

The psychological impact of wrongful convictions:  
The role of meaning making in recovery from trauma

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A dissertation submitted in partial fulfillment of

The requirements of the degree of

Doctor of Philosophy

(Counseling Psychology)

At the

UNIVERSITY OF WISCONSIN-MADISON

2021

Date of final oral examination: 1/15/2021

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## Chapter 1: Introduction

*“We are all implicated when we allow other people to be mistreated. An absence of compassion can corrupt the decency of a community, a state, a nation. Fear and anger can make us vindictive and abusive, unjust and unfair, until we all suffer from the absence of mercy and we condemn ourselves as much as we victimize others. The closer we get to mass incarceration and extreme levels of punishment, the more I believe it's necessary to recognize that we all need mercy, we all need justice, and- perhaps-we all need some measure of unmerited grace.”*

— Bryan Stevenson, *Just Mercy: A Story of Justice and Redemption*

While wrongful convictions were once thought to be a rare occurrence, recent data on the prevalence of wrongful convictions indicates the gravity of this issue in the United States and worldwide. Worldwide, there are over 5,800 documented exonerations in 120 countries (Sherrer’s Innocents Database, 2019; Medill Justice Project, 2018). In the United States, there have been 2,448 documented wrongful convictions between 1989 to 2019 alone, with over 20,800 years served collectively by innocent defendants (National Registry of Exonerations, 2018, 2019). As many as 50 innocent people have been executed in the United States from the 1980’s to the present, with an additional 165 death row inmates released upon exoneration (Gross, O’Brien, Hu, & Kennedy, 2014; Death Penalty Information Center’s The Innocence List, 2019). There are significant racial differences in wrongful convictions, such that Black defendants are more likely to be wrongfully convicted and tend to serve longer than their white counterparts; while only 12% of the

population is Black, 46% of people who are wrongfully convicted are Black (National Registry of Exonerations, 2018).

While recent studies have acknowledged the prevalence and legal causes of wrongful convictions, there is an absence of literature examining the many consequences of wrongful convictions on the individuals and society (Campbell & Denov, 2004; Cole, 2009; Grounds, 2004). Of the existing empirical research examining the impact of wrongful convictions, much of the research was conducted in countries other than the United States and involved small sample sizes (Campbell & Denov, 2004; Grounds, 2004; Grounds, 2005; Jenkins, 2013; Tan, 2011). Although there is a need for further research, the existing literature on wrongful convictions suggests that exonerees face higher rates of mental health disorders than both the general population and prison populations generally. (Wildeman, Costelloe, & Schehr 2011; Grounds, 2004).

Researchers have posited that individuals who are wrongfully convicted experience unique stressors beyond the stressors of incarceration due to several factors, including the fact that people who are wrongfully convicted tend to be isolated in their claims of innocence, tend to face multiple unsuccessful appeals before being exonerated, face longer sentences due to their refusal to admit culpability, tend to have high profile cases resulting in difficulty assimilating in prison, tend to become detached from their surrounding due to their high level of focus on their legal appeals, and tend to have difficulty making meaning of their arrest and conviction due to being innocent. (Grounds, 2005; Simon, 1993; Westervelt & Cook, 2010). Upon exoneration and release from prisons, exonerees tend to face a variety of challenges, including difficulty navigating ruptured relationships, coping with daily tasks, dealing with stigma that is particularly salient due to the notoriety of their

case, and coping with a loss of self-identity and a profound mistrust of authority figures and the legal system (Iannozi, 2015; Campbell & Denov, 2004).

This dissertation focuses on psychological experiences of people who were wrongfully convicted and subsequently exonerated, with a focus on the role of meaning making in individuals' reactions to trauma, through the lens of Janoff-Bulman's (1992) shattered assumptions theory and Park's (2010) meaning making model. There is little prior research examining the psychological experiences of those who are wrongfully convicted, and the existing research is primarily qualitative or with small samples sizes. Further, no research has currently examined meaning making or posttraumatic growth processes in exonerees.

Three primary aims guide this study. The primary aim of this study is to better understand the psychological experiences of people who are wrongfully convicted, with a focus on gaining insight into the prevalence of symptoms of posttraumatic stress disorder, anxiety, and depression. The secondary aim of this study is to gain an understanding of the role of posttraumatic growth and meaning making in the process of recovery after experiencing a wrongful conviction, with a goal of identifying predictors of growth following trauma. By providing a critical review of posttraumatic growth and meaning making, the study aims to further the study of reactions to trauma by considering meaning making as a dimension of growth, and by considering meaning making in terms of a process (i.e., meaning making coping) and outcome (i.e., meanings made in life) of growth following trauma. The tertiary aim of this study is to expand the current methodology by which the field studies trauma and recovery retrospectively. By utilizing a new trajectory method modified from Mancini, Bonanno, and Sinan's (2015) brief retrospective method

for identifying longitudinal trajectories of adjustment following acute stress, in which participants retrospectively identify and plot their level of distress over time, the study could potentially provide an innovative method of determining clusters of recovery following trauma, while gaining insight into recovery trajectories of those who are wrongfully convicted. By comparing participants' self-reported changes in world beliefs to their self-reported trajectory of recovery in terms of distress, we can provide evidence for, or against, current theories of trauma, based in the shattered assumptions theory, that improvements in PTSD symptoms, as well as meaning making, occurs when one is able to reduce the discrepancy between the initial appraisal meaning and their global beliefs.

## **Chapter 2: Background**

### **Incarceration in the United States**

A number of studies examine the psychological impacts of long-term incarceration generally, but few studies have examined the specific psychological impacts of wrongful convictions (Scott, 2010). Thus, this literature review will first briefly describe the literature on the psychological impacts of incarceration generally, before examining the literature on wrongful convictions specifically.

### ***Current State of U.S. Prisons***

In examining the impacts of incarceration, it is important to first examine the social and historical contexts that impact the state of prisons and jails in the United States.

Incarceration rates have risen throughout the world, with over 10 million people incarcerated worldwide (Armour, 2012). Since the early 1990's, the United States has consistently had the highest rate of incarceration per capita in the entire world (Haney, 2001; Travis, Western, & Redburn, 2014). Data collected by the Bureau of Justice Statistics suggests that prison populations in the United States have increased more than seven times from the 1920's to the current decade (Travis, Western, & Redburn, 2014). Specifically, the incarceration rate for drug offenses has grown astronomically in the past three decades, increasing tenfold from 1980 to 2010 (Travis, Western, & Redburn, 2014).

The increased rates of incarceration in the United States have led to unprecedented overcrowding in prisons, resulting in a crisis according to penologists (Haney, 2001).

Haney (2001) argues that the historical trend towards increasingly harsh policies and de-emphasis on rehabilitation as a goal of incarceration has resulted in increased psychological harms for inmates. Specifically, several researchers have suggested that, due

to overcrowded and increasingly punitive correctional institutions, inmates experience more isolation, neglect, and abuse, resulting in maladaptive coping mechanisms that decrease the inmates' mental health, such as hyper vigilance, suppression of emotions, decreased self-efficacy and self-worth, social withdrawal, and violent behaviors (Haney, 2001; Matthews, 1999).

### ***Prevalence Rates of Mental Health Disorders in Incarcerated Populations***

Research has consistently shown that incarcerated individuals have a higher prevalence of psychiatric disorders than the general population (Fazel, Hayes, Bartellas, Clerici, & Trestman, 2016). In fact, in 44 states, the correctional institutions house more individuals with mental illness than the largest state psychiatric hospital (Torrey, Kennard, Eslinger, Lamb, & Pavle, 2010). Inmates have increased rates of suicide, self-injury, violence, and victimization (Fazel et al., 2016). Research has consistently shown that inmates are more significantly likely to have experienced trauma and endorse symptoms of PTSD than the general population (Goff, Rose, Rose & Purves, 2007). Female inmates tend to have significantly higher rates of trauma than male inmates (Goff, Rose, Rose & Purves, 2007).

Although it is well established that rates of psychiatric disorders are significantly higher in incarcerated individuals, it is unclear whether inmates enter prisons with higher rates of mental illness or whether incarceration causes mental illness to develop. (Armour, 2012; Fazel et al., 2016). Armour (2012) suggests that inmates' traumatic experiences may explain their increased rates of mental illness, because inmates are more likely to experience trauma prior to incarceration, as well as during their incarceration. Thus, Armour (2012) posits that inmates enter prisons with higher rates of mental illness due to

previous traumatic experiences *and* they develop subsequent mental illness as a result of trauma while incarcerated. Further, research has shown that trauma exposure in inmates was strongly associated with behavioral problems and clinical psychiatric symptoms (Wolff & Shi, 2012).

## **Wrongful Convictions**

### ***Wrongful Convictions in the United States***

As rates of incarceration in the United States have risen astronomically in the past century, so have the rates of wrongful convictions. While wrongful convictions were once thought to be a rare occurrence, recent data from the National Registry of Exoneration indicates that there are 2,265 documented wrongful convictions in the United States from 1989 to 2018. A database of wrongful convictions worldwide suggests that there are over 5,800 documented exonerations in 120 countries (Sherrer's Innocents Database, 2019; Medill Justice Project, 2015). The average wrongfully convicted individual in the United States served 8 years and 10 months, with a total of 20,080 years served collectively among those included in the National Registry of Exonerations. It is estimated that as many as 50 innocent people have been executed in the United States from the 1980's to the present, with an additional 165 death row inmates released upon exoneration (Gross, O'Brien, Hu, & Kennedy, 2014; Death Penalty Information Center's The Innocence List, 2019). While the average length of time served was 8 years and 10 months, 35 men spent more than 30 years in prison before exoneration (National Registry of Exonerations, 2018). Data indicates that the length of time spent in prison is consistent with the severity of the crime, such that the average time served for drug crimes is 1.3 years as compared to 13.2 years served on average for murder convictions (National Registry of Exonerations, 2018).

Significant racial differences in the experiences of those wrongfully convicted are evident in the data collected by the National Registry of Exonerations (2018). While only 12% of the population is Black, 46% of people who are wrongfully convicted are Black (National Registry of Exonerations, 2018). Further, Black defendants are disproportionately represented on death row, such that they represent 42% of death row inmates and 35% of inmates executed (NAACP Legal Defense & Education Fund, 2016). Not only are Black defendants more likely to be wrongfully convicted, they also tend to serve longer before being exonerated as compared to their white or Latin@ counterparts (National Registry of Exonerations, 2018). For example, Black exonerees serve an average of 14.7 years for murder, as compared to white exonerees or Latin@ exonerees, who both serve 11.6 years on average. This remains true for less violent crimes such as robbery, such that Black exonerees serve 6.5 years on average, as compared to an average of 5.6 and 4.5 years for white and Latin@ exonerees, respectively.

### ***Causes of Wrongful Convictions***

The National Registry of Exonerations (2019) also documented the causes of wrongful convictions and discovered that many wrongful convictions have multiple causes. Specifically, of the cases documented in the National Registry of Exonerations (2019), 58% involved perjury or false accusation, 54% involved official misconduct, 28% involved mistaken witness identification, 23% involved false or misleading forensic evidence, and 12% involved a false confession. The data also indicated that Black defendants were 22% more likely to have been wrongfully convicted of murder due to misconduct by police officers than their white counterparts (National Registry of Exonerations, 2017). Further, Black defendants convicted of a sexual assault are much

more likely to experience errors in eyewitness testimony, with 79% of Black exonerees having been falsely identified compared to 51% of white exonerees (National Registry of Exonerations, 2017). Although less than 11% of sexual assaults in the United States involve a Black man assaulting a white woman, over half of sexual assault exonerations involved a Black man assaulting a white woman (National Registry of Exonerations, 2017).

### ***Wrongful Convictions and Mental Health***

While a body of literature exists examining the cause of wrongful convictions and other miscarriages of justice, there is a dearth of literature examining the consequences of wrongful convictions on the individuals and society (Campbell & Denov, 2004; Cole, 2009; Grounds, 2004). Of the empirical research examining the impact of wrongful convictions, the majority of research was conducted in countries other than the United States (Campbell & Denov, 2004; Grounds, 2004; Grounds, 2005; Jenkins, 2013; Tan, 2010).

### ***Unique Stressors of Being Wrongfully Convicted***

While there is not a comprehensive body of literature examining the impact of wrongful conviction on exonerees' mental health, the existing literature suggests that exonerees tend to endorse significant mental health concerns and negative impacts on multiple domains of their lives. Individuals who are wrongfully convicted are thought to experience unique stressors beyond the stressors of incarceration (Grounds, 2005). People who are wrongfully convicted are often isolated in their claims of innocence, frequently experience multiple unsuccessful appeals, face longer sentences due to their refusal to admit culpability in the crime, and tend to have high profile or notorious cases (Grounds,

2005). Many wrongfully convicted inmates become extremely focused on their legal appeals, resulting in detachment from their surroundings and social isolation within correctional institutions (Campbell & Denov, 2004). It has also suggested that people who are wrongfully convicted experience a unique trauma when trying to make meaning of their arrest and conviction when they know that they are innocent (Grounds, 2005; Simon, 1993). Research suggests that exonerees have an increased psychological burden from the moral wrongfulness of their ordeal and the fact that their convictions were caused by deliberate misconduct of police and/or prosecutors (Westervelt & Cook, 2010)

### ***Prevalence of Mental Health Disorders in Exonerees***

Although there is a need for further research, the existing literature on wrongful convictions suggests that exonerees face higher rates of mental health disorders than both the general population and prison populations generally. Through individual, in-person interviews with 55 exonerees to measure short and long term psychological effects associated with wrongful conviction, Wildeman, Costelloe and Schehr (2011) found that 44% of participants scored within the clinical depression range and 23.7% of participants scored above the threshold for PTSD, which is over four times and three times that of the general population, respectively. The authors concluded that the exonerees had significantly higher rates of mental health disorders than the general population of inmates, suggesting that there is additional stress experienced when one is wrongfully convicted. (Wildeman, Costelloe, & Schehr, 2011).

Similarly, Grounds (2004), who interviewed 18 wrongfully convicted men who were referred for assessments after their convictions were overturned on appeal in the U.K. for purposes of assessing civil damages, found high rates of mental health disorders. Of the

18 exonerees interviewed, 14 met criteria for ICD-10 diagnosis for “enduring personality change following catastrophic experience,” 12 met ICD-10 criteria for PTSD, 10 participants met criteria for depressive disorder, 5 had features of panic disorders, 4 had paranoid symptoms, and 3 had alcohol or drug dependence (Grounds, 2004, 2005). The majority of the participants also reported significant problems with psychological and social adjustment, particularly within families, as well as chronic difficulties in sleeping (Grounds, 2004, 2005). The participants described difficulty coping after exoneration, including difficulty tolerating the chaos of their home after living so long in a predictable, ordered environment, as well as difficulties with avoiding emotions, isolation, and social withdrawal (Grounds, 2004, 2005). Additionally, the exonerees described a unique incongruence with their actual age, with many participants reporting that they felt developmentally similar to their age at arrest (Grounds, 2004, 2005). Grounds (2004) concluded that the difficulties experienced by the exonerees were similar to those described in the clinical literature on war veterans. Similarly, Prezell (2012) demonstrated that death row exonerees have significantly higher levels of PTSD than combat veterans (Prezell, 2012).

In addition to the above-described studies that examine prevalence of mental health disorders and symptoms, several studies examine other psychological impacts of wrongful convictions. Upon release, exonerees tend to struggle with navigating ruptured relationships, coping with everyday tasks, and dealing with the stigma associated with the notoriety of their case (Iannozzi, 2015). In a sample of five Canadian exonerees, Campbell and Denov (2004) identified shared long-term impacts of wrongful conviction, including loss of self-identity, anger and resentment towards the justice system, profound mistrust of

authority figures, and a sense of continued imprisonment after exoneration. Campbell and Denov (2005) also identified coping strategies among exonerees in Canada, including violence and cooperation; withdrawal and isolation; and preoccupation with exoneration that victims adopt to cope with their incarceration. In death row exonerees, Westervelt and Cook (2008) identified a shared experience of survivor's guilt after seeing other inmates be executed, fear of repeat accusations, helplessness, experiences of stigma, difficulty adjusting to the changes that occurred in the world since their incarcerations, and difficulty navigating a shift in identity.

While there is a lack of an empirically supported theory of psychological process one goes through when wrongfully convicted, Scott (2010) proposes stages of coping with a wrongful conviction according to the clinical experiences of John Wilson, a professor who studied trauma in the wrongfully convicted. Scott (2010) posits that the first stage is a sense of shock and disbelief, coupled with a belief that the arrest is a mistake that will be soon corrected; next, feelings of helplessness and hopelessness starts to develop, followed by a sense of injustice, rage, and anger; finally, the individual develops a fear of death, abuse, and never obtaining freedom.

### ***Financial Consequences of Wrongful Conviction***

In addition to the psychological consequences, exonerees tend to face devastating financial consequences (Cole, 2009; Naughton, 2007). Along with the enormous costs of appealing their legal conviction and ultimately obtaining an exoneration, exonerees tend to have difficulty finding meaningful employment after their exoneration due to the stigmatizing effect of their criminal record, their lack of meaningful training and experience due to their incarceration, and the impact of psychological symptoms that make

it difficult to maintain employment. (Clow & Leach, 2013; Cole, 2009; Iannozzi, 2015; Kregg, 2016; Santos, 2007). Exonerees who were unemployed tend to have significantly more severe depression and anxiety, creating a cyclical pattern of increasingly severe psychological symptoms that further prevents gainful employment (Wildeman, Costelloe, and Schehr, 2011). Stigma towards the wrongfully convicted also results in difficulty for many exonerees in finding housing upon their release, with many exonerees facing homelessness or reliance on friends and family for shelter (Iannozzi, 2015; Jones, 2013).

### ***Impact on Family of Exonerees***

Loss of family, deterioration of the family structure, and difficulty navigating familial changes are common experiences for exonerees and their families following wrongful convictions (Campbell & Denov, 2004; Kregg, 2016). Jenkins (2013) interviewed 16 wrongfully convicted participants and their families and found that half of participants divorced or separated from their spouse or partner within two years of their release from prison. Families of the wrongfully convicted experienced significant financial burdens, stigmatization, psychological symptoms (i.e., anxiety, depression, and/or panic attacks), and physical symptoms (i.e., headaches, irritable bowel syndrome; Jones, 2013).

In summary, while wrongful convictions were once thought to be a rare occurrence, recent data has revealed that wrongful convictions occur at a much higher rate than previously believed and disproportionately impact racial minorities. Existing research has revealed that wrongful convictions have dire consequences for the wrongfully convicted, their family, and society as a whole. While there is a small body of emerging research examining the consequences of wrongful convictions, there is a need for more research to gain an understanding of the psychological impact of wrongful convictions in the United

States. Specifically, this study conceptualizes the psychological impact of wrongful convictions through a trauma lens. In the next section, I will review the literature on trauma more generally, defining trauma for the purposes of this study and describing reactions to trauma.

## **Trauma**

### ***Brief History of the Study of Trauma***

Since the inception of the field of psychology in the 19<sup>th</sup> century, social scientists have studied the concept of trauma. One of the earliest instances of the study of trauma was by French neurologist Jean-Martin Charcot, who posited that “female hysteria” was caused by psychological trauma (Herman, 1992). Sigmund Freud, in his seminal piece “The Aetiology of Hysteria,” furthered this theory, suggesting that the root of hysteria is childhood sexual trauma (Herman, 1992). A greater interest in studying trauma blossomed in reaction to World War I, when soldiers’ reactions to the horrors of war and combat were thought to lead to “combat neurosis” (Herman, 1992). The study of trauma continued in reaction to World War II and the Vietnam War, and, in 1980, the diagnosis of posttraumatic stress disorder was added to the Diagnostic and Statistical Manual of Mental Disorders III (DMS-III). In the DSM-III an DSM-IV, trauma was classified in the anxiety disorders category; however, in the DSM-5, trauma has been moved to a new diagnostic category entitled, “Trauma and Stressor-Related Disorders,” along with adjustment disorder, reactive attachment disorder, disinhibited social engagement disorder, and acute stress disorder.

### ***Trauma Defined***

According to the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5), trauma occurs when one is the victim or witness of circumstances involving “exposure to actual or threatened death, serious injury, or sexual violence.” This updated definition of trauma in the DSM-5 has received criticism for being too narrow (Pai et al., 2017). In fact, one study using self-report inventories found that 60% of cases that met PTSD criteria in the DSM-IV no longer met the DSM-5 criteria for PTSD because the index trauma did not fall within the new definition of trauma (Kilpatrick et al., 2013). Pearlman and Saakvitne (1995) proposed a broader definition of trauma, defining psychological trauma as the unique individual experience of an event or enduring condition, during which the individual’s ability to integrate his/her emotional experience is overwhelmed, or the individual subjectively experiences a threat to their life, bodily integrity, or sanity (p. 60).

For the purpose of this dissertation, I will define trauma in accordance with Pearlman and Saakvitne’s (1995) expanded definition of trauma, such that traumatic events occur when one experiences an event or enduring condition during which the individual’s ability to integrate his/her emotional experience is overwhelmed. I chose to utilize this broad definition of trauma because it is important to acknowledge that trauma varies significantly by the experience of the survivor, such that two people can undergo the same event and one person may experience trauma symptoms while the other does not. While the DSM-5 provides a more objective measure of trauma, the narrow nature of the DSM-5’s definition does not account for the nuance in each individual’s experience, especially for the purposes of understanding an enduring traumatic event such as a wrongful conviction. While all participants in this study have experienced a similar trauma in being

wrongfully convicted, the details of the events and the psychological adjustment processes will likely vary, and a primary aim of this study is to test hypotheses about the subjective factors that lead to different adjustment trajectories. It is also important to note that there is a significant overlap between the trauma and grief literature, such that these constructs often become blurred or not clearly defined. Although grief and loss can be traumatic in certain circumstances, the construct of grief/loss is distinct from trauma, and I will attempt to identify this distinction when relevant in this literature review.

### **Reactions to Trauma**

A body of literature has emerged examining reactions to trauma or acute stress. For the purpose of this literature review, I will review the literature on reactions to trauma through the lens of the shattered assumptions theory, with a focus on both negative symptoms consistent with posttraumatic stress and growth reactions consistent with posttraumatic growth.

#### ***Shattered Assumptions Theory***

One theory that aims to explain the reactions of survivors of trauma, including how survivors view themselves and the world, is the shattered assumptions theory (Janoff-Bulman, 1992). The shattered assumptions theory posits that trauma can be understood through the lens of an alteration in one's assumptive world following a traumatic event. (Janoff-Bulman, 1992). The construct of "assumptive world" was coined by Parkes (1975) as a "strongly held set of assumptions about the world and the self which is confidently maintained and used as a means of recognizing, planning and acting." (p. 132). At the core of this theory is the idea that people tend to hold three fundamental assumptions about the world: the world is benevolent; the world is meaningful; and I am worthy (Janoff-Bulman,

1992). Within the belief that the world is benevolent is two sub-assumptions: that the world is benevolent generally, and that the people in the world are benevolent (Janoff-Bulman, 1992). The belief that the world is meaningful includes the notion that the world makes sense, and that what happens to a person is reflective of that person's behavior or character (Janoff-Bulman, 1992). Finally, within the belief that the individual themselves is worthy is the positive self-appraisal making that person deserving of good outcomes in their life (Janoff-Bulman, 1992). In summary, the shattered assumptions theory posits three positive assumptions co-exist at the core of our assumptive world: "we believe we are good people who live in a benevolent, meaningful world." (Janoff-Bulman, 2010, p. 12). Janoff-Bulman (1992) suggests that these three assumptions are the foundation of human well-being and help people to navigate the decision they make daily.

According to the shattered assumptions theory, when one experiences trauma, their assumptions about the world and themselves are shattered (Janoff-Bulman, 1992). When traumatic events cannot be easily integrated into one's previously held worldviews, it is likely that they no longer perceive themselves as competent and invulnerable, and no longer view the world as benevolent and predictable. The shattering of one's worldview results in an awareness of personal vulnerability and defenselessness, resulting in psychological and physiological symptoms consistent with posttraumatic stress (Janoff-Bulman, 1992). When a person's initial appraisal of situational meaning is in conflict with his/her global beliefs, the person often begins a search for meaning as comprehensibility, which is a search for meaning in an attempt to make sense of the situation in line with existing global beliefs (Janoff-Bulman & Frantz, 1997). Janoff-Bulman (1992) suggests

that healing from trauma occurs when an individual creates new assumptions or modifies their old assumptions to account for the traumatic experience.

It is important to note that there is a discrepancy in the literature around whether trauma leads to true shattered assumptions or violations of global meaning. Mancini & Bonanno (2008) argued that trauma and grief do not truly result in shattered assumptions, specifically stating that, “[f]indings support the pre-loss worldviews can buffer the impact of loss, that post-loss worldviews have minimal effects on subsequent adjustment, and that grief symptoms can compromise subsequent worldviews” (p. 184-185). However, several studies have demonstrated shifts in global beliefs subsequent to a stressful or traumatic experience, “but the magnitude of these shifts falls short of that which would indicate ‘shattering.’” (Park, 2010, p. 283). Several longitudinal studies revealed shifts in global beliefs following a stressful or traumatic experience in various populations, including adults experiencing trauma more generally (Gluhoski & Wortman, 1996), mothers undergoing bone marrow transplants (Rini et al., 2004), and undergraduates experiencing traumatic events as defined in the DSM-4 (Kaler et al., 2008). Several cross-sectional studies have also revealed moderate evidence of stressful or traumatic experiences leading to a violation of world beliefs, although some of the results are mixed (Prager & Solomon, 1995; Denkers & Winkel, 1995; Magwaza, 1999; Boelen, Kip, Voorluis, & van den Bout, 2004; Schwartzberg & Janoff-Bulman, 1991; Franklin, Janoff-Bulman, & Roberts, 1990; Solomon, Iancu, & Tyano, 1997; Matthews & Marwit, 2004).

### ***Posttraumatic Stress***

There are a variety of negative consequences that can occur as a result of experiencing a traumatic event, including the development of PTSD. In fact, it is estimated

that approximately 7% of the United States population will meet the criteria for PTSD at some point in their lives (APA, 2000, p. 46). This section will discuss the diagnostic criteria for PTSD and risk factors for developing PTSD.

**PTSD Diagnostic Criteria in the DMS-5.** According to the DSM-5, there are eight criterion which must be met to meet the requirements for a diagnosis of PTSD, including exposure to the trauma, at least one intrusive symptom, at least one avoidance symptom, at least two symptoms of negative alterations in cognitions and mood, alterations in arousal and reactivity, symptoms lasting for more than one month, symptoms creating distress or functional impairment, and symptoms cannot be better explained by medication, substance use, or other illness. PTSD is characterized both cognitive and affective reactions to trauma, such that the emotions and cognitions association with PTSD interact and influence one another (Hayes, VanElzaker, Shin, 2012). While PTSD can be long lasting, a large meta-analysis found that 44% of participants, who were identified as having PTSD at baseline and were not engaging in treatment, no longer met diagnostic criteria for PTSD 40 months later (Morina et al., 2014).

**Risk Factors for Developing PTSD.** While it is estimated that up to 70% of the population has experienced a traumatic event or critical stressor at some point in their lives, only an estimated 7% of the United States population is thought to have PTSD at some point in their lives (APA, 2000, p. 46). A large body of literature has examined predictors and risk factors for PTSD. In a meta-analysis of 476 studies, Ozer et al. (2003) found seven significant predictors of PTSD, including prior trauma, prior psychological adjustment, family history of psychopathology, perceived life threat during the trauma, post-trauma social support, peritraumatic emotional responses, and peritraumatic

dissociation. Further, in another meta-analysis of 77 studies, Brewin, Andrews and Valentine (2000) identified three categories of risk factors for developing PTSD. First, the authors found that gender, age at trauma, and race predicted PTSD in some populations, such that female gender, younger age, and racial minority status were significant risk factors that predicted PTSD. Second, a lack of education, a history of previous trauma, and a history of general childhood adversity predicted PTSD more consistently but still not uniformly across all populations studied. Third, a history of a psychiatric diagnosis, reported childhood abuse, and a family history of psychiatric diagnoses had uniform predicted effects across all populations studied.

Further, a body of research has revealed that people who experience significant adverse childhood experiences, often categorized in accordance with the Adverse Childhood Experiences (ACE) Questionnaire to include abuse, neglect, and household challenges, are more likely to experience symptoms of mental illness and psychopathology in adulthood, including PTSD, depression, and anxiety (Filitti, Anada, Nordernberg, Williamson, Spitz, Edwards, Koss, & Marks, 1998; Chapman, Anda, Felitti, Dube, Edwards; Whitfield, 2004; Schalinski, Teicher, Nischk, Muller, & Rockstroh, 2016; Teicher & Samson, 2013; Teicher, Samson, Polcari, & McGreenery, 2006). It is important to note that not all adverse childhood experiences have the same effect; research has shown that the type and timing of adverse childhood experiences has a significant effect on the severity of mental health symptoms experienced during adulthood (Schalinski, Teicher, Nischk, Muller, & Rockstroh, 2016). Researchers have posited that the variation in impact of adverse childhood experiences on mental health symptoms in adulthood is due to the stress-sensitive periods of brain development throughout childhood and adolescence

(Schalinski, Teicher, Nischk, Muller, & Rockstroh, 2016; Teicher & Samson, 2013; Teicher, Samson, Polcari, & McGreenery, 2006).

In summary, there are a variety of negative consequences that can occur as a result of experiencing a traumatic event. While the negative consequences of trauma have been the focus of much of the literature on trauma, recently, there is a body of emerging literature that highlight the potential growth as a result of trauma. This will be the topic of the next section of this literature review.

### ***Posttraumatic Growth***

While it has been suggested that growth in various life domains likely occurs following trauma in people who are wrongfully convicted (Konvisser, 2012), there is no current literature examining posttraumatic growth in exonerees. For several decades, a body of literature has emerged examining the construct of posttraumatic growth, or the phenomenon of positive psychological change following trauma, also called various terms including stress-related growth, benefit finding, positive illusions, and, most commonly, posttraumatic growth (Tomich & Helgeson, 2004; Park, Cohen, & Murch, 1996; Taylor & Amor, 1996; Tedeschi and Calhoun, 1996; Armeli, Gunthert, & Cohen, 2001; Helgeson, 2006). Tedeschi and Calhoun (1996) coined the term posttraumatic growth, positing that one can actually experience gains as a result of the creation of a new assumptive world as described in Janoff-Bulman's (1992) shattered assumption theory. Tedeschi and Calhoun (1996) identified five domains in which growth is likely to occur, including improved relationships with others, identification of new possibilities for one's life, increased perceptions of personal strength, enhanced appreciation of life, and spiritual growth.

Posttraumatic growth is beyond a return to baseline functioning following trauma (Tedeschi & Calhoun, 2004). Rather, posttraumatic growth “describes the experience of individuals whose development, at least in some areas, has surpassed what was present before the struggle when the crises occurred.” (Tedeschi & Calhoun, 2004). Further, posttraumatic growth involves “a quality of transformation, or a qualitative change in functioning, unlike the apparently similar concepts of resilience, sense of coherence, optimism, and hardiness” (Tedeschi & Calhoun, 2004). Joseph and Lindley (2008) offered a slightly different definition of posttraumatic growth in their organismic valuing theory, defining growth as positive changes in “issues of meaning, personality schemas, and relationships” (p. 33). It is important to note that posttraumatic growth is posited to be both a process of identifying positives as well as an outcome of true positive changes; the field of posttraumatic growth has been criticized for conflating process and outcomes (Jayawickreme & Blackie, 2016; Tennen & Affleck, 2002).

**Models of Posttraumatic Growth.** A substantial body of literature has emerged examining the process by which posttraumatic growth occurs. Along with identify the five-domain model of posttraumatic growth, Tedeschi and Calhoun (2004) created a theoretical model that serves as a conceptual basis for the process by which posttraumatic growth occurs. In this model, Tedeschi and Calhoun suggest that traumatic experiences cause an initial reaction including emotional distress and disruption of one’s core beliefs or assumptive world, which is based in Janoff-Bulman’s (1992) shattered assumptions theory. The cognitive and affective reactions to trauma lead one to experience automatic, intrusive rumination. Through self-disclosure and social support, one then learns to manage their intrusive rumination and begins the process of deliberative rumination, which leads to the

development of a new narrative and reformation of one's assumptive world. Tedeschi and Calhoun (2004) suggest that it is both deliberate rumination and enduring distress as a result of the trauma that leads to posttraumatic growth and ultimately wisdom overtime.

The literature contains a plethora of other models of posttraumatic growth that define posttraumatic growth in a variety of ways. Park (2010) suggested that posttraumatic growth occurs when one develops a sense of meaning following a traumatic event. In Park's (2010) model, meaning is defined as possessing an understanding of why the event occurred, having a sense of acceptance of the traumatic event, perceiving positive changes in self and one's life following the event, and reevaluating one's purpose and goals in life as a result of the event.

Another model of posttraumatic growth, by Pals and McAdams (2004), views posttraumatic growth from the lens of a revised life narrative. Pals and McAdams (2004) posit that posttraumatic growth occurs when one reconstructs their life story or narrative based on an understanding of how they have been impacted by the trauma. By viewing posttraumatic growth in a more broad fashion through the lens of a revised life narrative, Pals and McAdams' (2004) model captures change that may go beyond the five domains proposed by Tedeschi and Calhoun (2004). Additionally, conceptualizing posttraumatic growth as change in one's life narrative provides a more individualized approach to viewing growth, which addresses a common critique of Tedeschi and Calhoun's model that it does not adequately account for each individual's differences when inventorying their growth in the five domains (Pals & McAdams, 2004; McMillen, 2004).

In the affective-cognitive processing model of posttraumatic growth, Joseph, Murphy and Regel (2012) posit that intrusion and avoidance symptoms of PTSD may also

serve as evidence of cognitive processing in the affective-cognitive processing model of posttraumatic growth. The authors theorize that post-traumatic stress, specifically the occurrence of intrusive and avoidant state thought to be indicative of working through a trauma, can be conceptualized as an engine through which post-traumatic growth occurs.

Among all of the theories and models of posttraumatic growth is the core idea that experiencing trauma or adversity is not enough, in and of itself, to facilitate growth (Tedeschi & Calhoun, 2004; Joseph and Linley, 2005). Most theories of posttraumatic growth are based upon the just world theory, which assumes that people develop a general set of assumptions about the world which they use to make sense of the social world and interpret their surroundings (Janoff-Bulman, 1992; Parkes, 1975). When one experiences trauma or adversity, their general set of assumptions about the world are often shattered, especially their beliefs about justice, benevolence, safety, and their ability to control the world (Janoff-Bulman, 1992; Parkes, 1975). It is through the processing of disengaging from prior beliefs and assumptions about the world and forming new identities, beliefs, and goals that one experiences posttraumatic growth in various domains (Park, 2010). When one experiences a significant shattering of their assumption beliefs about the world, meaning making and a revised narrative occur as a result of an existential reevaluation as one confronts their own fragility and vulnerability. (Janoff-Bulman, 2004). When one experiences trauma and assimilates their experience to fit their prior beliefs about the world, or they form new negative beliefs and assumptions about the world, posttraumatic growth is not believed to occur (Park, 2010). Rather, it is theorized that the formation of new negative assumptions and beliefs about the world may instead lead to the development of PTSD (Joseph & Linley, 2005).

There are two central processes that are thought to be related to positive changes in assumptions and beliefs about the world following a traumatic experience: cognitive processing of the event and meaning making (Tedeschi & Calhoun, 2004). Immediately following a traumatic experience, cognitive processing typically involves a high level of distress, intrusive thoughts and memories related to the trauma, and counterfactual thoughts and self-blame about ways the trauma could have been avoided (Tedeschi and Calhoun, 2004). Tedeschi and Calhoun (2004) posit that posttraumatic growth occurs when one moves from intrusive cognitive processing, rumination, and re-experiencing of the trauma to a deliberate cognitive process in which meaning is made. Triplett, Tedeschi, Cann, Calhoun, and Reeve (2011) tested a model of posttraumatic growth and life satisfaction based on cognitive processing of the event and meaning making. Specifically, Triplett et al. (2011) found that changes in core beliefs impacted both intrusive and deliberate rumination. The changes in core beliefs and deliberate rumination were positively related to posttraumatic growth, which was related to increased meaning in life and increased life satisfaction (Triplett et al., 2011).

Tedeschi & Calhoun (2004) theorize that the process of posttraumatic growth is further facilitated through social support and supportive conditions of a social environment. Specifically, self-disclosure facilitates the cognitive processes and meaning making associated with posttraumatic growth, especially when the self-disclosure occurs in a supportive social environment. By sharing their stories with others, a survivor of trauma can gain other perspectives that help lead to a reconstructed narrative and meaning making about why the traumatic event occurred (Tedeschi & Calhoun, 2004). Further, self-disclosure and sharing about the traumatic event with others may make a survivor feel

more competent and autonomous in coping with their trauma, leading to increased cognitive processing and ultimately facilitating posttraumatic growth (Joseph & Linley, 2005).

**Prevalence of Posttraumatic Growth.** Previous research suggests that posttraumatic growth, as currently measured, is fairly common, with 58-83% of survivors of trauma reporting some level of posttraumatic growth (Afeck et al., 1987, 1991; Sears et al., 2003; McMillen et al., 1997). In a survey of 3157 veterans, Tsai et al. (2014) found that 50.1% of veterans, and 72.0% of veterans who screened positive for PTSD, reported at least moderate post-traumatic growth in relation to their worst traumatic event.

**Growth as a Predictor of Positive Outcomes.** There are inconsistent findings in the literature about the relationship between perceived posttraumatic growth and positive outcomes. In a meta-analysis of 87 studies, Helgeson, Reynolds, and Tomich (2006) found that posttraumatic growth was correlated with greater well-being, lower levels of depression, and increased intrusive thoughts about the event, which Tedeschi and Calhoun (2004) posit is part of the process towards posttraumatic growth. Tsai et al. (2014) found that posttraumatic growth in Veterans was associated with great social connectedness, intrinsic religiosity, and purpose in life. Similarly, Triplett et al. (2011) found that changes in core beliefs and deliberate rumination were positively related to posttraumatic growth, which was related to increased meaning in life and increased life satisfaction. On the other hand, Helgeson et al. (2006) found that benefit finding was not significantly related to anxiety, global distress, quality of life, and subjective reports of physical health. Several significant moderators were also found related to benefit finding and outcomes, including the amount of time passed since the trauma/stressor, the racial identities of the sample, and

the measure of benefit finding utilized (Helgeson et al., 2006). It is important to note that the Helgeson et al. (2006) meta-analysis was conducted on cross-sectional data only, which is a significant limitation. Additionally, it is possible that difficulties measuring posttraumatic growth, described below, may account for the discrepancies in the literature.

**Measuring Posttraumatic Growth.** In 1996, Tedeschi and Calhoun developed the Posttraumatic Growth Inventory (PTGI) based upon interviews with adults who experienced physical disabilities in adulthood or the death of a spouse. The PTGI includes 21 items, which fit into a five-factor structure consistent with the five domains of posttraumatic growth (Tedeschi and Calhoun, 1996). A subsequent version of the PTGI, entitled the PTGI-42, was developed to examine both positive and negative changes following trauma, which are described as posttraumatic growth and posttraumatic depreciation. (Baker, Kelly, Calhoun, Cann, & Tedeschi, 2008; Cann, Calhoun, Tedeschi, & Solomon, 2010). Additionally, a ten-item short form of the PTGI was subsequently developed (Cann et al., 2010).

**Criticism of Measures of Posttraumatic Growth: Does the PTGI Measure Actual Growth?** Although the PTGI has been commonly used in the literature examining posttraumatic growth, it is not without criticism (Jayawickreme & Blackie, 2016). While Tedeschi and Calhoun (1996) developed the PTGI as a way of measuring posttraumatic growth itself, several researchers have suggested the PTGI should instead be framed as a measure of *perceived* posttraumatic growth rather than *actual* growth (Jayawickreme & Blackie, 2016). While the term posttraumatic growth implies that there are gains in certain life domains as a result of trauma, there is little literature that actually examines whether true change or growth occurs. Ford et al. (2008) summarized the methodological problems

with the current body of literature on posttraumatic growth as a lack of longitudinal data with baseline data collected prior to the traumatic event, an overreliance on self-reported data, and inconsistency in the instruments used. Other researchers have suggested that measures such as the PTGI prime participants to find the positive in traumatic events and circumstances by including only items that ask about positive perceptions (Tennen & Affleck, 2002; McFarland & Alvaro, 2000).

Most research examining posttraumatic growth is cross-sectional, and most studies lack a control group with no traumatic experiences as a comparison group (Jayawickreme & Blackie, 2016; Andrykowski et al., 2002; Cordova et al., 2001). Without longitudinal data with a control group, it is difficult to rule out other alternative explanations for individuals' perceptions of positive change over time. (Jayawickreme & Blackie, 2016). In fact, the few studies that have examined perceived personality change longitudinally demonstrate that people's self-reported perceptions of change are only weakly associated with actual measures of change (Robins et al., 2005; Herbst et al., 2000; Henry et al., 1994). Further, Frazier et al. (2009) conducted a longitudinal study of the five domains of posttraumatic growth as defined by Tedeschi and Calhoun (1996) and measured in the PTGI, and found that participants retrospective self-reported level of posttraumatic growth was not significantly associated with objective measure of change in the five growth-related domains; Frazier (2009) also found that perceived posttraumatic growth was positively associated with high levels of distress over time and a positive reappraisal coping style, while actual growth was unrelated to coping style and significantly related to decreased distress. There is a need for more longitudinal research on posttraumatic growth,

as evidenced by Helgeson et al.'s (2006) conclusion that there were not enough longitudinal studies of posttraumatic growth to complete a meta-analysis.

**Factors that Contribute to Bias in Posttraumatic Growth.** Researchers have posited several factors that contribute to bias in studying and measuring posttraumatic growth, including active coping efforts, self-enhancement, the violation of post-event recovery expectations, and personality characteristics and cultural scripts. (Jayawickreme & Blackie, 2016). In terms of self-enhancement, posttraumatic growth may represent an individual's reappraisal of a situation in an effort to reduce their sense of victimization; for example, an individual may compare themselves to others who are less fortunate as a way of restoring their perceptions of control, optimism, and self-esteem (Jayawickreme & Blackie, 2016; Taylor, 1983). Taylor (1983) framed self-enhancement as the formation of positive illusions that reduce the initial threat of the traumatic event and help an individual move towards acceptance. Wortman (2004) takes the idea of self-enhancement a step further, positing that perceived positive changes following trauma may be defensive illusions that one uses to convince themselves that they are coping better with the aftermath of the traumatic event than they actually are.

In terms of posttraumatic growth as an active coping effort, several researchers have theorized that the process of identifying benefits experienced after a traumatic event is actually a form of coping (Jayawickreme and Blackie, 2016; Tennen & Affleck, 2002; Folkman & Lazarus, 1988). Identifying positive outcomes, such as developing spiritual beliefs, finding meaning in life, and feeling a sense of personal strength, are examples of posttraumatic growth that are also types of coping mechanisms (Jayawickreme & Blackie, 2016). Stanton and Low (2004) suggest that the use of coping strategies may differ

depending on one's level of hope and optimism, such that posttraumatic growth in people low in hope and optimism may actually represent defensive or avoidance coping, whereas posttraumatic growth in people who are high in hope or optimism is more likely to be consistent with adaptive coping. It has been suggested that people may report posttraumatic growth as a way of understanding why they are functioning better than expected (Tennen and Affleck, 2002).

Finally, posttraumatic growth may represent the expression of personality characteristics and cultural scripts and expectations (Jayawickreme & Blackie, 2016). McAdams (1994) posited that personality involves dispositional traits, personal concerns, and life narratives, and that the experience of trauma can result in changes to personal concerns and life narratives. Specifically, McAdams et al. (2001) suggested that posttraumatic growth may represent the expression of a redemptive narrative, which is a narrative characterized by a movement from a negative narrative to a positive one. Cultural expectations may also play a significant role in the narratives that individuals tell around their recovery from a traumatic experience; for example, in the Western world, the plethora of cultural messages, embodied in literature, religion, and philosophy, around growing through suffering may impact an individual's narrative around their recovery from trauma (Jayawickreme & Blackie, 2016; Splevins et al., 2010; Tennen & Affleck, 2002).

**Predictors of Posttraumatic Growth.** Several factors have emerged as significant predictors of posttraumatic growth. In a systematic review, Linley and Joseph (2004) found that those experiencing a greater level of perceived threat and harm related to the traumatic event tended to report higher levels of posttraumatic growth. While the cause of the relationship between perceived threat/harm and posttraumatic growth is not known,

researchers has posited that events that cause a more significant challenge to one's beliefs are more likely to result in intensive meaning making processes (Linley & Joseph, 2004; Jayawickreme & Blackie, 2016). Several personality characteristics, including optimism, extraversion, and openness to experience, have also been shown to be significant predictors of posttraumatic growth (Bostock et al, 2009; Prati & Pietrantonio, 2009; Linley & Joseph, 2004). Research also suggests that engagement in adaptive coping strategies, including problem-focused coping, positive reappraisals, and positive religious coping, is related to higher levels of posttraumatic growth (Shaw et al., 2005; Linley & Joseph, 2004). Further, longitudinal research has confirmed several other predictors of posttraumatic growth over time, including cognitive processing of the traumatic event through deliberative rumination, active coping styles, emotional social support, and a greater challenge to the individual's core beliefs (Pollard & Kennedy, 2007; Danhauer et al., 2013; Schroevers et al., 2010; Salsman et al., 2009).

**Meaning Making and Posttraumatic Growth.** Meaning making is a cognitive and affective process related to posttraumatic growth, including the process of growth through meaning making coping, as well as the outcome of growth through increased meaning in life (O'Leary & Ickovics, 1995; Tedeschi & Calhoun, 1995; Schaefer & Moos, 1998; Parkes, 1998; Park, 2008). Despite a significant body of theoretical support for the likely role of meaning making in posttraumatic growth, there is little research empirically examining the relationship between meaning making and posttraumatic growth (Aguirre, 2008). Several studies have defined meanings made or meaning making as posttraumatic growth or stress-related growth (Gangstad, Norman, & Barton, 2009; Park et al., 2008; Phelps et al, 2008; Michael & Snyder, 2005; Hayes et al., 2005; Salsman et al., 2009; Stein

et al., 2009; Bonanno et al., 2004; Davis & Morgan, 2008; Park, 2005). Because of the literature described above indicating the problems with utilizing the PTGI as a measure of *actual* growth, for the purposes of this dissertation, the PTGI will be utilized as a way of gaining insight into participants' *perceived* growth as a conduit for understanding how they have made meaning of their wrongful conviction.

### **Trajectories of Recovery**

While this literature review thus far has focused on two aspects of recovery from trauma, including stress and growth, I will now review the literature on trajectories of recovery from trauma more broadly. It was once assumed that reactions to trauma fell into a normal distribution, such that the most common reaction was a moderate level of stress and difficulty completing daily expectations and the two tails involved growth or more extreme distress (Mancini, Bonanno, & Sinan, 2015). However, recent studies have indicated that reactions to acute stress do not fall into a single normal distribution, but rather fall into four prototypical trajectories (Bonanno, Westphal, & Mancini, 2011; Bonanno & Mancini, 2012; Bonanno, 2004). Bonanno (2004) characterized the four prototypical trajectories as stable and resilient functioning, elevated and chronic distress, gradual recovery, and delayed reactions. Subsequent research found trajectories consistent with the prototypical trajectories in populations experiencing a variety of trauma or acute stress, including loss of a loved one (Bonanno et al., 2002; Mancini, Bonanno, & Clark, 2011), undergoing breast cancer surgery (Lam et al., 2010; Deshield, Tibbs, Fan, & Taylor, 2006), experiencing the September 11 Attacks (Bonanno, Rinnecke, & Dekel, 2005), sustaining traumatic injury and spinal injuries (deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010; Bonanno, Kennedy, Galatzer-Levy, Lude, & Elfstrom, 2012),

experiencing combat deployment (Bonanno et al., 2012), and experiencing natural disasters (Norris, Tracy, & Galea, 2009). It is important to note that much of the research on trajectories of recovery have emerged from the grief literature. While losing a loved one can, in some instances, resemble a traumatic experience, it is imperative to acknowledge the differences between grief/loss and trauma.

### ***Measuring Reactions to Trauma: Challenges with Retrospective Data***

Due to challenges in obtaining longitudinal data, a significant portion of research examining reactions to trauma is obtained through retrospective studies. While retrospective studies can still provide helpful data, it is important to note the many potential problems and limitations with retrospective data. Hassan (2005) posits that retrospective recollection of information is problematic due to human's inability to recall information with complete accuracy. Several aspects of human memory likely reduce the validity of self-reported retrospective data, including the fact that details about the traumatic experience may not be encoded in the first place, memory is distorted by perception in multiple ways, and repeated retrieval of a memory often results in the recoding of a revised version of the memory in which facts are altered (Hassan, 2005). It is posited that memories of events that are traumatic or arouse a strong emotion are often recalled with more frequency and clarity than memories not association with strong emotions (Cahill, Prins, Weber, & McGaugh, 1999). However, Van der Kolk and Fisler (1995) argued that highly intense emotional events interfere with the construction of a narrative that is coherent, making it more difficult to recall the event with ease. Current mood and symptoms of PTSD when recalling an event may also impact one's ability to consolidate and recall memories of a traumatic event (McNally, 2003). Participants

endorsing a higher level of PTSD symptoms has been shown to amplify their memory of an arousing event and tend to remember more central and critical details but not peripheral ones (King et al., 2000).

Due to the challenges of obtaining longitudinal data, there is still limited research on trajectories of reactions to trauma and acute stress (Mancini, Bonanno, & Sinan, 2015). As a result of the difficulties obtaining longitudinal data, Mancini, Bonanno, and Sinan (2015) proposed an interactive retrospective method for identifying trajectories of adjustment following acute stress. Mancini, Bonanno, and Sinan (2015) found that participants' self-reported retrospective trajectories of their degree of impairment and level of functioning were consistent with interviewer-rated overall functioning and symptoms of depression, PTSD, and grief, as well as self-reported life satisfaction and somatic symptoms collected longitudinally and friend/relative ratings. A goal of this dissertation is to modify Mancini, Bonanno, & Sinan's (2015) retrospective method for identifying trajectories to determine whether people who are wrongfully convicted fall within the four prototypical trajectories seen in other populations. A more details discussion of Mancini, Bonanno, and Sinan's (2015) interactive retrospective method for identifying trajectories of adjustment will be discussed in Chapter III.

In summary, the literature on trauma has revealed the unique, subjective experiences and reactions that one can experience as a result of a traumatic experience. For the purpose of this study, trauma is defined in accordance with Pearlman and Saakvitne's (1995) expanded definition of trauma, such that traumatic events occur when one experiences an event or enduring condition during which the individual's ability to integrate his/her emotional experience is overwhelmed. While the negative consequences

of trauma have been the focus of the majority of the literature on trauma, there is an emerging body literature that highlights the potential growth that can occur as a result of trauma. The literature on posttraumatic growth has been criticized for inaccurately equating actual growth with perceived growth. Due to the difficulties in measuring actual growth, this study will focus on participants' perceptions of growth as a conduit for understanding whether they have made meaning of their wrongful conviction. A goal of this study is to understand the role of meaning making in exonerees' trajectory of recovery following their traumatic experience. In accordance with the shattered assumptions theory that focuses on the cognitive process of reacting to a traumatic experience, the next section of this literature review will focus on meaning making to better understand this aspect of traumatic reactions.

### **Meaning Making**

Over the last several decades, a substantial body of literature about the topic of meaning making has emerged (Park, 2010). In the 1940's, Victor Frankl created logotherapy, which is a form of therapy with the purpose of helping clients to find meaning in their lives. Frankl posited that there are three courses of action through which people can find meaning: through deeds, through the experience of values in some kind of medium, and through suffering (Frankl, 1992). Specifically, suffering is thought to be an opportunity to find meaning and experience values when other opportunities are not available (Frankl, 1992). A core aspect of meaning making, according to Frankl, is each person's responsibility for their decisions and the subsequent meaning (Frankl, 1992).

Although there is a significant body of literature emerging since Frankl brought the study of meaning making to the forefront, the literature lacks an accepted definition of

meaning making (Park, 2010). In general, meaning making is conceptualized as a coherence-seeking process that people use to cognitively make sense of their surroundings. One definition proposed for meaning making more generally is a “mental representation of possible relationships among things, events and relationships. Thus, meaning *connects* things” (Baumeister, 1992 p. 15). Ignelzi (2000) defined meaning making as “the process of how individuals make sense of knowledge, experience, relationships, and the self.” (p. 5). Additionally, meaning-making is believed to help people in "retaining, reaffirming, revising, or replacing elements of their orienting system to develop more nuanced, complex and useful systems.” (Gillies, Neimeyer, & Milman, 2014, p. 208). One reason for the difficulty in defining meaning is that there are various subtypes of meaning, including global meaning and situational meaning. For the purpose of this dissertation, I will utilize Park’s (2010) meaning making model (as a framework for defining the process by which global and situational meaning is made).

Figure 2.1. Visual depiction of Park’s (2010) Meaning Making Model.

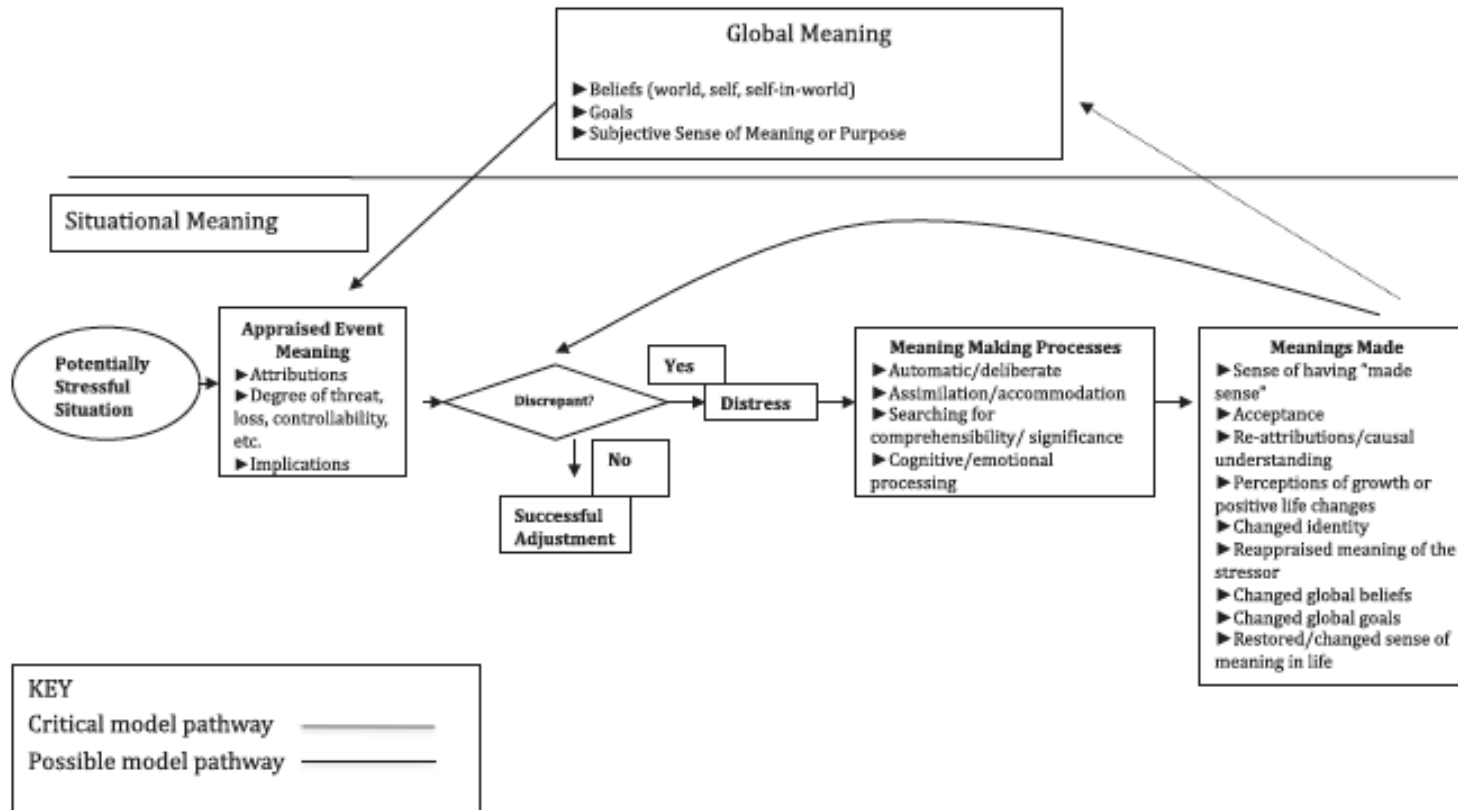


Figure 1. The meaning-making model.

***Global Meaning***

According to Park's (2010) meaning making model, *Global meaning* is a person's general orienting system, including beliefs, subjective feelings, and goals (Pargament, 1997; Dittman-Kohli & Westerhof, 1999; Reker & Wong, 1988). Core schemas are formed through aspects of global meaning, such as global beliefs related to control, predictability, and justice, which in turn affect an individual's beliefs about the self and the world (Janoff-Bulman, 1993; Parkes, 1993). Global meaning making is an ongoing process that begins early in life and is modified based on experiences (Singer & Salovey, 1991). Within global meaning making is the construct of a subjective sense of meaning, which refers to one's sense of purpose of direction in life (Reker & Wong, 1988). A subjective sense of meaning is thought to exist when a person's behavior is driven by a desired future goal (McGregor & Little, 1998).

***Situational Meaning***

On the other hand, *situational meaning* refers to an ongoing meaning making process that occurs in response to a stressful event (Park, 2010). Within the meaning making model, Park (2010) posited several processes and outcomes that lead to situational meaning making, including an initial appraisal and assignment of meaning to the event, determination of discrepancies between appraised and global meaning, meaning making, meanings made, and adjustment to the event. First, appraised meaning of an event occurs when one makes an initial appraisal of the meaning of an event (Park, 2010). In making an initial appraisal of an event, one makes several determinations, including the extent to which an event is threatening and controllable, an initial attribution about why the event occurred, and implications for that person's future (Park, 2010; Aldwin, 2007). Thompson

and Janigian (1988) posited that the initial appraisal of meaning of an event occurs implicitly without an intentional search for meaning; however, the initial appraisal of meaning of a stressful situation can be continually modified and revised over time (Park, 2010; Bonanno & Kaltman, 1999).

After an initial appraisal of the meaning of the stressful event, Park's (2010) meaning making model suggests that one determines the fit of discrepancy between the initial appraised meaning and their global meaning. When one perceives a discrepancy between their situational and global meaning, they experience distress that drives further meaning making (Park, 2010; Carver & Scheier, 1998; Janoff-Bulman & Frieze, 1983). A discrepancy between situational and global meaning can involve violation of global beliefs or global goals (Park, 2010). The level of discrepancy between the initial appraisal meaning and global meaning is posited to affect that person's level of distress experienced (Park, 2010; Everly & Lating, 2004). For example, a person is likely to experience significant distress after experiencing an event perceived as highly uncontrollable while possessing a global belief that the world is highly controllable.

According to Park's (2010) meaning making model, one recovers from a stressful event when they can reduce the discrepancy between the initial appraisal meaning and their global beliefs (Joseph & Linley, 2005). Park (2010) defines meaning making as the process by which the discrepancy between the appraisal meaning and global beliefs is reduced. Specifically, the meaning making model posits that there are four common categories of meaning making: automatic versus deliberate processes; assimilation versus accommodation processes; searching for comprehensibility versus searching for significance; and cognitive versus emotional processing.

The category of automatic versus deliberate processes identifies that meaning making occurs through both automatic and unconscious processes (Park, 2010; Creamer, Burgess, & Pattison, 1992; Gray, Maguen, & Litz, 2007). Automatic processes include experiencing intrusive thoughts about the stressful event and avoidance of reminders, which is a process that integrates appraisal meaning and global meaning (Park, 2010; Lepore, 2001). Deliberate processes include meaning-related coping strategies, which can be directed towards changing appraised or global meaning (Park, 2010; Pearl & Folkman, 1997). Meaning-making coping is a type of deliberate process with a goal of decreasing distress by decreasing the discrepancy between appraised and global meaning (Park, 2010).

The category of assimilation versus accommodation processes is a different perspective on the resolution of the discrepancy between situational appraised meaning and global meaning (Park, 2010). Assimilation refers to the process of changing situational appraised meaning to be more in line with global meaning, whereas accommodation refers to the changing global belief or goals to make sense of the situation appraised meaning (Park, 2010; Joseph & Linley, 2005).

The category of comprehensibility versus searching for significance refers to the processes involved in comprehending the situation and searching for significance in the situation (Park, 2010). Comprehending the situation means making sense of the event within one's worldview, whereas searching for significance involves the process of finding value or worth in the situation (Park, 2010; Janoff-Bulman & Frantz, 1997).

Finally, the category of cognitive versus emotional process refers to the ways that stressful events are processed (Park, 2010). Cognitive processes refer to the integration of new experiences with preexisting schemas (Janoff-Bulman, 1992). Emotional processes

refer to the process of affective exposure and habituation as well as the process of regulating negative affect (Park, 2010; Ehlers & Clark, 2006). It is important to note that the underlying mechanisms of cognitive and emotional processing are likely similar, such that the term cognitive-emotional processing has been proposed as a way of combining the two constructs (Hayes et al., 2007; Park, 2010).

### *Meanings Made*

Finally, Park (2010) distinguished the types of meaning made, or the product of the meaning making process, which occurs once an individual has reduced the discrepancy between global meaning and appraised meaning. One of the most commonly studied outcomes, but least clearly defined, is the sense of having “made sense” (Park, 2010; Davis, Nolen-Hoeksema, & Larson, 1998). Previous research that involved asking participants to explain how they made sense of an event or trauma resulted in a wide variety of different responses, indicating the importance of understanding each individual’s unique perspective on meaning through having made sense (Park, 2010). Another type of meaning made is acceptance, or the extent to which one has accepted or come to terms with an event (Park, 2010; Evers et al., 2001). Janoff-Bulman and Frantz (1997) posit that meanings made can be viewed as gaining a new understanding of the cause of an event through reattributions over time (Park, 2010). By measuring reattributions long after the event, researchers can assess the alterations of attributions over time as a product of meaning making (Park, 2010; Janoff-Bulman & Frantz, 1997).

Perceptions of growth or positive life changes are also posited to be a type of meaning made in Park’s (2010) meaning making model. Park (2010) suggested that a positive appraised meaning of a stressful event is a sign of meaning making, whether or

not the positive changes or growth has truly occurred, as they result in less discrepancy between the appraised and global meaning. For the purposes of this dissertation, the PTGI will be utilized to assess for meanings made in terms of perceptions of growth or positive life changes.

Another meaning making outcome is identity reconstruction, which occurs when an individual shifts their personal narrative as a result of a stressful life experience; however, there is little research examining identity reconstruction as an outcome of meaning making (Park, 2010; Gillies & Neilmeyer, 2006). Outcomes of meanings made can also involve reappraisal of the meaning of the stressor itself, such that the individual changes the appraised meaning of the stressful event such that it is more consistent with their global beliefs (Park, 2010). Additionally, meaning making can result in an individual changing their global beliefs or global goals. For example, a person who is unable to have biological children may shift their global goals towards adoption, in turn reframing their global goal from having a child to raising a child (Park, 2010; Clark, Henry, & Taylor, 1991). Finally, a restored or changed sense of meaning in life is another potential outcome of meaning making, although little research has examined this as an outcome of meaning making (Park, 2010; Park, Malone, Suresh, Bliss, & Rosen, 2008).

### ***Measuring Meaning Making***

While Park's (2010) meaning making model provides a nuanced description of the process of meaning making, there is a lack of consensus in the meaning making literature about how to best measure the meaning making process (Park, 2010). In reviewing the meaning making literature, Park (2010) concludes that while most studies generally characterize meaning making as a discrepancy between global and situational meaning,

there is variation in whether studies focus on cognitive processes (Boehmer et al., 2007; Gignac & Gottlieb, 1996; Roberts et al., 2006; Salsman et al., 2009; Davis & Morgan, 2008), emotional processes (Stanton et al., 2000), or a combination of cognitive and emotional processes (Bonanno et al., 2005, Farran, Miller, Kaufman, & Davis, 1997; Tait & Silver, 1989; Williams et al., 2002). Additionally, prior research varies in viewing meaning making as deliberate coping (Danahauer, Carlson, & Andrykowski, 2005), an automatic process (Michael & Snyder, 2005), or a combination of deliberate and automatic processes (Park, 2008; Park, 2010).

### ***The Relationship Between Meaning Making and Psychological Adjustment and Functioning***

While a significant body of literature exists examining meaning making, there are inconsistent findings regarding the role of meaning making in psychological outcomes (Park et al., 2008). While several studies have shown that the search for meaning is psychologically adaptive (Davis, Holen-Hoeksema, & Latson, 1998; Bower et al., 2003; Sears, Stanton, & Danoff-Burg, 2003), other studies have found the search for meaning to be related to higher levels of dysfunction and distress (Bonanno, Pap, Lalande, Zhang, & Noll, 2005; Roberts, Lepore & Helgeson, 2005; Stanton et al., 2000; Silver, Boon, & Stones, 1983). Park et al. (2008) posited that the discrepancies in findings in the relationship between searching for meaning and psychological adjustment and functioning is likely due to the significant variations in operational definition, design, and measurement between studies. In particular, many studies fail to acknowledge that distress is posited to occur during the process of meaning making, and few studies distinguish the process of meaning making as a coping process as opposed to meaning making as an

outcome (Park et al., 2008; Silver, Boon, & Stones, 1983). In fact, Updegraff, Silver, & Homan (2008) found the participants' level of acute stress symptomology was a significant predictor of the intensity of their search for meaning, providing evidence that distress may serve as a trigger for the meaning making process. Additionally, Bonanno (2014) posited that meaning making may turn into rumination if distress remains elevated or the search is prolonged. Several studies have provided evidence that the outcome of meaning making, rather than the process of searching for meaning, is psychologically adaptive and related to positive psychological outcomes. (Davis, Nolen-Hoeksema, & Larsen, 1998; Updegraff, Silver, & Holman, 2008; Silver, 1982)

However, several studies have suggested that the process of meaning making may not be beneficial for people with certain life histories or characteristics, as well as for some adolescents and children (Sales, Merrill, & Fivush, 2013; Breen & McLean, 2011; McLean & Mansfield, 2010; Bonanno, 2005; Salves, Fivush, Parker & Bahrlick). In a study of African American adolescents of low socioeconomic status, Sales, Merrill, and Fivush (2013) found that participants with an external locus of control who used more cognitive processing language in their narratives describing a negative past event tended to have a higher level of depressive symptoms. Specifically, Sales et al (2013) suggested that, "for individuals who have lived highly challenging lives, with frequent stressful encounters, reasoning about and trying to situate another negative event into their already negative life story may be psychologically damaging. [...] It appears that for adolescent females with challenging lives perhaps not engaging in narrative meaning-making, and instead bolstering other potentially protective characteristics such as internal locus of control, is the best approach for better psychological well-being." (p. 12). Both in adults and

adolescents, research suggests that meaning making through construction of more coherent and emotionally expressive narratives is associated with increased well-being (Sales, Merrill, & Fivush, 2013).

### ***Individual Factors Impacting Meaning Making***

There are several individual-level factors that play a role in meaning making. Several studies have examined the role of religion as a collaborative social context in which one can interpret the meaning of a traumatic event and assimilate it within their global meaning (Tait & Silver 1989; Pennebaker & Harber, 1993; Lepore, Silver, Wortman, & Wayment, 1996). More generally, spirituality may facilitate processing and meaning making around a traumatic event by providing schema throughout which an individual can understand their experiences (McIntosh, Poulin, Silver, & Holman, 2011). Lenkauskiene and Liubieniene (2002) suggest the importance of understanding an individual's social and cultural background, including their beliefs and values, as a significant factor in their meaning making process following a traumatic event. Finally, several studies have revealed that personality characteristics, such as optimism and hardiness, are significant predictors of resilience, meaning making, and well-being (Pressman & Bonanno, 2007; Westphal & Bonanno, 2007).

In summary, a substantial body of literature examines both the process and outcome of meaning making. Park's (2010) meaning making model provides a useful framework to understand the role of meaning making in reaction to a traumatic event. Specifically, the model posits that when one perceives a discrepancy between their situational and global meaning, they experience distress that drives further meaning making. Perceptions of growth or positive life changes, such as posttraumatic growth

measured by the PTGI, are posited to be a type of meanings made in Park's (2010) meaning making model. While the *process* of searching for meaning has been associated with increased levels of distress, several studies have demonstrated that the *outcome* of having made meaning of a stressful event is associated with positive psychological outcomes.

### **Contributions of Current Study**

The primary aim of this study is to better understand the psychological experiences of people who are wrongfully convicted, as this is a population with whom little research has been conducted. Specifically, a purpose of this study is to gain insight into the prevalence of psychopathology, including symptoms of anxiety, depression, and posttraumatic stress disorder, in people who were wrongfully convicted and subsequently exonerated.

The secondary aim of this study is to gain an understanding of the role of posttraumatic growth and meaning making in the process of recovery after experiencing a wrongful conviction and subsequent exoneration. By providing a critical review of posttraumatic growth and meaning making, the study aims to further the study of reactions to trauma by considering meaning making as a dimension of growth, and by considering meaning making in terms of a process (i.e., meaning making coping) and outcome (i.e., meanings made in life) of growth following trauma.

The tertiary aim of this study is to expand the current methodology by which the field studies trauma and recovery retrospectively. By utilizing a new trajectory method modified from Mancini, Bonanno, and Sinan's (2015) brief retrospective method for identifying longitudinal trajectories of adjustment following acute stress, in which

participants identify and plot their level of distress over time, the study could potentially provide an innovative method of determining clusters of recovery following trauma. By comparing participants' self-reported changes in world beliefs to their self-reported trajectory of recovery in terms of distress, we can provide evidence for, or against, current theories of trauma, based in the shattered assumptions theory, that improvements in PTSD symptoms, as well as meaning making, occurs when one is able to reduce the discrepancy between the initial appraisal meaning and their global beliefs. Specifically, this study aims to understand the relationship between global meaning violation, meaning making, global beliefs, and PTSD symptomology. Based on the literature, it is hypothesized that participants who endorse more significant violations of their global meaning will endorse more PTSD symptoms, but that this relationship will be moderated by the level of meaning making and positive global beliefs, such that participants who endorse a higher rate of meaning making and more positive global beliefs will demonstrate weaker associations between earlier meaning violations and current PTSD symptoms.

In summary, an extensive body of literature exists examining reactions to trauma and stressful situations, as well as the role of meaning making in recovery from trauma. Research has established that four prototypical reactions to trauma occur in response to a variety of traumatic or stressful experiences, ranging from losing a loved one to sustaining traumatic injuries to experiencing combat deployment. Despite the plethora of literature examining reactions to a variety of traumatic experiences, there is a lack of research examining reactions to trauma in people who were wrongfully convicted, or the role of meaning making in recovery after exoneration. The majority of current research on wrongful convictions involves qualitative research with small sample sizes, or examines

the experiences of people wrongfully convicted in countries other than the United States. By gaining a better understanding of reactions to trauma in people who were wrongfully convicted in the United States, as well as the potential role of meaning making in recovery from trauma, this study can provide important data that can guide interventions aimed at helping exonerees reintegrate into society.

### **Research Hypotheses**

#### ***Hypothesis 1***

Participants who are wrongfully convicted, imprisoned, and later exonerated, will have significantly higher rates of symptoms of depression, anxiety, and PTSD than the general population.

#### ***Hypothesis 2***

Global meaning violations as a result of the wrongful conviction (retrospectively reported) will be positively associated with current levels of PTSD, anxiety, and depression symptoms.

#### ***Hypothesis 3***

Two meaning making variables (including meanings made and positive world beliefs) will moderate the relationship between global meaning violations and mental health symptoms.

**Hypothesis 3.a.** Meaning making, specifically the outcome of having made meaning, will moderate the relationship between violations of global meaning as a result of the wrongful conviction and current PTSD, anxiety, and depression symptoms, such that the positive association between the violation of global

meaning and current PTSD, anxiety, and depression symptoms will be weaker for those who report a higher level of meaning making.

**Hypothesis 3.b.** Positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable will moderate the relationship between violation of global meaning as a result of the wrongful conviction and current PTSD, anxiety, and depression symptoms, such that the association between past meaning violation and current PTSD, anxiety, and depression symptoms will be weaker for those who report more positive current world assumptions.

#### ***Hypothesis 4***

Several meaning making constructs (including meanings made, global meaning, and positive world assumptions) will be negatively associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.

**Hypothesis 4.a.** Meanings made will be negatively associated with current PTSD, anxiety, and depression symptoms and positive associated with satisfaction with life.

**Hypothesis 4.b.** Global meaning will be negatively associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.

**Hypothesis 4.c.** Positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable will be negatively

associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.

### ***Hypothesis 5***

Two meaning making outcome variables (including meanings made and global meaning) will be positively associated with positive world assumptions.

**Hypothesis 5.a.** Meanings made will be positively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable.

**Hypothesis 5.b.** Global meaning will be positively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable.

### ***Hypothesis 6***

The trajectory data collected will cluster into trajectories that fall into the four prototypical trajectories (stable and resilient functioning, elevated and chronic distress, gradual recovery, and delayed reactions).

### ***Hypothesis 7***

Presuming that participants cluster into the four prototypical trajectories, a series of hypotheses predict that participants in each cluster will differ on mental health symptoms, satisfaction with life, meanings made, and global meaning.

**Hypothesis 7.a.** Participants in the “stable and resilient” cluster will report lower mean scores of current PTSD, anxiety, and depression symptoms and higher mean scores on satisfaction with life than those in the other three clusters.

**Hypothesis 7.b** Participants in the “stable and resilient” or “gradual recovery” clusters will endorse higher mean scores of meanings made and global meaning than those in the other two clusters.

**Hypothesis 7.c.** Participants in the “elevated and chronic distress” cluster will endorse higher mean scores of current PTSD, anxiety, and depression symptoms and lower mean scores of satisfaction with life than those in the other three clusters.

**Hypothesis 7.d.** Participants in the “elevated and chronic distress” cluster will endorse lower mean scores of meanings made and global meaning than those in the other three clusters.

### ***Hypothesis 8***

Several factors related to the intensity of involvement in the legal system (including number of trials, time incarcerated prior to exoneration, and number of appeals prior to incarceration) will be positively associated with violations of global meaning, negatively associated with positive world assumptions, positively associated with current mental health symptoms, and positively associated with satisfaction with life.

**Hypothesis 8.a.** Number of trials will be: positively associated with violations of global meaning as a result of the wrongful conviction; negatively associated with positive world assumptions, including the beliefs that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and

vulnerable; positively associated with current PTSD, anxiety, and depression symptoms; and negatively associated with satisfaction with life.

**Hypothesis 8.b.** Time incarcerated prior to exoneration will be: positively associated with violations of global meaning as a result of the wrongful conviction; negatively associated with positive world assumptions, including the beliefs that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable; positively associated with current PTSD, anxiety, and depression symptoms; and negatively associated with satisfaction with life.

**Hypothesis 8.c.** Number of appeals prior to exoneration will be: positively associated with violations of global meaning as a result of the wrongful conviction; negatively associated with positive world assumptions, including the beliefs that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable; positively associated with current PTSD, anxiety, and depression symptoms; and negatively associated with satisfaction with life.

### Chapter 3: Method

#### Participants

A total of 74 participants were recruited through a listserv of people who were wrongfully convicted and subsequently exonerated, to complete an online, 125-item survey on Qualtrics, a secure online survey platform. The listserv is a Google Group that exonerees can elect to join when they attend the annual Innocence Network Conference. The listserv was created to provide a sense of community and method of communication among exonerees. The survey was reviewed and determined to be exempt by the University of Wisconsin-Madison Institutional Review Board. Additionally, the Research Committee at the Innocence Network reviewed and approved the survey. Members of the Exonerees Google Group were invited to participate in the study via an email explaining the purpose of the study and the approximate length of time to complete the survey. Two additional reminder emails were sent to invite exonerees in the Google Group to participate in the study. The survey was designed to take approximately 20-40 minutes to complete. Participants were informed that the survey is completely voluntary and all participants provided consent prior to beginning the survey. Participants were provided a \$20 gift card to Amazon to thank them for their participation in the survey.

Table 3.1 provides demographic data on the survey respondents. Of the 74 total participants, 78.4% ( $n = 58$ ) identified as male and 21.6% identified as female ( $n = 16$ ). In terms of race, 59.5% ( $n = 44$ ) identified as white/Caucasian, 23.0% as Black/African American ( $n = 17$ ), 9.5% as Hispanic/Latino ( $n = 7$ ), 2.7% as American Indian ( $n = 2$ ), 2.7% as Multiracial ( $n = 2$ ), and 1.4% as Asian/Asian American ( $n = 1$ ). A plurality of participants reported their highest level of education as high school (41.9%;  $n = 31$ ), with

39.2% of participants with a college degree ( $n = 29$ ), 16.2% with a graduate degree ( $n = 12$ ), and 1.4% with a middle school degree ( $n = 1$ ). In terms of marital status, 31.1% of participants reporting that they were married ( $n = 23$ ), 35.1% reported being in a relationship ( $n = 26$ ), and 33.8% reported being single ( $n = 25$ ). In terms of employment, 51.4% of participants reported that they were employed ( $n = 38$ ). The majority of participants identify as religious or spiritual (70.3%;  $n = 52$ ).

The majority of participants reported being tried one time for the crime in which they were exonerated (78.4%;  $n = 58$ ), with 17.6% of participants reporting being tried twice ( $n = 13$ ), 2.7% of participants tried three times ( $n = 2$ ), and 1.4% of participants tried four or more times ( $n = 1$ ). The majority (56.8%) of participants had a private attorney ( $n = 42$ ), with 40.5 percent with a public defender ( $n = 30$ ) and 1.4% representing themselves *pro se* ( $n = 1$ ). 59.5% of participants were not released on bond while awaiting trial. Prior to their exoneration, 18.9% of participants underwent one appeal ( $n = 14$ ), 12.2% underwent two appeals ( $n = 9$ ), 10.8% underwent three appeals ( $n = 8$ ), 4.1% underwent four appeals ( $n = 3$ ), and 50.0% underwent five or more appeals ( $n = 37$ ). 87.8% of participants were exonerated in state court ( $n = 65$ ) and 10.8% were exonerated in federal court ( $n = 8$ ). Participants' months in jail ranged from 0 to 60 months, with a mean of 11.86 ( $SD = 11.77$ ). Participants spent an average of 15.87 years in prison prior to their exoneration, with a range of .1 to 37 years ( $SD = 8.74$ ).

Table 3.1. Demographic characteristics for participants.

Demographic characteristics	n(%)
Gender	
Male	58 (78.4)
Female	16 (21.6)
Highest Level of Education	
Middle School	1 (1.4)
High School	31 (41.9)
College	29 (39.2)
Advanced Degree	12 (16.2)
Race	
American Indian or Alaska Native	2 (2.7)
Asian or Pacific Islander	1 (1.4)
Black	17 (23.0)
Hispanic	7 (9.5)
White	44 (59.5)
Multiracial	2 (2.7)
Marital Status	
Single – Not Dating	25 (33.8)
In a Relationship – Not Married	26 (35.1)
Married	23 (31.1)
Current Employment Status	
Employed	35 (47.3)
Not Employed	38 (51.4)
Perceived Childhood Social Class	
Lower Class	11 (14.9)
Working Class	26 (35.1)
Lower-Middle Class	12 (16.2)
Middle Class	21 (28.4)
Upper-Middle Class	3 (4.1)
Religious/Spiritual	
Religious/Spiritual	52 (70.3)
Not Religious/Spiritual	20 (27.0)
Combined Annual Household Income	
\$0-19,999	20 (27.0)
\$20,000-39,999	12 (16.3)
\$40,000-59,999	11 (14.9)
\$60,000-79,999	8 (10.8)
\$80,000-99,999	7 (9.5)
\$100,000-119,999	3 (4.1)
\$120,000-139,999	4 (5.4)
\$140,000-159,999	1 (1.4)
\$160,000-199,999	1 (1.4)
\$200,000 and above	2 (2.7)

*Note.* N's ranged from 71 to 74.

Table 3.2. Participants' experiences in the criminal justice system.

Demographic characteristics	n(%)
Number of Trials	
One	58 (78.4)
Two	13 (17.6)
Three	2 (2.7)
Four or More	1 (1.4)
Type of Attorney	
Private Attorney	42 (56.8)
Public Defender	30 (40.5)
Represented Self <i>Pro Se</i>	1 (1.4)
Released on Bond	
Yes – Released on Bond	29 (39.2)
No – Not Released on Bond	44 (59.5)
Number of Appeals	
One	14 (18.9)
Two	9 (12.2)
Three	8 (10.8)
Four	3 (4.1)
Five or More	37 (50.0)
Exonerated In State or Federal Court	
State Court	65 (87.8)
Federal Court	8 (10.8)

*Note.* N's ranged from 71 to 74.

## Measures

### *Demographics Questionnaire*

Basic demographic information was collected for the characteristics listed in Table 4.1. Beyond the basic demographic information, descriptive information about participants' experiences in the criminal justice system was collected (see Table 4.2).

### *Self-Report Measures of Current Mental Health Symptomology*

To assess for current mental health symptomology, participants were asked to complete the Patient Health Questionnaire 9 (PHQ-9), the Generalized Anxiety Disorder 7-Item Scale (GAD-7), and the PTSD Checklist for DSM-5 (PCL-5).

**Patient Health Questionnaire 9.** The PHQ-9 is a brief, 9-item measure designed to screen for depression and assess for severity of depressive symptoms in the past two weeks (Kroenke, Spitzer, & Williams, 2001). Participants are asked to report how often they experienced depressive symptoms within the past two weeks on a 0 to 3 scale, with 0 indicating "not at all," 1 indicating "several days," 2 indicating "more than half the days," and 3 indicating "nearly every day." Items are based upon DSM-5 criteria for depression. Examples of items include "Little interest or pleasure in doing things" and "Feeling down, depressed, or hopeless." For a complete list of the items, see Appendix C. A total score is calculated by adding the score from items 1 through 9. Total scores of 1—4 indicates minimal depression, 5—9 indicate mild depression, 10—14 indicate moderate depression, 15—19 indicate moderately severe depression, and 20—27 indicate severe depression. It is important to note that diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairments in several domains of functioning, which is assessed in the final unnumbered item. In a study of 5,013 participants, Kocalevent, Hinz, and Brahler

(2013) developed normative data for the PHQ-9 in men and women, finding that men had a mean PHQ-9 score of 2.7 (with a standard deviation of 3.5) and women had a mean score of 3.1 (with a standard deviation of 3.5). Further, the data suggested a prevalence rate of moderate to high severity of depressive symptoms of 5.6% in the general population (Kocalevent, Hinz, and Brahler, 2013).

The PHQ-9 has been shown to have excellent internal consistency reliability ( $\alpha = .86 - .89$ ; Kroenke, Spitzer, & Williams, 2001). The PHQ-9 was shown to have adequate construct validity, such that as depression severity increased on the PHQ-9, there was a substantial decrease in functional status across the subscales of the 20-Item Short Form Survey, and there was an increase in sick days, health care utilized, and reported symptom-related difficulties (Kroenke, Spitzer, & Williams, 2001). Additionally, Kroenke, Spitzer, & Williams (2001) found that the PHQ-9 had an excellent 48-hour test-retest reliability ( $r_{xx} = .84$ ). In the current study, the PHQ-9 had good internal consistency reliability ( $\alpha = .85$ ).

**Generalized Anxiety Disorder 7-Item Scale.** The GAD-7 is a brief, 7-item measure designed to screen for anxiety and assess for severity of anxiety symptoms in the past two weeks (Spritzer, Kroenke, Williams, & Lowe, 2006). Participants are asked to respond to items asking how often they experience symptoms in the past two weeks on a 0 to 3 scale, with 0 indicating “not at all,” 1 indicating “several days,” 2 indicating “over half the days,” and 3 indicating “nearly every day.” Items are based upon DSM-5 criteria for anxiety. Examples of items include, “Feeling nervous, anxious, or on edge” and “Not being able to stop or control worrying.” For a complete list of the items, see Appendix D. A total score is calculated by adding the score from items 1 through 7. Total scores of 0 to 5 indicate mild anxiety, 6 to 10 indicate moderate anxiety, 11 to 21 indicate severe anxiety.

Diagnoses of Generalized Anxiety Disorder or Other Anxiety Disorder also require impairments in several domains of functioning, which is assessed by the final unnumbered item (Spritzer, Kroenke, Williams, & Lowe, 2006). A score of 10 or above is considered a probable diagnosis of Generalized Anxiety Disorder, with further evaluation needed for a definite diagnosis (Spritzer, Kroenke, Williams, & Lowe, 2006). In a study of 5030 participants, Lowe, Decker, Muller, Braehler, Schellberg, Herzog, & Herzberg (2008) found that, across all ages and subgroups, approximately 5% of participants had GAD-7 scores of 10 or greater and approximately 1% had GAD-7 scores of 15 or greater.

In a study of over 5000 participants, the GAD-7 was shown to have adequate construct validity, with intercorrelations between the GAD-7 and the PHQ-2 Depression Scale ( $r = .64$ ), the Rosenberg Self Esteem Scale ( $r = -.43$ ), and the Questionnaire on Life Satisfaction ( $r = -.34$ ); additionally, internal consistency was demonstrated across all subgroups of the sample ( $\alpha = .94$ ), and women had significantly higher mean GAD-7 scores than men as expected (Lowe et al., 2008). Further, Spitzer, Kroenke, Williams, et al. (2006) demonstrated that the GAD-7 had good test-retest reliability at a one-week interval ( $r_{xx} = .84$ ). In the current study, the GAD-7 had excellent internal consistency reliability ( $\alpha = .92$ ).

**PTSD Checklist for DSM-5.** The PCL-5 is a 20-item measure designed to assess for symptoms of PTSD as defined by the DSM-5, and to make a provisional diagnosis of PTSD when applicable (Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013).

Participants are provided the following instructions: “Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you

have been bothered by that problem in the past month.” Participants are then asked to respond to items on a 0 to 4 scale, with 0 indicating “not at all,” 1 indicating “a little bit,” 2 indicating “moderately,” 3 indicating “quite a bit,” and 4 indicating “extremely.” An example item is, “In the past month, how much were you bothered by: repeated, disturbing, and unwanted memories of the stressful experience?” For the purposes of this study, the phrase “stressful experience” was changed to “wrongful conviction” throughout the PCL-5. For a complete list of items on the PCL-5, refer to Appendix E. Scores from the 20 items are added together to form a total score ranging from 0 to 80.

The PCL-5 can provide a provisional diagnosis of PTSD in two ways (Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013). First, a total score of 33 or above is considered a reasonable cut-point score, such that a score of 33 or above indicates a high likelihood of the presence of PTSD. Second, items scored as a 2 or above can be considered symptoms endorsed. In accordance with the DSM-5 criteria, a provisional diagnosis of PTSD can be made when at least one symptom is endorsed in Criterion B (Items 1-5) and Criterion C (Items 6-7), and at least two symptoms are endorsed in Criterion D (Items 8-14) and Criterion E (Items 15-20; Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013). Normative data collected in the general population suggest a mean total score of 20.9, with a standard deviation of 17.7 (Ashbaugh, Houle-Johnson, Herbert, & El-Hage, 2016).

A significant body of research exists examining the psychometric properties of the PCL-5 (Blevins, Weathers, Davis, & Witte, 2015). In a study of college students, Blevins, Weathers, Davis, & Witte (2015) found the PCL-5 had strong internal consistency reliability ( $\alpha = .94$ ), test-retest reliability at a one-week interval ( $r = .82$ ), and convergent

( $r_s = .74$  to  $.85$ ) and discriminant ( $r_s = .31$  to  $.60$ ) validity. In terms of convergent validity, the PCL-5 correlated highly with other PTSD measures. For discriminant validity, authors predicted, and results confirmed, that the PCL-5 correlated most strongly with constructs such as Depression, Anxiety, and Borderline Personality Disorder, moderately with related constructs such as Somatization and Alcohol and Drug Use, and weakly with constructs least theoretically related to PTSD such as Antisocial Personality Disorder and Mania (Blevins, Weathers, Davis, & Witte, 2015). In the current study, the PCL-5 had excellent internal consistency reliability ( $\alpha = .95$ ).

### ***Posttraumatic Growth Inventory (PTGI)***

The Posttraumatic Growth Inventory (PTGI) was developed by Tedeschi and Calhoun (1996) based on interviews with adults who experienced physical disabilities in adulthood or the death of a spouse. The PTGI includes 21 items, which fit into a five-factor structure consistent with the five domains of posttraumatic growth (Tedeschi and Calhoun, 1996). The five domains of the PTGI include improved relationships with others, identification of new possibilities for one's life, increased perceptions of personal strength, enhanced appreciation of life, and spiritual growth (Tedeschi and Calhoun, 1996). For sake of reducing the length of the survey, the short form of the PTGI will be used in this study. The short-form of the PTGI involves 10 items, with two items from each of the five factors of the original PTGI (Cann, Calhoun, Tedeschi, Taku, Vishnevsky, Triplett, & Danhauer, 2010). Participants are provided the following instructions, "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." For the purposes of this study, the phrase "crisis/disaster" was changed to "wrongful conviction." Participants are then asked to

answer each of the 21 items on a 0 to 5 scale, with 0 being “I did not experience this change as a result of my crisis,” 1 being “I experienced this change to a very small degree as a result of my crisis,” 2 being “I experienced this change to a small degree as a result of my crisis,” 3 being “I experienced this change to a moderate degree as a result of my crisis,” 4 being “I experienced this change to a great degree as a result of my crisis,” and 5 being, “I experienced this change to a very great degree as a result of my crisis.” For the purposes of this study, the phrase “my crisis” was changed to “my wrongful conviction.” For a complete list of items, refer to Appendix F. The PTGI is scored by adding up a total score of the 10 items, with a higher score indicating more growth following trauma.

Tedeschi and Calhoun (1996) found that the PTGI had good internal consistency ( $\alpha = .90$ ), and the subscales had adequate internal consistency (New Possibilities:  $\alpha = .84$ ; Relating to Others:  $\alpha = .85$ ; Personal Strength:  $\alpha = .72$ ; Spiritual Strength:  $\alpha = .85$ ; Appreciation of Life:  $\alpha = .67$ ). Additionally, corrected item-total PTGI correlations were found to be in the moderate range ( $r = .35$  to  $r = .63$ ), and the two-month test-retest reliability for the 21-item PTGI was adequate ( $r = .71$ ). As described above in Chapter 2, a significant critique of the PTGI is that it likely measures perceived posttraumatic growth rather than true growth or change (Jayawickreme & Blackie, 2016). The short form of the PTGI also had good internal consistency and was strongly correlated with the full form of the PTGI ( $r = .96$ ; Cann, Calhoun, Tedeschi, Taku, Vishnevsky, Triplett, & Danhauer, 2010). In the current study, the PTGI had good internal consistency reliability ( $\alpha = .88$ ).

Several studies have conceptualized the PTGI as a way of measuring meaning making, rather than posttraumatic growth, such that the items on the PTGI ask the participant to identify the extent to which they have developed meaning from their

traumatic experience (Park & Al, 2007; Park & George, 2013). For the purposes of the current study, I am utilizing the PTGI as a way of measuring meaning making as a way of gaining insight into participants' perceived growth, rather than their actual growth, as a conduit for understanding how they have made meaning of their wrongful conviction.

### ***World Assumptions Questionnaire (WAQ)***

The World Assumptions Questionnaire (WAQ) was developed by Kaler (2009), based upon Janoff-Bulman's (1992) Shattered Assumptions Theory. Kaler (2009) formed the items based upon qualitative survey and interview data collected from trauma survivors, undergraduate students, trauma researchers, and clinicians who treated trauma survivors. The survey consists of 22 items on a 1 to 6 scale, with 1 indicating "Strongly Agree" and 6 indicating "Strongly Disagree." For a complete list of items, refer to Appendix G. The WAQ includes 4 subscales, including Controllability of Events (5 items, with a range of 5-30), Comprehensibility and Predictability of People (5 items, with a range of 5-30), Trustworthiness and Goodness of People (6 items, with a range of 6-36), and Safety and Vulnerability subscales (6 items, with a range of 6-36). Subscale scores are typically calculated in addition to a total score for the entire measure (Kaler, 2009; Schuler & Boals, 2016). Higher scores indicate more positive world assumptions. Kaler (2009) found that the WAQ had adequate temporal stability, a stable 4-factor structure, adequate internal consistency reliability, and further evidence of content and construct validity. Specifically, Kaler (2009) found internal consistency coefficients for the four subscales ranging from .74-.82 and temporal stability coefficients ranging from .68 to .74 at a two-month interval. Schuler and Boals (2016) found that the WAQ total score had an internal reliability of .82. In the current study, the full WAQ scale had acceptable internal

consistency reliability ( $\alpha = .76$ ). Additionally, the WAQ Controllability of Events Subscale ( $\alpha = .74$ ). Comprehensibility and Predictability of People Subscale ( $\alpha = .74$ ), Trustworthiness and Goodness of People Subscale ( $\alpha = .78$ ), and Safety and Vulnerability Subscale ( $\alpha = .71$ ) had adequate internal consistency reliability.

### ***Meaning in Life Questionnaire (MILQ)***

The Meaning in Life Questionnaire (MILQ) is a 10-item questionnaire designed to assess two dimensions of meaning in life: presence of meaning (defined as how much participants feel their lives have meaning) and search for meaning (defined as how much participants are striving to find meaning in their lives; Steger, Frazier, Oishi, & Kaler, 2006). Participants are provided brief instructions stating, "Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below." Participants are then asked to respond to the 10 items on a 1 to 7 scale, with 1 = "Absolutely Untrue," 4 = "Can't Say True or False" and 7 = "Absolutely true." Items can be analyzed as a total score or as subscale scores for the Presence of Meaning and Search for Meaning subscales. For a complete list of items, refer to Appendix H. Internal consistency coefficients for the MLQ have been  $\alpha = .80$  in multiple samples (Steger & Shin, 2010). Confirmatory factor analysis methods have been used to confirm the fit of the two subscales (Steger & Shin, 2010). Steger and Kashdan (2007) found that the MILQ is distinct from life satisfaction and is relatively stable when re-tested one year later (e.g.,  $r_{xx} = 0.41$  for total score). Steger and Shin (2010) also stated that there is sufficient convergent validity evidence of ratings on

the MLQ, as evidenced by comparing initial self-reports with one-month retest and informant reports. In the current study, the full MILQ scale had adequate internal consistency reliability ( $\alpha = .75$ ). The MILQ Presence of Meaning subscale ( $\alpha = .90$ ) and the MILQ Search for Meaning subscale ( $\alpha = .85$ ) had excellent internal consistency reliability.

### ***Satisfaction With Life Scale (SWLS)***

The Satisfaction with Life Scale (SWLS) was developed by Deiner, Emmons, Larsen, and Griffen (1985) as a brief measure of global life satisfaction. The SWLS is specifically focused on a global life satisfaction, which is a cognitive judgment process, rather than other aspects of subjective well-being such as positive affect (Deiner, Emmons, Larsen, and Griffen, 1985). Participants are asked to answer five items on a 1 to 7 scale, with 1 being “strongly disagree” and 7 being “strongly agree.” An example item is, “In most ways my life is close to my ideal.” For a complete list of items, refer to Appendix I. A total score is calculated by adding the score for each of the five items, such that a higher score indicates higher life satisfaction. In a sample of college students, Deiner, Emmons, Larsen, and Griffen (1985) found moderately strong correlations between the SWLS and several other measures of subjective well-being ( $r = .58 - .75$ ). The SWLS was also correlated with interviewer estimates of life satisfaction in a geriatric sample (Deiner, Emmons, Larsen, and Griffen, 1985). The SWLS has shown strong internal consistency reliability ( $\alpha = .87$ ) and test-retest stability at 2 months ( $r_{xx} = 0.82$ ; Diener, Emmons, Larsen, and Griffen, 1985). In the current study, the SWLS had good internal consistency reliability ( $\alpha = .76$ ).

***Global Meaning Violation Scale (GMVS)***

The Global Meaning Violation Scale (GMVS) was developed by Park, Riley, George, Gutierrez, Hale, Cho, & Braun (2016). The GMVS is a 13-item measure designed to assess the extent to which an individual's appraisal of a stressful event (i.e., their situational meaning) violates their goals and beliefs (i.e., their global meaning), in accordance with Park's (2010) meaning making model (Park, Riley, George, Gutierrez, Hale, Cho, & Braun, 2016). For items 1 through 5, participants are asked to reflect on how they felt before and after their most stressful experience, and answer on a 1 ("Not at all") to 4 ("Very Much") scale how much the stressful event violated their sense of the world being fair or just, their sense that other forces have control in the world, their sense that God is in control, their sense of being in control of their life, and their sense that the world is a good and safe place. Items 1 through 5 compose the Belief Violations Subscale. For items 6 through 13, participants are asked to reflect on how much their stressful experience interferes with their ability to accomplish a series of goals, including social support and community, self-acceptance, physical health, inner peace, educational achievement, achievement in their career, creative or artistic accomplishment, and intimacy (emotional closeness). Items 6, 7, 8, 9, and 13 compose the Intrinsic Goal Violation Subscale, and Items 10, 11, and 12, compose the Extrinsic Goal Violation Subscale. For a complete list of the items, refer to Appendix J. For the purpose of this study, the phrase "most stressful experience" and "stressful event" were changed to "wrongful conviction" throughout the measure, and participants will be asked to reflect on the extent to which their global meaning was violated as a result of their wrongful conviction.

Each of the GMVS subscales has been shown to have marginal to acceptable internal consistency ( $\alpha = .61 - .72$ ; Park et al., 2016). In terms of predictive validity, Park et al. (2016), using bivariate correlations between GMVS subscale change scores and distress change scores, found that reductions in violations tended to be related to reductions in distress. In terms of concurrent validity, Park et al (2016) found that the three subscales of the GMVS were strongly correlated, as expected, and found evidence of discriminant validity. In the current study, the GMVS had good internal consistency reliability ( $\alpha = .81$ ).

### ***Retrospective Trajectory Measure***

Due to the challenges of obtaining longitudinal data, Mancini, Bonanno, and Sinan (2015) proposed an interactive retrospective method for identifying trajectories of adjustment following acute stress. Bonanno (2004) posited that there are four prototypical trajectories following a traumatic experience, including: stable and resilient functioning, elevated and chronic distress, gradual recovery, and delayed reaction. Subsequent research found trajectories consistent with the prototypical trajectories in populations experiencing a variety of trauma or acute stress, as described above in Chapter II. To assess for trajectories following trauma, Mancini, Bonanno, and Sinan (2015) provided an oral description of the trajectories to participants, while also providing a graphical depiction and written decryption of each of the four prototypical trajectories. Participants were then asked to choose a trajectory that was most similar to their reaction to the September 11<sup>th</sup> attacks. Mancini, Bonanno, and Sinan (2015) found that participants' self-reported retrospective trajectories of their degree of impairment and level of functioning were consistent with interviewer-rated overall functioning and symptoms of depression, PTSD,

and grief, as well as self-reported life satisfaction and somatic symptoms collected longitudinally and friend/relative ratings.

In the current study, participants were provided an interactive interface, modified from Mancini, Bonanno, and Sinan's (2015) methodology, in which they completed their trajectory at six time points: prior to being charged with a crime; after being charged but prior to being tried; after being found guilty but prior to their first appeal; after losing their first appeal (if applicable), immediately after exoneration; and six months after exoneration. At each time point, participants were asked to rate their level of distress on a 1 to 10 scale."

In the current study, a cluster analysis was conducted in accordance with Hair, Anderson, and Black's (1998) recommended guidelines. It is important to note that cluster analyses are "descriptive, atheoretical, and noninferential" (Hair, Anderson, & Black, 1998 p. 149). Because cluster analyses do not allow for researchers to draw inferences from a specific sample to a broader population, cluster analyses should be considered exploratory (Hair, Anderson, & Black, 1998). Hair, Anderson, and Black (1998) recommend a six-step cluster analysis decision-making process. First, one must determine the objectives and goals of the cluster analysis. For the purposes of this study, the cluster analysis will likely serve the purpose of taxonomy description, such that the clusters serve as classifications. Second, one must determine a research design, while acknowledging that different research designs will likely result in different results when utilizing cluster analyses. Third, one must consider the assumptions of the cluster analysis, especially the representativeness of the sample and the multicollinearity. Fourth, the researcher then derives the clusters and assesses overall fit of the cluster model. Fifth, the researcher then interprets the clusters.

The sixth step involves validating the clusters and creating a profile (Hair, Anderson, & Black, 1998).

### ***Qualitative Measures***

Due to the lack of research on people who are wrongfully convicted, a series of four qualitative questions, adapted from Kaler (2009), were included in the survey to gain a deeper understanding of the meaning making experiences of the participants. For a complete list of the qualitative items, refer to Appendix K.

## Chapter 4: Results

### Descriptive Analyses

Prior to conducting the primary hypotheses, 10 participants who did not complete questions beyond the demographic items were deleted from the dataset. The remaining 74 participants, who completed at least two of primary measures following the demographic items, were included in the analyses. Of the 74 total participants, 57 participants (77.0%) completed the survey in its entirety, and 17 participants (23.0%) stopped responding at various points in the survey and the remaining data was missing. The mean number of missing items is 8.2, with a standard deviation of 4.5 and a range of 0 to 89 missing items. For participants who completed part of a scale, scale scores were computed from the non-missing values if the participant answered at least 75% of the measure.

Descriptive statistics were calculated for all principal variables, including means, standard deviations, and ranges, as well as a matrix of correlations. See Table 4.1 for descriptive statistics for all principal variables and Table 4.2 for a matrix of correlations. Additionally, coefficient alphas were calculated to estimate internal consistency reliability of all measures. See Table 4.3 for internal coefficient alphas for each scale.

Table 4.1. Descriptive statistics for principal variables.

Principle Variables	<i>M(SD)</i>	Range
PHQ-9	9.16 (6.03)	0-25
GAD-7	7.70(5.81)	0-19
PCL-5	30.11(19.22)	0-75
PTGI	30.28(12.54)	0-50
SWLS	17.94(7.43)	5-31
GMVS	54.13(9.18)	33-71
WAQ	62.20(11.84)	35-87
WAQ Controllability of Events Subscale	17.60(4.91)	7-27
WAQ Comprehensibility and Predictability of People Subscale	13.12(4.21)	5-25
WAQ Trustworthiness and Goodness of People Subscale	18.65(4.98)	6-27
WAQ Safety and Vulnerability Subscale	13.43(3.66)	6-21
MILQ	47.00(9.72)	27-69
MILQ Presence of Meaning Subscale	24.53(7.23)	8-35
MILQ Search for Meaning Subscale	22.53(7.16)	7-35

*Note.* PHQ-9 is the Patient Health Questionnaire-9. GAD-7 is the Generalized Anxiety Disorder Scale-7. PCL-5 is the PTSD Checklist-5. PTGI is the Posttraumatic Growth Inventory. SWLS is the Satisfaction with Life Scale. GMVS is the Global Meaning Violation Scale. WAQ is the World Assumptions Questionnaire. MILQ-Search is the Meaning in Life Questionnaire Search for Meaning subscale. MILQ-Presence is the Meaning in Life Questionnaire Presence of Meaning subscale. *N*'s ranged from 61 to 74.

Table 4.2. Correlations and descriptive statistics for measures

	PHQ-9	GAD-7	PCL-5	PTGI	SWLS	GMVS	WAQ Total	WAQ -CE	WAQ- CPP	WAQ- TGP	WAQ- SV	MILQ- Search	MILQ - Presence
PHQ-9	—												
GAD-7	.796***	—											
PCL-5	.650***	.756***	—										
PTGI	-.070	-.046	-.020	—									
SWLS	-.387**	.293*	-.439***	.333**	—								
GMVS	.383**	.489***	.602***	.191	-.209	—							
WAQ Total	-.308*	-.393**	-.384**	.254*	.264*	-.240	—						
WAQ-CE	-.432***	-.519***	-.477***	.133	.305*	-.213	.660***	—					
WAQ-CPP	-.143	-.117	-.048	.210	.032	-.048	.706***	.291*	—				
WAQ-TGP	-.087	-.192	-.271*	.202	.377**	-.326*	.667***	.227	.280*	—			
WAQ-SV	-.146	-.103	-.107	.200	.006	-.091	.635***	.238	.358**	.247	—		
MILQ – Search	.339**	.467**	.367**	.040	-.012	.437***	-.345**	-.340**	-.199	-.126	-.175	—	
MILQ – Presence	-.215	-.227	-.267*	.613***	.379**	-.011	.248	.261*	.100	.156	.159	-.095	—

*Note.* PHQ-9 is the Patient Health Questionnaire-9. GAD-7 is the Generalized Anxiety Disorder Scale-7. PCL-5 is the PTSD Checklist-5. PTGI is the Posttraumatic Growth Inventory. SWLS is the Satisfaction with Life Scale. GMVS is the Global Meaning Violation Scale. WAQ Total is the World Assumptions Questionnaire total score. WAQ-CE is the World Assumptions Questionnaire Controllability of Events Subscale. WAQ-CPP is the World Assumptions Questionnaire Comprehensibility and Predictability of People Subscale. WAQ-TGP is the World Assumptions Questionnaire Trustworthiness and Goodness of People Subscale. WAQ-SV is the World Assumptions Questionnaire Safety and Vulnerability Subscale. MILQ-Search is the Meaning in Life Questionnaire Search for Meaning subscale. MILQ-Presence is the Meaning in Life Questionnaire Presence of Meaning subscale. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . *N*'s ranged from 61 to 74.

Table 4.3. Internal coefficient Alpha's for scales.

Scale	$\alpha$
PHQ-9	.850
GAD-7	.923
PCL-5	.954
PTGI	.879
SWLS	.852
GMVS	.809
WAQ	.763
WAQ Controllability of Events Subscale	.743
WAQ Comprehensibility and Predictability of People Subscale	.740
WAQ Trustworthiness and Goodness of People Subscale	.779
WAQ Safety and Vulnerability Subscale	.711
MILQ	.746
MILQ Presence of Meaning Subscale	.904
MILQ Search for Meaning Subscale	.851

*Note.* PHQ-9 is the Patient Health Questionnaire-9. GAD-7 is the Generalized Anxiety Disorder Scale-7. PCL-5 is the PTSD Checklist-5. PTGI is the Posttraumatic Growth Inventory. SWLS is the Satisfaction with Life Scale. GMVS is the Global Meaning Violation Scale. WAQ is the World Assumptions Questionnaire. MILQ-Search is the Meaning in Life Questionnaire Search for Meaning subscale. MILQ-Presence is the Meaning in Life Questionnaire Presence of Meaning subscale. *N*'s ranged from 61 to 74.

### Exploratory Analyses

Prior to conducting the principal analyses, exploratory analyses were conducted to determine whether there were significant differences in mental health and meaning making variables between demographic groups, including race, gender, level of education, current family income, current employment status, and religious status. Specifically, a series of one-way between subjects ANOVAs revealed that there were significant differences across clusters in scores on the PHQ-9, GAD-7, PCL-5, PTGI, SWLS, GMVS, WAQ, MILQ-Presence of Meaning, and MILQ-Search for Meaning. Results of the series of one-way between subjects ANOVAs revealed that there were no significant differences in scores on the PHQ-9, GAD-7, PCL-5, PTGI, SWLS, GMVS, WAQ, MILQ-Presence of Meaning, and MILQ-Search for Meaning for gender, level of education, current family income, or current employment status.

A series of one-way between subjects ANOVAs revealed that there were significant differences across race (divided into two groups: participants who identify as white and participants who identify as a racial minority) in PTGI total scores ( $F(1, 62) = 4.589, p = .036$ ). A Bonferroni post-hoc test revealed that participants who identified as a racial minority ( $M = 34.36, SD = 12.92$ ) had significantly higher scores on the PTGI than their white counterparts ( $M = 27.67, SD = 11.71$ ). There were no significant differences across race in PHQ-9, GAD-7, PCL-5, SWLS, GMVS, WAQ, MILQ-Presence of Meaning, and MILQ-Search for Meaning scores.

Additionally, a series of one-way between subjects ANOVAs revealed that there were significant differences across religious status (divided into two groups: Participants who identified as religious/spiritual and participant who do not) in PTGI total scores ( $F(1,$

62 = 17.27,  $p = .000$ ) and MILQ-Presence of Meaning subscores ( $F(1, 62 = 10.19, p = .002$ ). A Bonferroni post-hoc test revealed that participants who identified as religious/spiritual ( $M = 32.32, SD = 12.52$ ) had significantly higher scores on the PTGI than participants who did not identify as religion/spiritual counterparts ( $M = 27.47, SD = 11.92$ ); participants who identified as religious/spiritual ( $M = 32.32, SD = 12.52$ ) also had significantly high scores on MLQ-Presence of Meaning ( $M = 26.53, SD = 7.21$ ) than participants who did not identify as religious/spiritual ( $M = 22.88, SD = 7.25$ ). There were no significant differences across religious status in PHQ-9, GAD-7, PCL-5, SWLS, GMVS, WAQ, and MILQ-Search for Meaning scores.

### **Principal Analyses**

The principal hypotheses were tested through a series of quantitative analyses.

#### ***Hypothesis 1***

*Participants who are wrongfully convicted, imprisoned, and later exonerated, will have significantly higher rates of symptoms of depression, anxiety, and PTSD than the general population.*

A  $t$ -test was utilized to determine whether the mean of scores on the PHQ-9, GAD-7, and PCL-5 for participants in this study, who were wrongfully convicted and subsequently exonerated, differs significantly from the mean for the general population as established in previously-published normative data. A one-sample  $t$ -test revealed that participants who were wrongfully convicted had a significantly higher rate of depression ( $t(72) = 9.16, p = .000, d = .27$ ), anxiety ( $t(72) = 4.56, p = .000, d = .52$ ), and PTSD symptoms ( $t(72) = 3.98, p = .000, d = .73$ ) than the general population.

Additionally, rates of major depressive disorder (MDD), generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD) were calculated utilizing the recommended cut-off scores for the PHQ-9, GAD-7, and PCL-5. Based on PHQ-9 scores, 32.4% of participants reported mild depression ( $n = 24$ ), 23.0% reported moderate depression ( $n = 17$ ), 16.2% reported moderately severe depression ( $n = 12$ ), and 4.1% reported severe depression ( $n = 3$ ). Based on GAD-7 scores, 46.6% of participants reported mild anxiety ( $n = 34$ ), 23.2% of participants reported moderate anxiety ( $n = 17$ ), and 30.1% reported severe anxiety ( $n = 22$ ). Approximately 35.6% of participants met the criteria for a probable diagnosis of GAD ( $n = 26$ ). Based on PCL-5 scores, 39.1% of participants met the criteria for a probable PTSD diagnosis ( $n = 27$ ).

### ***Hypothesis 2***

*Global meaning violations as a result of the wrongful conviction (retrospectively reported) will be positively associated with current levels of PTSD, anxiety, and depression symptoms.*

A significance test for the Pearson correlation coefficient was used to determine whether the total score on the GMVS (IV) is a significant predictor of total scores on the PHQ-9 (DV1), GAD-7 (DV2), and PCL-5 (DV3). A series of significance tests for the Pearson correlation coefficient revealed that global meaning violation was positively correlated with depression ( $r(61) = .383, p = .003$ ), anxiety ( $r(61) = .489, p = .000$ ), and PTSD ( $r(61) = .602, p = .000$ ).

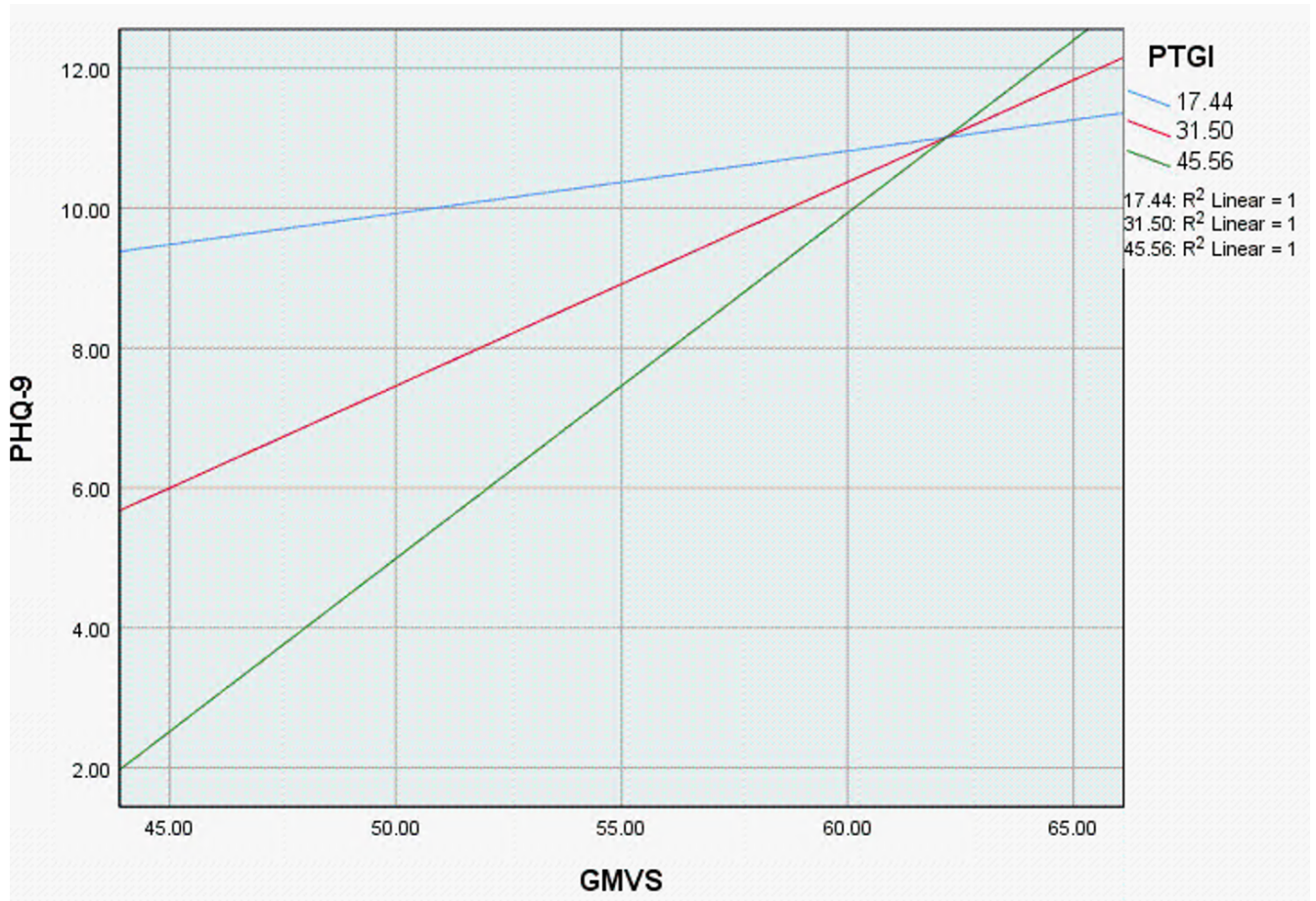
***Hypothesis 3***

*Two meaning making variables (including meanings made and positive world beliefs) will moderate the relationship between global meaning violations and mental health symptoms.*

**Hypothesis 3.a.** *Meaning making, specifically the outcome of having made meaning, will moderate the relationship between violations of global meaning as a result of the wrongful conviction and current PTSD, anxiety, and depression symptoms, such that the positive association between the violation of global meaning and current PTSD, anxiety, and depression symptoms will be weaker for those who report a higher level of meaning making.*

Following procedures outlined by Baron and Kenny (1986; Frazier, Tix, & Barron, 2004), a multiple regression analysis was conducted to determine whether the PTGI significantly moderated the relationship between the GMVS and the PHQ-9. Results revealed that the interaction between the GMVS and PTGI was statistically significant,  $B(58) = .02, p = .034$ . Examination of the interaction plot (see Figure 4.1 below) showed that, as predicted, the positive association between the GMVS and PHQ-9 was weaker for those who reported a higher PTGI total score.

Figure 4.1. Interaction Plot between Meanings Made (PTGI) and Global Meaning Violation (GMVS)

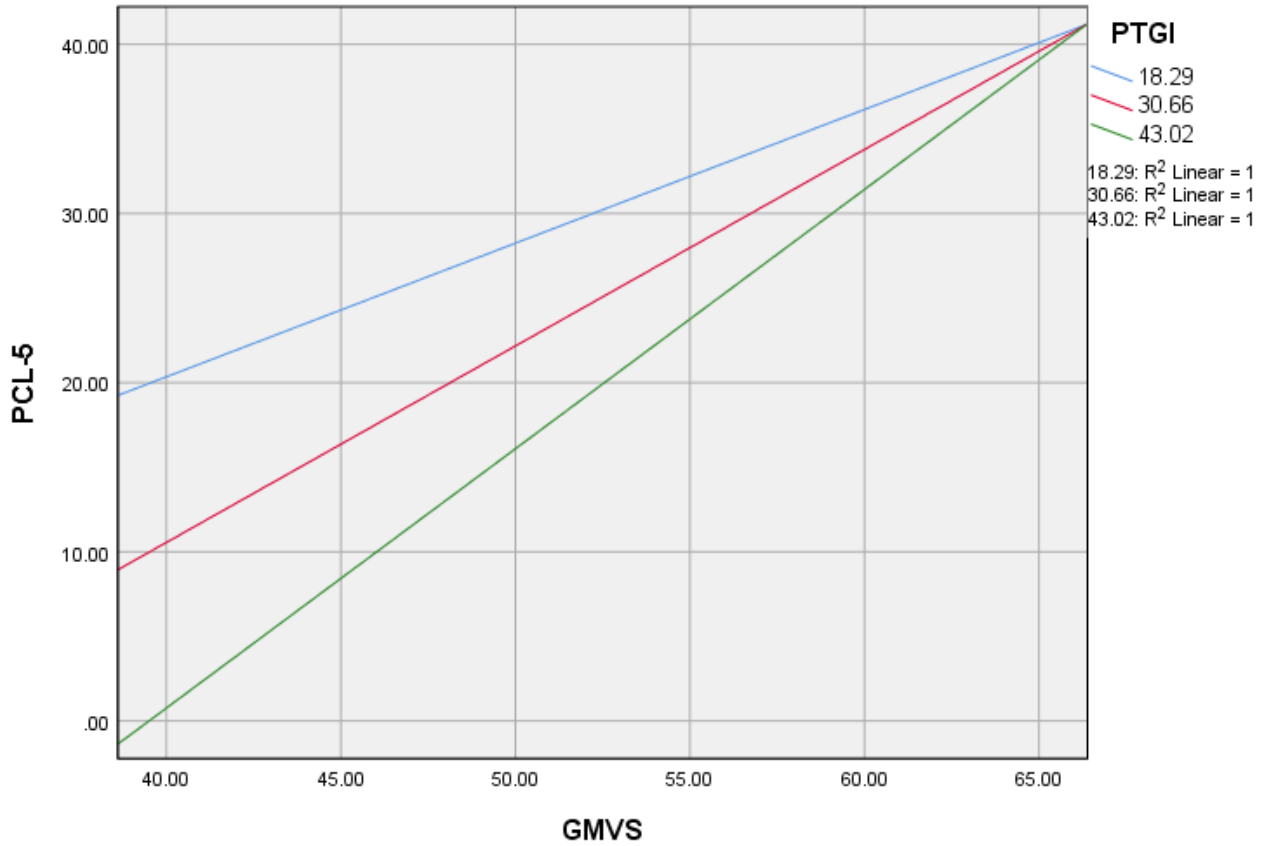


*Note.* PHQ-9 is the Patient Health Questionnaire-9. GMVS is the Global Meaning Violation Scale. PTGI is the Posttraumatic Growth Inventory, which was used in this study as a measure of meanings made.

A multiple regression analysis was conducted to determine whether the PTGI significantly moderated the relationship between the GMVS and the GAD-7. The interaction between PTGI and GMVS was not statistically significant,  $B(58) = .009, p = .173$ .

A multiple regression analysis was conducted to determine whether the PTGI significantly moderated the relationship between the GMVS and the PCL-5. The interaction between PTGI and GMVS was statistically significant,  $B(58) = .04, p = .013$ . Examination of the interaction plot (see Figure 4.2 below) showed that, as predicted, the positive association between the GMVS and PCL-5 was weaker for those who reported a higher PTGI total score.

Figure 4.2. Interaction Plot between Meanings Made (PTGI) and Global Meaning Violation (GMVS).



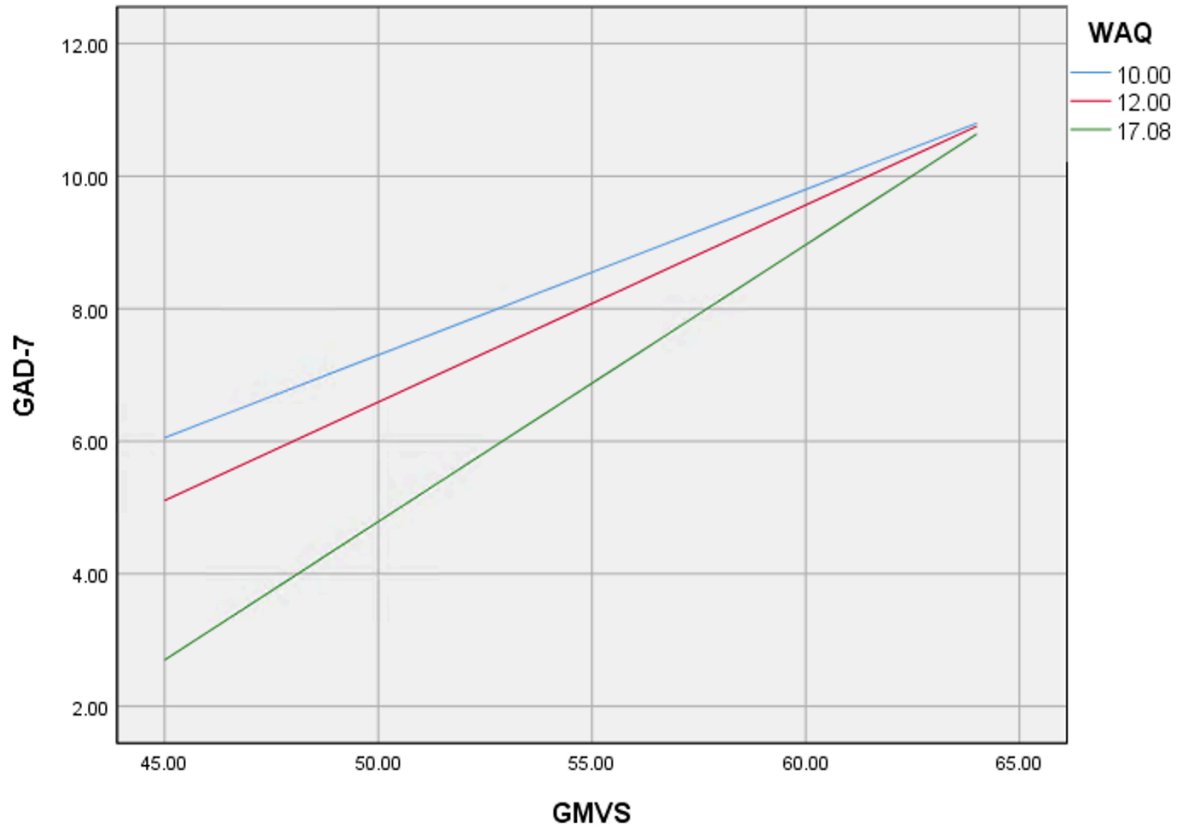
*Note.* PCL-5 is the PTSD Checklist for the DSM-5. GMVS is the Global Meaning Violation Scale. PTGI is the Posttraumatic Growth Inventory, which was used in this study as a measure of meanings made.

**Hypothesis 3.b.** *Positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable will moderate the relationship between violation of global meaning as a result of the wrongful conviction and current PTSD, anxiety, and depression symptoms, such that the association between past meaning violation and current PTSD, anxiety, and depression symptoms will be weaker for those who report more positive current world assumptions.*

Following procedures outlined by Baron and Kenny (1986; Frazier, Tix, & Barron, 2004), a multiple regression analysis was conducted to determine whether the WAQ significantly moderated the relationship between the GMVS and the PHQ-9. The interaction between WAQ and GMVS was not statistically significant,  $B(58) = .002, p = .076$

A multiple regression analysis was conducted to determine whether the WAQ significantly moderated the relationship between the GMVS and the GAD-7. The interaction between the WAQ and GMVS was statistically significant,  $B(58) = .02, p = .009$ . Examination of the interaction plot (see Figure 4.3 below) showed that, as predicted, the positive association between the GMVS and GAD-7 was weaker for those who reported a higher WAQ total score.

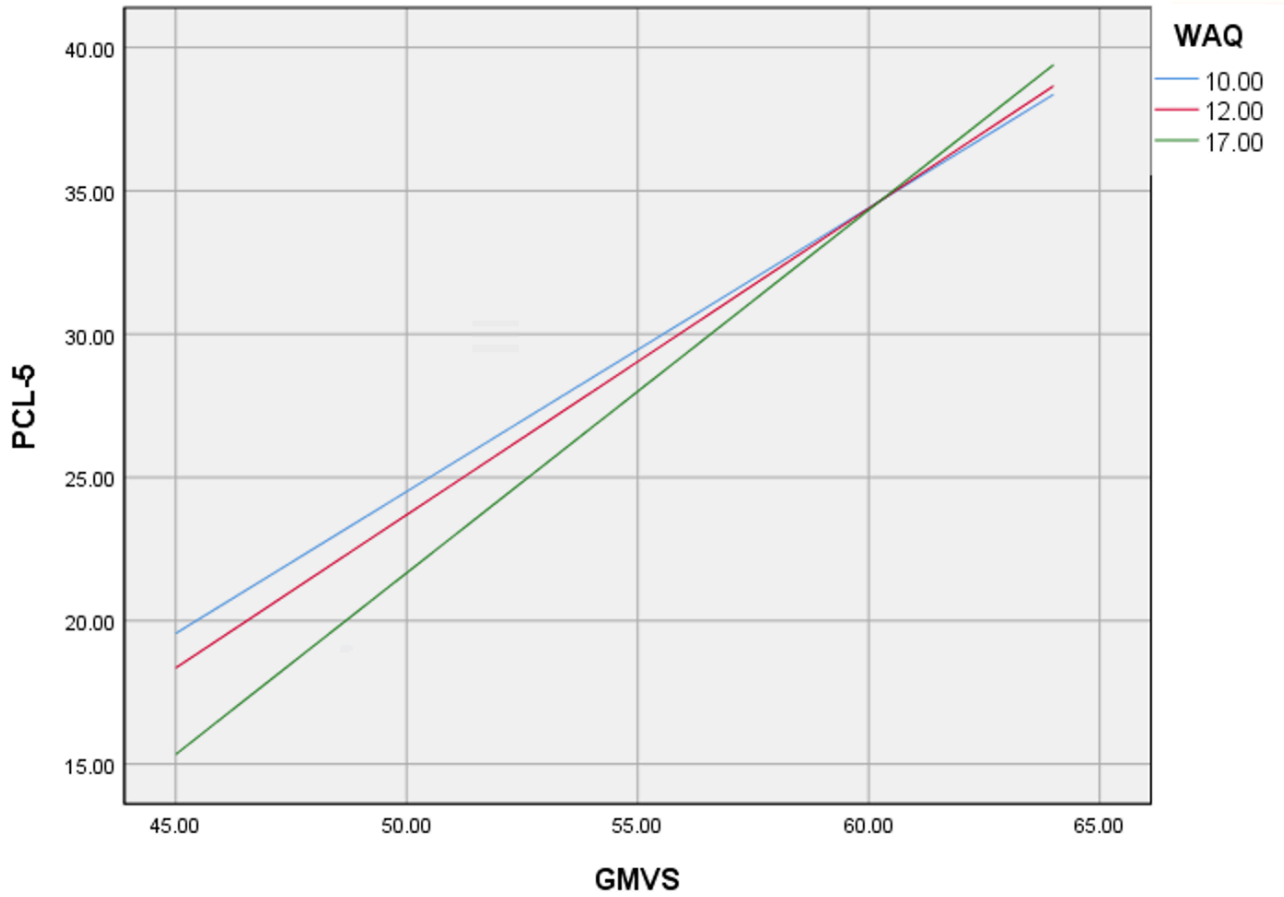
Figure 4.3. Interaction Plot Between World Assumptions (WAQ) and Global Meaning Violation (GMVS) on the Outcome of Anxiety (GAD-7).



Note. GAD-7 is the Generalized Anxiety Disorder -7. GMVS is the Global Meaning Violation Scale. WAQ is the World Assumptions Questionnaire.

A multiple regression analysis was conducted to determine whether the WAQ significantly moderated the relationship between the GMVS and the PCL-5. The interaction between PTGI and GMVS was statistically significant,  $B(58) = .04, p = .012$ . Examination of the interaction plot (see Figure 4.4 below) showed that, as predicted, the positive association between the GMVS and PCL-5 was weaker for those who reported a higher WAQ total score.

Figure 4.4. Interaction Plot Between World Assumptions (WAQ) and Global Meaning Violation (GMVS) on Outcome of PTSD Symptoms (PCL-5).



*Note.* PCL-5 is the PTSD Checklist for the DSM-5. GMVS is the Global Meaning Violation Scale. WAQ is the World Assumptions Questionnaire.

***Hypothesis 4***

*Several meaning making constructs (including meanings made, global meaning, and positive world assumptions) will be negatively associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.*

**Hypothesis 4.a.** *Meanings made will be negatively associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.*

A significance test for the Pearson correlation coefficient was used to determine whether the total score on the PTGI (IV) is a significant predictor of total scores on the PHQ-9 (DV1), GAD-7 (DV2), PCL-5 (DV3), and SWLS (DV4). A series of significance tests for the Pearson correlation coefficient revealed that meanings made were not significantly correlated with depression ( $r(64) = -.070, p = .588$ ), anxiety ( $r(64) = -.046, p = .721$ ), or PTSD ( $r(64) = -.020, p = .878$ ). A significance test for the Pearson correlation coefficient revealed that meanings made were positively correlated with satisfaction with life ( $r(64) = .333, p = .009$ ).

**Hypothesis 4.b.** *Global meaning will be negatively associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.*

A significance test for the Pearson correlation coefficient was used to determine whether the MLQ – Presence of Meaning score is a significant predictor of total scores on the PHQ-9 (DV1), GAD-7 (DV2), PCL-5 (DV3), and SWLS (DV4). A series of significance tests for the Pearson correlation coefficient revealed that presence of global meaning was significantly correlated with depression ( $r(63) = -.215, p = .046$ ), anxiety

( $r(63) = -.227, p = .037$ ), PTSD ( $r(63) = -.267, p = .018$ ), and satisfaction with life ( $r(64) = .379, p = .002$ ).

Additionally, a significance test for the Pearson correlation coefficient was used to determine whether the MLQ – Search for Meaning score is a significant predictor of total scores on the PHQ-9 (DV1), GAD-7 (DV2), PCL-5 (DV3), and SWLS (DV4). A series of significance tests for the Pearson correlation coefficient revealed that search for global meaning was significantly correlated with depression ( $r(63) = .335, p = .004$ ), anxiety ( $r(63) = .465, p = .000$ ), and PTSD ( $r(63) = .366, p = .002$ ); these correlations are in the opposite of the predicted direction. A significance test for the Pearson correlation coefficient revealed that search for global meaning was not significantly correlated with satisfaction with life ( $r(64) = .012, p = .225$ ).

**Hypothesis 4.c.** *The belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable will be negatively associated with current PTSD, anxiety, and depression symptoms and positively associated with satisfaction with life.*

A significance test for the Pearson correlation coefficient was used to determine whether the total score on the WAQ (IV) is a significant predictor of total scores on the PHQ-9 (DV1), GAD-7 (DV2), PCL-5 (DV3), and SWLS (DV4). A series of significance tests for the Pearson correlation coefficient revealed that positive world assumptions were negatively correlated with depression ( $r(64) = -.308, p = .014$ ), anxiety ( $r(64) = -.393, p = .001$ ), and PTSD ( $r(64) = -.384, p = .002$ ). A significance test for the Pearson correlation

coefficient revealed that positive world assumptions was positively correlated with satisfaction with life ( $r(64) = .264, p = .041$ ).

Additionally a multiple regression was used to determine whether the four subscale scores on the WAQ (IV1-4) are significant predictors of total scores on the PHQ-9 (DV1), GAD-7 (DV2), PCL-5 (DV3), and SWLS (DV4). A simultaneous multiple regression ( $R^2 = .195, F(1, 62) = 3.513, p = .012$ ) revealed that the belief that events are controllable ( $\beta(62) = -.535, p = .001$ ) was the only unique predictor of depression when the other WAQ subscales were statistically controlled; the belief that people are comprehensible and predictable ( $\beta(62) = .029, p = .875$ ), that people are trustworthy and good ( $\beta(62) = -.023, p = .882$ ), and that one can be safe and vulnerable ( $\beta(62) = -.059, p = .777$ ) were not significant predictors of depression in this analysis.

Similarly, in a simultaneous regression ( $R^2 = .343, F(1, 62) = 7.702, p = .000$ ) the belief that events are controllable ( $\beta(62) = -.681, p = .000$ ) was the sole unique predictor of anxiety (controlling for the other WAQ subscales), while the belief that people are comprehensible and predictable ( $\beta(62) = .122, p = .448$ ), that people are trustworthy and good ( $\beta(62) = -.203, p = .133$ ), and that one can be safe and vulnerable ( $\beta(62) = .074, p = .687$ ) were not significant predictors of anxiety.

The final multiple regression ( $R^2 = .354, F(1, 62) = 7.941, p = .000$ ) revealed that the belief that events are controllable ( $\beta(62) = -1.985, p = .000$ ) and that people are trustworthy and good ( $\beta(62) = -1.096, p = .012$ ) were significant unique predictors of PTSD symptoms, while the belief that people are comprehensible and predictable ( $\beta(62) = .791, p = .126$ ), and that one can be safe and vulnerable ( $\beta(62) = .171, p = .770$ ) were not significant predictors of PTSD symptoms.

**Hypothesis 5**

*Two meaning making variables (including meanings made and global meaning) will be positively associated with positive world assumptions.*

**Hypothesis 5.a.** *Meanings made will be positively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable.*

A significance test for the Pearson correlation coefficient was used to determine whether the total score on the PTGI (IV) is a significant predictor of total scores on the WAQ (DV). Additionally, a significance test for the Pearson correlation coefficient was used to determine whether the total score on the PTGI (IV) is a significant predictor of each of the four subscales of the WAQ (DV1-4).

A significance test for the Pearson correlation coefficient revealed that meanings made were positively correlated with positive world beliefs ( $r(64) = .254, p = .048$ ). A series of significance tests for the Pearson correlation coefficient revealed that meanings made were not significantly correlated with the belief that events are controllable ( $r(64) = .133, p = .300$ ), that people are comprehensible and predictable ( $r(64) = .210, p = .095$ ), that people are trustworthy and good ( $r(64) = .202, p = .115$ ), and that one can be safe and vulnerable ( $r(64) = .200, p = .119$ ).

**Hypothesis 5.b.** *Global meaning will be positively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable.*

A significance test for the Pearson correlation coefficient was used to determine whether MLQ – Presence of Meaning subscale (IV) is a significant predictor of total scores on the WAQ (DV). Additionally, a significance test for the Pearson correlation coefficient will be utilized to determine whether the total scores on the MLQ (IV) is a significant predictor of each of the four subscales of the WAQ (DV1-4).

A significance test for the Pearson correlation coefficient revealed that the presence of meaning was positively correlated with positive world beliefs ( $r(64) = .248, p = .049$ ). A significance test for the Pearson correlation coefficient revealed that the presence of meaning was positively correlated with the belief that events are controllable ( $r(63) = .261, p = .041$ ). A series of significance tests for the Pearson correlation coefficient revealed the presence of meaning was not correlated with the belief that people are comprehensible and predictable ( $r(63) = .100, p = .435$ ), the belief that people are trustworthy and good ( $r(63) = .156, p = .229$ ), or the belief that one can be safe and vulnerable ( $r(63) = .159, p = .222$ ).

### ***Hypothesis 6***

*The trajectory data collected will cluster into trajectories that fall into the four prototypical trajectories (stable and resilient functioning, elevated and chronic distress, gradual recovery, and delayed reactions).*

Exploratory analyses were conducted to determine whether the trajectory data clustered into trajectories consistent with the four prototypical trajectories identified by Mancini, Bonanno, and Sinan (2015). Participants were provided with an interactive interface, modified from Mancini, Bonanno, and Sinan's (2015) methodology, in which they rated their distress on a 1 to 10 scale at six time points: prior to being charged with a crime; after being charged but prior to being tried; after being found guilty but prior to

their first appeal; after losing their first appeal (if applicable), immediately after exoneration; and six months after exoneration. A total of 46 participants completed all 6 time points and were include in the trajectory analysis.

Following procedures outlined by Hair, Anderson, and Black (1998), a cluster analysis was conducted utilizing the “Average” linking method using the “hclust” function in R. In utilizing “Average” linkage clustering, the distance between the clusters was defined as the average of distances between all of the pairs of objects. The cluster analysis was run for both a three-cluster and four-cluster solution. Upon reviewing the means of the three-cluster and four-cluster solutions at each of the six time points, it appeared that the four-cluster solution was the best fit, as each of the four clusters had clinical meaning. See Figure 4.5 below for a dendrogram demonstrating the four-cluster solution. A dendrogram is a visual depiction of the hierarchical relationship between the participants, such that each of the four colors represents the four clusters.

Next, the four clusters were interpreted and given names, including Chronic Distress ( $n = 9$ ), Relief and Readjustment ( $n = 12$ ), Recovery ( $n = 17$ ), and Intense Distress, Minimal Recovery ( $n = 8$ ). The Chronic Distress group reported a high level of distress across all six timepoints. The Relief and Readjustment group reported a decrease in distress immediately following exoneration, followed by a return to baseline level of distress six months following exoneration. The Intense Distress with Minimal Recovery group reported a lower of stress prior to their involvement in the legal system, following by a high level of distress throughout their incarceration and following their exoneration. The Recovery group reported an increase in distress after being charged and during their incarceration, followed by a decrease in distress following their exoneration. See Table 4.4

and Figure 4.6 below, which demonstrate the means of distress by cluster at the six time points.

Figure 4.5. Dendrogram of Four-Factor Solution.

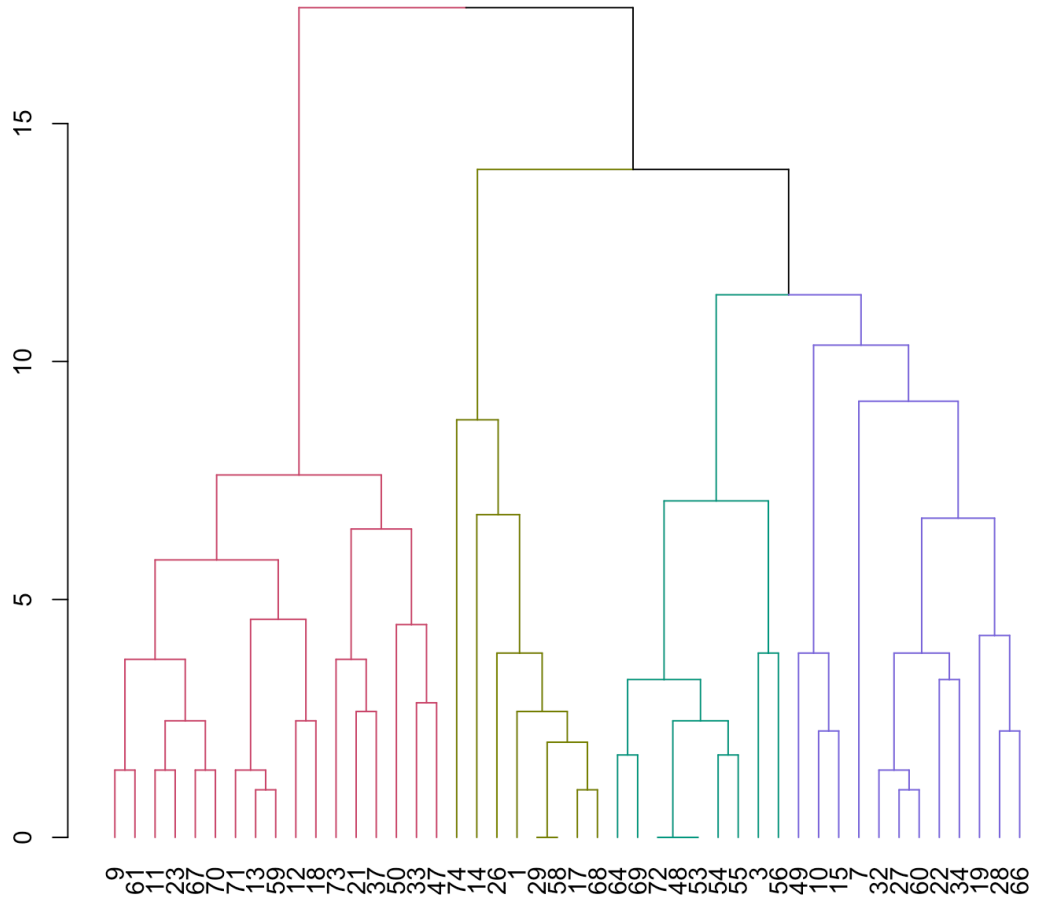
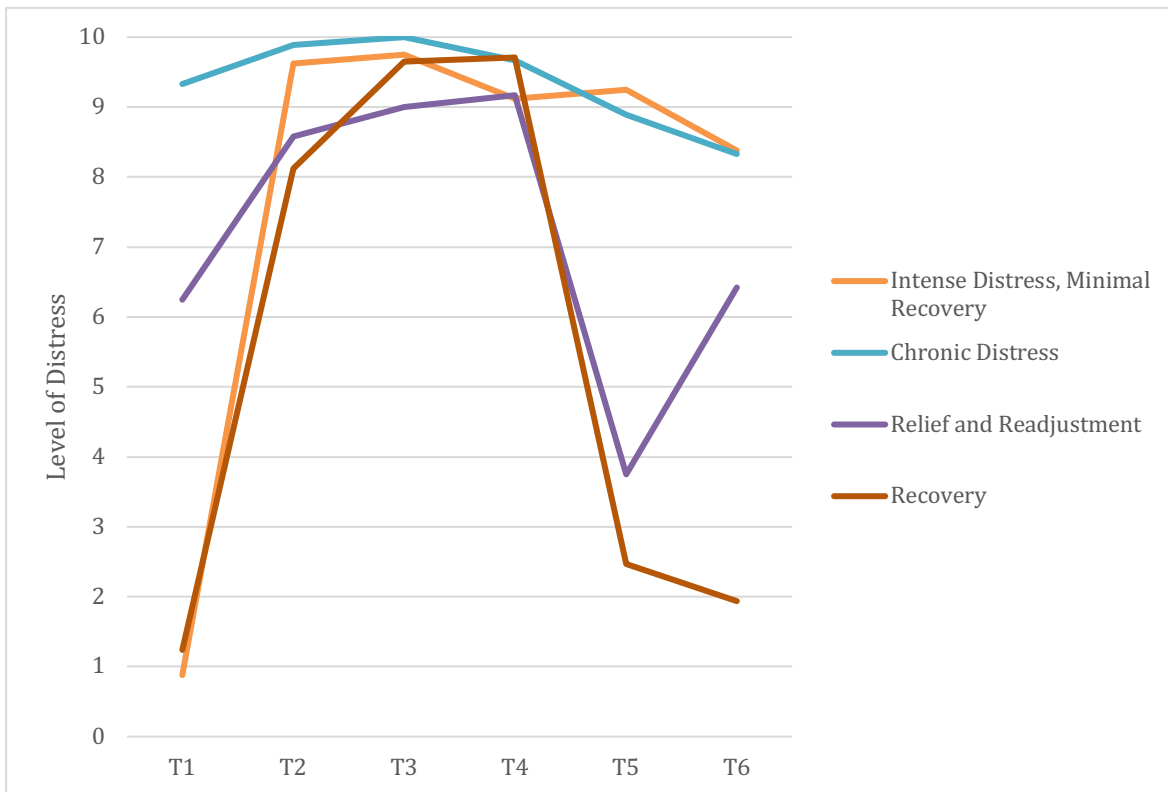


Table 4.4. Means (and Standard Deviations) of Distress by Cluster at 6 Time Points

Cluster Name	T1	T2	T3	T4	T5	T6
Recovery ( $n = 17$ )	1.24(.90)	8.12(1.90)	9.65(.86)	9.71(.69)	2.47(1.74)	1.94(1.72)
Chronic Distress ( $n = 9$ )	9.33(1.12)	9.89(.33)	10.00(.00)	9.67(1.00)	8.89(8.89)	8.33(2.29)
Relief and Readjustment ( $n = 12$ )	6.25(2.05)	8.58(2.15)	9.00(1.81)	9.17(1.59)	3.75(1.76)	5.42(5.42)
Intense Distress, Minimal Recovery ( $n = 8$ )	0.88(.64)	9.62(.74)	9.75(.71)	9.12(1.81)	9.25(1.39)	8.38(2.72)

*Note.* Distress was measured on a 0-10 scale. T1 is the time point prior to being charged with a crime. T2 is after being charged but prior to being tried. T3 is after being found guilty but prior to their first appeal. T4 is after losing their first appeal (if applicable). T5 is immediately after exoneration. T6 is six months after exoneration.

Figure 4.6. Means of Distress by Cluster at 6 Time Points



*Note.* T1 is the time point prior to being charged with a crime. T2 is after being charged but prior to being tried. T3 is after being found guilty but prior to their first appeal. T4 is after losing their first appeal (if applicable). T5 is immediately after exoneration. T6 is six months after exoneration.

**Hypothesis 7**

*Presuming that participants cluster into the four prototypical trajectories, a series of hypotheses predict that participants in each cluster will differ on mental health symptoms, satisfaction with life, meanings made, and global meaning.*

**Hypothesis 7.a.** *Participants in the “Recovery” cluster will report lower mean scores of current PTSD, anxiety, and depression symptoms and higher mean scores on satisfaction with life than those in the other three clusters.*

A series of one-way between subjects ANOVAs revealed that there were significant differences across clusters in PTSD symptoms ( $F(3, 41) = 5.299, p = .004$ ) and anxiety symptoms ( $F(3, 42) = 4.747, p = .006$ ). A Bonferroni post-hoc test revealed that participants in the Recovery cluster had significantly lower levels of PTSD symptoms and anxiety symptoms than the Intense Distress with Minimal Recovery, Chronic Distress, and Relief and Readjustment clusters. See Table 4.5 for means and standard deviations of anxiety and PTSD symptoms for each cluster. There were no other significant differences between clusters in level of anxiety or depression. A series of one-way between subjects ANOVAs revealed there were not significant differences across clusters in depressive symptoms ( $F(3, 41) = 2.314, p = .090$ ) and satisfaction with life ( $F(3, 40) = 1.670, p = .189$ ).

Table 4.5. Means and Standard Deviations of Anxiety and PTSD Symptoms Across Clusters

	GAD-7 <i>M(SD)</i>	PCL-5 <i>M(SD)</i>
Recovery	4.41(4.78)	18.88(12.40)
Chronic Distress	10.67(7.28)	38.67(15.55)
Relief and Readjustment	10.58(4.56)	35.08(20.91)
Intense Distress, Minimal Recovery	9.75(4.13)	41.63 (13.22)

*Note.* GAD-7 is the Generalized Anxiety Disorder-7 scale. PCL-5 is the PTSD Checklist for DMS-5.  $N = 46$ .

**Hypothesis 7.b.** *Participants in the “Recovery” cluster will endorse higher mean scores of meanings made and global meaning than those in the other two clusters.*

A series of one-way between subjects ANOVAs were conducted to determine whether there were significant differences between the “Recovery” cluster and the other three clusters on WAQ, MILQ-Presence of Meaning, MILQ-Search for Meaning, and PTGI. A series of one-way between subjects ANOVAs revealed there were not significant differences across clusters in PTGI ( $F(3, 42) = .674, p = .416$ ) and MILQ – Presence of Meaning ( $F(3, 42) = 2.643, p = .111$ ). A one-way between subjects ANOVA revealed there were significant differences between clusters in positive world assumptions ( $F(1, 41), = 19.742, p = .000$ ) and MILQ – Search for Meaning ( $F(3, 42) = .6.777, p = .013$ ). A Bonferroni post-hoc test revealed that participants in the Recovery cluster had significantly higher levels scores on the WAQ and significantly lower scores on the MILQ-Search for Meaning Subscale than the Intense Distress with Minimal Recovery, Chronic Distress, and Relief and Readjustment clusters. See Table 4.6 for means and standard deviations of anxiety and PTSD symptoms for each cluster. There were no other significant differences between clusters in WAQ and MILQ-Search for Meaning scores.

Table 4.6. Means and Standard Deviations of World Assumption Questionnaire and Across Clusters

	WAQ $M(SD)$	MILQ-Search for Meaning $M(SD)$
Recovery	71.86(9.63)	19.47(6.65)
Chronic Distress	61.0(9.67)	24.45(6.88)
Relief and Readjustment	55.92(10.27)	24.89(4.46)
Intense Distress, Minimal Recovery	57.0(9.44)	23.63(6.05)

*Note.* WAQ is the World Assumptions Questionnaire. MILQ- Search for Meaning is the Meaning in Life Questionnaire Search for Meaning subscale.  $N = 46$ .

**Hypothesis 8**

*Several factors related to the intensity of involvement in the legal system (including number of trials, time incarcerated prior to exoneration, and number of appeals prior to incarceration) will be positively associated with violations of global meaning, negatively associated with positive world beliefs, positively associated with current mental health symptoms, and positively associated with satisfaction with life.*

**Hypothesis 8.a.** *Number of trials will be: positively associated with violations of global meaning as a result of the wrongful conviction; negatively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable; positively associated with current PTSD, anxiety, and depression symptoms; and negatively associated with satisfaction with life.*

A series of one-way between subjects ANOVAs revealed that number of trials was not significantly associated with violations of global meaning as a result of the wrongful conviction ( $F(3, 57) = 1.333, p = .272$ ), beliefs that events are controllable ( $F(3, 63) = 1.855, p = .146$ ), beliefs that people are comprehensible and predictable ( $F(3, 64) = .321, p = .810$ ), beliefs that people are trustworthy and good ( $F(3, 62) = .388, p = .762$ ), beliefs that one can be safe and vulnerable ( $F(3, 61) = .553, p = .648$ ), depression ( $F(3, 69) = 2.285, p = .086$ ), anxiety ( $F(3, 69) = .2602, p = .059$ ), PTSD ( $F(3, 65) = 1.688, p = .178$ ), and satisfaction with life ( $F(2, 60) = 1.973, p = .148$ )

**Hypothesis 8.b.** *Time incarcerated prior to exoneration will be: positively associated with violations of global meaning as a result of the wrongful conviction; negatively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable; positively associated with current PTSD, anxiety, and depression symptoms; and negatively associated with satisfaction with life.*

A significance test for the Pearson correlation coefficient was used to determine whether the number of years incarcerated prior to exoneration (IV) is a significant predictor of total scores on the MLQ (DV1), WAQ (DV2), PCL-5 (DV3), PHQ-9 (DV4), GAD-7 (DV5), and SWLS (DV6). Additionally, a significance test for the Pearson correlation coefficient was used to determine whether the number of years incarcerated (IV) is a significant predictor of each of the four subscales of the WAQ (DV1-4).

A series of significance tests for the Pearson correlation revealed that the number of years incarcerated prior to exoneration was not significantly correlated with meaning in life ( $r(63) = .218, p = .088$ ), positive world assumptions ( $r(64) = -.208, p = .102$ ), depression ( $r(64) = .153, p = .198$ ), PTSD ( $r(64) = .129, p = .294$ ), and satisfaction with life ( $r(64) = .014, p = .917$ ). A significance test for the Pearson correlation revealed that the number of years incarcerated prior to exoneration was positively correlated with anxiety ( $r(64) = .240, p = .043$ ).

Additionally, a significance test for the Pearson correlation coefficient revealed that the number of years incarcerated prior to exoneration was negatively correlated with the belief that people are comprehensible and predictable ( $r(63) = -.320, p = .008$ ). A series of

significance tests for the Person correlation coefficient revealed that the number of years incarcerated prior to exoneration was not correlated with the belief that events are controllable ( $r(63) = -.045, p = .720$ ), the belief that people are trustworthy and good ( $r(63) = .156, p = .229$ ), and the belief that one can be safe and vulnerable ( $r(63) = .159, p = .222$ ).

**Hypothesis 8.c.** *Number of appeals prior to exoneration will be: positively associated with violations of global meaning as a result of the wrongful conviction; negatively associated with positive world assumptions, including the belief that events are controllable, that people are comprehensible and predictable, that people are trustworthy and good, and that one can be safe and vulnerable; positively associated with current PTSD, anxiety, and depression symptoms; and negatively associated with satisfaction with life.*

A series of one-way between subjects ANOVAs revealed that number of appeals prior to trial was not significantly associated with violations of global meaning as a result of the wrongful conviction ( $F(4, 54) = 1.76, p = .150$ ), beliefs that events are controllable ( $F(4, 60) = .245, p = .912$ ), beliefs that people are comprehensible and predictable ( $F(4, 61) = .588, p = .672$ ), beliefs that people are trustworthy and good ( $F(4, 59) = 1.039, p = .395$ ), beliefs that one can be safe and vulnerable ( $F(4, 58) = 1.231, p = .308$ ), depression ( $F(4, 65) = .450, p = .772$ ), anxiety ( $F(4, 65) = .611, p = .656$ ), PTSD ( $F(4, 62) = 1.057, p = .150$ ), and satisfaction with life ( $F(4, 56) = .745, p = .565$ ).

### ***Qualitative Analysis***

Due to the lack of research on people who are wrongfully convicted, a series of four qualitative questions, adapted from Kaler (2009), were included in the survey to gain a

deeper understanding of the meaning making experiences of the participants. Participants were asked to discuss 1) how their life changed as a result of their wrongful conviction, 2) what life problems they experienced as a result of their wrongful conviction, 3) what, if any, positive changes they experienced as a result of their wrongful conviction and 4) how, if so, their worldview and basic beliefs changed after their wrongful conviction. A comprehensive qualitative analysis was not conducted for the purpose of this dissertation. However, a brief review of the qualitative responses revealed several key themes.

Participants described several negative impacts of their wrongful conviction, including loss of relationships, disgraced reputation, challenges to finding housing and employment upon re-entry, experiences of stigma, loss of religious faith, loss of parenting, mental health difficulties, and trauma symptoms. Several participants described the impact of losing years of their life while incarcerated for a crime they did not commit, including one participant who wrote, "I missed formative years that help one develop and grow as a person socially and emotionally." Additionally, many participants noted a loss of religious faith; for example, one participant stated, "I was agnostic going into prison. Now I am atheist. I strongly believe that it is harmful for people to believe in anything without reason. Because of this, I often feel alienated from other people." Another participant provided a powerful analogy of his wrongful conviction:

It was like walking down some stairs and suddenly one is missing. you begin to fall and you don't land until many years after the prison sentence ends. when you do finally land you are in an entirely different place. I believe after 24 years I am still adjusting.

Another participant described his change in worldbeliefs as a results of his wrongful conviction as follows:

I had strong Christian beliefs predicated on what I was taught. Essentially, 90 percent of what I believed, I no longer believe. I came to realize that so much of the spiritual or religious concepts and beliefs were based on what was convenient for the group. But once those beliefs were challenged by true adversity, it fell apart. I only was left with those beliefs that transcend, people, social class and geographical location. My statement became, if it doesn't work for someone in a third world country as well as for those that are more fortunate here, then it really wasn't worth investing in.

Additionally, participants noted several positive impacts of their wrongful conviction, including increased hope, newfound empathy, increased resilience, improved career opportunities, increased meaning in life, and newfound knowledge about individuals and societal issues. For example, when asked about how his wrongful conviction changed his life, one participant provided the following response:

Wow. Now there's a question. But I laugh... because it would be an exercise in futility to even try to concisely, clearly, sufficiently! convey the multitude and magnitude of the changes as a result of my wrongful arrest/ prosecution/ conviction/ incarceration and post imprisonment adjustment in writing alone. However. In simplistic overall terms I can tell you this: It made me a better person. Or should I say, I made me a better person? IN SPITE of what's designed to crush...

Several participants described an increased appreciation for life, including one participant who stated, "The biggest change in my life is the depth of my appreciation of everything. Life certainly gets hectic at times, but because of the experience I am able to throttle down the pace and respond appropriately." Additionally, several participants described a newfound spirituality and improved relationships, such as one participant who described the impact of his wrongful conviction as follows: "I became a spiritual man. I became a loving partner. I became more of a compassionate person." Several participants noted that their wrongful conviction lead to a new path in life, both in terms of career and

personal life, including one participant who described the impact of his wrongful conviction as follows:

Despite dashed college plans at 22 upon my arrest, I survived 18 years, meeting my wife and having children & grandkids together. I educated myself every year, using this to earn my bachelor's (summa) upon my exoneration. This helped me lecture globally, strengthen my commitment to family responsibilities while working to improve our world by also operating my commercial real estate investments and finishing my memoir.

Notably, several themes emerged that highlight gender differences, such that women experienced unique stressors, including loss of parenting, loss of ability to have biological children in the future, and relationship difficulties. For example, one female participant described the impact of her wrongful conviction as follows:

I realize that I have been hardened by the wrongful conviction and that hasn't lessened after my release. The things that I wanted when I left prison were out of my reach. There was no money for continuing my education. I had to focus on getting a home, rebuilding my life and caring for my 16 year old son that I gave birth to in prison. I couldn't get married because I no longer trust people. I barely date. No one wants to stick around and hope that I get over my issues. My dream of having another child was squashed because my age made it impossible and I could not afford medical advancements to help. Literally, I walked out of prison with nothing but my prison uniform. I had to rebuild everything from scratch and my dreams/hopes were dismissed.

In conclusion, a preliminary review of the qualitative data provided by participants revealed that many exonerees reported shared, salient experiences related to their wrongful conviction and subsequent exoneration, which indicates that importance of conducting a comprehensive qualitative analysis. A grounded theory analysis of the qualitative data collected as a part of this dissertation will be completed as a future study.

## **Chapter 5: Discussion**

This chapter discusses the study's finding in the context of existing literature on meaning making and trauma. A brief summary of the design of the study is provided, followed by a discussion of the results in the context of existing literature. Next, the study's limitations are discussed, including suggestions for future research. Finally, the chapter concludes with implications for mental health providers working with exonerees, as well as implications for policy reform.

### **Summary of the Current Study**

The current study is an online, 125-item survey designed to investigate the psychological experiences of people who were wrongfully convicted and subsequently exonerated. Although the prevalence of wrongful convictions continues to rise, there is little research examining the psychological impact of wrongful convictions. The majority of current research on wrongful convictions involves qualitative research with small sample sizes, or examines the experiences of people wrongfully convicted in countries other than the United States. Despite the plethora of literature examining reactions to a variety of traumatic experiences, there is a lack of research examining reactions to trauma in people who were wrongfully convicted, or the role of meaning making in recovery after exoneration. By gaining a better understanding of reactions to trauma in people who were wrongfully convicted in the United States, as well as the potential role of meaning making in recovery from trauma, this study can provide important data that can guide interventions aimed at helping exonerees reintegrate into society.

Specifically, the study had three goals: 1) To better understand the psychological experiences of people who are wrongfully convicted, including the prevalence of anxiety,

depression, and posttraumatic stress disorder. 2) To gain an understanding of the role of posttraumatic growth and meaning making in the process of recovery after experiencing a wrongful conviction and subsequent exoneration. 3) To expand the current methodology by which the field studies trauma and recovery retrospectively, as well as gaining an understanding of the relationship between global meaning violation, meaning making, global beliefs, and PTSD symptomology. By comparing participants' self-reported changes in world beliefs to their self-reported trajectory of recovery in terms of distress, we can provide evidence for, or against, current theories of trauma, based in the shattered assumptions theory, that improvement in PTSD symptoms occurs when one is able to make meaning of their wrongful conviction and reduce the discrepancy between the initial appraisal meaning and their global beliefs.

### **Discussion of Findings**

#### ***Prevalence of Psychopathology in Exonerees***

A primary aim of this study was to gain a better understanding of the prevalence of psychopathology in exonerees, including major depressive disorder (MDD), generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD). There is little research on rates of mental health disorders in exonerees, as most research has been qualitative in nature or has involved small samples sizes. Prior qualitative research suggests that individuals who are wrongfully convicted are thought to experience unique stressors beyond the stressors of incarceration, in part due to the unique trauma of trying to make meaning of their arrest and conviction when they know that they are innocent (Grounds, 2005; Simon, 1993). Prior to this study, the largest study of exonerees ( $N = 55$ ) revealed

that 44% of participants scored within the clinical depression range and 23.7% of participants scored above the threshold for PTSD (Wildeman, Costelloe and Schehr, 2011).

Consistent with prior research, in current study reveal that exonerees reported significantly higher rates of depression, anxiety and PTSD than the general population. Approximately 20.3% of participants met criteria for moderate or severe depression, 35.6% of participants met criteria for GAD, and 39.1% met criteria for a diagnosis of PTSD. Compared to the general population, exonerees face four times higher rates of depression, seven times higher rates of anxiety, and eleven times higher rates of PTSD. Given that this study has the highest sample size of exonerees to date, the results reveal the dire rates of mental health disorders in exonerees, and suggest the need for mental health services for exonerees, as discussed in more detail below.

### ***The Role of Meaning Making in Recovery from Trauma***

Another primary goal of the study was to gain an understanding of the role of posttraumatic growth and meaning making in the process of recovery after experiencing a wrongful conviction and subsequent exoneration. This dissertation is based in the shattered assumptions theory, which posits that trauma can be understood through the lens of an alteration in one's assumptive world following a traumatic event. (Janoff-Bulman, 1992). At the core of the shattered assumptions theory is the idea that people tend to hold three fundamental assumptions about the world: the world is benevolent; the world is meaningful; and I am worthy (Janoff-Bulman, 1992). Janoff-Bulman (1992) suggests that these three assumptions are the foundation of human well-being and help people to navigate the decision they make daily.

According to the shattered assumptions theory, when one experiences trauma, their assumptions about the world and themselves are shattered (Janoff-Bulman, 1992). When traumatic events cannot be easily integrated into one's previously held worldviews, it is likely that they no longer perceive themselves as competent and invulnerable, and no longer view the world as benevolent and predictable. The shattering of one's worldview results in an awareness of personal vulnerability and defenselessness, resulting in psychological and physiological symptoms consistent with posttraumatic stress (Janoff-Bulman, 1992). When a person's initial appraisal of situational meaning is in conflict with his/her global beliefs, the person often begins a search for meaning as comprehensibility, which is a search for meaning in an attempt to make sense of the situation in line with existing global beliefs (Janoff-Bulman & Frantz, 1997). Janoff-Bulman (1992) suggests that healing from trauma occurs when an individual creates new assumptions or modifies their old assumptions to account for the traumatic experience. This healing can occur through the process of meaning making.

In addition to the shattered assumptions theory, I also rely on Park's (2010) meaning making model as a framework for defining the process by which global and situation meaning is made. According to Park's (2010) meaning making model, *Global meaning* is a person's general orienting system, including beliefs, subjective feelings, and goals (Pargament, 1997; Dittman-Kohli & Westerhof, 1999; Reker & Wong, 1988). Core schemas are formed through aspects of global meaning, such as global beliefs related to control, predictability, and justice, which in turn affect an individual's beliefs about the self and the world (Janoff-Bulman, 1993; Parkes, 1993). On the other hand, *situational meaning* refers to an ongoing meaning making process that occurs in response to a

stressful event (Park, 2010). Within the meaning making model, Park (2010) posited several processes and outcomes that lead to situational meaning making, including an initial appraisal and assignment of meaning to the event, determination of discrepancies between appraised and global meaning, meaning making, meanings made, and adjustment to the event.

While a significant body of literature exists examining meaning making, there are inconsistent findings regarding the role of meaning making in psychological outcomes (Park et al., 2008). While several studies have shown that the search for meaning is psychologically adaptive (Davis, Holen-Hoeksema, & Latson, 1998; Bower et al., 2003; Sears, Stanton, & Danoff-Burg, 2003), other studies have found the search for meaning to be related to higher levels of dysfunction and distress (Bonanno, Pap, Lalande, Zhang, & Noll, 2005; Roberts, Lepore & Helgeson, 2005; Stanton et al., 2000; Silver, Boon, & Stones, 1983). While the *process* of searching for meaning has been associated with increased levels of distress, several studies have demonstrated that the *outcome* of having made meaning of a stressful event is associated with positive psychological outcomes.

While previous qualitative studies have suggested that meaning making may play a role in recovery from trauma in exonerees, there are no quantitative studies that have examined meaning making in exonerees. Using the framework of Park's (2010) meaning making model, the current study examined several components of the meaning making process to determine whether meaning making leads to recovery from PTSD, anxiety, and depression in exonerees.

**Global Meaning Violations Predict Mental Health Symptoms.** Consistent with Park's (2010) meaning making model, results revealed that global meaning violations were

positively correlated with depression, anxiety, and PTSD symptomology, such that exonerees who experienced more global meaning violations had higher rates of depression, anxiety, and PTSD symptoms.

**Situational Meaning and Positive World Beliefs Moderate the Relationship between Global Meaning Violation and PTSD and Anxiety.** Next, consistent with Park's (2010) meaning making model, results revealed that the outcome of having made meaning of the wrongful conviction (measured using the PTGI) and having positive world beliefs (measured by the WAQ) significantly moderated the relationship between the global meaning violations and PTSD symptoms, such that participants who reported a higher level of meanings made and more positive world beliefs reported lower PTSD symptoms across all levels of global meaning violations. A similar pattern was seen for anxiety and depression, in which positive world beliefs moderated the relationship between global meaning violation and anxiety and depression symptoms, such that participants who reported more positive world beliefs reported lower anxiety and depression symptoms across all levels of global meaning violations.

These results suggest that meaning making and positive world beliefs reduce the impact of global meaning violations on PTSD and anxiety symptoms, thus providing important implications for treatment which will be discussed below. In contrast with Park's (2010) meaning making model, the outcome of having made meaning and endorsing positive world beliefs did not moderate the relationship between global meaning violations and depression symptoms. Although this result is surprising, the shattered assumptions theory posits that global meaning violations will lead to PTSD symptoms, not depression

symptoms. This result indicates that a different process may be occurring to lead to depression symptoms in exonerees.

**Meaning was Not Correlated with Mental Health Symptomology.** In contrast to Park's (2010) Meaning Making Model, situational meaning, as measured by the PTGI, was not correlated with mental health symptomology, including anxiety, depression, or PTSD. Situational meaning was, however, correlated with global satisfaction with life, such that participants who reported higher levels of situational meaning reported higher global satisfaction with life. Although this result was not expected, the lack of correlation between the PTGI and symptom measures not completely surprising given that there are inconsistent findings in the literature about the relationship between perceived posttraumatic growth and positive outcomes. (Helgeson, Reynolds, and Tomich, 2006; Tedeschi and Calhoun, 2004; Triplett et al., 2011; Helgeson et al., 2006).

**Presence of Global Meaning was Correlated with Depression, Anxiety, and PTSD Symptoms.** Consistent with Park's (2010) Meaning Making Model (2010), presence of global meaning was negatively correlated with depression, anxiety, and PTSD symptoms, such that participants who endorsed higher presence of global meaning reported lower levels of depression, anxiety, and PTSD. Additionally, presence of global meaning was positively correlated with satisfaction with life, such that participants who reported higher presence of global meaning reported higher levels of satisfaction with life.

**Global Search for Meaning was Correlated with Depression, Anxiety, and PTSD Symptoms.** Consistent with several studies that have found that the process of searching for meaning to be related to higher levels of dysfunction and distress (Bonanno, Pap, Lalande, Zhang, & Noll, 2005; Roberts, Lepore & Helgeson, 2005; Stanton et al.,

2000; Silver, Boon, & Stones, 1983; Park et al., 2008), in the current study the search for meaning was positively correlated with depression, anxiety, and PTSD, such that participants who reported higher levels of searching for meaning reported higher levels of depression, anxiety, and PTSD symptoms. Search for meaning was not significantly related to satisfaction with life, which suggests that the process of searching for meaning may lead to mental health symptoms, but there is no evidence that it leads to global issues with satisfaction with life.

**World Beliefs were Negatively Correlated with Mental Health Symptomology and Positively Correlated with Satisfaction with Life.** Consistent with Park's (2010) meaning making model and the Shattered Assumptions Theory, positive world beliefs were negative correlated with mental health symptoms and positively correlated with satisfaction with life, such that exonerees who reported more positive world beliefs tended to report less symptoms of depression, anxiety, and PTSD, and higher levels of global satisfaction with life.

**Situational Meaning and Global Meaning Predicted Positive World Beliefs.** Consistent with Park's (2010) meaning making model and the Shattered Assumptions Theory (Janoff-Bulman, 1994), both situational meaning (as measured by the PTGI) and global meaning (as measured by the MLQ) predicted positive world beliefs. Specifically, situational meaning and global meaning both predicted higher levels of the positive world belief that events are controllable.

**Conclusion.** Consistent with the literature, the results of the meaning making hypothesis tests suggest that the search for meaning may be indicative of increased distress and less recovery, but the presence of global meaning may lead to less symptoms of

anxiety, depression, and PTSD and higher levels of life satisfaction more generally (Homan, 2008; Bonanno, 2014; Davis, Nolen-Hoeksema, & Larsen, 1998; Updegraff, Silver, & Holman, 2008; Silver, 1982). It is important to note that situational meaning, measured as perceived growth as a result of the wrongful conviction, was not significantly correlated with depression, anxiety, and PTSD symptoms, which is in contrast to the hypotheses. It is possible that these unexpected results may be due to the challenges of measuring situational meaning, as perceived growth is theorized to be one of many forms of situational meaning. The results also provide support for the shattered assumptions theory, in that positive world assumptions, likely representative of a reduced discrepancy between the initial appraisal meaning and global beliefs, lead to less anxiety, depression, and PTSD symptomology and increased satisfaction with life (Janoff-Bulman, 1992).

### ***Trajectory Data***

A final goal of the study was to apply an expanded methodology that has been used to conceptualize and study recovery from other types of trauma. The methodology is modified from Mancini, Bonanno, and Sinan's (2015) interactive retrospective method for identifying trajectories of adjustment following acute stress. Using prospective data, Bonanno (2004) identified four prototypical trajectories following a traumatic experience, including: stable and resilient functioning, elevated and chronic distress, gradual recovery, and delayed reaction. Subsequent research found trajectories consistent with the prototypical trajectories in populations experiencing a variety of trauma or acute stress (Bonanno et al., 2002; Mancini, Bonanno, & Clark, 2011; Lam et al., 2010; Deshield, Tibbs, Fan, & Taylor, 2006; (Bonanno, Rinnecke, & Dekel, 2005; deRoon-Cassini, Mancini, Rusch, & Bonanno, 2010; Bonanno, Kennedy, Galatzer-Levy, Lude, & Elfstrom,

2012; Bonanno et al., 2012; Norris, Tracy, & Galea, 2009). Research has found the four prototypical trajectories following a variety of traumatic events, but no research has examined the longitudinal impact of an ongoing trauma such as a wrongful conviction.

In the current study, participants were provided with an interactive interface, modified from Mancini, Bonanno, and Sinan's (2015) methodology, in which they rated their distress on a 1 to 10 scale at six time points: prior to being charged with a crime; after being charged but prior to being tried; after being found guilty but prior to their first appeal; after losing their first appeal (if applicable), immediately after exoneration; and six months after exoneration. A cluster analysis revealed a four-factor solution, including the following four-clusters: Chronic Distress, Relief and Readjustment, Recovery, and Intense Distress with Minimal Recovery. The Chronic Distress group reported a high level of distress across all six timepoints. The Relief and Readjustment group reported a decrease in distress immediately following exoneration, followed by an increase in distress six months following exoneration. The Intense Distress with Minimal Recovery group reported a lower level of stress prior to their involvement in the legal system, following by a high level of distress throughout their incarceration and following their exoneration. The Recovery group reported an increase in distress after being charged and during their incarceration, followed by a decrease in distress following their exoneration. Of the four trajectories, the largest group is the Recovery cluster, which suggests that, despite experiencing significant distress during their incarceration, many exonerees are resilient and demonstrate recovery within six months of their exoneration.

While the trajectories were not exactly consistent with Bonanno's (2004) trajectories, the trajectories followed a similar trend, such that some participants

experienced recovery following their wrongful conviction and others experienced ongoing distress six months after exoneration. Specifically, two of the four trajectories directly matched Bonanno's (2004) prototypical trajectories, including: Chronic Distress and Recovery. In contrast to Bonanno's (2004) trajectories, exonerees demonstrated an Intense Distress with Minimal Recovery group with a lower level of stress prior to their involvement in the legal system, followed by a high level of distress throughout their incarceration and following their exoneration. Additionally, the cluster analysis did not reveal a Stable and Resilient Functioning group in exonerees, as all exonerees reported an increase in distress from their arrest throughout their incarceration. Finally, the Relief and Readjustment cluster was unique to exonerees, but was somewhat similar to Bonanno's (2004) Delayed Reaction cluster, as the exonerees in this cluster demonstrated a decrease in distress immediately following exoneration, followed by an increase in distress to baseline level 6 months later.

In examining differences in mental health symptoms among the four clusters, the Recovery group had significantly lower levels of PTSD and anxiety symptoms than the other three groups. There were no significant differences among the four clusters in levels of depression symptoms and satisfaction with life. In terms of meaning making variables, the Recovery cluster had higher levels of positive world assumptions and lower levels of searching for meaning than the other three clusters, but there were no differences among clusters in level of meaning made (as measured by the PTGI) or presence of meaning. Consistent with the literature, these results suggest that the search for meaning may be indicative of increased distress and less recovery (Homan, 2008; Bonanno, 2014). The results also provide support for the shattered assumptions theory, in that positive

world assumptions, likely representative of a reduced discrepancy between the initial appraisal meaning and global beliefs, lead to less PTSD symptomology and more positive mental health outcomes.

### ***Impact of Legal Variables***

While it was predicted that several legal variables (including the number of trials, number of years spent incarcerated, and number of appeals prior to exoneration) would be related to mental health outcomes (including depression, PTSD, anxiety and satisfaction with life) and meaning making variables (including global meaning violations and positive world beliefs), the results only supported that the number of years incarcerated was positively correlated with anxiety and negative correlated with the belief that people are comprehensible and predictable. Results indicated that participants who were incarcerated for longer periods of time tended to report higher levels of anxiety and less beliefs that people are comprehensible and predictable. Surprisingly, number of years incarcerated was not related to PTSD symptoms, depression symptoms, lower satisfaction with life, increased global meaning violations, and decreased positive world beliefs. Additionally, the number of trials and number of appeals prior to exoneration were not related to any mental health outcomes or meaning making variables. These results have important implications for mental health clinicians working with exonerees, highlighting the importance of assessing for mental health symptoms in all exonerees no matter the length of time they were incarcerated or the number of trials and appeals prior to exoneration. Additionally, the results emphasize the importance of assessing for anxiety and negative world beliefs related to the belief that people are comprehensible and predictable in exonerees who served long sentences.

## **Study Limitations**

### ***Sample Size***

The power analysis conducted prior to recruiting participants indicated that, in order to have adequate power to detect medium effects for the principal hypotheses, 84 participants were needed to detect a correlation of .30, and that 200 participants would provide adequate power to detect a correlation of .20. Although the current study has the largest sample size of exonerees to date, the sample size is relatively small and likely resulted in reduced power. It is possible that some of the statistically nonsignificant results could be due to the lack of power. Future research with larger sample sizes is needed to replicate the findings in a larger sample and strengthen confidence in the findings with increased statistical power.

### ***Current Sample is Not Representative of Racial Identities of Exonerees***

While the research suggests that 46% of people who are wrongfully convicted are Black, only 23% of participants in the current study identified as Black. (National Registry of Exonerations, 2018). While it is not clear why the sample is not representative of the racial distribution of exonerees more generally, it is important to note that the results cannot be generalized to all exonerees due to this limitation. It is imperative that future research be conducted with larger sample sizes that are representative of the racial identities of exonerees to better understand the experiences of Black exonerees in the United States.

### ***Limitation of Online Survey***

Given that many exonerees struggle with technology after being incarcerated for a significant number of years prior to exoneration, it is important to note that the use of an

online survey is a limitation to this study. This study represents a sample of exonerees who had the technological ability to take an online survey, as well as access to a phone or computer, which may not be representative of all exonerees.

### ***Limitations of Self-Reported, Retrospective Data***

There are several limitations to conducting research using self-report measures involved retrospective recall. First, participants' perceptions and responses are likely influenced by their mood at the time they completed the survey, which could result in biased responses. Second, given the retrospective nature of many of the questions, the survey is susceptible to bias in memory and recall. The retrospective method used in this study was modified from Mancini, Bonanno, and Sinan's (2015) methodology, in which they found that participants' retrospective recall was consistent with interviewer-rated overall functioning and symptoms. However, several aspects of human memory likely reduce the validity of self-reported retrospective data, including the fact that details about the traumatic experience may not be encoded in the first place, memory is distorted by perception in multiple ways, and repeated retrieval of a memory often results in the recoding of a revised version of the memory in which facts are altered (Hassan, 2005). Additionally, retrospective data does not support causal inferences in the way that longitudinal data would, as it is difficult to differentiate the cause and effect of meaning making over time. Future studies could utilize longitudinal designs to avoid the biases associated with retrospective recall. Longitudinal designs would also allow for a more comprehensive understanding of the experience of people who are currently wrongfully incarcerated, rather than the experience of exonerees who are retrospectively reflecting on their experiences while wrongfully incarcerated.

### ***Socially Desirable Responding***

Many of the concepts assessed by this study involve a significant level of stigma, and thus may be susceptible to socially desirable responding. For example, discussing symptoms of mental health is often stigmatized and may be impacted by socially desirable responding.

### ***Modification to Measures***

Two measures used in this study, the PTGI and GMVS, were modified by adding in the term “wrongful conviction,” which could potentially impact the standardization of the measure. Future studies could examine the psychometric properties of the modified measures to determine if the modification impacted the psychometric properties.

### **Directions for Future Research**

While the current study is the largest sample of exonerees to date, there is a need for future research with larger sample sizes that are representative of the demographics of exonerees at large. For the current study, a power analysis revealed that 200 participants were needed to detect medium effects, and the current study had 74 participants. Future research could replicate the current study in a larger sample size to strengthen the confidence in this study’s conclusion with increased statistical power.

Furthermore, it is important that future research examine the experiences of Black exonerees, as the participants in the current study were under-representative of the percentage of exonerees who identify as Black. There is a growing body of literature confirming the impact of racism as a social determinant of both physical and mental health outcomes (Paradies et al., 2015). Specifically, a recent meta-analysis has shown that racism is associated with a variety of negative mental health outcomes, including depression,

anxiety, psychological stress, posttraumatic stress, reduced life satisfaction, and suicidal ideation (Paradies et al., 2015). Given the significant body of research demonstrating the impact of racism on mental health outcomes, it is imperative that future research examine the impact of minority stress and racism on exonerees of color.

Although the current study was representative of the number of female exonerees in the population more generally, there is a need for future research examining the experiences of female exonerees. Only 8% of exonerees are women, likely due to the fact that nearly 63% of female exonerees are convicted of crimes that never occurred, resulting in additional challenges to achieving exoneration (Jackson & Gross, 2014). Additionally, 90% of women who are exonerated were convicted of crimes against children that never happened (Jackson & Gross, 2014). There is a need for further research involving larger samples sizes of female exonerees to better understand the unique psychological experiences of women who are wrongfully convicted.

Further, while the current study examines anxiety, depression, and PTSD in exonerees, there is a need for research examining other issues with reentry that exonerees face, including challenges with substance use, obtaining housing, finding and maintaining gainful employment, obtaining education, and financial issues. An emerging body of research has examined the impact of re-entry following incarceration more generally, including barriers to employment, housing, and social services (Cnaan, Draine, Frazier, & Sinha, 2008; Harper et al., 2020; Coates, 2015). In addition to the barriers created by having a criminal record, the stigma of incarceration coupled with a period without employment contribute to challenges in gaining employment upon release (McGrew & Hanks, 2017). In the current study, 51.4% of the exonerees reported that they are not

currently employed. There is a need for further research examining the challenges to re-entry faced by exonerees, including challenges with employment, education, and housing. Further, future research could compare the prevalence of mental health symptoms in exonerees to that of recently-incarcerated people more generally, thus building on the results of this study showing that exonerees face higher rates of mental health disorders than the general population.

The current study suggests that participants who reported the outcome of having made meaning making, including the both situational and global meaning, reported lower levels of anxiety, depression, and PTSD, as well as higher levels of satisfaction with life. Moreover, exonerees who were actively engaged in the search for meaning reported higher levels of anxiety, depression, and PTSD. These results reveal the importance of future research focused on ways of incorporating meaning making into psychotherapy for exonerees to provide relief from the high rates of major depressive disorder, generalized anxiety disorder, and posttraumatic stress disorder. There is currently no research examining best practices or recommendations for clinicians working with exonerees. There is a need for research to create evidence-based guidelines or manuals for clinicians who work with exonerees.

Finally, future longitudinal research is needed to better understand the trajectories of distress of recovery following experiences of trauma. The current study provides support for four trajectories of recovery or distress following exoneration, but there is a need for longitudinal research to provide additional support for the trajectories without the flaws of retrospective research.

**Implications for Policy and Practice**

Results from the current study reveal dire rates of posttraumatic stress disorder, major depressive disorder, and generalized anxiety disorder in exonerees. Consistent with prior research, results from the current study reveal that exonerees have significantly higher rates of depression, anxiety and PTSD than the general population. Specifically, comparisons to cutoff scores for these standardized assessments suggest that exonerees face four times higher rates of depression, seven times higher rates of anxiety, and eleven times higher rates of PTSD than the general population. Given that this study has the highest sample size of exonerees to date, the results reveal the dire rates of mental health disorders in exonerees, and suggest the need for mental health services for exonerees. Currently, only 7 states have statutes that provide therapy or counseling for exonerees (Gutman, 2017). Additionally, there are 15 states in the U.S. that provide no statutory compensation for exonerees more generally, thus creating a financial barrier for exonerees to seek needed mental health services. Prior research has revealed that only 39% of exonerees receive any sort of financial compensation, either by state statute or lawsuit (Gutman, 2017). The results of the current study provide support for public policy reform to increase access to mental health services for exonerees. Further, the results of the trajectory measure suggest uniformly high levels of distress during the incarceration and appeals process, signifying the importance of seeking justice for inmates who are currently in prison as a result of a wrongful conviction.

In terms of practice, results of the current study provide support for use of therapy focus on meaning making, such as Cognitive Processing Therapy or Existential Psychotherapy. The current study suggests that the outcome of meaning making, including

the both situational and global meaning, results in lower levels of anxiety, depression, and PTSD, as well as higher levels of satisfaction with life. Specifically, the results of the current study provide preliminary support for the use of therapies such as Cognitive Processing Therapy to treat symptoms of PTSD in exonerees, as CPT focuses on reducing the discrepancy between one's initial situational meaning and their global beliefs.

The high rates of distress symptoms in exonerees demonstrate the need for mental health and social work services for exonerees both during incarceration and upon release. Given that exonerees are a growing population, the results of this study highlight the need for informed clinicians who are aware of the needs and experiences of exonerees.

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## Appendix A

### Demographic Questions

Instructions: Please answer the following questions as honest and thoroughly as possible.

1. Age: \_\_\_\_ years
2. Gender:
  - a. \_\_\_\_ Male
  - b. \_\_\_\_ Female
  - c. \_\_\_\_ Transgender
  - d. \_\_\_\_ (Other: Please describe) \_\_\_\_\_
3. My ethnicity is:
  - a. \_\_\_\_ Asian or Asian American, including Chinese, Japanese, and others
  - b. \_\_\_\_ Black or African American
  - c. \_\_\_\_ Hispanic or Latino, including Mexican American, Central American, and others
  - d. \_\_\_\_ White, Caucasian, Anglo, European American; not Hispanic
  - e. \_\_\_\_ American Indian/Native American
  - f. \_\_\_\_ Mixed; Parents from two different groups \_\_\_\_ Other (please specify)  
\_\_\_\_\_
4. What is your highest level of education obtained
  - a. \_\_\_\_ Grade School
  - b. \_\_\_\_ Middle School
  - c. \_\_\_\_ High School
  - d. \_\_\_\_ College
  - e. \_\_\_\_ Advanced Degree (e.g., Master's degree, Nursing degree, etc.)

5. What is your current marital status?
  - a. Single – not dating
  - b. In a relationship, not married
  - c. Married
  
6. Are you currently employed?
  - a. \_\_\_\_ Yes
  - b. \_\_\_\_ No
  
7. On Average, how many hours per week do you work? \_\_\_\_\_
  
8. What is the combined annual income of the person(s) in your home?
  - a. \_\_\_\_ 0 - \$19,999
  - b. \_\_\_\_ \$20,000 - \$39,999
  - c. \_\_\_\_ \$40,000 - \$59,999
  - d. \_\_\_\_ \$60,000 - \$79,999
  - e. \_\_\_\_ \$80,000 - \$99,999
  - f. \_\_\_\_ \$100,000 - \$119,999
  - g. \_\_\_\_ \$120,000 - \$139,999
  - h. \_\_\_\_ \$140,000 - \$159,999
  - i. \_\_\_\_ \$150,000 - \$179,999
  - j. \_\_\_\_ \$180,000 - \$199,999
  - k. \_\_\_\_ \$200,000 and above
  
9. In thinking about your childhood, which label best describes your perceived social class?
  - a. \_\_\_\_ Lower Class

- b. \_\_\_\_ Working Class
- c. \_\_\_\_ Lower-Middle Class
- d. \_\_\_\_ Middle Class
- e. \_\_\_\_ Upper-Middle Class
- f. Upper Class

10. In thinking about your present experiences, which label best describes your perceived social class?

- a. \_\_\_\_ Lower Class
- b. \_\_\_\_ Working Class
- c. \_\_\_\_ Lower-Middle Class
- d. \_\_\_\_ Middle Class
- e. \_\_\_\_ Upper-Middle Class
- f. \_\_\_\_ Upper Class

11. Do you identify as religious and/or spiritual?

- a. \_\_\_\_ Yes
- b. \_\_\_\_ No

**Appendix B****Demographic Questions About Experiences in the Criminal Justice System**

1. How many times were you tried for the crime in which you were exonerated?
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  - e. 5 +
  
2. Did you have a private attorney or public defender?
  - a. \_\_\_\_ Private attorney
  - b. \_\_\_\_ Public defender
  - c. \_\_\_\_ I represented myself *pro se*.
  
3. How long did you serve in jail prior to your conviction? \_\_\_\_ years.
  
4. Were you released on bond while awaiting trial?
  - a. \_\_\_\_ Yes
  - b. \_\_\_\_ No
  
5. How long did you serve in prison prior to your exoneration? \_\_\_\_ years.
  
6. How many appeals (including both state and federal appeals) did you undergo prior to your exoneration?
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  - e. 5 +

7. Were you exonerated in state court or federal court?

a. \_\_\_\_ State court

b. \_\_\_\_ Federal court

**Appendix C****Patient Health Questionnaire – 9 (PHQ-9)**

Over the last 2 weeks, how often have you been bothered by any of the following problems?

1. Little interest or pleasure in doing things
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. More than half the days
  - d. \_\_\_\_\_ 3. Nearly every day
  
2. Feeling down, depressed, or hopeless
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. More than half the days
  - d. \_\_\_\_\_ 3. Nearly every day
  
3. Trouble falling or staying asleep, or sleeping too much
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. More than half the days
  - d. \_\_\_\_\_ 3. Nearly every day
  
4. Feeling tired or having little energy
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. More than half the days

- d. \_\_\_\_\_ 3. Nearly every day
5. Poor appetite or overeating
- a. \_\_\_\_\_ 0. Not at all
- b. \_\_\_\_\_ 1. Several days
- c. \_\_\_\_\_ 2. More than half the days
- d. \_\_\_\_\_ 3. Nearly every day
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down.
- a. \_\_\_\_\_ 0. Not at all
- b. \_\_\_\_\_ 1. Several days
- c. \_\_\_\_\_ 2. More than half the days
- d. \_\_\_\_\_ 3. Nearly every day
7. Trouble concentrating on things, such as reading the newspaper or watching television.
- a. \_\_\_\_\_ 0. Not at all
- b. \_\_\_\_\_ 1. Several days
- c. \_\_\_\_\_ 2. More than half the days
- d. \_\_\_\_\_ 3. Nearly every day
8. 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
- a. \_\_\_\_\_ 0. Not at all
- b. \_\_\_\_\_ 1. Several days

- c. \_\_\_\_ 2. More than half the days
- d. \_\_\_\_ 3. Nearly every day

9. Thoughts that you would be better off dead, or of hurting yourself

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. Several days
- c. \_\_\_\_ 2. More than half the days
- d. \_\_\_\_ 3. Nearly every day

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

- a. \_\_\_\_ Not difficult at all
- b. \_\_\_\_ Somewhat difficult
- c. \_\_\_\_ Very difficult
- d. \_\_\_\_ Extremely difficult

**Appendix D****Generalized Anxiety Disorder 7-Item Scale**

Over the last 2 weeks, how often have you been bothered by the following problems?

1. Feeling nervous, anxious, or on edge
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. Over half the days
  - d. \_\_\_\_\_ 3. Nearly every day
  - e. \_\_\_\_\_
2. Not being able to stop or control worrying
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. Over half the days
  - d. \_\_\_\_\_ 3. Nearly every day
3. Worrying too much about different things
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days
  - c. \_\_\_\_\_ 2. Over half the days
  - d. \_\_\_\_\_ 3. Nearly every day
4. Trouble relaxing
  - a. \_\_\_\_\_ 0. Not at all
  - b. \_\_\_\_\_ 1. Several days

- c. \_\_\_\_ 2. Over half the days
  - d. \_\_\_\_ 3. Nearly every day
5. Being so restless that it's hard to sit still
- a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. Several days
  - c. \_\_\_\_ 2. Over half the days
  - d. \_\_\_\_ 3. Nearly every day
6. Becoming easily annoyed or irritable
- a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. Several days
  - c. \_\_\_\_ 2. Over half the days
  - d. \_\_\_\_ 3. Nearly every day
7. Feeling afraid as if something awful might happen
- a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. Several days
  - c. \_\_\_\_ 2. Over half the days
  - d. \_\_\_\_ 3. Nearly every day

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?

- a. Not difficult at all
- b. Somewhat difficult
- c. Very difficult
- d. Extremely difficult

**Appendix E****PTSD Checklist for DSM-5 (PCL-5)**

Below is a list of problems that people sometimes have in response to a wrongful conviction. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

1. Repeated, disturbing, and unwanted memories of the wrongful conviction?
  - a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately
  - d. \_\_\_\_ 3. Quite a bit
  - e. \_\_\_\_ 4. Extremely
  
2. Repeated, disturbing dreams of the wrongful conviction?
  - a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately
  - d. \_\_\_\_ 3. Quite a bit
  - e. \_\_\_\_ 4. Extremely
  
3. Suddenly feeling or acting as if the wrongful conviction were actually happening again (as if you were actually back there reliving it)?
  - a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately
  - d. \_\_\_\_ 3. Quite a bit

- e. \_\_\_\_ 4. Extremely
4. Feeling very upset when something reminded you of the wrongful conviction?
- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely
5. Having strong physical reactions when something reminded you of the wrongful conviction (for example, heart pounding, trouble breathing, sweating)?
- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely
6. Avoiding memories, thoughts, or feelings related to the wrongful conviction?
- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely
7. Avoiding external reminders of the wrongful conviction (for example, people, places, conversations, activities, objects, or situations)?
- a. \_\_\_\_ 0. Not at all

- b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately
  - d. \_\_\_\_ 3. Quite a bit
  - e. \_\_\_\_ 4. Extremely
8. Trouble remembering important parts of the wrongful conviction?
- a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately
  - d. \_\_\_\_ 3. Quite a bit
  - e. \_\_\_\_ 4. Extremely
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?
- a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately
  - d. \_\_\_\_ 3. Quite a bit
  - e. \_\_\_\_ 4. Extremely
10. Blaming yourself or someone else for the wrongful conviction or what happened after it?
- a. \_\_\_\_ 0. Not at all
  - b. \_\_\_\_ 1. A little bit
  - c. \_\_\_\_ 2. Moderately

d. \_\_\_\_3. Quite a bit

e. \_\_\_\_4. Extremely

11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?

a. \_\_\_\_0. Not at all

b. \_\_\_\_1. A little bit

c. \_\_\_\_2. Moderately

d. \_\_\_\_3. Quite a bit

e. \_\_\_\_4. Extremely

12. Loss of interest in activities that you used to enjoy?

a. \_\_\_\_0. Not at all

b. \_\_\_\_1. A little bit

c. \_\_\_\_2. Moderately

d. \_\_\_\_3. Quite a bit

e. \_\_\_\_4. Extremely

13. Feeling distant or cut off from other people?

a. \_\_\_\_0. Not at all

b. \_\_\_\_1. A little bit

c. \_\_\_\_2. Moderately

d. \_\_\_\_3. Quite a bit

e. \_\_\_\_4. Extremely

14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?

a. \_\_\_\_0. Not at all

- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

15. . Irritable behavior, angry outbursts, or acting aggressively?

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

16. Taking too many risks or doing things that could cause you harm?

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

17. Being “superalert” or watchful or on guard?

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

18. Feeling jumpy or easily startled?

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

19. Having difficulty concentrating?

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

20. Trouble falling or staying asleep?

- a. \_\_\_\_ 0. Not at all
- b. \_\_\_\_ 1. A little bit
- c. \_\_\_\_ 2. Moderately
- d. \_\_\_\_ 3. Quite a bit
- e. \_\_\_\_ 4. Extremely

**Appendix F****Posttraumatic Growth Inventory – Short Form (PTGI)**

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

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

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

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

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

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

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

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 have a better understanding of spiritual matters. \_\_\_\_\_

4. I established a new path for my life. \_\_\_\_\_

5. I have a greater sense of closeness with others. \_\_\_\_\_

6. I know better that I can handle difficulties. \_\_\_\_\_

7. I am able to do better things with my life. \_\_\_\_\_

8. I have a stronger religious faith. \_\_\_\_\_

9. I discovered that I'm stronger than I thought I was. \_\_\_\_\_

10. I learned a great deal about how wonderful people are. \_\_\_\_\_

## Appendix G

### World Assumptions Questionnaire (WAQ)

Please rate the following statements on how much you agree or disagree with them using the following scale:

1 = Strongly Agree

2 = Agree

3 = Slightly Agree

4 = Slightly Disagree

5 = Disagree

6 = Strongly Disagree

1. Most people can be trusted.
2. I don't feel in control of the events that happen to me.
3. You usually can know what is going to happen in your life.
4.  It is difficult for me to take most of what people say at face-value.
5.  It is very difficult to know what others are thinking.
6. Anyone can experience a very bad event.
7.  People often behave in unpredictable ways.
8. People are less safe than they usually realize.
9.  For the most part, I believe people are good.
10. I have a great deal of control over what will happen to me in my life.
11. You never know what's going to happen tomorrow.
12. Other people are usually trustworthy.

13. People's lives are very fragile.
14. It is hard to know exactly what motivates another person.
15. Most people cannot be trusted.
16. People fool themselves into feeling safe.
17. It is hard to understand why people do what they do.
18. Most of what happens to me happens because I choose it.
19. Terrible things might happen to me.
20. It is ultimately up to me to determine how events in my life will happen.
21. It can be very difficult to predict other people's behavior.
22. What people say and what they do are often very different things.

Controllability of Events subscale<sup>[1]</sup><sub>SEP</sub> = Items 2, 3, 10, 18, 20

Comprehensibility and Predictability of People subscale = Items 5, 7, 14, 17, 21

Trustworthiness and Goodness of People subscale = Items 1, 4, 9, 12, 15, 22

Safety and Vulnerability subscale = 6, 8, 11, 13, 16, 19

## Appendix H

### Meaning in Life Questionnaire

Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

1 = Absolutely Untrue

2 = Mostly Untrue

3 = Somewhat Untrue

4 = Can't Say True or False

5 = Somewhat True

6 = Mostly True

7 = Absolutely True

\_\_\_\_\_ 1. I understand my life's meaning.

\_\_\_\_\_ 2. I am looking for something that makes my life feel meaningful.

\_\_\_\_\_ 3. I am always looking to find my life's purpose.

\_\_\_\_\_ 4. My life has a clear sense of purpose.

\_\_\_\_\_ 5. I have a good sense of what makes my life meaningful.

\_\_\_\_\_ 6. I have discovered a satisfying life purpose.

\_\_\_\_\_ 7. I am always searching for something that makes my life feel significant.

\_\_\_\_\_ 8. I am seeking a purpose or mission for my life.

\_\_\_\_\_ 9. My life has no clear purpose.

\_\_\_\_\_ 10. I am searching for meaning in my life.

## Appendix I

### Satisfaction With Life Scale (SWLS)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

7 - Strongly agree

6 - Agree

5 - Slightly agree

4 - Neither agree nor disagree

3 - Slightly disagree

2 - Disagree

1 - Strongly disagree

1. \_\_\_\_ In most ways my life is close to my ideal.
2. \_\_\_\_ The conditions of my life are excellent.
3. \_\_\_\_ I am satisfied with my life.
4. \_\_\_\_ So far I have gotten the important things I want in life.
5. \_\_\_\_ If I could live my life over, I would change almost nothing.

**Appendix J****Global Meaning Violations Scale** (Modified from Park, Riley, George, Gutierrez, Hale,

Cho, &amp; Braun (2016))

1 = Not at all

2 = A little bit

3 = Moderately

4 = Very much

*Belief Violation:*

1. When you think about how you felt before and then after your wrongful conviction, how much did the occurrence of this loss violate your sense of the world being fair or just?
2. When you think about how you felt before and then after your wrongful conviction, how much did this loss violate your sense that the world is a good and safe place?
3. When you think about how you felt before and then after your wrongful conviction, how much did this loss violate your sense of being in control of your life?
4. When you think about how you felt before and then after your wrongful conviction, how much did this loss violate your sense that God is in control?
5. When you think about how you felt before and then after your wrongful conviction, how much did this loss violate your sense that other forces have control in the world?

How much did your wrongful conviction interfere with your ability to accomplish each of these?

6. Social support and community

7. Self-acceptance
8. Physical health
9. Inner peace
10. Educational achievement
11. Achievement in my career
12. Creative or artistic accomplishment
13. Intimacy (emotional closeness)
  
14. How important to you is the sense of the world being fair or just?
15. How important to you is the sense of the world is a good and safe place?
16. How important to you is your sense of being in control of your life?
17. How important to you is the sense that God is in control?
18. How important to you is the sense that other forces have control in the world?

Belief violations subscale: items 1, 2, 3, 4, 5

Intrinsic goal violations subscale: items 6, 7, 8, 9, 13

Extrinsic goal violations subscale: items 10, 11, 12

## Appendix K

### Optional Qualitative Questions – Adapted from Kaler (2009)

The next questions ask your experiences regarding this most distressing event. Again, remember that you may decline to answer any of the questions that you do not feel comfortable answering. Please provide me with as much information as you feel able to provide.

1. How did your life change as a result of your wrongful conviction?
2. Sometimes people say that bad events have led to a variety of problems in their lives. Was this true for you? What types of problems did you observe?
3. Sometimes people say that bad events have led to positive changes in their lives. Was this true for you? What types of positive changes did you experience?
4. Sometimes people say that bad events resulted in changes to their most basic beliefs about the world, the things they assumed to be true about the world. Was this true for you? What changes to your most basic beliefs did you experience?