychological distress (Courtois, 2004; Johnson & Thompson, 2008; Nickerson et al., 2010). In general, findings suggest that the

more chronic the trauma exposure, the greater the probability that exposure occurs across multiple developmental periods, which is associated with greater overall distress. More specifically, more chronic exposure has been associated with increased risk for negative outcomes including PTSD, depression, anxiety, substance use, and difficulties with interpersonal relationships (Courtois, 2004). Specific to developmental timing, earlier trauma exposure increases risk for later distress (i.e., PTSD symptoms and depressive symptoms) (Sutherland & Bryant, 2005). This relationship is supported by theoretical arguments that suggest individuals exposed to trauma over time and across multiple developmental periods cope by dissociating, which exacerbates challenges related to behavioral functioning, emotion regulation, and self-value (Courtois, 2004). In a related vein, the number of different types of traumas increase the likelihood of negative psychological distress (Briere et al., 2008; Van der Kolk et al., 2005).

Although there is strong evidence to support the link between greater chronicity and greater distress, less research has documented the role of chronicity and developmental timing as predictors of growth. Of the few studies that examine this relationship, it has been suggested that chronic trauma exposure across multiple developmental periods may have a greater influence on growth compared to isolated events. This argument is made under the assumption that distress is the catalyst for growth; therefore, the more extensive the trauma exposure, the greater the distress, and in turn, the greater potential there is for growth (Hagenaars, Fisch, & van Minnen, 2011; Hagenaars & van Minnen, 2010; Santiago et al., 2013). There is also evidence that chronic trauma exposure allows individuals to prepare for revictimization at future developmental periods, which reduces perceptions of severity of the trauma, possibly

decreasing acute psychological distress. It has been proposed that in preparing for revictimization, the development of strategies to cope or buffer the effects may constitute as growth (Armstrong, Shakespeare-Finch, & Shochet, 2014).

Overall, findings suggest increased chronicity is associated with an increased probability that trauma exposure has occurred across multiple developmental periods. Chronic trauma that occurs over multiple developmental periods increases the risk for symptoms of distress, such as PTSD, depression, and anxiety (Courtois, 2008; Johnson & Thompson, 2008; Nickerson et al., 2010). Studies examining psychological growth show a similar relationship, with more chronic trauma exposure across multiple developmental periods being associated with greater growth compared to isolated events (Hagenaars et al., 2011; Hagenaars & van Minnen, 2010; Santiago et al., 2013). To date, no studies have examined chronicity and developmental timing as unique predictors of the co-occurrence of distress and growth. One reason for this may be that the majority of extant studies have focused on natural disasters, which often occur as isolated, one-time incidents during a given developmental period. Given the high rates of chronic trauma exposure in childhood, particularly in association with interpersonal trauma, there is a need for more research on the co-occurrence of distress and growth following interpersonal traumatic events, which are more likely to have great variability in chronicity and developmental timing than non-interpersonal events.

Sex. With regard to distress, notable differences exist among men and women, with women being twice as likely to meet criteria for PTSD compared to men (Christiansen & Hansen, 2015; Tolin & Foa, 2008). Lifetime prevalence rates of PTSD for females is 10-12%, whereas the rate for males is 5-6%, with similar differences

reported for major depression and anxiety disorders (Olf, 2017). Additionally, females and males experience different types of trauma at different levels of chronicity and at different developmental periods (Olf, 2017). After controlling for type of trauma, females were more likely to experience higher rates of distress compared to males (Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Tolin & Foa, 2008). This suggests that sex differences in distress following trauma extend beyond trauma type and may be influenced by other factors (Tolin & Foa, 2008). There are several theories to explain why females may be more susceptible to distress compared to males. For example, it is argued that due to cultural and societal expectations, females may be encouraged to use more internalizing coping styles, whereas males may be more likely to use externalizing coping styles in response to trauma. The differences in coping styles are associated with varying presentations of distress, a factor that may contribute to increased rates of psychological distress among females, including high rates of symptoms of PTSD, depression, and anxiety (Kobulsky, Yoon, Bright, Lee, & Nam, 2018).

Studies on psychological growth also suggest that sex may play an important role. Several studies report that females are more likely to experience growth compared to males (Linley & Joseph, 2004; Stanton, Bower, & Low, 2006; Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010). This finding is supported by theory that argues females are more likely than males to utilize positive coping strategies, such as positive reappraisal and more positive self-talk that promote growth (Tamres, Janicki, & Helgeson, 2002). Additionally, females are more likely use emotion-focused coping strategies that may initially contribute to increase distress, while also initiating the process of growth (Lilly & Graham-Bermann, 2010). In addition to sex, several other

individual characteristics have been examined in the literature in relation to psychological growth. A meta-analytic review conducted by Helgeson and colleagues (2006) found nonsignificant relations between marital status or socioeconomic status and posttraumatic growth, lending support that sex may be one of the more salient individual characteristics to predict growth.

Dynamic Risk Factors

In addition to static risk factors that may predict psychological distress and growth, it is also important to examine dynamic risk factors that may influence outcomes of distress and growth. The current study will examine perceived level of social support, considered an individual environmental resource that is able to change throughout the life course, as a predictor of posttraumatic adjustment.

Social support. Social support has been characterized as one of the most salient predictors of posttraumatic adjustment, making it an important predictor to examine in relation to distress and growth (La Greca et al., 2010; Ozer, Best, Lipsey, & Weiss, 2003). Social support has been argued to buffer the development of psychological distress by promoting positive changes in health behaviors and strengthening coping skills (Zhou, Wu, Li, & Zhen, 2018). Of all the predictors discussed so far, social support has received the most attention within the growth literature, with several studies indicating that social support is a strong predictor of growth (Jia, Ying, Zhou, Wu, & Lin, 2015; Linley & Joseph, 2004; Yu et al., 2014).

Theoretically, social support may provide assistance with the development of new perspectives, which is one of the initial steps to starting the process of growth (Tedeschi & Calhoun, 2004; Ullman & Peter-Hagene, 2014). Social support also may increase after

a traumatic event, and increased social support is associated with posttraumatic growth (Sheikh, 2004; Zhou & Wu, 2016). It is suggested that high levels of social support following a trauma may also increase the opportunity for social disclosure, as well as the receipt of positive responses from others, which may help an individual process the experience and begin the growth process (García et al., 2015; García, Cova, Rincón, Vázquez, & Páez, 2016; Taku, Cann, Tedeschi, & Calhoun, 2009). In other words, social support may facilitate the development of growth by fostering constructive processing of the trauma (Chen & Wu, 2017).

Even within the research that examines social support as a predictor of distress, it is commonly described as a protective factor against physical and mental health outcomes. Several studies have shown that higher levels of social support are protective against the negative effects of childhood trauma (Salazar, Keller, & Courtney, 2011; Vranceanu, Hobfoll, & Johnson, 2007). For instance, multiple studies have demonstrated that higher levels of social support are associated with lower levels of PTSD symptoms (La Greca et al., 2010; Vernberg, La Greca, Silverman, & Prinstein, 1996).

Social support has been found to predict membership in specific profiles of distress and growth (Chen & Wu, 2017; Jielsing & Xinchun, 2017; Lai, Kelley, Harrison, Thompson, & Self-Brown, 2015). Chen and Wu (2017) found that those with higher levels of social support following a natural disaster were more likely to belong to a profile characterized by fewer PTSD symptoms. Similarly, Lai and colleagues (2015) examined patterns of distress after non-interpersonal trauma exposure and found that individuals with high social support were less likely to belong to a group with mixed internalizing symptoms. Additionally, researchers found high levels of social support

were associated with membership in a group characterized by mild PTSD symptoms and moderate levels of growth (Chen & Wu, 2017). These findings lend support to the protective role of social support against negative psychological distress following a trauma exposure, as well as its role in the facilitation of growth. Overall, high levels of social support seems to predict membership in profiles characterized by lower distress and higher growth.

Missing Gap: Latent Profile Analysis

It is noteworthy that a majority of the research on the sequelae of childhood trauma used variable-centered approaches, whether they examined distress and growth as individual or co-occurring outcomes. Although variable-centered approaches are useful for predicting outcomes, they may minimize or mask potential differences among heterogeneous groups. An alternative method designed to capture individual differences and reveal underlying heterogeneous groups of individuals is the latent profile analysis (LPA). LPA is a person-centered analytic approach that allows for the classification of individuals into profiles or groups based on similar response patterns. This method makes it possible to identify commonly occurring patterns of distress and growth among individuals exposed to childhood trauma.

Of the limited studies to date that use LPA to explore patterns of distress and growth, all use PTSD as the indicator of distress and focus on non-interpersonal experiences of trauma (Birkeland, Hafstad, Blix, & Heir, 2015; Cao et al., 2018; Chen & Wu, 2017; Zhou et al., 2018). First, one study that examined distress and growth following a non-interpersonal trauma identified three classes of posttraumatic outcomes, including high PTSD/high PTG and mild PTSD/high PTG among individuals who were

personally impacted by the event, and mild PTSD/mild PTG among individuals not physically proximate to event. In this study, class membership was predicted by personality characteristics and social support (Birkeland et al., 2015). Another study that used LPA to examine distress and growth following a natural disaster found three profiles, including low PTSD/ high growth, high PTSD/high PTG, and low PTSD/low PTG. Trauma exposure (indirect vs. direct) and individual characteristics such as age, sex were found to be significant determinants of profile membership, such that those with indirect trauma exposure and older age were more likely to be associated with the high PTSD/high PTG profile (Zhou et al., 2018). A third study examining psychological outcomes among children and adolescents following a natural disaster identified three patterns of distress and growth: thriving; resilient; and stressed and growing. The majority of the children and adolescents (76.2%) were classified into the “thriving” group, reporting mild PTSD symptoms and moderate levels of growth. In the “resilient” group (9.1%), children and adolescents reported mild PTSD symptoms and minimal growth. Compared with the resilient group, children and adolescents in the thriving group did more than just return to their previous level of functioning, demonstrating additional positive outcomes following trauma exposure. The remaining children and adolescents (14.7%) were classified into the “stressed and growing” group, reporting significant PTSD symptoms and moderate levels of growth. This study found that trauma characteristics such as loss and injury, subjective fear, and social support predicted group membership (Chen & Wu, 2017). Specifically, social support was associated with membership in “thriving” profile. Finally, similar to previous findings, a fourth study found a three class profile including mild PTSD/mild growth, mild PTSD/high growth,

and high PTSD/high growth. In this study, number of trauma exposures, sex, and social support were found to be significant determinants of profiles of distress and growth, such that older females with greater trauma exposure were more likely associated with the high PTSD/high PTG profile (Cao et al., 2018).

It is noteworthy that in LPA studies, a group characterized by high PTSD/ low growth does not emerge. It seems that individuals with significant PTSD symptoms were also more likely to report moderate levels of growth. This finding is supported by growth theory that suggests distress can trigger cognitive processing that leads to growth (Meyerson, Grant, Carter, & Kilmer, 2011). In addition, all LPA studies of distress and growth examine non-interpersonal trauma experiences. Additional profiles of distress and growth may emerge once interpersonal trauma experiences are taken in account. For instance, even though a pattern of high distress and low growth has not been identified in the current studies, it is possible that this pattern may emerge in a sample with exposure to interpersonal trauma.

Although research utilizing LPA begins to fill one gap within the literature, no research to date has examined patterns of distress and growth while considering a broader range of psychological distress that includes symptoms of depression and anxiety in addition to posttraumatic stress. Considering symptoms of depression and anxiety provides a more comprehensive understanding of psychological distress that may result from childhood trauma and be associated with growth (Flory & Yehuda, 2015; Hoven et al., 2005). Further, no studies explore patterns of distress and growth using LPA in the context of different types of trauma, including both interpersonal and non-interpersonal events, as well as in consideration of the chronicity and developmental timing of

traumatic events. Thus, these gaps in the literature suggest important directions for research to obtain a more complete understanding of psychological reactions to trauma exposure.

Summary

Both distress and growth have received extensive attention as distinct outcomes; however, the relationship between these two constructs yields mixed findings. Whereas some studies suggest that distress and growth exist on the same continuum whereby posttraumatic growth may buffer negative outcomes (Frazier et al., 2001; Johnson et al., 2011), other studies suggest that distress and growth co-occur, with the assumption that distress precedes growth (Butler et al., 2005; Hall et al., 2010; Taku, Calhoun, Cann, & Tedeschi, 2008). Further, additional studies report distress and growth to be independent, unrelated constructs (Hobfoll et al., 2006; Maercker & Herrle, 2003; Salsman et al., 2009). Inconsistent findings suggest that the relationship between distress and growth is complex and further research is needed to clarify the relationship between these two constructs.

Most of the previous work on the sequelae of childhood trauma rely on variable-centered approaches. These methods may overlook individual differences among heterogeneous groups. Although statistical approaches like LPA exist to reduce these issues, only four studies to date have used this approach in exploring patterns of distress and growth. Even among studies that utilize LPA, limitations still exist. For instance, all LPA studies use PTSD as the indicator of distress and focus on non-interpersonal experiences of trauma, neglecting to report on other dimensions of distress including depression and anxiety and additional types of trauma exposure (Birkeland, Hafstad,

Blix, & Heir, 2015; Cao et al., 2018; Chen & Wu, 2017; Zhou et al., 2018). Additionally, chronicity and developmental timing remain understudied determinants of patterns of distress and growth.

Overall, the limitations in the literature warrant additional studies that examine predictors that contribute to patterns of psychological distress and posttraumatic growth in young adults following experiences of childhood trauma, using statistical approaches that do not assume homogeneity across individuals. Moreover, examining varying profiles of distress and growth may clarify the relationship between these constructs. Additionally, the identification of profiles may have implications for therapeutic interventions and outcomes. Better understanding psychological responses to trauma may help to identify high risk individuals and provide interventions that best treat their symptom patterns.

Current Study

The current study aims to examine predictors that contribute to profiles of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and posttraumatic growth in young adults following experiences of childhood trauma. A latent profile approach will allow for the examination of heterogeneous patterns of psychological distress and positive growth; specifically, to determine distinct profiles or groups of individuals that follow specific distributions in their reports of psychological distress and growth (Oberski, 2016). The first aim of the study is to explore profiles of psychological distress and positive growth. The second aim is to investigate whether categorical characteristics of the trauma, including the type of trauma (e.g., interpersonal or non-interpersonal), chronicity, and developmental age at which trauma occurred; as

well as categorical characteristics of the individual, including perceived level of social support and sex, contribute to individual membership in the latent profiles of psychological distress and positive growth. Below are the specific aims and hypotheses of the current study.

1. Explore profiles of psychological distress and positive growth.
 - a. Based on the literature that has used LPA to explore patterns of distress and growth (Birkeland et al., 2015; Chen & Wu, 2017; Zhou et al., 2018), as well as the research that suggests distress is often a precursor to growth (Tedeschi & Calhoun, 2004), it is hypothesized that the following profiles will emerge:
 - i. High Distress, High Growth
 - ii. Low Distress, High Growth
 - iii. High Distress, Low Growth
 - iv. Low Distress, Low Growth
2. Understand predictors of group membership.
 - a. Trauma Characteristics: type of trauma (interpersonal vs. non-interpersonal) and chronicity and developmental period at which trauma occurred
 - i. Due to the literature that suggests interpersonal trauma may be associated with higher levels of distress compared to non-interpersonal trauma (Santiago et al., 2013), and that non-interpersonal experiences of trauma are more likely to be associated with growth compared to interpersonal trauma (Ickovics et al.,

2006; Shakespeare-Finch & Armstrong, 2010), it is hypothesized that individuals that experience interpersonal trauma will demonstrate high levels of distress and low growth, whereas individuals who experience non-interpersonal trauma will belong to groups with low distress and high growth.

- ii. Based on prior literature indicating that greater chronicity is linked with increased risk for negative psychological distress (Briere et al., 2008; Van der Kolk et al., 2005) and that chronic trauma exposure across multiple developmental periods may have a greater influence on growth compared to isolated events, it is hypothesized that chronic trauma histories that occur at multiple development periods will predict membership to groups characterized by high distress and high growth.

b. Individual Characteristics: perceived level of social support and sex

- i. Based on the research that indicates social support may protect against the emergence of psychological distress by promoting positive coping skills (Schwarzer & Knoll, 2007; Zhou, Wu & Zhen, 2018), it is hypothesized that social support will be predictive of low levels of distress and high levels of growth
- ii. Based on the literature that suggests that females are more vulnerable to negative psychological distress after a traumatic experience due to differences in coping strategies that facilitate not only greater distress, but also initiate greater growth, it is

hypothesized that female sex will be predictive of high levels of distress and growth (Kobulksy et al., 2018; Tamres et al., 2002).

CHAPTER II

METHODS

Participants

Participants were recruited through the Psychology Department Research Participation System (SONA) at Oklahoma State University. Participants met the following inclusion criteria: A) age \geq 18 years old; B) fluent English speaker; and C) experienced at least one potentially traumatic event prior to age 18. Trauma experiences were categorized into trauma-type groups (e.g., interpersonal trauma, non-interpersonal trauma). All participants were consented and completed anonymous online questionnaires. All measures completed by participants are described below and the actual items are included in Appendix A. Participants first completed demographic items and then the remaining scales were presented in a random order. Finally, participants were compensated with psychology course credit for their participation.

Measures

Posttraumatic Stress Disorder Symptoms. The Posttraumatic Diagnostic Scale For DSM-5 (PDS-5; Foa et al., 2016) is a 24-item self-report measures that assesses PTSD symptoms using the DSM-5 diagnostic criteria. The PDS-5 includes a trauma screener, 20 items that assess PTSD symptoms over the past month, and 4 items that evaluate distress, interference, onset, and duration of symptoms. The 20 items that assess

PTSD symptoms over the past month are rated on a 4-point scale, assessing frequency and severity of symptoms (ranging from 0 = *not at all*) to 4 = *6 or more times a week/severe*). Responses were summed to create a total severity score, ranging from 0 to 80. The tool also provided a categorical diagnosis of probable PTSD derived from using a cut off score of 28 (Foa et al., 2016). In the present sample, the PDS-5 demonstrated good internal consistency ($\alpha=.96$).

Depressive Symptoms. The Patient Health Questionnaire (PHQ-9; Spitzer, Kroenke, Williams, & Löwe, 2006) is a 9-item self-report measure that assesses depressive symptoms in the last two weeks. Respondents indicated the frequency (0 = *not at all*, 1 = *several days*, 2 = *more than half the days*, and 3 = *nearly every day*) they have been bothered by symptoms including loss of interest or pleasure in doing things, feeling down, difficulties with sleep, fatigue, changes in appetite, self-criticism, trouble concentrating, and psychomotor agitation or retardation. Additionally, the PHQ-9 includes an item to assess the degree of difficulty (0 = *not at all difficult* to 3 = *extremely difficult*) associated with interference of these symptoms on daily activities and functioning. The responses were summed (possible range of 0-24), with higher scores indicating greater depressive symptoms. A score between 8 and 11 on the PHQ-9 suggests probable depression and thus was used as an indicator of moderate to severe depression in the current study. The PHQ-9 has shown excellent internal reliability in a variety of samples, including primary care ($\alpha=0.89$) (Kroenke, Spitzer, & Williams, 2001). In the present sample, the PHQ-9 demonstrated good internal consistency ($\alpha=.92$).

Anxiety Symptoms. The Generalized Anxiety Disorder (GAD-7; Spitzer et al., 2006) is a 7-item self-report measure that assesses symptoms of generalized anxiety

disorder over the last two weeks. Respondents indicated the frequency (0 = *not at all*, 1 = *several days*, 2 = *more than half the days*, and 3 = *nearly every day*) they have been bothered by problems including feeling nervous, controlling worry, difficulties relaxing, feeling restless, becoming easily irritated, and feeling afraid. The responses were summed (possible range of 0-21), with higher scores indicating greater GAD symptoms. A threshold score of 10 was used as a cut off score on the GAD-7 to indicate probable anxiety (Spitzer et al., 2006). In the present sample, the GAD-7 demonstrated good internal consistency ($\alpha=.94$).

Psychological Growth. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) is a 21- item self-report measure designed to measure perceived benefits and positive outcomes associated with exposure to potentially traumatic events. Using a 5-point Likert response format (ranging from “*I did not experience this change*” to “*A very great degree as a result of my crisis*”), respondents indicated the degree each specific change has occurred following the trauma exposure that they have indicated as the most bothersome. The PTGI evaluates the following factors: new possibilities, relating to others, personal strength, spiritual change, and appreciation of life. Scores were summed, with higher scores indicating a greater degree of perceived change (range=0-105). As suggested by Mazor and colleagues (2016), total scores above 46 were considered to have moderate to high PTG levels. The scale has been shown to have excellent internal consistency ($\alpha=.90$) and acceptable test-retest ($r=.71$) reliability. In the present sample, the PTGI demonstrated good internal consistency ($\alpha=.97$).

Trauma Type. Participants’ trauma history was assessed using an item on the PDS-5 that asks participants to “Describe the most distressing traumatic event” that

occurred to them. The type of trauma was coded as 0= interpersonal trauma, 1= non-interpersonal trauma, 3= prefer not to answer, and -999=missing. Interpersonal trauma experiences such as physical abuse, sexual abuse, and emotional abuse, emotional neglect, household member with mental illness, household member with substance abuse, parental separation/divorce, and household member with history of incarceration were coded as “0”. Non-interpersonal trauma experiences such as natural disasters, motor vehicle accidents, and crime-related events were coded as “1”.

Developmental Timing and Chronicity. Chronicity and developmental timing data were collected and intended to be examined. However, due to survey design and coding challenges, these variables were not included in the analyses. Although developmental timing was indicated on alternative measures (e.g., Trauma History Questionnaire, Adverse Childhood Experiences), the PDS-5, which prompted for most distressing trauma event, did not collect information on developmental timing. The report of trauma experience on the PDS-5 was used because the growth questionnaire instructs participants to indicate growth based on the ‘most distressing’ trauma, as such it was important to use the trauma stated on the PDS-5. Relatedly, since respondents did not indicate developmental timing for the most distressing trauma on the PDS-5, chronicity could also not be coded.

Social support. The Medical Outcomes Survey Social Support Scale (MOS-SSS; Sherbourne, & Stewart, 1991), a 19-item self-report measure used to assess multiple dimensions of social support. Using a 5-point Likert scale ranging from “none of the time” to “all of the time,” respondents indicated the availability of different kinds of support (e.g., emotional support, tangible/instrumental support, affection, and positive

social interaction). Total scores are calculated by adding all responses for a possible range of 19-95. The MOS-SSS has demonstrated strong evidence for good validity and reliability in a variety of samples (Sherbourne & Stewart, 1991). In the present sample, the MOS-SSS demonstrated good internal consistency ($\alpha=.97$).

Sex. Participants completed a questionnaire assessing demographic variables, including sex, gender, age, race, ethnicity, and education level. Sex was examined as a predictor variable.

Study Design and Procedure

All data was collected from a larger, ongoing study. Participants signed up through the SONA system to participate in a confidential online, Qualtrics survey. All participants began by providing electronic consent approved by the Oklahoma State University Institutional Review Board (IRB). They then completed a survey that took approximately 60 to 120 minutes. After completing the survey, participants were compensated for their time and efforts with 2 course credits. All measurements were collected at one time point all using self-report.

Analytic Strategy

The study addressed the patterns of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and posttraumatic growth among young adults following experiences of childhood trauma. This was examined using Latent Profile Analysis (LPA) in R Studio using tidyLPA (Rosenberg, Beymer, Anderson, Van Lissa, & Schmidt, 2019). In particular, this package allows for the specification of different models, by determining and utilizing different parameters (i.e., means, variances, and covariances) to specify the number of profiles to estimate. A latent profile approach was

used to allow for the examination of heterogeneous patterns of psychological distress and positive growth; and specifically, to determine distinct profiles or groups of individuals that follow specific distributions in their reports of psychological distress and growth (Oberski, 2016).

LPA models containing one-to-five profiles were specified and estimated. Model fit was evaluated using Akaike's Information Criterion (AIC), Bayesian Information Criterion (BIC), Sample-size Adjusted Bayesian Information Criterion (SABIC), and Integrated complete-data likelihood (ICL). In general, lower AIC, BIC, SABIC, and ICL indicate a better fitting model. Further, classification quality was evaluated using entropy values, with values closer to one indicating better classification (Jung & Wickrama, 2008).

The second aim of the study was to investigate whether type of trauma exposure, sex, and social support could predict the membership in patterns of distress and growth. After determining the best fitting model, multinomial logistic regressions were conducted to test whether the type of trauma exposure, sex, and social support would significantly predict membership (Starkweather & Moske, 2011). Odds ratios for the predictors were used to indicate how the risk of classification in the comparison group compared to the risk of classification in the referent group. Additionally, missing data was handled using random forest (RF) missing data algorithms (Tang & Ishwaran, 2017) to accommodate complex interactions and non-linear relations in the data.

CHAPTER III

RESULTS

Data Cleaning

All data were reviewed prior to conducting analyses to ensure that they were complete and met assumptions for subsequent analyses. A total of 1207 individuals responded to the larger survey, and a total of 866 records were eliminated from the dataset for either not endorsing a trauma experience or not responding in a valid fashion (missing PTSD and/or PTG score). Upon final data cleaning, a complete sample of 341 individuals with valid responding was retained.

Cross-sectional Bivariate Associations

Cross-sectional bivariate correlations from the present study indicate that posttraumatic growth was significantly positively correlated with posttraumatic stress symptoms, but was not associated with depressive symptoms or anxiety symptoms. Further, all scores measuring distress (e.g., posttraumatic stress, depression, and anxiety) were positively correlated with one another. See Table 1.

Descriptive analyses, including mean and standard deviation, were conducted for the main study variables. The descriptive statistics for the main study variables are presented in Table 2. The majority of the sample was white (84.7%), female (75.1%) and reported experiencing at least 1 non-interpersonal trauma event (59.8%) during

childhood. Overall, sample mean scores for PTSD (mean=15.76), depression (m=7.43), and anxiety (mean=6.10) all fell below the cut off scores for clinically elevated symptoms. Additionally, the overall sample reported somewhat low posttraumatic growth (mean=44.54).

Table 1.

Bivariate associations between key study variables

Variable	1	2	3	4	5	6
1. Posttraumatic growth	-					
2. Posttraumatic stress symptoms	.19*	-				
3. Depressive symptoms	.03	.53**	-			
4. Anxiety symptoms	.08	.52**	.74**	-		
5. Interpersonal trauma type	-.10	-.16*	-.09	-.08	-	
6. Social support	.12*	-.28**	-.33**	-.25**	-.05	-
7. Female sex	-.19**	-.08	.05	-.05	-.01	-.18*

Note: * $p < .05$, ** $p < .01$.

Table 2.

Descriptive statistics for the main study variables

Variable	<i>n</i>	%/M	<i>SD</i>	Min	Max
Race					
White	149	84.7			
Black	9	5.1			
Native American or Alaska	10	5.7			
Native					
Asian	3	1.7			
Other	5	2.8			
Sex					
Female	145	75.1			
Male	46	23.8			
Prefer not to say	2	1.0			

Trauma type					
Interpersonal	61	34.1			
Non-interpersonal	107	59.8			
Prefer not to say	11	6.1			
Social Support	327	4.1	.9	1	5
Distress Symptoms					
Posttraumatic stress symptoms	341	15.8	18.2	0	80
Depressive symptoms	341	7.4	6.6	0	27
Anxiety symptoms	341	6.1	6.0	0	21
Growth Symptoms					
Posttraumatic growth	341	44.5	30.0	0	105

Aim 1: Explore Profiles of Distress and Growth

To explore aim one of identifying the patterns of distress and growth, LPA was conducted. Variances and covariances were freely estimated across the profiles (Rosenberg, Beymer, Anderson, Van Lissa, & Schmidt, 2019). Five models with 1 to 5 latent profiles were estimated and compared to determine the best-fitting model to the data. Indices for model fit in each class are reported in Table 3. AIC, BIC, SABIC, and ICL fit statistics continued to decrease from the one-profile solution to the three-profile solution, suggesting a solution with three or more profiles would adequately fit the data. A five-class solution demonstrated error messages and could not be fit to the data, suggesting problems with estimation and convergence. Notably, when variances and covariances were not allowed to vary for a five-class solution, the model converged; however, results did not indicate an improvement in fit indices, and thus was not considered as a final solution, leaving the possibility for 3- or 4-profile solution.

Although the three-class solution demonstrated decreased BIC, showed adequate entropy, and was deemed to generally fit the data well, additional criteria were used to determine the four-class solution was the best-fitting model. The four-class solution had a greater decrease in AIC and SABIC, as well as adequate entropy, suggesting good

separation among profiles. Additionally, using recommendations from Marsh and colleagues (2009) to examine both quantitative and qualitative aspects of profile structures, the four-profile model included an additional meaningful profile that characterized 13.2% of the sample (Low Distress-High Growth). Thus, the four-group model was selected based on adequate fit statistics, and meaningful profiles that represented a parsimonious and interpretable solution.

Table 3.

Model-fit statistics for one- to four-group models using latent profile analysis for PTSD and PTG

Number of Profiles	AIC	BIC	SABIC	ICL	entropy
1	10212.25	10265.90	10221.49	-10265.90	1.00
2	9909.63	10020.75	9928.76	-10072.66	0.77
3	9800.09	9968.69	9829.12	-10017.65	0.85
4	9781.196	10007.28	9820.12	-10072.20	0.84
5	-	-	-	-	-

Note. AIC= Akaike's Information Criterion, BIC= Bayesian Information Criterion, SABIC= Sample-Size Adjusted BIC, ICL= Integrated complete-data likelihood criterion. Model 5 produced error messages and could not be fit.

The parameters for the four profiles are presented in Table 4. Means for each of the distress and growth dimensions were compared and used to interpret profile characteristics. The four profiles were named High Distress-Moderate Growth, Low Distress-Moderate Growth, Low Distress-High Growth, and Low-Distress-Low Growth. The High Distress-Moderate Growth profile accounted for 44.9% of the sample and was characterized by high levels of distress (clinically elevated depression and anxiety, moderately elevated PTSD) and moderate levels of growth. The Low Distress-Moderate Growth profile accounted for 30.5% of the sample and was characterized by low distress

and moderate growth. The Low Distress-High Growth group accounted for 13.2% of the sample and was characterized by low distress (although relatively higher PTSD than the other low distress profile) and high growth. Lastly, the Low-Distress-Low Growth group accounted for 11.4% of the sample and was characterized by minimal distress and growth. See Figure 1 for comparison of total mean scores and Figure 2 for comparison of z-scores.

A one-way ANOVA was conducted to examine mean differences across profile membership in PTSD, depression, anxiety, growth, and social support. Pairwise comparisons of the means using Bonferroni corrections indicated significant mean differences. See Table 4. Overall, participants in the High Distress-Low Growth profile indicated significantly greater levels of PTSD, depression, and anxiety symptoms compared to all other groups. Further, participants in the Low Distress-High Growth profile indicated higher PTSD symptoms compared to the Low Distress-Low Growth group, but notably, did not differ in depression and anxiety scores. Lastly, the Low Distress-High Growth profile also demonstrated significantly higher growth compared to all other profiles, as well lower social support than all other profiles. In addition, a chi-square test of independence indicated that profile membership did not significantly differ by sex. Lastly, a chi-square test of independence indicated that participants in the High Distress-Moderate Growth profile were more likely to report exposure to interpersonal trauma.

Table 4.

Means and standard deviations for distress and growth, and predictor variables within each profile

Latent Profiles

	High Distress- Moderate Growth <i>N</i> = 153 (44.9%)	Low Distress- Moderate Growth <i>N</i> = 104 (30.5%)	Low Distress- High Growth <i>N</i> = 45 (13.2%)	Low Distress- Low Growth <i>N</i> = 39 (11.4%)
PTSD	25.91 _a (18.54)	7.65 _{bc} (6.29)	11.74 _c (8.46)	2.93 _b (3.59)
Depression	12.34 _a (6.44)*	3.63 _b (3.13)	3.80 _b (3.36)	2.50 _b (2.69)
Anxiety	12.07 _a (5.04)*	2.79 _b (2.27)	3.77 _b (3.36)	1.74 _b (2.25)
PTG	46.32 _a (0.98)*	41.65 _a (19.82)	82.20 _b (15.57)*	1.79 _c (3.06)
Female	80.2% _a	73.2% _a	71.4% _a	60.0% _a
Interpersonal Trauma	44.7% _a	28.0% _b	30.0% _b	23.1% _b
Social support	3.80 _a (0.97)	4.19 _b (0.93)	4.50 _b (0.63)	4.48 _b (0.61)

Note. * = Above symptom cut off scores. Values reflect Mean and (SD). Pairwise mean comparisons are indicated using subscripts, where values with the same subscripts had statistically equivalent means according to ANOVA analyses with Bonferroni corrections. * $p < .01$.

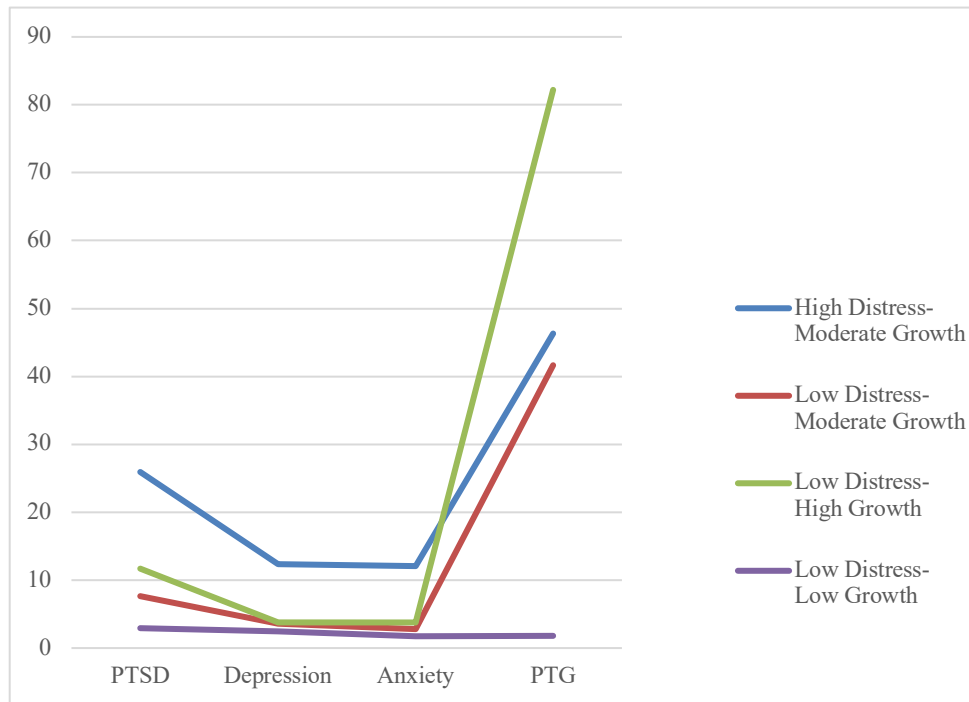


Figure 1. Class-specific means for growth and distress total scores.

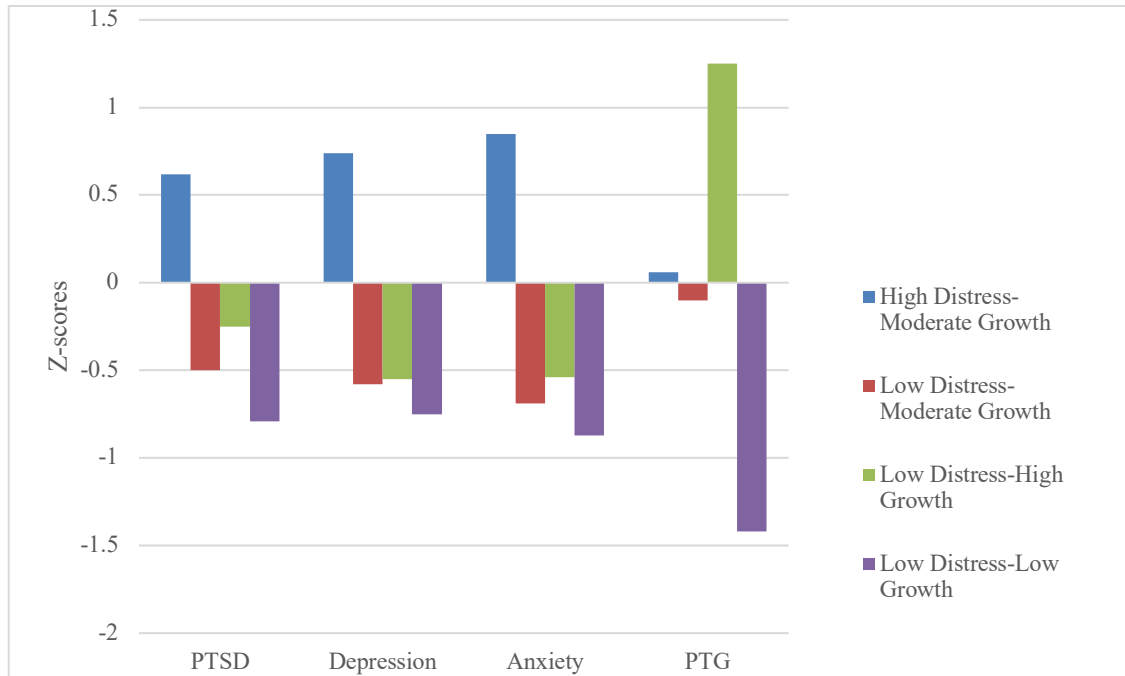


Figure 2. Class-specific means for growth and distress z-scores.

Aim 2: Examine predictors of profiles

Multinomial logistic regressions were conducted in SPSS to examine whether type of trauma exposure, social support, and sex could predict membership in the latent profiles of distress and growth. Results of the multinomial logistic regressions are reported in Table 5. Trauma type, social support, and sex did not statistically significantly predict group membership, which may be a function of large standard errors from a relatively small sample. However, the odd ratios for the predictors, often considered a measure of effect size, were notable in many instances, warranting description as they provide important directions for future research.

Compared to those in the Low Distress-Low Growth profile, participants had four times greater odds of being classified in the High Distress-Moderate Growth profile if they endorsed an interpersonal trauma type (OR=4.40) or were female (OR=4.45).

Similarly, compared to those in the Low Distress-Low Growth profile, participants had more than two times greater odds of being classified in the Low Distress-Moderate Growth profile (OR=2.43) or the Low Distress-High Growth profile (OR=2.86) if they endorsed an interpersonal trauma type (OR=2.43), and had twice the odds of being classified in the Low Distress-Moderate Growth profile if they were female (OR=2.04). See Table 5. Compared to those in the High Distress-Moderate Growth profile, participants had three times greater odds of being classified in the Low Distress-Low Growth profile if they endorsed higher levels of social support (OR=2.98). See Table 6. Compared to those in the Low Distress-Moderate Growth profile, participants had two times greater odds of being classified in the High Distress-Moderate Growth profile if they were female (OR=2.18). See Table 7. Lastly, compared to those in the Low Distress-High Growth profile, participants had three times greater odds of being classified in the High Distress-Moderate Growth profile if they were female (OR=3.16) and .41 times lower odds if they had high social support (i.e., almost two times greater odds (OR = 1.94) of being classified in the Low Distress-High Growth profile). See Table 8.

Table 5.

Multinomial logistic regression predicting profile membership compared to low distress-low growth group

	High Distress-Moderate Growth				Low Distress-Moderate Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	1.48	1.12	4.40	[0.49, 39.65]	0.60	1.14	2.43	[0.26, 22.86]
Social Support	-1.09	0.61	0.34	[0.10, 1.10]	-0.64	0.61	0.53	[0.16, 1.76]
Female	1.49	0.82	4.45	[0.89, 22.29]	0.79	0.80	2.04	[0.42, 9.81]

	Low Distress-High Growth				Low Distress-Low Growth <i>Reference Group</i>			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	1.05	1.24	2.86	[0.25, 32.30]	-	-	-	-
Social Support	-0.43	0.68	0.65	[0.17, 2.46]	-	-	-	-
Female	0.34	0.92	1.41	[0.25, 32.30]	-	-	-	-

*Note. OR, Odds Ratio; SE, Standard Error; CI, Confidence Interval; *p < .05, **p < .01*

Table 6.

Multinomial logistic regression predicting profile membership compared to high distress-moderate growth group

	High Distress-Moderate Growth <i>Reference Group</i>				Low Distress-Moderate Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	-	-	-	-	-0.59	0.47	0.55	[0.22, 1.38]
Social Support	-	-	-	-	0.46	0.24	1.58	[0.98, 2.53]
Female	-	-	-	-	-0.78	0.53	0.46	[0.16, 1.29]

	Low Distress-High Growth				Low Distress-Low Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	-0.43	0.67	0.65	[0.17, 2.43]	-1.48	1.12	0.23	[0.03, 2.05]
Social Support	0.66	0.39	1.94	[0.91, 4.16]	1.01	0.61	2.98	[0.91, 9.73]
Female	-1.15	0.70	0.32	[0.80, 1.25]	-1.49	0.82	0.23	[0.05, 1.13]

*Note. OR, Odds Ratio; SE, Standard Error; CI, Confidence Interval; *p < .05, **p < .01*

Table 7.

Multinomial logistic regression predicting profile membership compared to low distress-moderate growth group

	High Distress-Moderate Growth				Low Distress-Moderate Growth <i>Reference Group</i>			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	0.59	.47	1.81	[0.72, 4.54]	-	-	-	-
Social Support	-0.46	0.24	0.63	[0.40, 1.02]	-	-	-	-
Female	0.78	0.53	2.18	[0.77, 6.15]	-	-	-	-
	Low Distress-High Growth				Low Distress-Low Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	0.16	0.71	1.18	[0.29, 4.77]	-0.89	1.14	0.41	[0.04, 3.88]
Social Support	0.21	0.41	1.23	[0.56, 2.74]	0.64	0.61	1.89	[0.57, 6.25]
Female	-0.37	0.69	0.69	[0.18, 2.68]	-0.71	0.80	0.49	[0.12, 2.36]

*Note. OR, Odds Ratio; SE, Standard Error; CI, Confidence Interval; *p < .05, **p < .01*

Table 8.

Multinomial logistic regression predicting profile membership compared to low distress-high growth group

	High Distress-Moderate Growth				Low Distress-Moderate Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	0.43	0.67	1.54	[0.41, 5.76]	-0.16	0.71	0.85	[0.21, 3.44]
Social Support	-0.66	0.39	0.41	[0.41, 5.76]	-0.21	0.41	0.81	[0.37, 1.80]
	Low Distress-High Growth <i>Reference Group</i>				Low Distress-Low Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>

Interpersonal	-	-	-	-	-1.05	1.24	0.35	[0.03, 3.96]
Social Support	-	-	-	-	0.43	0.68	1.53	[0.41, 5.76]
Female	-	-	-	-	-0.34	0.92	0.71	[0.12, 4.28]

*Note. OR, Odds Ratio; SE, Standard Error; CI, Confidence Interval; *p < .05, **p < .01*

CHAPTER IV

DISCUSSION

The present study's overall objective was to examine the patterns of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and posttraumatic growth among young adults following experiences of childhood trauma, and explore factors that may predict membership into profiles of distress and growth. Results revealed four profiles: High Distress-Moderate Growth, Low Distress-Moderate Growth, Low Distress-High Growth, and Low-Distress-Low Growth. The majority of respondents fell in the High Distress-Moderate Growth profile (45%), followed by the Low Distress-Moderate Growth profile (31%). The third largest group included the Low Distress-High Growth profile (13%) and the remainder of respondents fell into the fourth profile, Low Distress-Low Growth (11%). Results also indicated that trauma type, social support and sex did not significantly statistically differentiate classification into the four profiles of distress and growth. The current study contributes to the overall understanding of the relationship between distress and growth. Broadly, the four profiles that emerged lend support to the assumption that distress and growth are separate constructs that arise independently and occur in non-shared dimensions (Hobfoll et al., 2006; Maercker & Herrle, 2003; Salsman et al., 2009). The emergence of the High-Distress- Moderate Growth and Low Distress-Moderate Growth profiles, differing by less

than five points on the PTG scale, suggests that distress and growth do not exist on the same continuum, and that growth does not function as a buffer to the distress associated with trauma (Frazier et al., 2001; Johnson et al., 2011). However, independence does not preclude a relationship between the constructs, and the results also provide evidence that distress and growth co-occur (Butler et al., 2005; Hall et al., 2010; Taku, Cann, Calhoun, & Tedeschi, 2008), likely in relation to PTSD symptoms specifically.

Compared to the High Distress-Moderate Growth profile, the Low Distress-High Growth profile had lower overall distress, yet almost twice as much growth. Interestingly, although labeled as ‘low’ distress, the Low Distress-High Growth profile was characterized by higher PTSD scores relative to other ‘Low Distress’ profiles, and larger discrepancies between PTSD and depression and anxiety scores. This unique profile may be highlighting the importance of PTSD specifically in the occurrence of the growth process, as well as suggesting that symptoms of depression and anxiety may limit or disrupt growth following traumatic experiences.

Several studies have reported evidence that particular clusters of PTSD symptoms may be associated with posttraumatic growth. For instance, one study demonstrated that hyperarousal was the only significant predictor of growth compared to other clusters of PTSD symptoms. Researchers concluded that hyperarousal symptoms are the ‘engine of PTSD’ that fuels not only distress, but growth as well (Dekel, Ein-Dor, & Solomon, 2012; Tedeschi & Calhoun, 2004). Other studies have demonstrated that re-experiencing symptoms are associated with growth due to an increase period of contemplation and consideration, which is necessary for growth to occur (Helgeson et al., 2006). Additional evidence suggests that growth and avoidance symptoms are associated, with greater

avoidance being correlated with less growth (Brooks, Graham-Kevan, Robinson, & Lowe, 2019). It is argued that individuals with greater avoidance symptoms have fewer opportunities to interact with the world and process their trauma, which is a necessary element of growth (Butler et al., 2005; Hall et al., 2010; Taku, Calhoun, Cann, & Tedeschi, 2008).

Additionally, the co-occurrence of symptoms of PTSD, depression, and anxiety may limit growth following childhood trauma, helping to further explain the difference in the mean growth scores between the High Distress-Moderate Growth and Low Distress-High Growth profiles. Previous research has shown that those who reported higher symptom levels of depression and anxiety generally reported less growth (Eisma, Lenferink, Stroebe, Boelen, & Schut, 2019). Growth may be particularly challenging in the presence of additional cognitive and affective impairments that are associated with depression and anxiety, especially those characterized by avoidance (Brooks, Graham-Kevan, Robinson, & Lowe, 2019).

The opportunity for growth to occur may be limited by greater distress. Particularly, comorbid presentations may reflect greater severity of symptoms and may be associated with the lack self-regulatory capacities (Wamser-Nanny & Cherry, 2018). Evidence also suggests when distress becomes too high, growth is less likely to occur (Dekel, Ein-Dor, & Solomon, 2012). This relationship is supported within the literature, which suggests that trauma, especially when it is prolonged, can disrupt features of the prefrontal cortex and impair executive functioning skills (Cook, Spinazzola, Ford, Lanktree, Blaustein, Cloitre, & Mallah, 2017). This disruption is associated with challenges related to developing self-narratives, reflecting on past and present experience,

anticipating and planning, and making decisions (Cook et al., 2017), which are all important contributors of growth (Tedeschi & Calhoun, 2004).

Predictors of the Profiles

Although results indicated that trauma type, social support, and sex did not significantly differentiate the various patterns of distress and growth, the trends in the results as characterized by odds ratios were notable to consider in relation to profile membership, generally supporting hypotheses and providing direction for future research. Pairwise comparisons also provided additional support to examine these predictors in relation to class membership.

Trauma Type. As hypothesized, interpersonal trauma appears to be associated with greater levels of distress (Copeland et al., 2007; Nooner et al., 2012). Notably, the profile characterized by the highest levels of distress had the largest proportion of participants endorsing exposure to interpersonal trauma (44.7%). Further, participants had four times greater odds of being classified in the High Distress-Moderate Growth profile if they endorsed an interpersonal trauma type compared to the Low Distress-Low Growth group. This finding is supported within the literature that suggests interpersonal trauma produces more long-term distress compared to non-interpersonal trauma (Palic, Zerach, Shevlin, Zeligman, Elklit, & Solomon, 2016). It is argued that the prolonged and pervasive nature of interpersonal trauma may result in several aversive early life consequences, more so than non-interpersonal trauma experiences, that disrupt a number of physical and psychological capacities (e.g., neurobiological development and attachment) (Cook, Blaustein, Spinazzola, & Van der Kolk, 2003; Frans et al. 2005).

Additionally, trending associations between interpersonal trauma and growth were found, yet findings were inconsistent with previous studies. The growth literature would suggest that non-interpersonal trauma is more likely to be associated with growth (Shakespeare-Finch & Armstrong, 2010; Taku et al., 2008). However, findings from the current study suggested the profile characterized by the second largest proportion of interpersonal trauma exposures was associated with the greatest levels of growth (Low Distress-High Growth), and the profile with the largest proportion of non-interpersonal trauma had the lowest levels of growth (Low Distress-Low Growth). These inconsistencies may reflect a larger issue with categorizing trauma type. For instance, several studies operationalize trauma types differently, with some studies dichotomizing interpersonal versus non-interpersonal, and others categorizing family dysfunction as its own category.

The examination of other predictor variables may be important to consider in the promotion of growth and distress. For example, chronicity of trauma and developmental timing of the trauma, which vary even within trauma types, are characteristics that may serve as significant predictors of growth and distress. These trauma characteristic variables were originally hypothesized to play an important role in the patterns of distress and growth, but due to survey design and coding challenges, they were not included in the analyses. Future investigations would benefit from the examination of chronicity of trauma and developmental timing of the trauma.

Social Support. Notably, the profile characterized by Low Distress-High Growth had the highest social support (mean=4.50), whereas the profile characterized by the highest levels of distress had the lowest levels of social support (mean=3.80). Social

support appeared to buffer or protect against the emergence of psychological distress (Schwarzer & Knoll, 2007; Zhou, Wu & Zhen, 2018), with increased odds of classification into low distress profiles consistent with previous LPA research showing social support was associated with profiles characterized by mild PTSD symptoms (Chen & Wu, 2017; Cao et al., 2018). Consistent with the buffering stress model (Cohen & Wills, 1985) and the relational regulation theory, social support may mitigate the psychological distress, as the support and resources offered by others is perceived to be available, and in turn facilitates coping and cognitive and emotional processing (Lakey & Orehek, 2011).

It is important to note that results from the three-class solution showed that social support significantly differentiated profiles. Specifically, compared to those in the previous High Distress-Moderate Growth profile, participants had statistically significant greater odds of being classified in the Moderate Distress-High Growth profile if they endorsed higher levels of social support (OR=1.73, $p=.02$). See Supplemental Table S1 in Appendix B. Thus, although the four-class solution was determined to be the best-fitting model, the three-class solution may suggest that having a larger sample size and greater range of scores in each profile may make it more likely that statistical significance would be observed among the predictors in the logistic regressions.

To expand the understanding of social support as a predictor of distress and growth profiles, future research should examine the role of specific types of social support (e.g., tangible support vs. emotional support). For instance, emotional support has been identified as being particularly important in the promotion of growth (Kamen et al., 2016). Additionally, the timing of perceived social support may be critical to the

emergence of post-trauma distress and growth, as evidenced by research showing that support immediately following interpersonal trauma was associated with fewer internalizing symptoms (Bal et al., 2005). Other studies have found that those who did not receive support right away demonstrated greater distress, and fewer benefits from subsequent social support (Ullman & Filipas 2001).

Sex. In general, being female increased the risk for high levels of distress, with females making up more than 80% of the High Distress-Moderate Growth profile. Conversely, the profile that had the smallest percentage of females (60%) was characterized as having the lowest levels of distress and lowest levels of growth. This finding is consistent with previous research that found PTSD and growth symptoms to be more common among females compared to males (Jin, Yuchang, Xu, & Liu, 2014). This finding also contributes to the extensive literature suggesting females are more vulnerable to psychological distress after a traumatic experience (Kimerling, Ouimette, & Weitlauf, 2007). There are several factors that may explain why females report more distress following trauma, including greater rates of interpersonal trauma, increased risk for internalizing symptoms, and greater likelihood to report trauma experiences and related symptoms compared to males (Wamser-Nanny & Cherry, 2018). Given the differences associated with male and female trauma experiences, sex as a predictor may be better interpreted in the context of other characteristics of the trauma. Further, it should be noted that the majority of the sample was female (75%); thus, the profiles of growth and distress should be further evaluated among males, and other gender identities.

The Greatest Risk Profile

The High Distress-Moderate Growth profile is characterized by a combination of risk factors relatively consistent with complex trauma, which is defined as multiple, chronic, and/or prolonged traumatic events that are often of an invasive, interpersonal nature and begin early in life (Cook, Blaustein, Spinazzola, & Van der Kolk, 2003). This group had the highest proportion of interpersonal trauma experiences, which is core to the conceptualization of complex trauma. Consistent with the literature that suggests females have greater rates of complex trauma histories and trauma-related difficulties, 80% of the individuals in this group characterized by high distress were female (Wamser-Nanny & Cherry, 2018). Additionally, the High Distress-Moderate Growth profile had the lowest levels of social support, consistent with findings that complex trauma is associated with lower levels of available resources and social support (Kimerling et al., 2007).

The High Distress-Moderate Growth profile also demonstrated distress and growth patterns consistent with the negative sequelae associated with complex trauma. For example, complex trauma exposure has been linked with a loss of core capacities related to self-regulation and interpersonal relatedness (Palic et al., 2016), and is associated with minimal posttraumatic growth (Orejuela-Dávila, Levens, Sagui-Henson, Tedeschi, & Sheppes, 2019). Similarly, this profile had the highest levels of distress characterized by elevated PTSD symptoms with comorbid symptoms of depression and anxiety, broadly suggesting overall difficulties with regulatory abilities. This profile also had notably lower psychological growth compared to the Low Distress-High Growth profile, an indication that the level/type of distress and nature of the trauma exposure may limit the potential for growth (Shakespeare-Finch & Armstrong 2010; Taku et al., 2008). However, in contrast to what has been found with complex trauma exposure, this profile

had moderate levels of posttraumatic growth, yet the growth was notably lower than the Low Distress-High Growth profile, suggesting that the severity of the traumatic experiences and the corresponding distress and functional impairments were lower in this sample than what has been commonly reported in the complex trauma literature (Palic et al., 2016). A true complex trauma profile would more likely reflect the hypothesized-but-not-found High Distress-Low Growth profile, and it is thought that this profile did not emerge due to the relatively low risk nature of this sample of college students and limited exposure to more severe, interpersonal trauma experiences. Still, the results of the current study do not rule out this profile, and it is possible that with a larger sample with greater exposure to complex-type trauma, the High Distress-Low Growth profile would emerge (Palic et al., 2016).

Summary

Overall, the findings of the current study suggest that posttraumatic growth is an independent construct in relation to posttraumatic distress (Hobfoll et al., 2006; Maercker & Herrle, 2003; Salsman et al., 2009). However, these constructs are often interrelated, and the results suggest that growth is more likely to co-occur when the distress is characterized primarily by PTSD symptoms, but may be limited or stunted by comorbid depression and anxiety. Although trauma type, social support, and sex were not found to be significantly statistically associated with profile membership, the trends broadly suggested that interpersonal trauma, lower levels of social support, and female sex are important for understanding the profiles of distress and growth.

Strengths, Limitations, and Future Directions

This study has several strengths. First, using LPA allowed for the examination of heterogeneous patterns of distress and growth. Further, this was the first study to use an LPA to examine distress and growth with the inclusion of interpersonal trauma as a predictor of group membership.

Although there are several strengths to this study, it is not without limitations. First, the study utilized a cross-sectional design with all observations collected at a single time point, and so information regarding causality or direction of influence and confounding factors that may be contributing to significant associations could not be obtained. Thus, these limitations limit the ability to draw causal conclusions from the data. Ideally, a prospective study that examines both pre- and post-trauma factors would be conducted to identify vulnerability factors that are present before the trauma exposure and how factors emerged following the trauma. The few studies that have used a prospective approach have found evidence that pre-existing characteristics (e.g., cognitions, self-efficacy) were linked to later distress (Bryant & Gurthrie, 2005; Heinrichs et al., 2005). Thus, it would be helpful to have an assessment of pre-existing conditions to assess for changes in posttraumatic distress and growth following exposure to childhood trauma.

There were significant limitations in variable measurement and scoring. For instance, data regarding childhood experiences were reported retrospectively, as such results may be affected by recall bias or lack of comfort with reporting past experiences. It is possible that responses may be confounded by mood or recall, and therefore, it may be difficult for individuals to accurately report traumas that are complex and chronic in nature (e.g., interpersonal trauma). Respondents were given the option to “opt out” of any

question they did not feel comfortable providing a response to, and given the nature of disclosing information about trauma, there is a possibility of item response bias in which blank responses may be omitted in a non-random fashion. Future studies should examine missing data patterns to see if the individuals who “skip” or indicate “prefer not to answer” belong to specific profiles. In addition, it should be noted that due to survey design and coding challenges, chronicity and developmental timing variables were not included in the analyses, yet were noted as important predictors to consider in future investigations.

Additionally, the study included a smaller sample size ($N = 341$) compared to other studies that utilize LPA. For instance, among 38 articles that utilized an LPA, the median total sample size was 377 (Range = 79 – 5183), the median number of latent classes was 3 (Range = 2 – 6), and the median number of observations in each latent class was 88 (Range = 7 – 3044) (Tein, Coxe, & Cham, 2013). Notably, the sample size of this study and the number of observations in the Low Distress-High Growth ($N=45$) and the Low Distress-Low Growth ($N=39$) group were somewhat smaller than other LPA studies. Relatedly, the number of respondents that endorsed interpersonal trauma and being male were notably low and likely contributed to insignificant findings among profile distinctions. Results with a larger sample size that includes greater endorsement of interpersonal trauma type and responses from males should be examined confirm the emergence of the four profiles and explore predictors of profile membership.

Another limitation is the general population from which the sample was recruited. More specifically, the sample was comprised of college students, and so the participant pool was relatively homogeneous in terms of gender, age, and race, and is generally

considered low risk in terms of trauma exposure, limiting variably in trauma type and severity, as well as severity of distress symptoms. Future studies should aim to examine profiles of growth and distress among a broader range of participants to ensure similar profiles still emerge. This is particularly important given that much of the literature on posttraumatic growth is lacking among older populations. Further, of the few studies that examine the role of race in the relationship between distress and growth, the majority indicate that there are differences in the levels of distress and growth by race. For instance, Phipps et al. (2007) found that Black youth reported more growth than their White counterparts, providing directions for future research.

Implications

With respect to clinical implications, results highlight the varying presentations of psychopathology in adulthood in response to childhood trauma. Particularly, findings suggested it may be important to assess for varying presentations of distress following childhood trauma. Clinically elevated depression and anxiety, and moderately elevated PTSD scores in the current study highlight the importance of assessing for a wide range of internalizing symptoms. Further, the study demonstrated that interpersonal trauma can be associated with greater levels of distress, and together, may limit capabilities and opportunities for growth. These finding may suggest clinically meaningful distinctions between trauma types, which may be informative to treatment planning and diagnosis.

Further, findings from the current study support previous research suggesting that treatments that target building and maintaining social support may be particularly salient among adults with a history of childhood trauma. Specifically, interventions that promote and bolster social support and social networks through supportive family, organizations,

and friends may be associated with lower distress and more opportunities for growth. Additional research is needed to examine whether the specific type of support or the specific provider of support changes the extent to which social support may protect against specific trauma experiences and the subsequent negative health consequences.

Conclusions

The present study aimed to examine the patterns of psychological distress (i.e., posttraumatic stress, depression, and anxiety symptoms) and posttraumatic growth among young adults following experiences of childhood trauma using an LPA. Results revealed four profiles: High Distress-Moderate Growth, Low Distress-Moderate Growth, Low Distress-High Growth, and Low-Distress-Low Growth. Potential predictors of these profiles were explored, and results indicated that trauma type, social support, and sex did not statistically significantly predict classification into the profiles, although trends in the odds ratios suggested that these factors are important for understanding the profiles of distress and growth. This study advances the literature by expanding upon previous studies that use LPA to examine the co-occurrence of distress and growth, specifically utilizing a more comprehensive approach to measuring distress and trauma type. However, further research is needed to examine additional predictors, such as chronicity and developmental timing, and to further differentiate risks associated with interpersonal and non-interpersonal trauma experiences.

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APPENDICES

APPENDIX A

SURVEY ITEMS

Posttraumatic Diagnostic Scale For DSM-5

TRAUMA SCREEN

Have you ever experienced, witnessed, or been repeatedly confronted with any of the following: (Check all that apply)

Serious, life threatening illness (heart attack, etc.)

Physical Assault (attacked with a weapon, severe injuries from a fight, held at gunpoint, etc.)

Sexual assault (rape, attempted rape, forced sexual act with a weapon, etc.)

Military combat or lived in a war zone

Child abuse (severe beatings, sexual acts with someone 5 years older than you, etc.)

Accident (serious injury or death from a car, at work, a house fire, etc.)

Natural disaster (severe hurricane, flood, earthquake, etc.)

Other trauma (Please describe briefly):

None

*** If NONE, please STOP and return this questionnaire ***.

Below is a list of problems that people sometimes have after experiencing a traumatic event. Write down the most distressing traumatic event that you checked on the last page:

Please read each statement carefully and circle the number that best describes how often that problem has been happening and how much it upset you over THE LAST MONTH. Rate each problem with respect to the traumatic event that you wrote above.

0	1	2	3	4
Not at all	Once a week or less/a little	2 to 3 times a week/somewhat	4 to 5 times a week/very much	6 or more times a week/severe

1. Unwanted upsetting memories about the trauma
2. Bad dreams or nightmares related to the trauma
3. Reliving the traumatic event or feeling as if it were actually happening again
4. Feeling very EMOTIONALLY upset when reminded of the trauma
5. Having PHYSICAL reactions when reminded of the trauma (for example, sweating, heart racing)
6. Trying to avoid thoughts or feelings related to the trauma
7. Trying to avoid activities, situations, or places that remind you of the trauma or that feel more dangerous since the trauma
8. Not being able to remember important parts of the trauma
9. Seeing yourself, others, or the world in a more negative way (for example "I can't trust people," "I'm a weak person")
10. Blaming yourself or others (besides the person who hurt you) for what
11. happened
12. Having intense negative feelings like fear, horror, anger, guilt or shame
13. Losing interest or not participating in activities you used to do
14. Feeling distant or cut off from others
15. Having difficulty experiencing positive feelings
16. Acting more irritable or aggressive with others
17. Taking more risks or doing things that might cause you or others harm (for example, driving recklessly, taking drugs, having unprotected sex)
18. Being overly alert or on-guard (for example, checking to see who is around you, being uncomfortable with your back to a door)
19. Being jumpy or more easily startled (for example when someone walks up behind you)
20. Having trouble concentrating
21. Having trouble falling or staying asleep

DISTRESS AND INTERFERENCE

21. How much have these difficulties been bothering you?
22. How much have these difficulties been interfering with your everyday life (for example relationships, work, or other important activities)?

SYMPTOM ONSET AND DURATION

23. How long after the trauma did these difficulties begin? [circle one]
 - a. Less than 6 months
 - b. More than 6 months
24. How long have you had these trauma-related difficulties? [circle one]
 - a. Less than 1 month
 - b. More than 1 month

Patient Health Questionnaire

Over the last 2 weeks, how often have you been bothered by any of the following problems?				
	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things				
Feeling down, depressed, or hopeless				
Trouble falling or staying asleep, or sleeping too much				
Feeling tired or having little energy				
Poor appetite or overeating				
Feeling bad about yourself - or that you are a failure or have let yourself or your family down				
Trouble concentrating on things, such as reading the newspaper or watching television				
Moving or speaking so slowly that other people could have noticed? or the opposite - being so fidgety or restless that you have been moving around a lot more than usual				
Thoughts that you would be better off dead, or of hurting yourself				

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not at all difficult
- Somewhat difficult
- Very difficult
- Extremely difficult

Generalized Anxiety Disorder

Over the last 2 weeks, how often have you been bothered by any of the following problems?				
	Not at all	Several days	More than half the days	Nearly every day
Feeling nervous, anxious, or on edge				
Not being able to stop or control worrying				
Worrying too much about different things				
Trouble relaxing				
Being so restless that it's hard to sit still				
Becoming easily annoyed or irritable				
Feeling afraid as if something awful might happen				

If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all _____

Somewhat difficult _____

Very difficult _____

Extremely difficult _____

Posttraumatic Growth Inventory

Indicate for each of the statements below the degree to which this change occurred in your life as a result of the crisis/disaster, using the following scale.

0 = I did not experience this change as a result of my crisis.

1 = I experienced this change to a very small degree as a result of my crisis.

2 = I experienced this change to a small degree as a result of my crisis.

3 = I experienced this change to a moderate degree as a result of my crisis.

4 = I experienced this change to a great degree as a result of my crisis.

5 = I experienced this change to a very great degree as a result of my crisis.

Possible Areas of Growth and Change			0	1	2	3	4	5
1. I changed my priorities about what is important in life.								
2. I have a greater appreciation for the value of my own life.								
3. I developed new interests.								
4. I have a greater feeling of self-reliance.								
5. I have a better understanding of spiritual matters.								
6. I more clearly see that I can count on people in times of trouble.								
7. I established a new path for my life.								
8. I have a greater sense of closeness with others.								
9. I am more willing to express my emotions.								
10. I know better that I can handle difficulties.								
11. I am able to do better things with my life.								
12. I am better able to accept the way things work out.								
13. I can better appreciate each day.								
14. New opportunities are available which wouldn't have been otherwise.								
15. I have more compassion for others.								
16. I put more effort into my relationships.								
17. I am more likely to try to change things which need changing.								
18. I have a stronger religious faith.								
19. I discovered that I'm stronger than I thought I was.								
20. I learned a great deal about how wonderful people are.								
21. I better accept needing others.								

MOS Social Support

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional/informational support					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand a situation	1	2	3	4	5
Someone to give you good advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Some whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
Tangible support					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
Affectionate support					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5

APPENDIX B

SUPPLEMENTAL RESULTS

Supplemental Table S1.

Multinomial logistic regression predicting profile membership compared to the High Distress- Moderate Growth in three-class solution

	High Distress- Moderate Growth <i>Reference Group</i>				Moderate Distress-High Growth			
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>
Interpersonal	-	-	-	-	-0.42	0.44	0.66	[0.28, 1.56]
Social Support	-	-	-	-	0.55	0.23	1.73*	[1.10, 2.74]
Female	-	-	-	-	-0.66	0.50	0.19	[0.20, 1.38]
	Low Distress-Low Growth							
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>95% CI</i>				
Interpersonal	-0.79	0.72	0.45	[0.11, 1.87]				
Social Support	0.70	0.39	2.01	[0.94, 4.27]				
Female	-1.13	0.67	0.32	[0.09, 1.19]				

*Note. OR, Odds Ratio; SE, Standard Error; CI, Confidence Interval; *p < .05, **p < .01*

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