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Yu-Feng Emily Hu
University of Missouri-St. Louis

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Emily Hu
M.A., Clinical Psychology, University of Missouri-St. Louis, 2012
B.A., Psychology, University of California-Berkeley, 2010

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Advisory Committee

Steven E. Bruce, Ph.D.
Chairperson

Matthew J. Taylor, Ph.D.

Kristin Carbone-Lopez, Ph.D.

Sharon D. Johnson, Ph.D.

Abstract

Posttraumatic stress disorder (PTSD) is a relatively recent diagnosis that results in significant personal and societal costs. Given the diversity of American mental health consumers, a more thorough understanding of PTSD and its relation to cultural factors may have important implications for treatment implementation and refinement. Cultural factors such as locus of control, religiosity, and religious coping have been frequently overlooked in trauma research, yet show a clear link to PTSD risk and symptomatology. This study examined these cultural factors in more detail with relation to race and trauma type and their combined influence on PTSD symptomatology. A national sample of adults (N = 1,654) who endorsed a Criterion A event completed a series of online questionnaires. Analyses showed that participants who experienced a noninterpersonal index trauma and more negative religious coping tended to report the highest levels of PTSD. African Americans who reported more negative religious coping also tended to report the most symptoms of PTSD when compared to Whites. Such findings suggest the importance of considering the ways religion may influence one's meaning-making following a traumatic experience. Clinical implications and future research directions are also discussed.

Cultural Conceptualizations of the Trauma Response: The Role of Locus of Control, Religiosity, and Religious Coping

Posttraumatic stress disorder (PTSD) has long held a place as the quintessential embodiment of the human psychological response following the experience of a traumatic event. However, research examining the influence of culture on the exposure to, experience of, and response following a traumatic event has concluded that PTSD as currently defined by the current iteration of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; see American Psychiatric Association, 2000) does not encompass the full scope of reactions to trauma on a global scale. Even within the United States, various racial minority groups have been shown to differ quite significantly not only on PTSD symptom presentation and prevalence, but on the conceptualization of trauma and the trauma response in general. It is therefore important to focus on the relationship between culture and trauma, as well as the applicability of the PTSD diagnosis within a multicultural context.

According to the DSM-IV-TR, PTSD is defined along four primary criteria. The first of these, aptly named Criterion A, addresses the nature of the traumatic event itself. Criterion A states that an event or experience qualifies as "traumatic" if it involved "actual or threatened death or serious injury, or a threat to the physical integrity of self or others." Moreover, the strong emotional and psychological impact of the event is encompassed in the requirement that the event in question must have engendered within the individual a sense of "intense fear, helplessness, or horror" at the time of occurrence (American Psychiatric Association, 2000). Following the primary traumatic event, an individual with PTSD may develop a variety of symptoms along three other criteria, or clusters: continuous *reexperiencing* of the event via

flashbacks, nightmares or intrusive memories; intense emotional *numbing* and persistent *avoidance* of thoughts, feelings, conversations, and reminders related to the event; and pervasive *hyperarousal*, usually evidenced by increased irritability, difficulty with sleep, a marked awareness of potential danger, and a tendency toward being hyperaware and vigilant of one's surroundings (American Psychiatric Association, 2000). Taken together, these symptoms comprise a pattern of psychological, emotional, and behavioral dysfunction that, for many, embodies the essence of a posttraumatic stress response.

Recent research has concluded that approximately 70% of adults within the general United States population will experience a Criterion A event within their lifetimes (Freedy et al., 2010). Given these statistics, one may expect the prevalence of PTSD itself to be quite substantial. Indeed, several nationwide studies, most notably the Replication of the National Comorbidity Survey, have estimated the prevalence of lifetime PTSD throughout the general adult population to be approximately 6.8% (Kessler et al., 2005). These estimates vary by subpopulation; certain groups, such as women and military veterans, are especially at risk for PTSD. For example, using data from the first iteration of the National Comorbidity Survey, Kessler and colleagues (1995) estimated the total lifetime prevalence of PTSD in adult women to be 10.4%—more than twice that of adult men. Similarly, estimates of PTSD prevalence within the Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veteran population run as high as 20% among non-treatment seekers (Ramchand et al., 2010). Data from the National Vietnam Veterans Readjustment Study (NVVRS) has also found lifetime PTSD prevalence rates of 30.9% for male veterans and 26.9% for female veterans (Kulka et al., 1990). Therefore, PTSD is a problem of considerable magnitude for a large portion of the American population.

Why is PTSD Important?

Personal costs. In addition to the individual symptoms described previously—impairing in and of themselves—PTSD engenders considerable costs in other areas of an individual's life. PTSD is often associated with a variety of comorbid psychopathological disorders. Approximately 37-48% of individuals with PTSD evidence comorbid major depressive disorder (Kaufman & Charney, 2000). A study employing a sample of young adults found that 43% of participants with PTSD reported lifetime substance use disorders, compared to 24.7% of participants without PTSD (Breslau, Davis, Andreski, & Peterson, 1991). Finally, approximately 12.2% of veterans with PTSD also met diagnostic criteria for non-trauma-related panic disorder with agoraphobia (Schillaci et al., 2009). PTSD is therefore rarely found on its own, and such extensive comorbidity only adds to the impairment experienced on a personal level.

Other correlates of PTSD contribute to the personal costs of the disorder. When one considers the intense emotional and psychological stress PTSD engenders, it is not surprising that PTSD is associated with a greater risk of suicide. In a general epidemiologic study, PTSD was found to be significantly associated with suicide attempts even after controlling for comorbid Axis I and Axis II disorders (Nepon, Belik, Bolton, & Sareen, 2010). PTSD is also associated with a lower overall quality of life in a variety of traumatized populations (Mendlowicz & Stein, 2000), including Holocaust survivors (Amir & Lev-Wiesel, 2003) and adult survivors of childhood cancer (Meeske, Ruccione, Globe, & Stuber, 2001). Finally, PTSD is highly comorbid with a variety of physical health conditions: one study employing OEF/OIF veterans found that participants diagnosed with PTSD were more likely to report health problems such as chronic heart conditions, headaches, and musculoskeletal problems (Nazarian, Kimerling, & Frayne, 2012); while another study examining older adults concluded that those

with lifetime PTSD were more likely to report poorer physical functioning and a variety of both general and aging-related physical conditions (Pietrzak, Goldstein, Southwick, & Grant, 2012). Therefore, PTSD appears to be quite closely associated with a variety of costs at the personal level.

Societal costs. The impact of PTSD extends beyond the individual and takes a collective toll on society as well. PTSD engenders considerable monetary costs resulting from increased healthcare utilization by those who have been traumatized. For instance, in 2007, female survivors of interpersonal violence reported excess annual healthcare costs of approximately $19.3 million per 100,000 women (Rivara et al., 2007). Within the general healthcare system, medical costs for individuals diagnosed with PTSD were found to be $3,940 higher than those for individuals diagnosed with other anxiety disorders (Marciniak et al., 2005). Within the Veterans Affairs (VA) healthcare system, PTSD was estimated to cost an additional $8,284 per patient in 1999 (Yu et al., 2003). A more recent study concluded that depressed veterans with comorbid PTSD evidenced higher mental health care costs (approximately $1,399 per patient in the past year) than depressed veterans without comorbid PTSD (Chan, Cheadle, Reiber, Unutzer, & Chaney, 2009). PTSD also has a significant impact on productivity at a societal level. Estimates find that individuals with PTSD demonstrate an average of 3.6 days of work impairment per month, equating to the loss of approximately $3 billion in productivity per year—a figure that is comparable to that of individuals with major depressive disorder (Kessler, 2000). Finally, individuals with PTSD have also been found to be at a higher risk for high school and college dropout, teenage pregnancy, and unemployment (Kessler, 2000), all of which have costly societal implications. Indeed, a recent economic microsimulation model utilized to predict total societal costs of mental health concerns in a sample of OIF veterans deployed in 2008

estimated that PTSD, depression, and the two combined would result in an approximate total cost of $923 million over two years, taking into account suicide and lost productivity in addition to healthcare utilization (Kilmer, Eibner, Ringel, & Pacula, 2011). Therefore, the significant personal and societal costs of PTSD necessitate a more thorough understanding of the disorder as a whole.

Definitions of Culture

For many researchers, such a comprehensive understanding of PTSD involves an examination of the applicability of the diagnosis within a multicultural context. With the diversity of the American population, an evaluation of any mental disorder is not complete without a consideration of multicultural variations in its prevalence, manifestation, and treatment. Yet any discussion of culture and trauma cannot begin without first providing a clear definition of each construct. As will be discussed later, the definition of "trauma" itself varies in accordance with cultural factors; therefore, a working definition of "culture" must be attained before anything else.

Unfortunately, a true definition of culture has traditionally proved elusive, due to the variety of nuanced ways in which culture manifests and is experienced (Rosaldo, 2005). One particular definition that arose over the years has appeared more comprehensive than most: citing Pamela Hays (2001, 2008), Brown (2008) defined a person's cultural identity as consisting of "an intersecting web of 'social locations'…components of identity that are constructed in the context of social, interpersonal, and relational realities and that commonly inform the development of identity." Specifically, Hays and Brown both endorse using the acronym ADDRESSING (age, disability, religion, race, social class, sexual orientation, indigenous heritage, national origin, and gender/sex) to describe these different social locations. Indeed, all

of these different dimensions of identity may fall under the sweeping umbrella of "culture." However, the majority of the research to date has tended to equate culture with racial minority status. Such a restrictive approach engenders numerous issues, particularly with regard to intragroup variability and the importance of racial subcultures. Thus, an exploration of PTSD from a multicultural perspective should encompass not only racial minority issues but also other, less "visible" cultural constructs. Such constructs include such important factors as sexual orientation, disability status, generational beliefs, and socioeconomic class, among others. This study specifically examines the less visible cultural constructs of religiosity and beliefs about control.

PTSD as a Culture-Bound Syndrome

Previous research demonstrating the induction of PTSD symptoms via biological compounds (e.g. Jensen et al., 1997; Kellner, Levengood, Yehuda, & Wiedemann, 1998; Rainey et al., 1987; Southwick et al., 1993) and the diagnosis of PTSD within multiple populations (Friedman, Resick, & Keane, 2007; Marsella, Friedman, & Spain, 1996) has led many to conclude that PTSD is indeed a universal diagnosis. However, though PTSD as a syndrome may be found throughout the world, the experience and presentation of PTSD symptoms has been found to be quite significantly influenced by an individual's cultural background. This relationship merits further exploration, as it would lend more insight into the many nuanced ways in which trauma and PTSD may be perceived and, in turn, ultimately treated.

To begin, it is important to recognize that PTSD as a diagnosis came about as the result of a vast cultural shift. The diagnosis traces its origins to the "traumatic neuroses of war," a term used to describe the variety of psychological symptoms and errant behaviors—such as periods of explosive aggression, irritability, and war-related dreams—displayed by combat veterans from

early wars (Young, 2000). Indeed, PTSD was only introduced as a disorder in the DSM-III through the lobbying efforts of Vietnam veterans and their advocates, looking both to receive official recognition of emotional as well as physical injury received while deployed, and to make available a service-connected diagnosis that would qualify them for benefits through the VA (Bloom, 2000; Young, 2000). There is even some evidence that advocates for the establishment of PTSD initially wanted the diagnosis to be exclusive to veterans of the Vietnam War, such that the experience of these soldiers could be shown to be qualitatively distinct even from the experiences of those who had fought in other military conflicts (Watters, 2010). The development of PTSD as a diagnosis was thus largely situation-specific, in that the diagnosis was initially created with veterans in mind and situated quite specifically within the context of military hospitals and VA service centers. Such deep social and political roots indicate that PTSD does not function independently of the American veteran culture from which it sprang.

Indeed, PTSD—and all its previous diagnostic iterations—has changed and expanded multiple times in response to political and social pressures throughout the years. For instance, the feminist movement in the 1960s and 1970s succeeded in equating "rape trauma syndrome"—and other syndromes thought to develop from the experience of gendered violence—with PTSD. These advocates argued that the nightmares, flashbacks, and other symptoms reported by survivors of rape, domestic violence, and child sexual abuse were similar to those traditionally reported by veterans (Bloom, 2000). PTSD thus expanded to include gendered violence in addition to military-related trauma. Yet the shifts did not stop there: through extensive political advocacy and social justice movements, other experiences we now consider traumatic, such as natural disasters, terrorism, and crime victimization, also became associated with PTSD (Bloom, 2000). Therefore, it is important to remember that PTSD as a diagnosis was originally developed

in order to cater to and describe the experience of a specific group of people, and has shifted and expanded throughout the decades to be more and more inclusive, usually in response to political or social pressure.

Even taking into account the broader definition of Criterion A and the other PTSD symptom clusters in the recently-released current iteration of the DSM (DSM-5; see American Psychiatric Association, 2013), one must still remember that the vast majority of research concerning PTSD and trauma treatment has focused on Western European populations (Osterman & de Jong, 2007). Moreover, studies of PTSD conducted on racial minorities—be they in the United States or elsewhere—have tended to recruit primarily treatment- or asylum-seeking individuals who may not represent the community as a whole (Osterman & de Jong, 2007). Thus, the relative lack of multicultural data necessitates caution in drawing conclusions about applicability of the PTSD diagnosis to non-Euroamerican populations. Indeed, before we may assess whether or not PTSD as a diagnosis is sufficiently able to capture the entirety of the cross-cultural posttraumatic experience, we must examine the role culture plays at each step of the trauma experience. One of these steps involves the impact of cultural attitudes and beliefs on the traumatic conceptualization of a particular event. After all, whether or not an event is considered to be traumatic influences the presence and intensity of the subsequent psychological response.

Locus of Control, Fatalism and Religiosity in the Perception of Trauma

Definitions

A variety of cultural beliefs can influence an individual's perception of a traumatic event as well as the subsequent posttraumatic psychological response. Researchers examining these

factors have traditionally focused on more "visible" cultural identifiers, such as race/race, age, and gender. However, PTSD and trauma can also be influenced by other factors that vary by culture, such as beliefs in locus of control (LOC), fatalism, and religiosity. Before any discussion of the relationship among these constructs can take place, however, specific definitions of each must be delineated.

The concept of LOC has received much examination within the field of psychology. Locus of control may best be defined as "the degree to which persons expect that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics versus the degree to which persons expect that the reinforcement or outcome is a function of chance, luck, or fate, is under the control of powerful others, or is simply unpredictable" (Rotter, 1990). Locus of control may therefore be perceived as a broad, general concept encompassing aspects of perceived control and personal self-efficacy.

Fatalism has many definitions, depending on the field of interest. In social psychology, Wheaton (1980) first defined fatalism along the dimensions of coping ability versus coping effort. Specifically, he described *coping ability* as "the range and flexibility of a repertoire of coping behaviors" an individual may use when confronted with stress, while describing *coping effort* as "the intensity with which any chosen coping behavior is performed." Wheaton then postulated that the combinations of coping ability and coping effort form a spectrum of attribution, with "fatalism" at one end and "instrumentalism" at the other (Wheaton, 1980). Fatalism was defined as "a predisposition to interpret the external environment as having high causal power while personal forces are felt to be minimal," while instrumentalism was defined as the opposite (Wheaton, 1980). Therefore, an individual high in fatalism, according to Wheaton's

definition, is more apt to attribute outcomes of his or her behavior to external factors (such as luck or task difficulty) rather than internal factors (such as ability or effort).

Fatalism takes on a slightly different definition within the field of health psychology. Here, fatalism is defined as a belief on the part of the individual that his or her health is determined more by external than internal factors, and is also to some extent predestined (Straughan & Seow, 1998). Such beliefs relate to aspects of control and self-efficacy as well. This particular definition of fatalism has recently taken root with regard to psychological outcomes in patients with serious long-term medical conditions, such as cancer and diabetes. "Cancer fatalism" refers to a patient's belief that a diagnosis of cancer implies inevitable death (Powe & Finnie, 2003). A more lax definition of fatalism with regard to medical conditions in general also incorporates concepts of despair, hopelessness and powerlessness in the face of one's illness (Powe & Weinrich, 1999); for instance, a recent study examining the psychometric properties of a measure of "diabetes fatalism" found that the 12 items could be grouped into three constructs: emotional distress (despair), poor religious coping (hopelessness), and poor self-efficacy (powerlessness) (Egede & Ellis, 2010). Fatalism in the medical sense may therefore be conceptualized as a hopeless approximation of one's health prognosis stemming from a belief in predestination.

To this author's knowledge, definitions of fatalism with regard to the field of clinical psychology specifically do not currently exist. However, when considering the overlap between the social psychology and health psychology definitions of fatalism, one may construct an overarching definition of fatalism as a cultural belief that external forces shape one's life more than internal forces due to some aspect of predetermination, such as destiny, fate or a religious deity. This definition of fatalism will be used in the remainder of this paper.

In addition to fatalism and LOC, the more general construct of religiosity also bears mentioning. Throughout years of research, religiosity has long proved elusive in efforts at precise definition. Simply defining religiosity as the extent to which an individual participates in religious activities is restrictive and does not address the many nuances that make up religious behavior and belief. Indeed, the construct of religiosity has been shown to consist of multiple dimensions, although the exact nature of these dimensions varies from theorist to theorist. For example, Allport (1950) first advanced the theory that people who ascribe to some religious affiliation do so according to a spectrum, with an extrinsic orientation (using religion as a tool in order to achieve other means, such as social connection or a personal sense of security) at one extreme, and intrinsic orientation (incorporating religion into one's way of life in such a way that there are no other means to be achieved) at the other (Allport & Ross, 1967). Thus, an individual's religiosity could be measured according to where he or she falls on this spectrum of religious orientation. Other researchers such as Jacobson and colleagues (Jacobson, Heaton, & Dennis, 1990) instead postulate that religiosity can be measured according to where an individual falls on several dimensions simultaneously, such as belief orthodoxy, ritual involvement, personal religious behavior, and moral consequentiality. The multitude of theories concerning the definition and operationalization of religiosity have led to much disagreement and contention within the literature (Hackney & Sanders, 2003). Nevertheless, the constructs of fatalism and LOC, which are themselves rooted in cultural cognition, may be most related to the primarily cognitive dimension of religiosity that has been labeled "personal devotion" in the past (Hackney & Sanders, 2003). Religiosity, in this sense, would thus refer to the extent to which a particular individual feels a personal emotional attachment to God or another higher power, and the

subsequent intensity of his or her religious devotion (Hackney & Sanders, 2003). The remainder of this paper will utilize this definition in reference to the construct of religiosity.

Religious coping is also important to consider, as it may be related to LOC and fatalism in ways distinct from religiosity in general. Religious coping specifically describes how an individual integrates his or her religion and/or spirituality into coping with negative life stressors, whether that be positive religious coping (e.g. collaborative coping, religious purification/forgiveness, spiritual connection) or negative religious coping (e.g. demonic reappraisal, interpersonal religious discontent, punishing God reappraisal) (Ano & Vasconcelles, 2005; Pargament, Koenig, & Perez, 2000). Religious coping may therefore be related to both fatalism and LOC through cognitive beliefs regarding God's role in—and, relatedly, one's perceived control over—significant life events.

Such definitions of LOC, fatalism, and religiosity may lead one to believe that these constructs inhabit distinct islands of meaning. This, however, may not necessarily be the case. Certainly there are some key differences among these constructs. For instance, though fatalism incorporates an element of predestination, someone high in fatalism may believe that fate or destiny has set a predetermined path for his or her life, rather than subscribe to the mantra that "God has a plan for all of us." Similarly, a person who is deeply religious need not ascribe all causal control to God; certainly there is ample evidence of religious beliefs concerning free will, determination, and how best to respond to perceived "tests" from God. Yet there is no doubt that LOC, fatalism, and religiosity are related in some way. For instance, one study examining end-of-life decisions in older adults found that participants who scored lower on a religiosity scale and simultaneously reported ideas of LOC oriented more toward chance were more apt to endorse refusal of treatment and physician-assisted suicide in the face of a debilitating terminal

illness (Cicirelli & MacLean, 2000). Another study examining religious attitudes in open-heart surgery patients found that an internal LOC was positively associated with greater frequency of prayer as a coping mechanism, but negatively associated with general religiosity (Ai, Peterson, Rodgers, & Tice, 2005), suggesting the general pattern that religiosity is related to a belief in more external LOC. There is thus considerable evidence suggesting LOC, fatalism, and religiosity are related, although the extent to which these constructs overlap is less clear.

At first glance, also, LOC may appear to be identical to fatalism. Indeed, much of the literature to date has treated fatalism and LOC as largely interchangeable. However, Wheaton (1980) has argued that LOC is more restrictive than fatalism. Specifically, he postulated that LOC—according to Rotter's original conceptualization—only considers the internal factor of ability and the external factor of luck, whereas fatalism includes other factors, such as effort and task difficulty. Other researchers, however, have categorized fatalism instead as a sub-entity within the more general measure of LOC, encompassing a person's beliefs regarding control over personal goals and outcomes but not over more general circumstances such as sociopolitical events (Furnham & Steele, 1993; Mirels, 1970). Such a conceptualization certainly does appear to most accurately capture the relationship between LOC and fatalism, especially when one considers the extent to which these two labels have been used interchangeably in the literature to date. Unfortunately, the research to date has not examined the relationship between fatalism and LOC from the standpoint of the former being encompassed within the latter. The present study seeks to remedy this gap.

Racial Differences

LOC, fatalism and religiosity are important factors to examine in multicultural psychology especially because all three constructs have been shown to vary according to race.

Research has historically found that racial minorities demonstrate more external LOC, higher fatalism, and higher religiosity than Caucasians.

As stated previously, the majority of studies that claim to have examined either fatalism or LOC as a construct treat them as interchangeable. These studies have generally found a pattern of racial minorities gravitating toward more fatalistic beliefs, or an external LOC. For instance, some theorists have postulated that the belief in an external LOC is a central tenet of Mexican culture, largely due to the collectivistic nature of the culture, as well as general beliefs in the idea that nature cannot be mastered or resisted (Buriel & Rivera, 1980; Neff & Hoppe, 1993; Ross, Mirowsky, & Cockerham, 1983). Indeed, a study of high school students (half of which were Caucasian, the other half Mexican-American) found that Caucasian students endorsed a more internal LOC with regard to politics than Mexican-American students (Buriel & Rivera, 1980). It should be noted, however, that the same study also concluded that Mexican-American students endorsed a more internal LOC with regard to respect, suggesting that perceptions of control and fatalism may vary depending on the subject. Another study examining LOC in a sample of 427 Native Americans with alcoholism also found that Native Americans reported more external LOC than Caucasians (Hurlburt, Gade, & Fuqua, 1983). Finally, one study concluded that Korean American Protestants reported more “powerful other” and “God control” (both external LOC) beliefs than Caucasian Protestants (Bjorck, Lee, & Cohen, 1997), Fatalism and LOC therefore both appear to vary by racerace, with minorities generally endorsing more fatalistic beliefs and a more external LOC than Caucasians.

With regard to fatalism specifically, other research has been conducted exploring racialracial differences in beliefs within the realm of cancer fatalism. One study incorporating data from the Health Information National Trends Survey found that Asians and Hispanics were

more likely to endorse fatalistic attributions of their color cancer development than non-Hispanic Whites (Jun & Oh, 2013). Another study that analyzed interview data obtained from a group of Jordanian and Palestinian American women concluded that fatalism was one of the cultural beliefs that lowered the likelihood of participating in breast cancer screening (Kawar, 2013). Finally, an analysis of the responses of 58 low-income women to a survey of attitudes toward breast health concluded that women who reported higher breast cancer fatalism were more likely to be African American, and were also more likely to endorse beliefs that little could be done to prevent breast cancer, and that breast cancer could not be treated even if detected early (Hall et al., 2008). It thus appears from the health psychology research that not only do members of racial minorities endorse fatalism at a higher rate, but fatalism also plays a role in their long-term health attitudes and prognoses.

With regard to religiosity, previous research has generally concluded that racial minorities value religion at least as much as, if not more than, Caucasians do. In fact, it has been postulated that many racial minority individuals, especially African Americans, may use religion and spirituality as a means of coping with the stress that results from living in a predominantly Caucasian society (Pargament, 2002). Indeed, African Americans evidence an involvement in religious activities and a tendency to seek support through religion at a higher level than that of Caucasians (Taylor, Chatters, Jayakody, & Levin, 1996). African Americans and Caribbean Blacks also endorsed the use of religious coping (turning to God or prayer in times of emotional need) at a higher rate than Caucasians (Chatters, Taylor, Jackson, & Lincoln, 2008). Indeed, religion seems to play an important role in the daily lives of the majority of African Americans (Constantine, Lewis, Conner, & Sanchez, 2000). Though less studied, Hispanics also appear to place considerable value on religion within their lives (Westoff & Marshall, 2010), as do both

Asian Americans (Ai, Bjorck, Appel, & Huang, 2013) and Native Americans (Yoon & Lee, 2004). Indeed, one may argue that Asian Americans' and Native Americans' overarching cultural belief in harmony with nature, society and the environment (Tan, 2008; Yoon & Lee, 2004) may render religion and spirituality a key part of their day-to-day living. Therefore, religion plays a significant role in the lives of many members of racial minorities.

The Connection to Psychopathology

What are the implications of LOC, fatalism, and religiosity for psychopathology and mental health? Research indicates that all three factors may play a role in the maintenance not only of mental health but of overall well-being in general.

A review of the research to date on this topic indicates that, as mentioned previously, many studies suffer from the lack of a distinction between the constructs of fatalism and LOC. Nevertheless, previous research has generally found both high fatalism and an external LOC to be associated with poorer mental health outcomes in a variety of populations. For example, a study employing 2,981 depressed adults concluded that belief in an external LOC significantly predicted more severe depressive symptoms one year later (Struijs, Groenewold, Oude Voshaar, & de Jonge, 2013), and another study of 5,423 adolescents found that belief in an external LOC significantly increased the odds of experiencing depressive symptomatology by as much as 25 before controlling for other cognitive covariates (Roberts, Roberts, & Chen, 2000). An older meta-analysis confirmed the historicalness of this pattern across multiple studies and populations (Benassi, Sweeney, & Dufour, 1988). Another meta-analysis specifically reviewing studies across multiple cultural groups concluded that external LOC is associated with both greater depression and greater anxiety (Cheng, Cheung, Chio, & Chan, 2013). Interestingly, the same study also concluded that the relationship between external LOC and anxiety was weaker for

collectivistic cultures than for individualistic ones, suggesting that an external LOC is both more acceptable within collectivistic cultures and more of an impediment within individualistic cultures who emphasize personal change and the achievement of individual agentic goals (Cheng et al., 2013). The influence of fatalism and LOC on psychopathology and mental health therefore appears to vary according to cultural beliefs and attitudes.

The research examining the relationship between religiosity and mental health has traditionally produced inconclusive results. Indeed, multiple meta-analyses have generally found that the number of studies that conclude a negative relationship between religiosity and psychopathology is comparable to the number of studies that conclude a positive relationship, as well as the number of studies that conclude no relationship at all (Power & McKinney, 2013). Several explanations for this discrepancy have been offered, the most prevalent of which is the issue of how religiosity is measured (Power & McKinney, 2013). Indeed, few studies have examined how the "personal devotion" aspect of religiosity specifically (as defined earlier) relates to mental health. Nevertheless, a previous meta-analysis did conclude that this form of religiosity was more strongly correlated with psychopathology than either institutional or ideological religion, and that it was most strongly associated with positive mental health in a variety of domains (Hackney & Sanders, 2003). Other research examining the relationship between religiosity and specific mental disorders has found similar patterns. For instance, a meta-analysis of studies examining religiosity and mental health in adolescents concluded that high religiosity was associated the most strongly with less substance use in this population (as compared to other forms of psychopathology) (Dew et al., 2008). Another study examining the possible connections between religiosity and obsessive-compulsive disorder (OCD) found that certain tenets of Christianity appear to fuel beliefs related to thought-action fusion, which may in

turn contribute to more severe OCD symptomatology (A. D. Williams, Lau, & Grisham, 2013). Finally, a cross-sectional study utilizing outpatients at an internal medicine clinic concluded that individuals with lower levels of religion/spirituality tended to simultaneously evidence more symptoms of borderline personality disorder (Sansone, Kelley, & Forbis, 2012). Religiosity therefore appears to have some form of an influence on mental health, though the exact nature of that influence is difficult to discern due to differences among studies in methods, measurement, and operationalization of constructs.

Locus of Control, Fatalism, and Religiosity in the Context of Trauma

Research specifically examining the relationship among LOC, fatalism, religiosity, general stress and trauma has been frustratingly rare. Nevertheless, there is some evidence that LOC, fatalism and religiosity may affect not only how an individual copes with general stress, but also how he or she perceives and responds to traumatic events experienced throughout life.

Fatalism and LOC have both been shown to influence how individuals cope with general stress. One study examining this relationship in parents of children with brain tumors concluded that those who believed in an external LOC tended to report higher levels of parenting stress than those who believed in a more internal LOC (Bennett, English, Rennoldson, & Starza-Smith, 2013). Another study examining the risk for compassion fatigue in genetic counselors again found that those who reported a more external LOC and lower optimism were at greater risk for compassion fatigue than those who did not (Injeyan et al., 2011). Finally, another study utilizing a sample of working adults found that those with an internal LOC were more likely to demonstrate positive coping (such as help-seeking), while those with an external LOC were more likely to demonstrate negative coping (such as avoidance/resignation) (Gianakos, 2002). High

fatalism and a belief in an external LOC therefore appear to contribute to poor coping in the face of general stress.

In the face of life stressors, many people often turn to religion for support and to help with the coping process. Indeed, studies examining the relationship between religiosity and successful coping with life stressors has tended toward the conclusion that religiosity may help buffer against the potential deleterious effects of stressful life events. For instance, when researchers analyzed data from the 1995 Detroit Area Study, they found that the frequency of church attendance and belief in eternal life were positively associated with psychological well-being (Ellison, Jason, Williams, & Jackson, 2001). Interestingly, the same study also found that frequency of prayer was negatively associated with psychological well-being (Ellison et al., 2001), once again highlighting the importance of considering individual dimensions of religiosity when examining its relationship to coping. Another study employing interviews from a community sample of 720 adults in the Connecticut area found that, although religious attendance did not directly reduce psychological distress stemming from life stressors, it nevertheless helped maintain psychological well-being in the face of such stress (D. R. Williams, Larson, Buckler, Heckmann, & Pyle, 1991). However, it must be noted that some aspects of religiosity—such as negative appraisals of a particular stressful situation stemming from religious beliefs—may in fact contribute to poorer coping following life stressors. Indeed, a meta-analysis examining religious coping in the face of stressful life events found generally that those who engaged in positive religious coping evidenced more positive psychosocial adjustment than those who engaged in negative religious coping (Ano & Vasconcelles, 2005; Pargament et al., 2000). A similar pattern was found in a national survey of Presbyterian clergy, elders and members, where those who endorsed more positive religious coping reported more general well-

being, with the opposite effect for those who endorsed more negative religious coping (Pargament, Tarakeshwar, Ellison, & Wulff, 2001). One must therefore keep in mind that religiosity as a whole does not necessarily buffer against psychological distress following a stressful life event. Rather, the way that an individual chooses to use religion to cope with the stressor in question may have more of an impact on a person's psychological adjustment in the face of stress.

With regard to trauma and PTSD specifically, fatalism and LOC have unfortunately received little attention. However, there is nevertheless some evidence to suggest both fatalism and LOC may contribute to how people perceive and respond to traumatic events, especially within the context of multiculturalism.

Beliefs regarding fatalism and LOC may influence people's perceptions of traumatic events. Most research in this area has been conducted with regard to motor vehicle accidents (MVAs). One study found that people in Pakistan, which is the country with the highest rate of fatalism according to a recent global survey (Acevedo, 2008), were more likely to endorse the idea that injuries or deaths as the result of an MVA do not need to be reported because of a belief in the predetermination and uncontrollability of the crash (Fleiter, Kayani, & King, 2012). A meta-analysis reviewing research examining drivers' likelihood of getting into an MVA also concluded that an internal LOC was negatively associated with risk of an MVA (Arthur, Barret, & Alexander, 1991). Notably, a more recent study examining different dimensions of driving-related LOC with a sample of Turkish drivers found that, although the extent of drivers' beliefs that MVAs are caused by vehicle- and environment-related problems was positively associated with the number of driving offences they endorsed, the extent of drivers' beliefs that MVAs are caused largely by bad luck or fate was not associated with either accidents, offences or errors

(Özkan & Lajunen, 2005). The results of this study therefore suggest that the influence of LOC on an individual's perception of an MVA varies according to the meanings they ascribe to aspects of control—someone who believes an accident was caused by bad weather or poor road conditions may perceive the event very differently than someone who attributes the accident to fate or luck.

Research examining how fatalism and LOC influence people's perceptions of traumatic events other than MVAs is much rarer. It has been postulated that Asian Americans' tendency toward more fatalistic thinking, especially with regard to perseverance through suffering, may often lead victims of child sexual abuse to underreport to both the family and the authorities, and to also refrain from taking action to stop the abuse (Futa, Hsu, & Hansen, 2006). In a similar vein, a qualitative study incorporating data obtained from focus groups, community meetings, and interviews with 32 HIV-positive Latina women who had also experienced domestic violence concluded that many of these women subscribe to the cultural belief that *la suerte*, or luck, largely determines the course of their lives, their choice of partners, and their HIV status (Moreno, 2007). Many of these women took the view of a "domino effect" with regard to negative events happening in their lives, and expressed a large lack of ability to control what happens to them (Moreno, 2007); indeed, many seemed to expect that continued trauma was simply their lot in life, so to speak. Therefore, cultural beliefs rooted in fatalism and LOC appear to have a significant impact on how individuals perceive traumatic events.

In addition to influencing how people perceive trauma, fatalism, LOC, and religiosity have all been shown to play a role in how—and if—people respond psychologically to traumatic events. In this case, the vast majority of the research has used PTSD as a measure of

psychological distress following trauma, although a few studies have used alternative measures of posttraumatic adjustment and well-being.

Research exploring how fatalism and LOC relate to posttraumatic adjustment is currently lacking in the field, although some work has been done involving estimates of PTSD prevalence in various populations following natural disasters. For instance, one study that analyzed interviews with 404 residents of south Florida following Hurricane Andrew concluded that Spanish-preferring Latinos reported PTSD at a rate significantly higher than either Caucasians or African Americans (Perilla, Norris, & Lavizzo, 2002). Further analyses found that, of all the different racial groups included in the analyses, Spanish-preferring Latinos endorsed an external LOC at the highest rate, and indeed, LOC was a significant mediator of the relationship between race and PTSD symptoms (Perilla et al., 2002). The authors therefore concluded that LOC played a significant role in determining the severity of PTSD above and beyond race itself (Perilla et al., 2002). These findings are intriguing, but unfortunately little work has been done exploring a similar research question utilizing other groups and other traumas. One may therefore broaden the picture by considering studies that, while not examining PTSD or the posttraumatic response per se, nevertheless explored the impact of fatalism and LOC-related beliefs on general psychological well-being following natural disasters. One such study utilizing data from the Gulf Coast Child & Family Health (GCAFH) project assessed the overall well-being and recovery of 1,074 survivors of Hurricane Katrina six and twelve months following the disaster using the Medical Outcomes Study Short Form Version 2 (SF-12). Mental health was just one of several dimensions subsumed under the construct of recovery in this case, and the researchers concluded that a predisposition toward greater psychological strength (including a tendency toward an internal LOC) significantly predicted more recovery post-disaster

(Abramson, Stehling-Ariza, Park, Walsh, & Culp, 2010). Finally, researchers utilizing a sample of college students exposed to hurricanes in Florida in 2004 concluded that students with an external LOC endorsed both more worry and more avoidant coping behaviors (Scott et al., 2010), which one may argue are psychological symptoms core to PTSD. Therefore, both higher fatalism and a belief in an external LOC appear to be related to poorer adjustment and greater risk of PTSD following non-interpersonal trauma in a variety of populations. One may expect such a relationship, since by definition one may presume that natural disasters are largely perceived as out of a person's control.

What about trauma that is interpersonal in nature—that is, perpetrated by someone else with the express intent to harm? Research in this area has tended to focus on the relationship between LOC and subsequent PTSD following the experience of interpersonal trauma. One studying employing responses from 117 undergraduate women found that participants who reported a history of child sexual abuse were more likely to endorse a lessened sense of perceived control, which in turn was associated with PTSD symptom severity following adult revictimization (Bolstad & Zinbarg, 1997). Another study utilizing a sample of crime victims found that generalized perceived uncontrollability over aversive events was associated with PTSD symptomatology (Kushner, Riggs, Foa, & Miller, 1993). Other research examining LOC and fatalism more specifically has found that women who reported a history of child sexual abuse showed a positive association between external LOC and current PTSD (Shaw, 2000 as cited by Hood & Carter, 2008). Women who reported a more internal LOC during an assessment six months following a sexual assault also tended to report less depression and PTSD related to the assault (Regehr, Cadell, & Jansen, 1999). Finally, research on veterans with combat trauma has concluded that Vietnam veterans with PTSD can be characterized by a general belief in

external LOC (Orr et al., 1990), and the PTSD symptom severity experienced by Hispanic veterans specifically may be mediated by fatalism (Ruef, Litz, & Schlenger, 2000). A review of the literature to date would therefore suggest that both fatalism and LOC play a significant role in PTSD symptomatology and posttraumatic adjustment following both interpersonal and non-interpersonal trauma.

The relationship between religiosity and trauma has been explored more extensively in the research. In this vein, most studies have generally concluded that higher religiosity is associated with decreased PTSD symptomatology for both interpersonal and non-interpersonal trauma. For instance, one study that sampled 65 female African American survivors of domestic violence found that those who endorsed more spirituality and more frequent religious involvement also tended to report fewer symptoms of both depression and PTSD (Watlington & Murphy, 2006). Another study utilizing a sample of Vietnam veterans with combat trauma found that intrinsic religiosity was associated with fewer PTSD symptoms, while more endorsements on a measure of spiritual injury (measuring aspects of negative religious coping such as guilt or feeling God has treated one unfairly) were associated with more severe PTSD (Berg, 2011). Indeed, such findings have led to the development of treatment protocols integrating spirituality and religious beliefs. One such protocol, Building Spiritual Strength (BSS), is an eight-session group intervention designed to treat PTSD in combat veterans using an approach that addresses religious stress and meaning-making (J. I. Harris et al., 2011). A randomized controlled trial concluded that veterans assigned to the BSS treatment group evidenced significant reductions in PTSD symptomatology when compared to a waitlisted control group (J. I. Harris et al., 2011). Research is rarer in the realm of religion and PTSD resulting from non-interpersonal trauma. Nevertheless, there is some evidence that religiosity relates to PTSD symptomatology with

regard to these types of traumatic events as well. For example, researchers who assessed 156 psychiatric outpatients after Hurricane Katrina found that those who endorsed using prayer as a coping strategy also tended to report fewer PTSD symptoms (McLeish & Del Ben, 2008). Another sample of 93 adult survivors of Katrina who were evacuated from the New Orleans area concluded that those who were deemed resilient to the development of PTSD reported significantly less negative religious coping than those who either developed chronic PTSD, developed delayed PTSD, or eventually recovered from PTSD (Wadsworth, Santiago, & Einhorn, 2009). It seems, then, that religiosity may buffer against PTSD symptomatology following a traumatic event, regardless of whether it was interpersonal or not. However, a clear distinction must be made between positive and negative religious coping, as the former appears beneficial and the latter harmful in terms of subsequent PTSD symptomatology.

Overall, research to date has found some evidence that higher fatalism, belief in an external LOC, and less religiosity (especially more negative religious coping) are associated with less posttraumatic adjustment and more PTSD following both interpersonal and non-interpersonal traumatic events. Fatalism, LOC, and religiosity are all constructs that vary according to race and cultural background, but research exploring how these constructs interact with subsequent PTSD development within the realm of racial identity has, to the author's knowledge, not yet been conducted within the field. Furthermore, the extent to which fatalism and LOC have been used interchangeably within the literature begs the question of whether they should be treated as separate but related constructs, or if fatalism is better conceptualized as a subdimension of LOC. The present study therefore sought to both to delineate the differences between fatalism and LOC as well as to further examine the relationship between these constructs, religiosity, racial identity, trauma type, and PTSD.

The Present Study

This study focused on examining how fatalism, LOC, religiosity, trauma type, and race all interact to influence PTSD symptomatology. The investigator had five primary aims. The first aim was to determine whether or not fatalism and LOC are indeed distinct constructs, or whether fatalism may instead be subsumed under the broader category of LOC. The second aim was to add to and provide further support for previous research by examining how fatalism, LOC, and religiosity vary by race. The third aim was to study aims to further clarify the relationship between these constructs and PTSD by examining how PTSD symptomatology relates to LOC, fatalism, and religiosity. The fourth aim was to explore the interactions among fatalism, LOC, religiosity, PTSD, and the trauma type. That is, non-interpersonal traumatic events may be perceived as less controllable and more attributable to a higher spiritual power than interpersonal traumatic events, which in turn may influence what effect—if any—such cultural beliefs as LOC, fatalism, and religiosity have on PTSD symptoms. Finally, the fifth aim was to examine the role race plays within this network of constructs.

In accordance with these five aims, the investigator formulated the following hypotheses based on previous research and theoretical groundwork:

Hypothesis 1: When combined as one measure and then deconstructed, fatalism and LOC will be best captured as dimensions of the same construct, rather than two constructs entirely independent of each other.

Hypothesis 2: Caucasians will report lower fatalism, more internal LOC scores, lower religiosity, and less religious coping than other racial groups.

Hypothesis 3: Higher external LOC, higher fatalism, lower religiosity, and more negative religious coping will be associated with more PTSD symptoms.

Hypothesis 4: Trauma type (noninterpersonal vs. interpersonal) will moderate the relationship between the cultural constructs (LOC, fatalism, religiosity, religious coping) and PTSD. Specifically, more external LOC, higher fatalism, greater religiosity, and more negative religious coping will predict lower PTSD symptomatology in people who report a noninterpersonal index trauma, but not in people who report an interpersonal index trauma.

Hypothesis 5: Race will also moderate the relationship between the cultural constructs (LOC, fatalism, religiosity, religious coping) and PTSD. Specifically, racial minority individuals who report more external LOC, higher fatalism, greater religiosity, and more negative religious coping will also endorse greater PTSD symptomatology when compared to Whites.

Methods

Participants

Participants were adults aged 18 or older. The experience of a Criterion A traumatic event was not an inclusion criterion for the study. Neither did participants have to meet diagnostic criteria for PTSD in order to qualify; since both the cultural constructs and PTSD symptomatology were treated as continuous variables in the data analysis (described below), thresholds and score cutoffs were not utilized to exclude or include potential participants.

A total of 1,901 people provided informed consent for the study. Of these, 247 did not complete any study measures beyond the informed consent form, resulting in 1,654 participants with at least some usable data. Data from these participants were used in analyses of Hypotheses 1-3. Demographic data for these 1,654 participants are presented in Table 1. The average age of the sample was 34.89 years (SD = 12.59). Participants were majority female (77%), lived in metropolitan or urban areas (53%), and identified as single or unmarried (47%). The average education level was 12.80 years (SD = 5.58), and most participants reported a low- to middle-class socioeconomic status (48% reported an annual household income between $10,001 and $50,000). The majority of the sample identified a sect of Christianity as their primary religion (47%). Approximately 57% of the sample identified as Caucasian/White, 12% as African American/Black, 10% as Hispanic/Latino, 4.3% as Asian, 0.6% as Native American/American Indian, and 2% as Other. Approximately 14% of participants did not respond to the race question.

A total of 558 participants completed all study measures (required for analyses of Hypotheses 4 and 5). Demographic data for these study completers are presented in Table 2. The average age of the sample was 37.49 years (SD = 12.96). Participants were, again, majority female (77%), lived in metropolitan or urban areas (49%), and identified as single or unmarried (45%). The average education level was 13.07 years (SD = 5.39), and most participants reported a low- to middle-class socioeconomic status (50% reported an annual household income between $10,001 and $50,000). The majority of the sample also identified a sect of Christianity as their primary religion (52%). Approximately 63% of the sample identified as Caucasian/White, 14% as African American/Black, 11% as Hispanic/Latino, 6% as Asian, 2% as Native American/American Indian, and 2% as Other.

Pearson's chi-square test of independence was performed to determine whether or not study completers differed from the overall sample on categorical demographic variables (gender, area of residence, socioeconomic status, religion, and race). Independent samples *t*-tests were used to determine whether or not the two groups differed on continuous demographic variables (age and years of education). Study completers were older than the overall sample (t = -2.60, p = .009), were slightly less likely to live in suburban areas ($\chi^2[3] = 7.88$, $p = .049$), were more likely to identify as Christian ($\chi^2[17] = 34.13$, $p = .008$), and more identified as African-American or another minority ($\chi^2[6] = 25.45$, $p < .001$). Study completers and the overall sample did not differ significantly in terms of gender ($\chi^2[1] = .61$, $p = .436$), marital status ($\chi^2[4] = 6.38$, $p = .173$), years of education (t = -1.02, p = .309), or socioeconomic status ($\chi^2[5] = 4.59$, $p = .468$).

Procedure

Participants were recruited via online advertisements posted on various Internet classifieds websites (e.g. Craigslist). Particular efforts were made to post advertisements in major cities throughout the United States in an effort to recruit a more culturally and racially diverse sample. Several cities were also selected on the basis of having larger populations of certain racial minorities (e.g. Miami, FL with its higher Hispanic/Latino population; Honolulu, HI with its higher Asian American population). The text of the advertisement indicated a search for people who had experienced "a stressful life event" but made no mention of PTSD or other mental health concerns.

Participants who clicked on the link from the advertisement were first presented with the informed consent. Those who provided consent were then directed to the study questionnaires, all administered online. After the questionnaires were completed, participants were given the option of entering in a raffle for one of four $50 Amazon gift cards. Those who wished to enter

the raffle were directed to a separate online survey, where they were asked to enter their email addresses into a separate database solely for the purposes of entry into the gift card drawing. The winners were randomly chosen and notified after recruitment ended. The study questionnaire survey and the raffle email survey were not linked in any way and did not ask participants to provide any overlapping identifying information. Therefore, participant responses were kept de-identified and entirely anonymous.

Measures

The online survey consisted of measures assessing demographics, trauma history, PTSD, depression, fatalism, LOC, and religiosity. Those participants who did not report a qualifying Criterion A event were not administered the PTSD measures. Those participants who did report a Criterion A event were administered all measures.

Demographics. Participants were asked to provide information regarding their age, gender, area of residence (rural/urban/suburban), education level, race, socioeconomic status, employment status, and religious affiliation. Specific sects within major religions (e.g. Christian – Catholic, Christian – Protestant) were also available for selection.

Life Events Checklist (LEC; see Gray, Litz, Hsu, & Lombardo, 2004). The LEC is a 17-item measure designed to assess an individual's trauma history, specifically the experience of events that would meet Criterion A of PTSD in the *DSM-IV*. The first 16 items of the LEC query respondents about life events that typically meet Criterion A. The last item queries the experience of "any other very stressful event or experience". Originally developed in concurrence with the Clinician-Administered PTSD Scale, the LEC has been shown to be a reliable and valid measure of trauma history independent of subsequent clarification with the CAPS (Gray et al., 2004).

For the purposes of this study, several modifications to the LEC were implemented. First, the standard descriptors participants may use to indicate their experience of a trauma on the LEC are "Happened to me", "Witnessed it", "Learned about it", "Not sure", and "Doesn't apply". To facilitate data analyses, save test-taking time, increase retention, and more clearly delineate the direct experience of traumatic events, several of these descriptors were removed so that respondents were only asked to indicate whether each event happened to them directly, or it did not apply. Respondents were also asked to indicate the approximate age of onset for each event they endorsed experiencing, using distinct age ranges: 0-5, 6-12, 13-18, and 18 and over. The administration procedures for the LEC were also slightly modified in that the measure was administered twice. During the first presentation, participants were encouraged to endorse experiencing as many traumatic events as was applicable. During the second presentation (immediately following), participants were then asked to select only the traumatic event that they considered to be their index event. Instructions for this task were as follows: "Please select the one traumatic event from the list below that you feel has had the greatest psychological/emotional impact on your life." The specific identification of an index event was used to classify respondents' traumas by type: interpersonal and non-interpersonal. Interpersonal traumatic events included physical assault, assault with a weapon, sexual assault, unwanted sexual experiences, combat, captivity, and severe human suffering. Non-interpersonal traumatic events included motor vehicle accidents, natural disasters, fires/other accidents, and illnesses. Traumatic events listed as "Other" were not classified.

Posttraumatic Stress Disorder Checklist – Civilian Version (PCL-C; see Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-C is a 17-item self-report measure that assesses whether or not an individual meets diagnostic criteria for PTSD according to the *DSM-IV* in the

past month. Notably, the instructions are not explicitly event-specific. Each of the individual PTSD symptom clusters are assessed on a 5-point Likert-type scale, where 1 = *Not at all* and 5 = *Extremely*. The total range of possible scores is 17-85. Suggested cutoffs for the PCL vary from population to population, although a cutoff score of 30 has been proposed for general health screening purposes (Bliese et al., 2008). Since this study targets the general population, this cutoff will thus be employed in descriptive data analyses examining the portion of the sample that meets criteria for PTSD. Of note, the present study used the PCL-C to measure each respondent's current PTSD symptomatology (i.e. how many total PTSD symptoms he or she endorsed) as opposed to PTSD severity (i.e. how many different PTSD symptom clusters the individual met threshold for). The PCL-C has been found to have good convergent validity and diagnostic efficiency when compared to gold-standard clinician-administered measures of PTSD (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996).

Center for Epidemiological Studies Depression Scale (CES-D10; see Andresen, Malmgren, Carter, & Patrick, 1994). The CES-D10 is a shortened, 10-item version of the original CES. It is designed to assess symptoms of depression within the past week. Participants indicate their agreement with such items as "*I was bothered by things that usually don't bother me*" and "*I felt fearful*" on a 4-point Likert-type scale, where 0 = *Rarely or none of the time* and 3 = *Most of all of the time*. Scores range from 0-30, and participants who score a 10 or above were considered to meet criteria for current depression. The CES-D10 has been shown to be well-correlated with the full CES-D, and has demonstrated good test-retest reliability in a population of older adults (Andresen et al., 1994).

Multiphasic Assessment of Cultural Constructs – Short Form, Fatalism Subscale (MACC-SF; see Cuellar, Arnold, & Gonzalez, 1995). The 8-item Fatalism subscale of the

MACC-SF assesses the extent to which a participant believes in fatalism. Items on the MACC-SF are typically answered "True" or "False"; however, to better inform data analysis, the MACC-SF was modified in this study so that responses instead fell on a 5-point Likert scale instead, ranging from 0 = *Strongly Disagree* to 4 = *Strongly Agree*. Thus, higher total scores indicate more fatalistic beliefs, and scores range from 0-32. The MACC-SF was originally developed for use with Mexican Americans, and has been shown to be negatively associated with acculturation (Cuellar et al., 1995). Internal consistency was found to be adequate in both a sample of Mexican American adolescents (Guzman, Santiago-Rivera, & Hasse, 2005) and Mexican American community college students (Ramos-Sánchez & Atkinson, 2009). Notably, the MACC-SF has not been generalized to other racial groups in the research to date. However, measures of non-health related fatalism are unfortunately rare, and so this study will attempt to provide further psychometric data regarding the MACC-SF as it applies to non-Mexican American populations.

Belief in Personal Control Scale (BPCS; see Berrenberg, 1987). The BPCS is a self-report measure designed to assess internal/external LOC, as well as exaggerated belief in personal control and a sense of control that is mediated by God. Respondents indicate how true they find each item based on a 5-point Likert scale. Factor analysis of the BPCS has yielded three primary factors: External Control (EC), Exaggerated Internal Control (EIC), and God-Mediated Control (GMC). These factors have been shown to have good convergent and divergent validity with other measures of LOC, such as the Rotter LOC scale, as well as more general measures of depression, mania, self-esteem and anxiety in a sample of college students (Berrenberg, 1987). The BPCS factors also demonstrated good test-retest reliability (Berrenberg, 1987). For the purposes of this study, items that loaded on the EIC factor were not included,

resulting in a total of 41 items. Thus, scores range from 0-164. The rationale for such an approach was to allow the inclusion of another gold-standard measure of LOC without contributing to participant fatigue. Notably, both the EC and GMC subscales are worded such that *lower* total scores on these subscales indicate *greater* beliefs in external control.

Rotter's Internal-External Locus of Control Scale (see Rotter, 1966). The Rotter scale is a 29-item self-report measure designed to assess the extent to which an individual subscribes to either an internal or external locus of control. The measure contains six filler items and 23 scorable items. Each item consists of two dichotomous responses (e.g. "Many of the unhappy things in people's lives are partly due to bad luck" vs. "People's misfortunes result from the mistakes they make"), and the respondent selects the response he or she agrees with the most. Scores range from 23-46. A higher total score indicates a tendency toward an external locus of control, while a lower total score indicates a tendency toward an internal locus of control. The Rotter scale has been used extensively in the literature throughout the years, and is considered the gold-standard measure of locus of control (Lange & Tiggemann, 1981). It has repeatedly demonstrated good reliability and validity across a variety of populations (Lange & Tiggemann, 1981).

Brief Multidimensional Measurement of Religion/Spirituality (BMMRS; see Fetzer Institute/National Institute on Aging, 1999). The BMMRS is a 38-item self-report measure designed to assess religiosity along multiple dimensions, including personal devotion, private religious involvement, participation in organized religion, and religious/spiritual coping. Some items are answered according to Likert scales, while other items are answered "yes" or "no" (e.g. the item "Did you ever have a religious or spiritual experience that changed your life?"). As this study recruited participants across the range of the religious spectrum, items that use the word

"God" were modified to instead state "God/a higher power" in order to assess other religious orientations that do not center around God per se (e.g. Hinduism, Buddhism). Initial psychometric analyses concluded that the BMMRS and its subscales demonstrated good reliability and validity in a community sample (Fetzer Institute/National Institute on Aging, 1999). The BMMRS was also found to have good construct validity in a sample of college students (Masters et al., 2009). The measure also demonstrated high internal consistency and good test-retest reliability in a sample of adolescents recruited from urban medical clinics (S. K. Harris et al., 2008).

Although the entire BMMRS was administered to all participants, only certain subscales and items were used in data analyses examining overall religiosity. These included the Daily Spiritual Experiences subscale, the Values/Beliefs subscale, and two items querying overall religiosity and overall spirituality. The rationale for this approach is twofold. First, the BMMRS is unscorable as an entire measure, due largely to differences in response scales across items (e.g. Yes/No, Likert scale, and open-ended questions such as asking how much an individual contributed to his/her congregation the past year). Second, the subscales and items listed above were deemed the closest in content to the "personal devotion" definition of religiosity this study attempted to assess. Sample items include "I feel God/a higher power's presence" and "I feel God/a higher power's love for me, directly or through others". Total scores thus range from 10-52, with higher scores indicating higher overall religiosity. For purposes of continuity, from this point forward the term "BMMRS" will be used to refer only to the sum of these specific subscales and items.

Brief RCOPE (see Pargament, Smith, Koenig, & Perez, 1998). The Brief RCOPE is a 14-item self-report measure designed to assess positive and negative religious coping following a

negative life stressor. Instructions for the measure were not specific to each participant's index trauma. Items query specific religion-related responses to the stressor; for example, "Looked for a stronger connection to God" or "Wondered what I did for God to punish me". Respondents indicate their agreement with each item on a 4-point Likert scale. The measure is divided into two subscales: positive religious coping (PRC) and negative religious coping (NRC). Scores for each subscale range from 7-28. Higher scores on each subscale indicate more of a tendency toward that particular form of religious coping. The Brief RCOPE has demonstrated adequate internal consistency in a sample of college students and older adult hospital patients (Pargament et al., 1998). A subsequent psychometric review of 30 studies that used the Brief RCOPE across a variety of populations concluded that the median Cronbach's α for the PRC was .92, while the median Cronbach's α for the NRC was .81 (Pargament, Feuille, & Burdzy, 2011). The measure was also shown to be adequately valid across the studies reviewed (Pargament et al., 2011).

Data Analysis

All data were analyzed using SPSS 21.0. A priori power analyses indicated that, for statistical power of .80 and effect size $d = .5$, a sample size of 570 was recommended in order to run the regression analyses for Hypotheses 4 and 5.

Preliminary χ^2 goodness-of-fit tests were first conducted to determine whether or not the racial distribution of the sample was in line with the distribution that would be expected from the data of the United States Census Bureau. According to this data, the racial breakdown of the United States in 2010 was 63.7% Non-Hispanic White, 12.6% African American, 16.3% Hispanic or Latino, 4.8% Asian, and 0.9% Native American (Humes, Jones, & Ramirez, 2011). Additionally, the fact that a large portion of the study sample self-identified as Christian reflects the general American population, of which 75% of adults identified as Christian according to US

Census data from 2008 (US Census Bureau, 2012). Descriptive data were also generated for overall demographics as well as trauma type, PTSD symptom severity, fatalism, LOC, religiosity, and religious coping. Psychometric data for the MACC-SF were also obtained through a calculation of Cronbach's α.

As stated previously, Hypotheses 1-3 were tested using all usable data from the overall sample (N = 1,654). Preliminary analyses in preparation to test Hypothesis 1 included an exploratory factor analysis combining the MACC-SF and the BPCS together into one main "measure". The factor analysis was used to determine whether fatalism (as measured by the MACC-SF) is indeed a construct distinct from LOC (as measured by the BPCS).

In order to test Hypothesis 2, participants were first classified into two main groups: White and Non-White. This overall racial classification was then treated as an independent variable in a multiple analysis of variance (MANOVA) utilizing LOC, fatalism, religiosity, and positive and negative religious coping as dependent variables. Demographic variables (excluding race) were entered as covariates. The MANOVA was subsequently repeated with race broken down into each specific group (Caucasian, African American, Hispanic/Latino, Asian American, Native American, Other, and Multiracial).

In order to test Hypothesis 3, Pearson's product-moment correlations were determined for LOC, fatalism, religiosity, religious coping, and PTSD symptomatology.

Data from study completers (N = 558) were used to test Hypotheses 4 and 5. In preparation for a moderation analysis to test Hypothesis 4, the predictors (LOC, religiosity, and positive and negative religious coping) were first centered by subtracting each mean from the score of each measure. Such a conversion to deviation scores was undertaken to reduce the effect of multicollinearity on subsequent analyses. The moderator (trauma type) was also dummy-

coded: 1 = Interpersonal, and 2 = Non-Interpersonal. An interaction term was then obtained by multiplying the predictor by the moderator in each case. An individual linear regression was then run using each of the predictors. Demographic variables and depression scores were entered first, followed by the individual predictor, then trauma type, and finally the interaction term. Thus were main effects as well as moderation effects determined.

Finally, a similar approach was used to test Hypothesis 5. First, a one-way ANOVA was run using race as the independent variable and PTSD symptomatology as the dependent variable, with demographics (except race) and depression scores entered as covariates. Subsequently, each centered version of the moderators (LOC, religiosity, and positive and negative religious coping) was multiplied by each racial group to create interaction terms. Subsequent individual linear regressions were run. Demographic variables and depression scores were again entered first, followed by race as the predictor, then each cultural factor (one per regression), and then the interaction term. Again, both main and moderation effects were determined this way.

Notably, in analyses for both Hypothesis 4 and Hypothesis 5, LOC and fatalism were entered simultaneously as predictors, as it was determined by the factor analysis that they were not independent constructs (see Results below).

Results

Sample Demographics

The χ^2 goodness-of-fit test was significant ($\chi^2[6] = 17.04$, $p < .01$), indicating the racial distribution of the sample did not match the racial distribution of the American population as a whole. Such a discrepancy is most likely due to an undersampling of individuals who identify as Hispanic or Latino (calculated residual within the Hispanic/Latino racial category was -24.1).

Outcome Measures

Data on all outcome measures is summarized in Table 3. Approximately half (53%) of participants reported an index event that was non-interpersonal in nature. The average total score on the PCL-C was 51.87 (SD = 17.37), well above the cutoff of 30 recommended for a diagnosis of PTSD (Bliese et al., 2008). The average total score on the CES-D10 was 16.29 (SD = 6.88), which was also above the recommended cutoff of 10 to indicate clinically significant levels of depression. The average score on the MACC-SF was 15.56 (SD = 4.80), indicating relatively low fatalism beliefs. Both subscales of the BPCS indicated overall high external LOC (mean EC score = 111.78, SD = 21.65; mean GMC score = 24.03, SD = 8.13). The average total score on the Rotter LOC scale was also indicative of an overall high external LOC (mean = 16.12, SD = 2.48). The average score on the BMMRS was 28.13 (SD = 10.83). The average total score on the PRC subscale of the RCOPE was 18.08 (SD = 6.74) and on the NRC subscale it was 12.91 (SD = 5.79).

Cronbach's α for all outcome measures is presented in Table 3. The majority of measures demonstrated good internal consistency. Notably, however, α for the MACC-SF was relatively low (.61) using the overall sample, and the number of Hispanic/Latino participants was insufficient for a separate within-group reliability analysis. Thus, it may be beneficial for future research to refine the MACC-SF for use with the general population.

Factor Analysis of Fatalism and LOC

An exploratory factor analysis (EFA) was conducted, combining the MACC-SF and BPCS (EC and GMC) items into one parent measure. Notably, in order to maintain as homogenous a sample as possible, only participants who did not meet criteria for PTSD according to the PCL-C were included in the factor analysis (N = 125). The Rotter LOC scale

was also not included in the factor analysis due to differences in response scales (i.e. the MACC-SF and the BPCS were anchored on a 5-point Likert scale, while the Rotter was anchored on a 2-point categorical response scale). The value of the Kaiser-Meyer-Olkin coefficient was .83, indicating sufficient item correlation and suggesting the data was suitable for EFA. Additionally, Bartlett's Test of Sphericity was significant ($\chi^2[1176] = 3884.08$, $p < .001$), indicating adequacy of sampling. As all variables were sufficiently correlated, varimax rotation with Kaiser normalization was implemented, and generated 11 factors with eigenvalues greater than 1. Factor loadings are provided in Table 4. Upon examination of item loadings on these different factors, the MACC-SF items and the BPCS items were found to be well interspersed, with no significant clustering on any particular factor. Therefore, fatalism and locus of control may be conceived as dimensions of the same construct, and the MACC-SF and BPCS scales were entered simultaneously into subsequent regression analyses. Of note, Cronbach's α for the MACC-SF and the BPCS combined as one measure indicated adequate internal consistency ($\alpha = .88$).

Racial Differences on Cultural Constructs

A Pearson's chi-square test of independence concluded Whites and Non-Whites differed significantly on type of trauma reported ($\chi^2[2] = 7.652$, $p = .022$). Specifically, Non-Whites in this sample reported more non-interpersonal index events than Whites.

Whites and Non-Whites were compared on all cultural variables using multivariate analysis of variance (MANOVA). Levene's test was nonsignificant across all racial groups, indicating that the assumption of equality of error variances was met. Wilk's lambda contraindicated a multivariate effect, such that Whites and Non-Whites did not differ significantly on their PTSD, LOC, fatalism, religiosity, and positive and negative religious coping total scores (Wilk's lambda = .97, $F[14, 1086] = 1.20$, $p = .27$).

Due to insufficient cell sizes—and, thus, inadequate statistical power—for the Native American, Other, and Multiracial racial groups, these groups were excluded from subsequent analyses. Further chi-square analyses comparing these groups on trauma type found no significant differences in type of trauma reported between Whites and African Americans (F = .74, p = .39), Whites and Hispanics/Latinos (F = .88, p = .35), Whites and Asian Americans (F = .42, p = .52), African Americans and Hispanics/Latinos (F = 1.93, p = .17), African Americans and Asian Americans (F = 1.12, p = .29), and Hispanics/Latinos and Asian Americans (F = .00, p = .99).

The MANOVA was then rerun comparing Whites, African Americans, Hispanics/Latinos, and Asian Americans on cultural outcome measures. A Bonferroni adjustment was applied in order to account for experiment-wise error rate, yielding a significance level of .007. Using this more stringent criterion, African Americans had higher scores on the God-Mediated Control subscale of the BPCS (F[6] = 7.12, p < .001), the total BMMRS (F[6] = 3.03, p = .001), and the positive religious coping subscale of the RCOPE (F[6] = 2.81, p = .002) than Whites. Partial eta-squared (η^2 = .07, .03, and .03, respectively) indicated small to medium effects according to guidelines set out by Cohen (1988). These discrepancies held even after controlling for demographic variables, including age, gender, education, marital status, area of residence, and socioeconomic status. The difference between African Americans and Whites on negative religious coping scores also approached significance (F[6] = 1.92, p = .04), suggesting African Americans tended to report more negative religious coping than Whites. No other differences between groups were found.

PTSD and Cultural Variables

Pearson's *r* correlations comparing outcome measures, including PTSD and cultural variables, are presented in Table 5. Greater PTSD symptomatology as measured by higher PCL scores was significantly associated with lower God-Mediated Control (r = -.08, p = .014), lower General External Control (r = -.41, p < .001), higher fatalism (r = .31, p < .001), higher positive religious coping (r = .15, p = < .001), and higher negative religious coping (r = .34, p < .001). Total religiosity (r = -.04, p = .33) was not significantly associated with PTSD.

Moderation Analyses Using Trauma Type

A one-way ANOVA concluded participants who experienced an interpersonal index trauma also reported more PTSD symptoms than participants who experienced a non-interpersonal index trauma (F = 20.54, p < .001).

As discussed previously, the BPCS and the MACC-SF were entered simultaneously as one LOC construct into linear regressions for moderation analyses utilizing trauma type as the moderator and total PCL scores as the dependent variable. A significant main effect was observed for LOC, such that participants who experienced interpersonal trauma reported more internal LOC than participants who experienced non-interpersonal trauma (F = 159.98, p < .001). However, trauma type (interpersonal vs. non-interpersonal) did not significantly moderate the relationship between LOC and PTSD (β = -.15, R^2 = .61, p = .11).

No significant main effects were found for trauma type on total BMMRS scores (F = .79, p = .37). Trauma type also did not significantly moderate the relationship between total religiosity and PTSD (β = -.05, R^2 = .63, p = .71).

No significant main effects were found for trauma type on total RCOPE PRC scores (F = .32, p = .57). Trauma type also did not significantly moderate the relationship between positive religious coping and PTSD (β = .20, R^2 = .62, p = .17).

Finally, no significant main effects were found for trauma type on total RCOPE NRC scores (F = 1.19, p = .28). However, trauma type significantly moderated the relationship between total negative religious coping and PTSD (β = .32, R^2 = .71, p = .02), such that people with noninterpersonal trauma and more negative religious coping tended to report the most PTSD symptomatology.

Moderation Analysis Using Race

Main effects observed for race on total BMMRS, RCOPE PRC, and RCOPE NRC scores have been previously discussed. Moderation analyses utilizing race as the moderator compared Whites, African Americans, Hispanics/Latinos, and Asian Americans to each other in separate regressions. Results are summarized in Table 6. For the regression using LOC as the predictor, the BPCS and MACC-SF scores were once again entered together into one LOC construct. Race did not significantly moderate the relationship between LOC and PTSD for any of the racial group comparisons.

Race similarly did not significantly moderate the relationship between total religiosity and PTSD for any of the racial groups. Race approached significant moderation of the relationship between positive religious coping and PTSD when comparing Whites and African Americans, such that African Americans with more positive religious coping tended to report fewer symptoms of PTSD (β = -.13, R^2 = .62, p = .05). No significant moderation was found for the other racial groups. Finally, race significantly moderated the relationship between total negative religious coping and PTSD when comparing Whites and African Americans (β = -.16, R^2 = .61, p = .02), such that African Americans who reported more negative religious coping tended to report the most symptoms of PTSD. Again, no other significant moderation effects were found for other racial groups.

Post hoc analyses using total study completers (N = 558) yielded statistical power of .66 (using the Bonferroni adjusted p-value of .007).

Discussion

The present study explored the interlocking relationships among PTSD, race, trauma type, and cultural factors centered around religion such as locus of control, religiosity, and positive and negative religious coping. Data were obtained from adult participants nationwide who completed a series of online questionnaires. Participants were from all racial and religious backgrounds, with a wide spectrum of traumatic experiences.

The sample as a whole reported experiencing posttraumatic psychological symptoms that are above recommended cutoffs for a probable diagnosis of PTSD. Participants also reported significant levels of comorbid depression, a consistent finding within the field across a variety of traumatized populations (e.g. Campbell et al., 2007; Nixon, Resick, & Nishith, 2004; O'Donnell, Creamer, & Pattison, 2004). Due to small cell sizes and subsequent lack of adequate statistical power, participants who identified as Native American or Other race were excluded from analyses utilizing race as a variable. Only individuals who identified as Caucasian/White, African American/Black, Hispanic/Latino, and Asian American were included in these analyses. Additionally, Hypothesis 1 of the study predicted fatalism and LOC would not be independent constructs, but rather two dimensions of a single entity. The results of an exploratory factor analysis supported this hypothesis, suggesting that fatalism and locus of control may both be driven by a single underlying construct, such as perceived control. To this end, the separate fatalism and LOC measures used in the study were combined into a single LOC measure for the purpose of moderation analyses. Researchers in the future may choose to use a similar approach,

or even eliminate measures specific to fatalism entirely. However, it is also important to note that this conclusion was drawn based on two specific measures of fatalism and LOC. Measures other than the MACC-SF and the BPCS may assess similar constructs but produce different results.

Hypothesis 2 of the study predicted Whites would report more internal LOC and lower religiosity than the other racial groups. Comparing the different racial groups along these various cultural outcome variables provided some support for the hypothesis: African Americans evidenced significantly more religiosity and positive religious coping than Whites, with a trend toward endorsing more negative religious coping as well. These findings suggest religion plays a larger role in posttraumatic coping for African Americans, and thus clinicians may wish to consider assessing religious supports as a potential complement to the treatment plan when working with these individuals who have experienced trauma. Supports to be assessed may include pastoral counseling, social and instrumental support from the congregation or general religious community, or prayer. The findings on the relationship between PTSD and positive and negative religious coping also suggest religion may be important for African Americans in making meaning of traumatic events in order to better cope with such experiences. Indeed, one previous study examining a similar idea found that religion played a significant role in the meaning-making themes of African American women undergoing stress (Mattis, 2002). Future research may wish to examine this relationship in more detail, perhaps qualitatively across different racial groups who may make different religion-based meanings of similar traumatic events. However, no differences were found between Whites and the other racial groups on LOC. When compared to each other, the various racial minority groups also did not evidence significant differences on the cultural variables examined in this study.

Hypothesis 3 of the study predicted that LOC, religiosity, and religious coping would be associated with PTSD symptomatology, such that people who reported more external LOC, less religiosity, and more negative religious coping would also tend to report more symptoms of PTSD. Study analyses supported much of this hypothesis, as only religiosity was found not to be significantly associated with PTSD in the predicted direction. These findings are in line with much of the literature to date (e.g. Bolstad & Zinbarg, 1997; Orr et al., 1990; Perilla et al., 2002; Scott et al., 2010; Wadsworth et al., 2009; Watlington & Murphy, 2006), and suggest, even regardless of race or cultural background, that LOC and religious factors are important to consider in the context of an individual dealing with posttraumatic stress.

Hypothesis 4 of the study predicted that trauma type would moderate the relationship between cultural variables (LOC, religiosity, and religious coping) and PTSD. With regard to main effects, study participants who reported an interpersonal index trauma also tended to report more symptoms of PTSD and more internal LOC than participants who reported a noninterpersonal index trauma. While the finding that the experience of interpersonal trauma places a person at greater risk for PTSD symptoms is not new (e.g. Forbes et al., 2012; Norris, 1992), the finding that people who report experiencing interpersonal trauma also report more internal LOC offers a fresh perspective on how people respond and make meaning of traumatic events. Specifically, participants in this study who experienced a *non*interpersonal index trauma may end up subscribing to a more *external* LOC as a function of what the traumatic event "teaches" them: that things in the world around them are even more out of their control than previously believed. On the other hand, participants who experienced an interpersonal index trauma may have manifested more internal LOC as a function of guilt and responsibility for the traumatic event.

With regard to Hypothesis 4, the only significant moderation effect was found for trauma type, negative religious coping, and PTSD, such that individuals who reported a noninterpersonal index trauma and more negative religious coping tended to report the most symptoms of PTSD. Such findings held even after controlling for depressive symptomatology and demographic variables, including race. Perhaps, in this case, negative religious coping following the experience of a noninterpersonal trauma increased the salience of the trauma for each individual, such that an event previously considered unrelated to one's own personal actions—a natural disaster, for instance, or a motor vehicle accident—became much more personalized and had a larger effect on posttraumatic dysfunction. Indeed, the difference between viewing an event as something entirely unrelated to oneself, and viewing the same event as directly connected to one's actions—a punishment from God, for example—is profound and would likely have a significant influence on an individual's coping, or lack thereof, following a noninterpersonal trauma. Clinicians and researchers working in the aftermath of noninterpersonal traumas, particularly natural disasters affecting wide areas and large populations, may thus wish to consider each individual's religious background and religious coping style, implementing measures to increase positive religious coping and decrease negative religious coping in order to help buffer against the subsequent development of PTSD symptoms.

Hypothesis 5 of the study predicted that race would also moderate the relationship between cultural variables (LOC, religiosity, and religious coping) and PTSD. To this end, a significant moderation effect was found for race on the relationship between negative religious coping and PTSD, such that African Americans who reported more negative religious coping also tended to report the most symptoms of PTSD when compared to Whites. African Americans who reported more positive religious coping also trended toward reporting fewer symptoms of

PTSD than Whites. Previous research has concluded that African Americans tend to engage in more positive and negative religious coping than Whites (Chatters et al., 2008), and although a previous study of African American domestic violence survivors did not find religious coping mediated the relationship between religious involvement and PTSD severity, results nevertheless showed women who endorsed more religious involvement tended to report lower levels of PTSD (Watlington & Murphy, 2006). The results of the present study add to this small body of literature, and suggest the importance once again of considering religious involvement and positive and negative religious coping when treating individuals, particularly African Americans, with symptoms of PTSD.

Limitations

The present study had several limitations. First, all data were collected online, which prevented the principal investigator from directly overseeing the accuracy of participants' responses. Nevertheless, numerous studies to date have compared the accuracy of Internet-administered questionnaires to more traditional paper-and-pencil or within-laboratory administration, and concluded there are no significant differences between the two (Gosling, Vazire, Srivastava, & John, 2004; Krantz & Dalal, 2000; Miller et al., 2002). Second, the retrospective nature of several measures used in the study (e.g. the LEC and the RCOPE) may have influenced the accuracy of participants' responses. Third, the instructions for the PCL do not require the respondent to indicate PTSD symptomatology in response to a specific traumatic event; therefore, a direct link between PTSD symptoms and the index event was not established, requiring more research in the future that more explicitly examines event-specific symptoms. Fourth, the composition of the overall sample (majority female, White, and Christian) limits the generalizability of the findings to individuals who do not reflect these characteristics. In addition,

study completers differed from the overall sample on several demographic variables (e.g. age, religious identification, and race). Future research may wish to utilize a more diverse sample, including more men and people of more diverse religious backgrounds. Additionally, cell sizes for several racial groups, including Native Americans/American Indians, Other racial identifications, and individuals who identify as multiracial were too small to allow for separate analyses on the study's outcome variables. Therefore, future work may wish to target these groups specifically in order to determine whether they also differ in terms of trauma type, religiosity, LOC, religious coping, and PTSD. Depressive symptoms also appeared to influence the strength of the study's findings; namely, entering depression as a control variable in regression analyses resulted in a profound change in variance explained. Researchers may thus wish to consider depression less a covariate and more a proxy measure of PTSD, and analyses from this study may be worth rerunning without controlling for depression to determine if other significant relationships can be found. Finally, this study collected cross-sectional data. Considering the importance of time in the examination of PTSD—symptoms only develop after some interval *following* the experience of a potentially traumatic event, not concurrently—a longitudinal examination of similar constructs would be the optimal way to differentiate the direction of causation with regard to race, trauma type, cultural variables, and PTSD. Specifically, by following individuals of different racial and religious backgrounds for several months or a year after the experience of trauma, researchers should be able to determine if such variables as overall religiosity, LOC beliefs, and religious coping change as a result of the experience of trauma, or if they instead act as buffers against subsequent development of PTSD symptomatology. Such findings would be especially important when considering trauma-focused treatment, and would help clinicians determine whether or not integrating religiosity, spiritual

practices, and positive religious coping would be beneficial for a patient reporting distress following a traumatic event.

Conclusions

Overall, trauma type, racial background, and religion-oriented variables such as LOC, religiosity, and religious coping appear to play a significant role in the development of PTSD symptomatology following the experience of potentially traumatic events. Negative religious coping especially puts individuals at risk for more symptoms of PTSD, especially when paired with racial minority status and the experience of a noninterpersonal index trauma. Therefore, it is important for clinicians treating individuals with PTSD to consider the role that religiosity and religious coping play in an individual's recovery from trauma. Contemporary trauma-focused psychotherapy tends to focus on time-limited structured protocols, which do not allow much room for cultural differences, much less specific factors such as religiosity, LOC, and religious coping. Nevertheless, clinicians whose patients evidence strong religious involvement and a desire to integrate religious coping into posttraumatic recovery should consider weaving such concepts into treatment. Indeed, incorporating an individual's entire cultural worldview—religious or otherwise—may be the most holistic, respectful, and successful way to help people recover following the experience of traumatic events. Future researchers may also wish to examine the effectiveness of such an approach for posttraumatic recovery.

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Tables

Table 1
Demographic Data for All Study Participants (N = 1,654)

	n	%		n	%
Gender	1274		Marital status		
Female	380	77	Single/Unmarried	794	48
Male		23	Married	414	25
Race			Living with partner	215	13
Caucasian/White	943	57	Divorced	198	12
African American	198	12	Widow/Widower	33	2
Hispanic/Latino	165	10	Annual income		
Asian	71	4.3	$0-$10,000	314	19
American Indian	10	0.6	$10,001-$35,000	496	30
Other	31	1.9	$35,001-$50,000	298	18
Area of residence			$50,001-$75,000	281	17
Metro/urban	877	53	$75,001-$100,000	149	9
Suburban	662	40	>$100,000	116	7
Rural	83	5			
Other	33	2			

Table 1 (continued)
Demographic Data for All Study Participants (N = 1,654)

	n	%		n	%
Religious affiliation			Unaffiliated: Atheist	116	7
Christian: Protestant	182	11	Unaffiliated: Agnostic	132	8
Christian: Catholic	331	20	No religious affiliation	248	15
Christian: Mormon	15	0.9	Prefer not to say	99	6
Christian: Jehovah's Witness	8	0.5			
Christian: Orthodox	17	1			
Christian: Other	298	18			
Jewish	66	4			
Buddhist	33	2			
Muslim	17	1			
Hindu	5	0.3			
Other world religion	17	1			
Unitarian/other liberal faith	33	2			
New Age	33	2			
Native American religion	10	0.6			

Table 2
Demographic Data for Study Completers (N = 558)

	n	%		n	%
Gender			Marital status		
Female	429	77	Single/Unmarried	268	48
Male	127	23	Married	139	25
Race			Living with partner	72	13
Caucasian/White	318	63	Divorced	67	12
African American	67	14	Widow/Widower	11	2
Hispanic/Latino	55	11	Annual income		
Asian	22	5.9	$0-$10,000	106	19
American Indian	3	2.2	$10,001-$35,000	167	30
Other	10	1.8	$35,001-$50,000	100	18
Area of residence			$50,001-$75,000	95	17
Metro/urban	271	53	$75,001-$100,000	50	9
Suburban	244	40	>$100,000	39	7
Rural	33	5			
Other	9	2			

Table 2 (continued)
Demographic Data for Study Completers (N = 558)

	n	%		n	%
Religious affiliation			Unaffiliated: Atheist	39	7
Christian: Protestant	61	11	Unaffiliated: Agnostic	45	8
Christian: Catholic	111	20	No religious affiliation	83	15
Christian: Mormon	5	.9	Prefer not to say	33	6
Christian: Jehovah's Witness	3	.5			
Christian: Orthodox	6	1			
Christian: Other	100	18			
Jewish	22	4			
Buddhist	11	2			
Muslim	6	1			
Hindu	17	3			
Other world religion	6	1			
Unitarian/other liberal faith	11	2			
New Age	11	2			
Native American religion	3	.6			

Table 3
Outcome Measures by Sample Completers and Race

	Overall Sample (*N* = 558)	Caucasian/White (*N* = 318)	African American (*N* = 67)	Hispanic/Latino (*N* = 55)	Asian American (*N* = 22)	
Trauma Type						
Interpersonal	47%	44%	48%	40%	40%	
Physical assault	7.5%	7.9%	5.5%	8.1%	12%	
Assault with weapon	2.4%	1.6%	4.1%	6.5%	0%	
Sexual assault	22.1%	22.4%	15.1%	19.4%	24%	
Combat	1.2%	1.3%	1.4%	1.6%	0%	
Captivity	0.9%	0.5%	1.4%	3.2%	0%	
Noninterpersonal	53%	56%	52%	60%	60%	
Natural disaster	2.7%	2.1%	2.7%	8.1%	4%	
Fire/explosion	2.1%	1.8%	4.1%	0%	4%	

Motor vehicle accident	5.7%		4.2%		8.2%		11.3%		4%	
Other serious accident	1.7%		1.8%		0%		0%		8%	
Toxic chemical exposure	0.2%		0.3%		0%		0%		0%	
Serious illness	7.2%		7.7%		5.5%		8.1%		0%	
Severe human suffering	5%[1]		6.3%		2.7%		3.2%		4%	
Measure (range)[2]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	α[3]
PCL-C (17-85)	51.87	17.37	51.29	17.12	54.04	18.04	52.54	17.18	46.90	18.32	.94
CES-D10 (0-30)	16.29	6.88	16.34	6.95	16.21	6.78	15.80	6.90	14.48	6.81	.87
MACC-SF (3-32)	15.56	4.80	15.20	4.71	15.97	5.30	16.85	4.72	16.40	4.92	.61
BPCS-EC (34-170)	111.78	21.65	112.65	20.51	111.02	25.56	110.68	25.43	108.65	18.64	.91
BPCS-GMC (7-35)	24.03	8.13	25.41	7.91	17.79	7.05	21.29	7.38	23.19	7.10	.94
Rotter LOC (10-22)	16.12	2.48	16.22	2.60	15.56	1.97	15.71	1.95	16.38	2.38	.83

BMMRS (10-52)	28.13	10.83	29.19	11.20	23.51	10.24	28.27	10.02	28.64	9.11	.92
RCOPE PRC (7-28)	18.08	6.74	17.43	6.93	20.70	6.31	17.95	5.83	19.09	6.25	.94
RCOPE NRC (7-28)	12.91	5.79	12.37	5.63	14.57	6.35	13.27	5.78	13.81	5.76	.91

[1] Percentage totals do not equal 100% because index traumas identified as "Other" were not included.
[2] For overall sample.
[3] Cronbach's α estimate of internal consistency.

Table 4
Exploratory Factor Analysis (EFA) Loadings for Participants Without PTSD (N = 125)

	Factor										
Item	1	2	3	4	5	6	7	8	9	10	11
BPCS_20	.969	-.024	.030	-.008	.021	.026	.015	-.041	-.007	-.009	-.057
BPCS_32	.919	.026	.010	-.050	-.074	-.024	.115	.027	.003	.037	.008
BPCS_6	.916	.002	.028	.015	-.063	.073	.013	-.002	.029	.085	-.030
BPCS_55	.884	.034	.041	-.059	.057	-.036	.215	-.051	-.069	.011	.018
BPCS_71	.814	.089	.000	.091	-.093	.098	-.134	.113	.035	-.013	.086
BPCS_62	.688	.239	.118	.100	-.143	-.012	.060	.018	.055	.108	.065
Fatalism_6	-.547	-.250	-.028	-.107	.431	-.040	-.004	-.153	-.072	-.078	-.165
BPCS_85	-.004	.721	.162	.000	-.103	.129	.157	.035	-.007	-.195	.071
BPCS_80	.173	.657	.222	.059	-.097	.172	.104	.126	.210	-.070	.018
BPCS_75	.156	.587	.143	.247	.076	.001	-.108	.164	.097	.067	-.128
BPCS_78	.002	.575	.354	.155	.073	.377	.106	.088	.007	-.114	.096
BPCS_59	.122	.545	.156	.356	-.107	-.006	.114	.231	.192	.022	.189

BPCS_84	.201	.541	.208	.421	-.137	-.008	.066	-.051	.120	.227	.114
BPCS_82	.059	.515	.324	.041	.007	.301	.229	.055	.134	.059	-.024
BPCS_27	.238	.412	.319	.177	-.285	.065	.151	.178	.154	.091	.163
BPCS_79	-.080	.405	.209	.362	.032	.256	.097	-.026	.152	.072	.103
BPCS_52	.103	.369	.365	.022	.102	.244	-.027	.141	.317	-.205	.183
BPCS_23	-.004	.251	.722	.236	-.080	.156	.052	-.073	.128	-.085	-.074
BPCS_24	-.015	.211	.672	.172	.099	.105	.172	.151	-.004	.118	.305
BPCS_39	.058	.208	.645	.088	.022	.130	.262	.045	.126	.056	-.170
BPCS_26	.199	.439	.556	.249	-.109	.011	-.072	.068	.103	-.084	.026
Fatalism_8	-.166	-.213	-.502	-.083	.358	.052	-.005	-.189	-.176	.180	-.082
BPCS_53	.019	.348	.472	.236	.096	.150	.240	.338	.185	.053	.139
BPCS_41	-.016	.390	.454	.256	.036	.236	.030	.416	.070	.018	.017
BPCS_15	-.047	.108	.179	.750	-.075	.227	.069	.085	.019	.031	.045
BPCS_11	.012	.150	.214	.692	-.137	.096	.113	.074	.057	-.071	.071
BPCS_49	.068	.371	.085	.651	-.182	.091	.200	.166	.074	.064	.162
BPCS_19	.069	.115	.107	.539	-.095	.265	-.036	.079	-.158	.019	-.339

Fatalism_3	-.078	.047	.114	-.055	.675	-.173	-.067	.053	-.060	-.223	.035
Fatalism_2	-.192	-.023	-.004	.063	.631	.030	-.176	.064	.126	-.058	-.044
Fatalism_1	-.158	.009	-.043	-.309	.595	-.020	-.023	.045	-.084	-.002	.071
Fatalism_5	.114	-.061	-.050	-.088	.486	-.032	.036	-.125	-.117	.089	-.085
BPCS_22	.347	.030	.108	.288	-.348	.147	.163	.119	-.033	-.153	-.017
BPCS_10	.091	.112	.064	.169	-.117	.534	.053	.095	.085	.101	.063
BPCS_67	.020	.420	.185	.185	-.024	.521	.255	.136	.130	-.118	.103
BPCS_69	.110	.171	.291	.294	-.039	.466	.037	.219	.235	-.079	.138
BPCS_73	-.076	.190	.059	.176	-.138	.425	.112	.042	-.156	.272	-.134
BPCS_35	.022	.252	.238	.178	-.036	.327	.253	.288	.253	.092	.100
BPCS_44	.069	.143	.077	.155	-.101	.040	.657	.174	-.009	-.057	.007
BPCS_56	.172	.114	.184	.045	-.114	.157	.534	-.137	.163	-.086	.210
BPCS_34	.098	.057	.228	.117	-.117	.307	.421	.267	.056	.082	-.057
BPCS_43	.042	.298	.139	.157	-.081	.342	.217	.683	.136	-.005	.014
BPCS_36	.088	.216	.115	.277	-.068	.119	.284	.407	.295	-.189	.141
BPCS_57	.113	.317	.175	.119	-.008	.051	.155	.039	.652	-.127	.005

Fatalism_4	.073	-.070	-.141	.095	.248	-.031	-.015	-.080	-.438	-.036	-.055
BPCS_51	-.041	.396	.084	.182	.059	.283	-.016	.069	.426	-.143	-.054
Fatalism_7	.120	-.158	-.108	-.041	-.120	.054	-.015	-.090	-.035	.648	-.064
BPCS_37	.121	.088	.184	.107	.056	.100	-.156	.272	-.118	.420	.033
BPCS_60	.195	.250	.093	.197	-.203	.203	.184	.124	.061	-.148	.547

Table 5
Correlations Among Outcome Variables for Study Completers (N = 558)

	Variable	1	2	3	4	5	6	7	8
1	PCL	1							
2	BPCS GMC	-.08*	1						
3	BPCS EC	-.41**	.16**	1					
4	Rotters (LOC)	.06	.08	-.37**	1				
5	MACC-SF (Fatl)	.31**	-.28**	-.43**	.03	1			
6	BMMRS (Rel)	-.04	.74**	.02	.10	-.09*	1		
7	RCOPE PRC	.15**	-.69**	-.06	-.15*	.15**	-.72**	1	
8	RCOPE NRC	.34**	-.17**	-.38**	.08	.23**	-.08	.30**	1

Note. PCL = Posttraumatic Stress Disorder Checklist-Civilian Version. BPCS GMC = Belief in Personal Control Scale, God Mediated Control subscale. BPCS EC = Belief in Personal Control Scale, External Control subscale. Rotters = Rotter's Internal-External Locus of Control Scale. MACC-SF = Multiphasic Assessment of Cultural Constructs, Fatalism subscale. BMMRS = Brief Multidimensional Measurement of Religion/Spirituality. RCOPE PRC = RCOPE, Positive Religious Coping subscale. RCOPE NRC = RCOPE, Negative Religious Coping subscale.
* $p < .05$, two-tailed.
** $p < .01$, two-tailed.

Table 6

Hierarchical Regression for Moderation Analyses: Race Moderating the Relationship Between Cultural Constructs and PTSD Severity in Study Completers (N = 558)

	Racial comparison group											
Predictor	Whites vs. African Americans		Whites vs. Hispanics/Latinos		Whites vs. Asian Americans		African Americans vs. Hispanics/Latinos		African Americans vs. Asian Americans		Hispanics/Latinos vs. Asian Americans	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.60		.59		.59		.66		.67		.62	
Demographic control variables[a]	.05		.03		.04		.01		.06		.02	
Depression	.60		.59		.59		.65		.67		.61	
Step 2	.002		<.001		.001		.001		.01		.009	
Race		.04		.02		-.03		-.03		-.10		-.10
Step 3												
LOC	.02	.14	.01	.11	.01	.13	.02	.16	.04	.22	.008	.11
BMMRS	.02	-.16	.02	-.16	.03	-.17	.02	-.15	.02	-.16	.03	-.18

RCOPE PRC	.03	.17	.03	.17	.03	.19	.008	.10	.01	.13	.02	.15
RCOPE NRC	.01	.13	.02	.14	.02	.14	.01	.10	.01	.11	.02	.16
Step 4												
Race x LOC	.002	.16	<.001	-.04	.001	.05	.007	-.41	<.001	.005	.005	.51
Race X BMMRS	<.001	.02	<.001	-.01	.001	-.06	<.001	-.06	.003	-.18	.001	-.29
Race x RCOPE PRC	.001	-.14	.001	-.05	<.001	.02	<.001	.05	.001	.12	<.001	.05
Race x RCOPE NRC	.02	-.16*	<.001	-.01	<.001	-.01	<.001	-.01	<.001	-.03	<.001	.06

Note. LOC = sum of Belief in Personal Control Scale (BPCS), Rotter's Internal-External Locus of Control Scale, and Multiphasic Assessment of Cultural Constructs, Fatalism subscale. BMMRS = Brief Multidimensional Measurement of Religion/Spirituality. RCOPE PRC = RCOPE, Positive Religious Coping subscale. RCOPE NRC = RCOPE, Negative Religious Coping subscale.

[a] Demographic control variables include age, gender, years of education, marital status, socioeconomic status, area of residence, and religious identification . ΔR^2 is not provided for each individual demographic variable due to negligible value (< .05 for each).

b LOC, BMMRS, and RCOPE scores were not entered simultaneously in Step 3. Instead, they were each entered into a separate regression, followed by their respective interaction terms (Step 4). For the sake of space, the multiple regressions have been condensed in this table.

* Significant moderation, $p < .05$.