Qualitative study of trauma outcomes among Acehnese tsunami survivors

Amrit Kaur
Qualitative Study of Trauma Outcomes Among Acehnese Tsunami Survivors

By

Amrit Kaur

Thesis

Submitted to the Department of Psychology

Eastern Michigan University

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

in

Clinical Psychology

Thesis Committee:

Ellen Koch, PhD

Carol Freedman-Doan, PhD

Tamara Loverich, PhD

May 12 2009

Ypsilanti Michigan
ABSTRACT

This study uses qualitative methods to understand trauma from an indigenous perspective and to assess the validity of the DSM-IV (APA, 2000) diagnosis PTSD and depression in a remote Asian population. Twelve individuals were interviewed about their post-tsunami difficulties in the Indonesian province of Aceh. Contrary to our expectations, participants reported significant numbers of almost all DSM-IV-TR symptoms of PTSD and depression. Although the expressions of illness symptoms were colored by the local language and customs, participants reported few symptoms that could be seen as unique to this culture. These findings suggest that Western developed DSM-IV-TR symptomatology may be largely valid in this culture. The correspondence between PTSD symptoms, functioning and economic distress provides clear indication that the symptoms have a profound effect and should be assessed and treated in the context of how these are expressed in the local context.
# TABLE OF CONTENTS

Abstract

Chapter 1: Review of Related Literature and Aims ......................................................1

Chapter 2: Methods ..................................................................................................24

Chapter 3: Results ....................................................................................................42

Chapter 4: Discussion ..............................................................................................98

References ..............................................................................................................122

Appendix A: Institutional Review Board Approval Letter .......................................138

Appendix B: Informed Consent Agreement ...............................................................140

Appendix C: Interview Questions ..........................................................................144

Appendix D: Visual Distress Scales .......................................................................148

Appendix E: Summary of Participants’ Experiences During and After the Tsunami ....149
<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Demographics .................................................................27</td>
</tr>
<tr>
<td>2</td>
<td>Tsunami Experiences at a Glance................................................29</td>
</tr>
<tr>
<td>3</td>
<td>DSM-IV-TR Criteria for PTSD....................................................39</td>
</tr>
<tr>
<td>4</td>
<td>DSM-IV-TR Criteria for Major Depressive Episode.............................41</td>
</tr>
<tr>
<td>5a</td>
<td>Category B PTSD symptoms endorsed by participants (Duration &gt; 1 Month)......47</td>
</tr>
<tr>
<td>5b</td>
<td>Category C PTSD symptoms endorsed by participants (Duration &gt; 1 Month)......54</td>
</tr>
<tr>
<td>5c</td>
<td>Category D PTSD symptoms endorsed by participants (Duration &gt; 1 Month).......59</td>
</tr>
<tr>
<td>6</td>
<td>Symptom Counts, Functioning and Self-reported Distress..........................63</td>
</tr>
<tr>
<td>7</td>
<td>Correlations between Symptomotology, Functioning and Self-reported Distress........65</td>
</tr>
<tr>
<td>8</td>
<td>Depression Symptoms Endorsed By Participants (Duration &gt; 2 weeks) .................69</td>
</tr>
<tr>
<td>9</td>
<td>Somatic Symptoms Endorsed By Participants .....................................76</td>
</tr>
</tbody>
</table>
CHAPTER 1: REVIEW OF LITERATURE

A Qualitative Study of Trauma Outcomes Among Acehnese Tsunami Survivors

Post-Disaster Mental Health

Among human traumas, natural disasters deserve special mention for their magnitude and capacity to devastate a great many individuals at once (Katz et al., 2002). Disasters are defined as "massive collective stress" (Kinston & Rosser, 1974), and the suffering of the survivors caused by the widespread loss of life, the infrastructural damage, and the loss of supportive community institutions is significantly exacerbated by a lack of resources.

Medical and community support structures are often compromised, and the limited resources available mean that crucial supplies and assistance reach people in remote towns and villages only after days or weeks.

As a result of both the high prevalence and high stressfulness of disasters, the question of whether they impact mental health has been of interest for decades, and a substantial literature has developed around this issue (Norris, 2001). The latest review of post-disaster research covered 225 post-disaster samples, 132 distinct events, and over 85,000 individuals (Norris, 2006). Most post-natural disaster research has been done on hurricanes, tornadoes, and earthquakes (Cao, McFarlane & Klimidis, 2002; De La Fuente, 1990; Goenjian, Molina, Steinberg et al., 2001; Kaiser, Sattler, Bellack et al., 1996; Madakasira & O’Brien, 1987), with a few focusing on the 2004 Boxing Day tsunami.

Specific psychological problems identified in about 80% of the samples included symptoms of Post Traumatic Stress Disorder (PTSD), Major Depressive Disorder (MDD), Generalized Anxiety Disorder (GAD), and Panic Disorder (PD). PTSD was the most commonly assessed and observed condition (McFarlane, 2006). Relative to other forms of disasters, the studies
show that PTSD occurs somewhat less frequently as a result of natural disasters than in man-made disasters, including technological disasters (Galea et al., 2005). More specifically, the National Comorbidity Study (Kessler et al., 1999) showed that interpersonal trauma results in significantly greater instances of PTSD than trauma arising out of “Acts of God.” The difference in the rate of PTSD occurrence is attributable to the variations in exposure and loss across the affected populations. Natural disasters usually affect more people than other types of traumas, and their exposure is usually for a more prolonged period than victims of other types of disasters. Hence, the small percentage cited in the National Comorbidity Survey translates into large numbers of affected people when applied across large populations of people that experience disasters (McFarlane and Norris, 2006).

Reported rates of PTSD vary widely, ranging from 71% of Armenian earthquake victims (Goenjian et al., 1994) to 12% of displaced persons in Phang Nga, Krabi, and Phuket after the South Asian tsunami of 2004 (Griensven et al., 2006). The traumatic event sometimes remains with individuals with PTSD for decades or a lifetime, dominating their psychological experience. The memory of the event retains its power to evoke panic, terror, grief, dread, or despair in daytime fantasies, nightmares, and psychotic reenactments known as PTSD flashbacks (Friedman & Marsella, 1996). Further, PTSD patients in the West have been found to be more than six times likely to attempt suicide than the general population. In international samples, PTSD symptoms are characterized more by arousal than avoidance (Norris, 2001), and dissociative responses and somatic symptoms are often reported in the aftermath of all the disaster types. Depression is a close correlate of PTSD, and rates of MDD in disaster-stricken communities have been found to exceed those in normative samples or control groups. Anxiety was the third most common identified problem (Norris, 2001).
Based on the predictive factors, the general findings are that a higher degree of exposure implies a greater likelihood of PTSD (Armenian et al., 2000; Bodvardottir & Elklit, 2004; Wang et al., 2000), as does greater loss. Women were found to be more likely than men to have PTSD post-disaster (Basoglu, Salcioglu & Livanoul, 2002; Steinglass & Gerrity, 1990), and low social support is similarly associated with a higher likelihood of PTSD (Norris, 2006). Within the same populations, some people are more protected while others are more vulnerable to developing clinical symptoms after being exposed to extremely stressful situations. Among people exposed to a traumatic stressor, those with a personal or family history of psychiatric illness are more likely to develop PTSD (Basoglu, Salcioglu & Livanoul, 2002; Breslau, et al., 1991). Other studies have shown the importance of social support, specifically perceived social support, as a significant predictor of post-traumatic symptoms over the long term (Armenian et al., 2000). Finally, there is a strong association between symptoms appearing in parents and their children (Galea et al., 2005).

A key finding of the reviews carried out in this domain is that the location of a disaster significantly influences the severity of its effects. While severe or very severe impairment (as opposed to mild impairment) was observed in only 25% of the U.S. samples, it was observed in 48% of the samples from other developed countries and in 78% of the samples from developing countries (Norris, 2001). While these variations have been ascribed to differences in the availability of resources and cultural differences that protect or exacerbate the trauma outcome, the more pressing concern is that developing countries are underrepresented in the literature. This makes it difficult to aggregate or make sense of such a finding.

Although most natural disasters occur in the developing world, mental health etiology
and treatment research has taken place primarily in the American context (Keane & Barlow, 2002). Indeed, among the approximately 3 billion people in the world affected by disasters between 1967 and 1991, approximately 85% lived in Asia (Lokai et al., 2004). In contrast, Girolamo and McFarlane commented in 1996 that of the 135 mass trauma-related studies counted in that year, only 8 (6%) were carried out in developing countries. Although this gap has been addressed somewhat since then, the situation is still far from ideal. Norris’s (2006) updated review found that 46 or 20% of mass trauma-related studies took place in the developing world, comprising Asia outside of Japan, the Americas outside of the US and Canada, and the former Soviet Union bloc. Within this group, a further breakdown showed that 38 involved natural disasters, four involved technological disasters, and another four involved mass violence. While some attention has been paid to the role of culture in the manifestations of trauma, the understanding of the applicability of Western diagnostic categories is far from complete.

The Impact of Culture on Mental Health Diagnoses

The committee convened to examine issues of culture in the Diagnostic and Statistical Manual, Fourth Edition, Text Revisions (DSM-IV-TR) stated plainly that “there is a cultural edge in every clinical event, intervention or interaction between the treating agent and the identified patient…” (Committee on Cultural Psychiatry, 2002). Culture can be defined as a set of meanings, behavior norms, and values used by members of a society as they construct their unique view of the world. These values serve as reference points for domains such as social relationships, language, nonverbal expression of thoughts and emotions, religious beliefs, moral thought, and technology (Committee on Cultural Psychiatry, 2002). Culture is not a static notion but one that changes as it is taught by one generation to the next.
(Gonzales et al., 1995; Leighton, 1963). Looking at the influence of culture on emotion, Ekman argued that, while the experience of emotion is universal, cultures vary widely in the ways in which basic emotions are expressed and displayed (Ekman, Friesen, & Ellsworth, 1972; Matsumoto, 1993). Thus, while universal neurobiological responses to traumatic events do most probably exist, there is, following Ekman, room for considerable ethnocultural variation in the expressive and phenomenological dimensions of the experience.

For example, schizophrenia is often assumed to be among the few universal disorders and is explained in largely genetic terms (Meehl 1962, 1990). However, peasant societies appear to have 10 times fewer instances of the disorder than economically and technologically advanced and formally organized societies. Warner (1985) went so far as to say that the disorder appears uncommon in societies that do not have a system of wage labor. Even the food people eat has been shown to impact health, development, and psychological wellness, and dietary deficiencies or excesses can increase the tendency to develop a variety of acute and chronic illnesses. For example, people whose diets consist largely of maize are more susceptible to nutritionally-acquired mental illness, specifically dementia and depression, both of which have been linked to a deficiency of the B vitamin, niacin (Committee on Cultural Psychiatry, 2002).

Beyond environmental differences, cultures that are very similar in many ways can still differ significantly in their appraisals of what is significant within a standard list of symptoms (Mezzich, Kleinman, Fabrega & Parron, 1996). For example, people diagnosed with schizophrenia in the US have on many occasions been diagnosed as manic-depressive on visiting mental health professionals in England, because of different cultural expectations.
Qualitative Study of Trauma Outcomes

(Kendall, 1975). Because each culture colors and shapes its expressions of illness and disease, the behaviors associated with pathologies or illnesses may vary across cultures (van de Vijver & Leung, 1997). While the DSM-IV-TR tends to stress emotional experiences as key in diagnosing anxiety and depression disorders, the symptoms that are most often recounted in international samples are largely somatic (Patel, 2001).

Differences in expressions can be demonstrated by the variations in the conception of the word “depression.” In the North American context, it would not be unusual for a mental health worker to ask if we felt emotionally “under the weather” or “down,” as the terms seem natural as a description of the emotional aspect of depression. But in Zimbabwe, the word “depression” is used almost exclusively to signify an illness, which rarely presents with emotional symptoms (Patel, 1995).

In fact, most non-Western people would be baffled by the term, as they are more likely to experience depression as a feeling of emptiness, and to describe it purely physically rather than in terms of an emotion (Mezzich, 1996). In Nigeria, for example, a core symptom of anxiety is the sensation of an insect crawling mainly through the head and sometimes other parts of the body (Awaritefe, 1988; Ebigbo, 1982; Makanjuola, 1987). Under the Shona models of illness in Zimbabwean culture, conditions similar to depression are more often associated with thinking too much (kufungisisa) and a belief that supernatural factors have caused the symptoms. Similarly, labels such as shenjing shuairuo (neurasthenia) in China, ghabrahat (anxiety) in India, pelo y tata (heart too much) in Botswana, and “nerves” in some Latin American and South African societies are described as local illness categories that overlap with depression (Patel, Abbas, Broadhead, Todd, & Reeler, 2001).

A great deal of confusion in cross-cultural studies of mental health comes about in
relation to somatic symptoms. Studies of somatoform disorders as they are defined in recent versions of the DSM show that the existing nosology is problematic because it separates somatoform disorders from anxiety and mood disorders and makes distinctions between physical and emotional distress that are not made the same way in other cultures. People from many other cultures often do not subscribe to the mind-body dualism that informs Western medicine and its everyday concept of the person (Kirmayer, 1988). Thus, somatic symptoms and attributions are used commonly as idioms of distress to convey a wider range of personal and social difficulties that may or may not indicate individual psychopathology (Kirmayer & Weiss, 1994; Nichter, 1981). Somatic and dissociative symptoms are addressed more fully in a subsequent section.

Not only does culture define how mental health is described and what constitutes a mental health trauma, it also influences how such trauma is dealt with. Religious and cultural beliefs may differentially influence the meaning and subjective experience of trauma. Large numbers of Thai Buddhists living in Phuket, for example, have come to see the tsunami that devastated their community to be the karmic result of exploitation of the environment and its residing spirits. They see it as retribution for over-fishing, pollution, and other ills. This explanation colors their acceptance of the impact of the tsunami and their way of dealing with its fall-out (van Griensven et al., 2006).

**PTSD And Its Relationship To Somatization And Dissociation**

PTSD can be understood as the outcome of conditioned emotional responses of fear that become generalized to a range of external and internal cues including thoughts, images, and other feelings. In addition, many have argued that symptoms of somatization and dissociation are closely linked to the symptom profile of people with PTSD. The relationship
between PTSD, somatization, and dissociation has been found in a number of studies. For example, PTSD, dissociation, somatization, and affect dysregulation were found to be highly interrelated in a study of 520 (largely American) trauma victims (van der Kolk et al., 1996). Participants with current PTSD scored significantly higher on these disorders than those with lifetime PTSD and those who had never had PTSD. Van der Kolk et al. (1996) concluded that PTSD, somatization, and affect dysregulation represent a spectrum of adaptations to trauma, and that they occur together in various combinations of symptoms over time.

In psychodynamic theory, somatization is the process of converting, transforming, or diverting emotional distress into somatic symptoms. Somatoform symptoms refer to physical symptoms lacking any identifiable medical explanation, such as chronic headaches for which no physical basis can be found. Large scale epidemiological surveys worldwide have found that the most common medically unexplained symptoms appear to be gastrointestinal complaints and abnormal skin sensations (World Health Organization, 1992.) These symptoms are presentations of psychiatric disorders that are conventionally viewed as cognitive or emotional in nature. The lack of recognition of somatic symptoms is thought to contribute significantly to the under-recognition of depression and anxiety at home, and particularly abroad (Goldberg, 1979; Verhaak, 1988). In many cultures, as noted in the previous section, somatic symptoms and attributions are used commonly as idioms of distress to convey a wider range of concerns of a personal and social nature that may or may not indicate individual psychopathology (Kirmayer & Weiss, 1997).

Examples of this are easily found in the literature. Somatic symptoms are more dominant among patients in Africa and in other developing countries (Kirmayer, 1984; Mumford et al., 1997; Prince, 1968), and are extremely common features of depression and
other mental disorders in African countries such as Nigeria (Okulate, Olayinka, & Jones, 2004). This finding also applies to Africans in the diaspora. Brown, Schulberg, and Madonia (1996) showed that, among depressed African-Americans, the severity of somatic symptoms was higher than in their White counterparts (Kirmayer, 1993). A number of US studies have documented higher levels of somatization among Latinos, particularly among Puerto Rican respondents both in Puerto Rico and on the mainland (Canino et al., 1992, Escobar, 1995). Cross-cultural studies of depressed persons have shown higher levels of somatic complaints among psychiatric patients in Asia and Latin America, than depressed patients in the US (Escobar et al., 1983; Kleinman, 1982). Somatization symptoms are thought to be particularly important when studying psychopathology in cultures where the Western concept of mind-body dualism has less currency. These commonly experienced symptoms are recognized within the culture as indicating personal or social difficulties (Nichter, 1981). Thus, somatic symptoms may be used to talk about and negotiate matters other than bodily illness and to help draw attention to psychological pain without requiring that the individual speak directly about their emotional reactions.

While some take the view that somatic symptoms are the “cultural” equivalent of depression and that somatization is the process by which psychological distress is expressed in non-industrialized countries, Patel (2001) stresses that such a stance is incorrect for two reasons. First, somatic expressions of emotional distress are not unique to less-developed nations, as they are also the most common presenting features of depression in industrialized societies (Gureje et al., 1997). For example, the majority of patients with depression, anxiety, and related disorders in Canadian and British primary care present exclusively with somatic symptoms (Bridges & Goldberg, 1985; Kirmayer et al., 1993). Western forms of somatoform
disorder NOS include unexplainable irritable bowel syndrome and chronic fatigue. Relative to organic diseases, these are more commonly associated with recent life events (Creed, 1993). The second reason Patel offers that somatic symptoms cannot be seen as the cultural equivalent of depression is that in several studies, the classic psychological symptoms of depression can usually also be elicited from patients (Araya, Robert, & Lewis, 1994; Patel et al., 1995; Patel, Pereira, & Mann, 1998). Various studies have described the clinical presentations of depression in primary and general health care settings. Although the commonest complaints were somatic, in particular tiredness and weakness, multiple aches and pains, dizziness, palpitations, and sleep disturbances, Patel found that the psychological symptoms of his Indian and Zimbabwean patients could be elicited relatively easily on inquiry.

Despite the high frequency of somatic symptoms, psychological symptoms have a higher sensitivity and specificity for the diagnosis of depression (Patel et al., 1998). This may be due to the fact that somatic symptoms such as tiredness can also occur because of variety of chronic infectious and other diseases common in non-industrialized countries. Nonetheless, Patel confirmed the view that depression in developing countries often presents with somatic symptoms. It is therefore vital that any attempt at understanding psychological trauma includes efforts geared towards understanding the culture-specific somatic terminology used by patients, and considers the role of mood in those with multiple somatic complaints.

Dissociation involves functional alterations of consciousness, memory, and identity (Spiegel & Cadena, 1991), and dissociative phenomena are similarly commonly seen in individuals diagnosed with PTSD. Murray, Ehlers, and Mayou (2002) studied dissociation
Qualitative Study of Trauma Outcomes

and PTSD prospectively in road traffic accident survivors and found that persistent
dissociation symptoms four weeks after the accident predicted chronic PTSD severity at six
months, over and above other clusters of PTSD symptoms. Cadena and Spiegel (1993)
reported a high prevalence of dissociative symptoms in two student samples following the
October 1989 earthquake in San Francisco. Derealization, depersonalization, alterations in
time perception, and difficulty concentrating were commonly reported. Dissociation is the
second most commonly observed comorbid condition among foreign victims of PTSD and is
extremely common worldwide (Kirmayer, 1996). Carlson and Rosser-Hogan (1994) found
that Cambodian refugees in the US showed high levels of PTSD, dissociation, depression,
and anxiety, with the level of each symptom correlating positively with the amount of trauma
experienced.

Some have argued that dissociative symptoms are such a common part of both acute
and chronic stress response syndromes that PTSD and related problems should be re-
classified as dissociative disorders (Spiegel, 1991). Davidson (1993) went so far as to say
that, just as childhood sexual or physical abuse is the rule rather than the exception in
borderline personality disorder and dissociative identity disorder, prior exposure to extreme
physical or psychological stress appears to be instrumental to brief reactive psychosis,
dissociative fugue, dissociative amnesia, conversion disorder, and a number of personality
disorders.

While dissociative symptoms often can be interpreted as predictive or indicative of
PTSD, dissociative phenomena take very different forms in different cultures, as cultural
factors may influence the propensity to dissociate as a response to stress. In some societies,
individuals may receive practice using dissociation in religious or artistic performances.
These make the behavior more acceptable in other circumstances, and cultural norms may sanction their use as a coping strategy in times of stress (Kirmayer, 1996). Dissociation also tends to offer oppressed groups (often women) an avenue for protest and a measure of power or leverage within relationships (Kirmayer, 1996). Such presentations of dissociation should not be confused with pathology (Kirmayer, 1996), and any attempt to assess the symptoms of post-trauma psychopathology must differentiate carefully between explicitly functional and non-intentional forms of dissociation.

While cross-cultural work on somatization and dissociation has uncovered a wide range of symptoms neglected in conventional psychiatric nosology, there have been few attempts to tap into this cultural variation in somatoform and dissociative disorders with standardized instruments. There is thus a need for more work using expanded symptom inventories to explore the structure of distress cross-culturally. Until broader symptom lists are used, insensitivity to cultural variation in symptom patterns and expression will persist (Patel, 2001).

*The Emic-Etic Debate*

Given the important role of culture on reported mental health symptoms, there has been much debate over the diagnostic methods used in international samples. The challenge of constructing culturally-pertinent diagnoses of mental health conditions can be succinctly framed by the classic emic-etic argument around which ideas of universalism and relativism have clashed. The assumption that the conceptualization of mental illnesses by a mainly biomedically-based psychiatry was automatically valid in the rest of the world is the basis of the “etic” approach, which underpins the bulk of epidemiological research world-wide.

However, as shown in the section above, the universality of psychopathology has
often been questioned (Kleinman, 1977; Kleinman & Good, 1985), and very little is known about the performance of diagnostic tools when applied to populations that are culturally distinct from the ones they were initially developed to serve (Manson, 1997). The “emic” approach suggests that psychiatric classifications, indeed the DSM itself, is as much a product of Western culture as the apparently exotic foreign conditions in the miscellaneous categories of the International Statistical Classification of Diseases and Related Health Problems (ICD). While the DSM provides a classificatory system that acts as a starting point for mental health workers and clients in understanding and treating a disorder, it also “parse(s) human behavior into normal and abnormal based on where this particular society draws the lines” (Small, 2006). It is worth noting that how these lines are drawn is by no means uniform across cultures.

**Issues With The Widespread Adoption Of The Etic Approach**

Besides a handful, most cross-cultural mental health researchers take the etic approach. These researchers, like many others, employ standard research instruments that were constructed and normalized with White/Caucasian populations, and then adapt them to ensure linguistic and semantic equivalence. This is done by translating the instrument and having it translated back, thus allowing researchers to determine if the translated test retains its original meaning and nuances. One diagnostic instrument that has been modified in such a way for international populations is the Disaster-Related Psychological Screening Test (DRPST), created by Chou, Su, Yang, Chien, and Chou (2003) for Taiwanese victims of the Chi-Chi earthquake of 1999.

Although this is a relatively clear-cut approach, the consequences of using such adapted instruments may not be as straightforward as they seem. For example, Mollica,
Kikuchi, Lavelle, and Allden (1995) translated existing PTSD instruments and administered them to Japanese victims of the Kobe earthquake. Despite Japan enjoying the most developed mental healthcare system outside Europe and North America, this was the first time that PTSD was reported there, and the instrument drew attention to what the authors dubbed the “Invisible Human Crisis.” Similarly, studies conducted using etic instruments such as those described above have revealed vastly differing levels of PTSD, depression, and other symptoms among traumatized populations across the world. While 67% of Armenian earthquake victims met the diagnostic criteria for PTSD (Keane & Barlow, 2003), the rate was only 12% among persons displaced in Phang Nga, Krabi, and Phuket (Thailand) after the 2004 South Asian tsunami (van Griensven et al., 2006).

When differences in the prevalence of PTSD and other psychopathologies are observed in cross-cultural samples in which such instruments are disseminated, the question arises as to whether the results are true cultural differences or merely measurement artifacts (Karahanna, Evaristo, & Strite, 2005). Merely translating an instrument leaves many issues unaddressed. For example, some questions may be incomprehensible or unacceptable to respondents of another culture. The lack of understanding of indigenous mental health-concepts could prevent researchers from successfully using a direct approach, similar to those used in international surveys (Bolton & Tang, 2004). These authors offer the example of participants in an unpublished study in Angola, who initially provided information about paralysis and movement disorders in response to questions about mental issues. It was later found that these responses were related to the cultural belief that the brain is responsible for movement only, while the heart takes charge of thinking and emotions. Similarly, Manson et al. (1996) showed in a study of PTSD among Native American Vietnam war veterans, that
questions on the abuse of peyote (a powerful Native American medicine) were best excluded from lists of questions on drug abuse among Native American populations (Manson, 1997). Other questions that were found to be irrelevant for this population included asking someone how often they visited friends who are not relatives. This made little sense in a reservation setting where friends were referred to in familial terms and were usually extended family.

Further, even if the concepts carry across cultures, the instrument can be compromised by issues of scale and technical equivalence because of a lack of equivalence in the education levels of participants and differences in the social desirability of certain responses across cultures. An example of this is the Likert scale. While this is ubiquitous and well-understood by anyone with a Western grade-school education, it may be incomprehensible to people of other cultures. For example, Koreans have been found to avoid extremes on Likert scales (Lee & Green, 1991), whereas Hispanics tend to choose extremes (Huí & Triandis, 1985).

These individual patterns of responding create challenges with attaining validity. Validity is understandably an issue of particular concern when studying phenomena across cultures. If an instrument uses a Likert scale that is unknowingly irrelevant for the culture, its validity scores will be low in subsequent studies. Construct bias clearly impacts a scale's relevance to a culture and occurs when a) there are undetected differences in norms and definitions, b) relevant behaviors are poorly sampled in the instrument items, and c) there is a lack of overlap in the behaviors associated with constructs. Construct bias impacts predictive validity, and if a scale is to have such validity, the symptoms measured should be related in meaningful ways to social, interpersonal, and psychological functioning.

If issues of validity are not adequately addressed, PTSD rates may appear low as the
scale may not be tapping into the essence of traumatization for the culture. Conversely, elevated scores might be better accounted for by demand characteristics (Kagee, 2004), and respondents’ endorsements of symptoms on a checklist or interview schedule need not mean that these symptoms have a salient meaning for them. These issues were demonstrated in a study conducted with a random sample of community members in Sierra Leone. Nearly everyone in the sample (99%) was estimated to be suffering from war-related PTSD based on high scores on the Impact of Event Scale (De Jong, Mulhern, Ford, Van der Kam, & Kleber, 2000). Yet most Sierra Leoneans continue to function successfully in their communities, suggesting that they may not attend to psychiatric concerns to the extent that mental health professionals typically assume. The issue with studies such as De Jong et al. (2000) is that, instead of entire communities being classified as pathologized, the issue may lie in the method of estimating the prevalence of psychiatric disturbance.

The range of issues identified above make it necessary for researchers to use some guidelines when conducting cross-cultural research. Friedman and Marsella (1996) neatly summarized the findings in this domain by stressing that researchers remain open to several possibilities. First, ethno-cultural differences in the expression of traumatic stress may not strictly conform to DSM-IV-TR diagnostic criteria. It is necessary, for example, to use idioms of distress and indigenous concepts to determine an accurate rate of disorder. Second, ethno-cultural tendencies may alter clinical phenomenology to such an extent that highly traumatized cohorts will exhibit surprisingly low rates of PTSD. Third, following traumatic exposure, members of some ethno-cultural groups may exhibit traumatic stress syndrome that overlaps with PTSD but feature symptoms idiosyncratic to individuals from specific ethno-cultural traditions. This has been shown in a number of studies that have attempted to bridge
Qualitative Study of Trauma Outcomes

the etic-emic divide by merging qualitative and quantitative methods.

*Bridging The Divide By Combining Exploratory And Confirmatory Research*

Moving beyond an awareness of the challenges facing cross-cultural studies, some researchers in this domain have begun popularizing the use of qualitative technique in addition to traditional quantitative methods to increase the different forms of validity and to detect the presence of construct bias (Kagee, 2004; Norris, 2001; Patel, Simunyu, Gwanzura, & Mann, 1997).

Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live. It differs from quantitative methodology in a number of ways. First, qualitative research often does not predefine dependent and independent variables, as the researcher's presuppositions tend to affect the validity of the data in significant ways. Put simply, the questions posed to informants largely determine what is to be derived from the exchange. Instead, the approach is to focus on the full complexity of human sense-making as the situation emerges (Kaplan & Maxwell, 1994).

Second, although a clear distinction between data gathering and data analysis is commonly made in quantitative research, such a distinction is problematic for many qualitative researchers, as it is often important to use information gained early in the process to inform subsequent data-gathering decisions (Miles & Huberman, 1994).

A number of studies have taken the approach of combining qualitative and quantitative methods and found them particularly suited for the examination of complex social phenomena that cannot be understood using either purely quantitative or qualitative techniques. Such mixed method designs work in a number of ways. First, they broaden understanding by working to elicit the perspective of the victims and other members of the
society under study. This is done by requesting that informants in each culture describe the construct and associated behaviors in their own terms (Serpell, 1993), often during focus groups of diverse people in the culture (Marsella & Kameoka, 1988). Second, by generating a comprehensive list of the signs and symptoms associated with trauma in the culture, qualitative methods help to “ground” (Glaser & Strauss, 1967) the research and thereby enhance the content validity of the data being collected. Another function of the qualitative effort is expansion, and the results derived from qualitative methods such as semi-structured interviews and focus groups are sometimes presented side by side with quantitative results to provide a more nuanced understanding of both (Teddlie & Tashakkori, 2003).

Fourth, mixed method designs allow for triangulation that serves to enhance validity by the simultaneous generation and verification of theory in the same study (Teddlie & Tashakkori, 2003). The data collected through semi-structured interviews and focus groups help assess external and internal validity, especially in the absence of sufficient statistical power for an independent assessment of validity. Their descriptions help determine if the construct encompasses similar behaviors, and new items from the list could be included in culturally appropriate assessment instruments. A focus group, for example, can unearth local expressions of the disorder, idioms of expression, and additional ethnocultural considerations that can be used to corroborate findings generated through quantitative analyses using foreign-developed instruments. Results derived from the use of a diagnostic instrument criterion can be examined for content validity that is concerned with the extent to which the tool represents the total domain of the criterion. This is done by comparing the items on the instrument to observations of the behavior of interest as it manifests in the community. Alternatively, it can be subjected to the judgment of indigenous experts or the results of the
focus group. An example is Marsella’s (1987) work in which he elicited the domain of rape responses through interviews with appropriate members of society. He then categorized the items through a process of sorting, ranking, and scaling to derive a comprehensive list of descriptors. Another recommended way of identifying the behavioral referents of the concept being measured is to rate the meaning of the items that have been generated from extensive interviews through word association and antecedent-consequent methods.

Karahanna, Evaristo, and Stite (2005) further recommend that factor analyses be used to examine the factor structures of an instrument across cultures, and this has been done in a number of post-disaster situations with mixed results (Binitie, 1975; Cepeda-Benito & Gleaves, 2000; Chapleski, Lamphere, Kaczynski, Lichtenberg, & Dwyer, 1997). For example, using factor analytical methods, Marsella et al. (1973) found that Chinese-Americans, Japanese-Americans, and Caucasian-Americans with depressive disorders had significantly different symptom profiles. The Chinese participants emphasized somatic complaints, the Japanese showed more interpersonal dysfunction, and the Caucasians expressed largely existential complaints.

A small number of recent studies have attempted to bridge the emic-etic divide by adopting some of the above strategies. Patel, Simunyu, Gwanzura, and Mann (1997) used ethnographic and qualitative studies to elicit idioms of distress related to psychological suffering and combined them with Western notions of distress, leading to the preliminary Shona Symptom Questionnaire. The preliminary questionnaire was administered to, among others, a group of 100 patients who were known to be suffering from mental disorder. Looking at the way these patients answered the questionnaire, 14 items were identified using discriminant analysis to be the strongest predictors of mental disorder. The items included...
those from Western instruments, and unique ones derived from qualitative interviews. The instrument showed good sensitivity and specificity and included the idioms of distress used by primary care attenders within the culture. The methodology used is an innovative way of combining etic and emic methods in the evaluation of common mental disorders.

Another attempt to cross the cultural chasm was made by Norris et al. (2001) in carrying out a qualitative analysis of post traumatic stress among 24 Mexican survivors of disasters. Participants described symptoms during face-to-face interviews, and after careful coding, researchers classified the symptoms into either DSM criterion symptoms of PTSD or non-criterion symptoms. Event-related distress, hypervigilance, recurrent recollections, and avoiding reminders were brought up most often, all of which were criterion symptoms. Three criterion symptoms were never described, namely a sense of foreshortened future, difficulty concentrating, and the exaggerated startle response, indicating perhaps that they did not apply as well to this population. Outside of the criteria symptoms, 109 additional symptom expressions were identified that could not be appropriately classified. These were sorted by nine independent Mexican volunteers and cluster analyzed to reveal additional culture-specific categories of trauma symptoms. Clusters composed of ataques de nervios, depression, lasting trauma, and somatic complaints provided the best description of the data.

In a third example, Kagee (2004) attempted to determine if symptoms of traumatization are salient psychiatric phenomena for South African former detainees. He used semi-structured qualitative interviews to understand the symptoms of 20 respondents who were detained and tortured for political reasons during the apartheid era. Interviews were transcribed and analyzed for thematic content using a grounded theory approach. Results showed that although the main concerns expressed were unrelated to traumatization,
participants also indicated that they experienced symptoms of PTSD as it is understood in the West. These data suggest that, although too great a focus on exporting diagnostic categories may be misplaced, it remains important to consider the possibility that foreign victims of traumatic stress may exhibit symptoms of this nature.

The Current Study

The literature reviewed thus far suggests that combining methods of qualitative and quantitative study can potentially reveal important information on how trauma is experienced, perceived, and understood in the culture. The current study begins this effort by using qualitative methods to gain a preliminary understanding of symptoms in the Acehnese population of tsunami survivors.

Location. Located on the northern tip of the island of Sumatra, Aceh is a relatively undeveloped territory of Indonesia. This population was chosen in particular because of the wide-scale trauma experienced in the wake of the Boxing Day tsunami of 2004. Aceh's value as a research site lies in the fact that it was closest to the earthquake's epicenter. Local villagers reported two waves in succession, each approximately 30 feet high, coming in like “a black cobra” or a “crashing wall,” submerging everything in its path (British Broadcasting Corporation, 2005). While parts of Banda Aceh, the capital, were unscathed, most of its western coast was completely destroyed, and many towns completely disappeared (British Broadcasting Corporation, 2005). Eyewitness accounts in the days and weeks after the tsunami reported crushed buildings, cars, and buses picked up and tossed, bodies on the beaches, in trees, clinging onto lamp posts, and later lining the sidewalks in piles of four, five, or six high. In the haste to prevent disease, countless victims were buried in mass graves, unidentified to the authorities and to loved ones. Survivors ran for safety in the
mountains inland, staying for days and weeks, too fearful to return to the bodies and
devastation, or to go anywhere close to the sea. Rescue was slow to come because of the
widespread nature of the devastation and the damage to the infrastructure. Survivors were
unaware if their family members had been killed or simply internally displaced.

While estimates vary, approximately 130,000 people out of a population of 4 million
were killed by the earthquake and tsunami in Aceh, and about 500,000 were left homeless
(British Broadcasting Corporation, 2006). Still, the highly collectivist culture has ensured
that families and villages have banded together, and large numbers of orphans have been
integrated within families in the community. While a modicum of normality is returning to a
large number of Acehnese villages, little has been done to understand the psychological
suffering of victims who witnessed horrific scenes and lost entire families and their
livelihoods, and even less has been done to deal with the mental health fallout of the disaster.

Aims.

This study aims to examine the relationship of the DSM-IV-TR categories of PTSD
and depression to the illness behaviors and idioms of distress reported by traumatized
Acehnese villagers. It also aims to increase our understanding of how Acehnese villagers
conceive trauma-related mental health symptoms. The findings should help researchers and
clinicians broaden their understanding of psychopathology from the perspective of victims in
a society that is outside the scope of usual PTSD research. In order to assess level of trauma,
specific symptoms in response to the trauma, and types of coping employed, a qualitative
interview was developed and later analyzed to answer the following three research questions:

1. Do the DSM-IV-TR criteria of the disorders apply meaningfully in this remote
region where the diagnostic methods employed in the DSM-IV-TR are largely alien?

2. What indigenous symptoms and cultural nuances do the Acehnese villagers use to describe the symptoms included in the DSM-IV-TR?

3. How do the Acehnese cope with the fallout of the disaster to moderate the impact of the trauma on their mental health?
CHAPTER 2: METHOD

Setting

The study is a qualitative examination of the trauma experience and symptoms of individuals from two villages located on the northern coast of the province of Aceh in Indonesia. The villages were chosen because of the high rate of devastation in the area and their accessibility through a charity that is involved in relief and rebuilding efforts.

Research Team

The research team consisted of the investigator, an assistant, and two local social workers who worked for the social service agency that has been heavily involved in relief efforts since the tsunami. The two local social workers transcribed the interviews, which were then translated by two native speakers. The coding of the qualitative data collected was then carried out by the lead researcher and two assistants.

Participants

Recruitment

Three influential elders in the community were identified through a local aid agency. With the help of the local social workers who were fluent in the local language, these elders were asked to identify 12 adult men and women in the community who were having a hard time since the tsunami. Care was taken to ensure similarity in the overall level of loss suffered by the participants in terms of devastation to their home, loss of family and friends, and livelihood. This was easily accomplished because of the relatively uniform level of devastation experienced by the inhabitants of the coastal communities. Participants were asked if they were willing to talk about their experiences in the company of the researcher who is somewhat fluent in the local language and the local social workers. Consent protocols
approved by Eastern Michigan University's Institutional Review Board\(^1\) were closely followed, and participants' consent to audio-taping was sought after they were briefed on confidentiality arrangements. A copy of the informed consent form that was read to participants is available in Appendix B.

**Participant Demographics**

The participants were five males and seven females aged between 17 and 60 living in two villages on the northern coast of Aceh. Their occupations were village-based, such as fishing, selling fish, or running cooked food stores. Because of their location, participants’ accounts of their tsunami experiences were relatively uniform. They described having heard loud noises and feeling an earthquake about 30 minutes before they heard shouts from people on the beach warning them to run. Many saw their friends and family caught up in the massive waves, in which sea water was mixed with sulfur and what was assumed to be volcanic ash. Five participants were unable to run fast enough and were themselves swept away by the series of waves that stormed inland. One of the five was carrying an infant child, and another was holding her newborn grandchild – both children perished in their arms as they were tossed about. Two participants further described being caught in the water for hours before making it to shore and swallowing the putrid seawater that made their lungs burn. Table 1 provides detailed demographic information on the participants, and Table 2 summarizes their critical tsunami experiences.

There were variations in the number of immediate family members (parents, siblings, children, grandchildren) lost, but all reported extensive losses in their extended families (the modal number reported by each participant was 40 lost friends and relatives). All participants

\(^1\) The Institutional Review Board’s approval letter can be found in Appendix A.
also suffered either the complete loss of their homes or extensive damage. After the tsunami, they lived in difficult conditions in the jungles at the foot of the nearby mountains, with many going without shelter. Although two participants were lucky enough to have family cottages in the mountains that they could use for shelter, conditions there were difficult, as they were overcrowded and short of food. Participants or their families walked for hours to find food, sometimes going on foot as far away as the capital city, which is more than an hour’s drive from the village. Aid was scarce in the first few days, but supplies began to trickle in within a week. The village headman described intense competition between representatives from various villages, and he had to fight his way out of a skirmish, holding desperately onto a sack of rice for his villagers.
Table 1

Demographics

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>Pre-tsunami occupation</th>
<th>Current occupation</th>
<th>Standard of Living</th>
<th>Functioning $^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45</td>
<td>Male</td>
<td>Farmer and Fisherman</td>
<td>Incapacitated – makes fishnets at home</td>
<td>Significantly reduced</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>52</td>
<td>Male</td>
<td>Fisherman</td>
<td>Fisherman</td>
<td>Significantly improved</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>Female</td>
<td>Student</td>
<td>Unenrolled, Unemployed, and Unmarried</td>
<td>Significantly reduced</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>Male</td>
<td>Coffee shop assistant</td>
<td>Electrician</td>
<td>Significantly improved</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>45</td>
<td>Female</td>
<td>Crab Catcher</td>
<td>Crab Catcher, but with reduced capability</td>
<td>Significantly reduced</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>50</td>
<td>Female</td>
<td>Food Stall Owner</td>
<td>Food Stall Owner</td>
<td>Significantly reduced</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>26</td>
<td>Female</td>
<td>Student</td>
<td>Home maker after birth of two children</td>
<td>Unchanged</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>42</td>
<td>Female</td>
<td>Food Stall Owner</td>
<td>Food Stall Owner</td>
<td>Unchanged</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>32</td>
<td>Female</td>
<td>Pottery seller</td>
<td>Sells fuel to vehicle owners</td>
<td>Unchanged</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>60</td>
<td>Female</td>
<td>Fishmonger</td>
<td>Fishmonger, but at reduced capacity</td>
<td>Significantly reduced</td>
<td>2</td>
</tr>
</tbody>
</table>

$^2$ 1 = Low to 5 = High
<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>Pre-tsunami occupation</th>
<th>Current occupation</th>
<th>Standard of Living</th>
<th>Functioning $^3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>59</td>
<td>Male</td>
<td>Fisherman</td>
<td>Boat builder</td>
<td>Reduced</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>45</td>
<td>Male</td>
<td>Construction Worker,</td>
<td>Farmer, Construction Worker</td>
<td>Unchanged</td>
<td>5</td>
</tr>
</tbody>
</table>

$^3$ 1 = Low to 5 = High
Table 2

*Tsunami Experiences at a Glance*

<table>
<thead>
<tr>
<th>Part. No.</th>
<th>Immediate Family Members Lost</th>
<th>Extended Family and Close Friends Lost</th>
<th>Children Lost</th>
<th>Experience</th>
<th>Involvement in the recovery efforts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 Brothers</td>
<td>48</td>
<td>0</td>
<td>Carried a kilometer away, and rendered unconscious for many hours. Lost clothes and swallowed the volcanic water.</td>
<td>No - Incapacitated by fear for a month after. Not fully conscious - “staring into space”</td>
</tr>
<tr>
<td>2</td>
<td>2 - Grandchild and daughter-in-law</td>
<td>Numerous relatives*</td>
<td>0</td>
<td>No</td>
<td>No - Severely Traumatized</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>Numerous relatives and all friends in the village*</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>Numerous relatives *</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Part. No.</td>
<td>Immediate Family Members Lost</td>
<td>Extended Family and Close Friends Lost</td>
<td>Children Lost</td>
<td>Experience Being Swept Away</td>
<td>Involvement in the recovery efforts</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------</td>
<td>----------------------------------------</td>
<td>---------------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>40 extended family from another village</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>Numerous relatives*</td>
<td>0</td>
<td>Lost clothes and swallowed the water which led to health problems</td>
<td>No - Hospitalized, and in recovery.</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>14 from uncle's family and many friends from her hostel *</td>
<td>0</td>
<td>No</td>
<td>No- Left Aceh for a month</td>
</tr>
<tr>
<td>8</td>
<td>17 - Including brother, mother &amp; 3 children</td>
<td>Numerous relatives and friends*</td>
<td>3</td>
<td>No</td>
<td>No - Was recovering from an earlier operation</td>
</tr>
<tr>
<td>Part. No.</td>
<td>Immediate Family Members Lost</td>
<td>Extended Family and Close Friends Lost</td>
<td>Children Lost</td>
<td>Experience Being Swept Away</td>
<td>Involvement in the recovery efforts</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------</td>
<td>----------------------------------------</td>
<td>---------------</td>
<td>-----------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>9</td>
<td>3 - Husband and 2 children</td>
<td>14</td>
<td>2</td>
<td>She and her husband were tossed by the waves for 6 hours. Lost the child she held in her arms</td>
<td>No - Incapacitated by grief and fear</td>
</tr>
<tr>
<td>10</td>
<td>15 - Husband, 4 children and 10 grandchildren</td>
<td>40</td>
<td>4</td>
<td>Was holding on to her 5-day-old grandchild.</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>1 – Brother</td>
<td>5 members of brother's family</td>
<td>0</td>
<td>Swept away and found unconscious by his son in another town. Tied himself to a tree, but suffered a broken rib.</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>1- Brother</td>
<td>Numerous relatives*</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: *Exact number unknown
Procedure

Data were collected using a semi-structured interview and a visual self-report distress scale (See Appendix C and D respectively). The interview was designed to elicit brief information about each individual's trauma experience during the tsunami and their physical, emotional, and mental health in the three years since. The visual self-report distress scales were used to elicit a more quantitative measure of overall, social, physical, and economic distress, as well as distress experienced by the participants months prior to the interview.

Before the interviews, the informed consent form, questionnaire, and the self-report distress ratings were translated from English to Bahasa Indonesia (the main language in Indonesia that is commonly used in Aceh) by a journalist fluent in Bahasa Indonesia, and then translated back to English by another journalist also fluent in Bahasa Indonesia to ensure semantic equivalence. Minor adjustments were made to the translated interview questionnaire and visual distress scales to take into account the lesser degree of differentiation between cognitive, emotional, and physical symptoms in Bahasa Indonesia before the interview was finalized for use.

Each interview took between one and two hours to complete and was conducted by the two local social workers who had been trained by the lead investigator. While efforts were made to conduct interviews in relative privacy, this was not always possible because of the open nature of village homes and cultural injunctions against unrelated men and women speaking in private. A consent form with a description of the project was read to each participant in Bahasa Indonesia and their agreement was sought before the interview began (a copy of this is provided in Appendix B.) The form covered procedures, risks and benefits, confidentiality, and other concerns. The social workers indicated the participants’ agreement
on the form once consent was obtained. Because of the high rate of illiteracy in the population, the participants were not required to sign the form themselves. Each questionnaire was assigned a numerical code to ensure confidentiality, and individual names were excluded from all documents.

At the start of the interview, participants were asked to describe their tsunami and post-tsunami experiences. Interviewees were prompted to articulate emotional and psychological difficulties in their own terms. For example, an early question in each interview was, “Describe the most painful things you experienced after the tsunami.” Questions were also included that aimed to elicit information on DSM-IV-TR defined PTSD and depression symptoms. For example, re-experiencing symptoms of PTSD were assessed by asking, among other questions, “Do you keep remembering the event? If so, what do you remember most often? Do you have dreams or nightmares of the tsunami or about people you have lost? Have you ever felt the same feelings you felt when the tsunami occurred? Have you ever found yourself acting like the tsunami is occurring again?”

Avoidance symptoms were assessed by asking, among other questions: “Do you avoid certain places or certain items that remind you about the tsunami? Do you avoid talking about the tsunami to spare yourself the pain of remembering? Do you have trouble remembering certain aspects of your tsunami experience? Have you reduced your interactions with family members or people in the community? Do you feel more or less interested in interacting with the people around you? Do you still enjoy the things you used to enjoy doing before the tsunami? Do you find it hard to plan for the future?”

Persistent symptoms of increased arousal were assessed by asking, among other questions, “Do you get angry more often or more easily since the tsunami? Do you have
“Trouble concentrating on what you do? Are you often scared or worried? Do you get shocked or startled easily?”

Symptoms of depression were assessed by asking participants, “Have your feelings or moods changed a lot since the tsunami? Have your sleep patterns changed? Do you get up very early, or fall asleep very late? Have you gained or lost a lot of weight since the tsunami? Do you feel responsible for certain events related to the tsunami (e.g., death of a family member)?” Given that PTSD is closely related to dissociation and somatization, questions were also asked about these symptoms: “Does your body feel different since the tsunami? Do you have new aches and pains or illnesses? Have you had any supernatural experiences or have you felt like your left your body temporarily?”

Participants were also asked to describe the changes that had occurred in their lives since the tsunami, “How did your life change as a result of the tsunami?” Prompts were provided that covered housing, social interactions, physical health, ability to work, income, and other areas. This information was used to rate the participant's functioning on a five-point scale. In addition, the interview also requested that participants share information relevant to how they coped with the difficulties they faced.

The impact of their symptoms was assessed by asking participants to rate their distress on a visual distress scale that sought participant ratings of their own social, economic, physical, and overall distress using a six-point scale that showed faces ranging from very happy to crying (See Appendix D).

Interviews were conducted in an iterative manner, with early interviews informing the content of the questions raised in subsequent interviews. Such an approach was chosen in light of the fact that little has been reported on this population, and attempts to restrict the
interview at too early a stage might hamper the goal of understanding indigenous conceptions from the ground-up. Also, in the interest of time, DSM-IV-TR symptoms that the participants had raised without prompting were not reassessed later, and those questions were simply dropped from the particular interview. Modest items of daily use, including towels and toothbrushes, were distributed to the villagers as a way of thanking the community for their participation in this study.

*Transcription and Translation*

All interviews were recorded electronically on a digital audio recorder. The audio files were transferred to and saved on a password-protected computer. The interviews were then transcribed by the social workers, and the transcribed text was sent to another Indonesian national and native speaker who translated the information from Bahasa Indonesia to English. Three interviews (25% of the text) were also translated by a second native speaker, and the two translations were examined for discrepancies. Differences between the two versions were minor and consisted mainly of slight semantic variations. Inconsistencies were resolved by examining audio recordings of the interview and consulting with the Indonesian social workers who had conducted the interviews.

*Coding and Analysis*

The individual interview transcripts were coded using NVIVO software that is specifically designed for qualitative data analysis. The interviews were coded at two levels. First, a “start list” of codes (Miles and Huberman, 1994) was created using a list of DSM-IV-TR criteria for PTSD (see Table 3), depression (see Table 4), somatization, and dissociation. Second, while doing the initial coding, new codes surfaced (Lincoln and Gubba, 1985) that consisted of themes that emerged from the data that were not covered in the start list. The
“constant comparative” method (Glaser & Strauss, 1967) was used in the second stage to generate as many new themes as possible, while comparing them with previous incidents coded under the same theme. As each case was examined in this way, recurring themes emerged, and the data were summarized into more conceptual categories.

To ensure the reliability of the findings, a list of codes and definitions were given to the first assistant coder who carried out her own examination. This list consisted of both the start list of codes (driven by DSM-IV-TR symptoms) and other themes that surfaced from the data including indigenous symptoms of distress and coping mechanisms. For the purposes of triangulation, this coder was told that she could use the codes provided and add any others that she felt were relevant. The researcher and the assistant met to discuss their preliminary findings and there was a strong concurrence on the preliminary analysis (Cohen's Kappa = 72%)⁴. Where there was disagreement, opposing views were noted and extensive discussions were held until consensus was reached on the most appropriate categorization of material. The themes were compared for similarities and differences, and hierarchical coding systems were developed, which helped to summarize the data and illuminate important findings.

Occasionally, themes were subdivided into two or three related themes to take into account the subtleties in the different responses. At other times, codes that were found to be similar were collapsed and the coding procedure streamlined in this way. This process brought about a number of new insights and perspectives on the data, which was incorporated into the final analysis.

A second independent coder was engaged to provide an assessment of the material using the codes that had been agreed upon in the previous analysis. Again, the coder was

---

⁴ Formula for Cohen’s kappa = (total number of passages coded similarly) divided by (the total number of coded passages; Miles & Huberman, 1987)
encouraged to use the provided codes, as well as any additional codes she felt relevant. The two versions were compared, and the reliability rate was established at 90%. Extensive discussions were once again held in relation to disputed material. Disputes mainly related to whether or not participant reports met the spirit of the DSM-IV-TR diagnostic criteria for PTSD and depression, and the interaction between the coders allowed for greater clarification and refinement.

Finally, the interview transcripts of persons who were suspected of having PTSD and depression-related symptoms were examined by three doctoral students with experience in assessing and treating individuals with such diagnoses. They were asked to assess the interview data independently against a checklist of DSM-IV-TR symptoms, mark the related text areas, and make a diagnosis wherever applicable.

At this point, relevant quotes from the participant's experience were available under thematic categories that were easily accessible using the NVIVO software. These quotes had been collected from each participant's interview transcript and added to a list of quotes relevant to various coding categories or themes. Once the coded process was complete, the quotes within each theme or symptom category were analyzed by the lead researcher to surface similarities and differences from the way psychological distress is commonly described by Western respondents and indigenous coping strategies.

The qualitative data were augmented by a quantitative analysis of the number of PTSD, depression, and somatization symptoms reported in the participants' qualitative accounts. The greater the number of symptoms of PTSD, depression, or somatization reported, the more severe a participant's suffering was assumed to be.

Each participant's level of functioning was determined by their endorsement of the
following items over the course of the interview: changes in occupation, financial distress, reduced social contact, physical problems that interfere with work, and any other reported symptoms that appear to be relevant to the functioning of a particular participant. Each mention of the above problems was noted, and participants who endorsed more items scored lower on the five-point-scale of functioning, indicating that they suffered greater impairment. Conversely, participants who endorsed fewer items had higher scores, indicating a higher level of functioning.

Finally, participants rated their own level of distress overall and their distress six months ago as well as their economic and social distress. A visual distress scale was presented to participants (Appendix D) in which they rated their personal distress on a scale ranging from 1 (very happy) to six (crying). These ratings became a source of quantitative data, with higher scores indicating greater impairment or suffering.
Table 3

*DSM-IV-TR Criteria for PTSD (APA, 2000)*

---

**Criterion A**

The person has been exposed to a traumatic event in which they experienced, witnessed, or were confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others. In addition, their response involved intense fear, helplessness, or horror.

**Criterion B**

The traumatic event is persistently reexperienced in one (or more) of the following ways:

1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.

2. recurrent distressing dreams of the event.

3. acting or feeling as if the traumatic event were recurring.

4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

**Criterion C**

Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

1. efforts to avoid thoughts, feelings, or conversations associated with the trauma

2. efforts to avoid activities, places, or people that arouse recollections of the trauma
3 inability to recall an important aspect of the trauma
4 markedly diminished interest or participation in significant activities
5 feeling of detachment or estrangement from others
6 restricted range of affect (e.g., unable to have loving feelings)
7 sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

Criterion D

Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

1 difficulty falling or staying asleep
2 irritability or outbursts of anger
3 difficulty concentrating
4 Hypervigilance
5 exaggerated startle response

Criterion E

Duration of the disturbance (symptoms in Criteria B, C, and D) is more than one month.

Criterion F

The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
Table 4

**DSM IV Criteria for a Major Depressive Episode (APA, 2000)**

Five or more of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one symptom is either 1 or 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful).</td>
</tr>
<tr>
<td>2</td>
<td>markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)</td>
</tr>
<tr>
<td>3</td>
<td>significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.</td>
</tr>
<tr>
<td>4</td>
<td>insomnia or hypersomnia nearly every day</td>
</tr>
<tr>
<td>5</td>
<td>psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)</td>
</tr>
<tr>
<td>6</td>
<td>fatigue or loss of energy nearly every day</td>
</tr>
<tr>
<td>7</td>
<td>feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)</td>
</tr>
<tr>
<td>8</td>
<td>diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)</td>
</tr>
<tr>
<td>9</td>
<td>recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide</td>
</tr>
</tbody>
</table>
CHAPTER 3: RESULTS

Although the interviews took place three years after the tsunami, its impact was found to be far-reaching. Qualitative descriptions of both the participants' tsunami experiences and their current symptoms suggest significant levels of suffering and psychopathology.

To answer the first research question, the participants' symptoms and expressions of distress were coded and compared to the DSM-IV-TR PTSD and depression criteria to ascertain how well they matched. The fit of the DSM-IV-TR criteria to the participants' experiences was evaluated based on three factors: a) whether symptoms endorsed by individuals who suffer from the traumatic consequences of the tsunami were similar to the DSM-IV-TR; b) whether these symptoms were seen to be problematic by these individuals and had a direct impact on their daily functioning and; c) whether they reported other symptoms that they found to be more distressing than the DSM-IV-TR symptoms.

The second research question aims to unearth indigenous symptoms and cultural nuances in the way participants describe their DSM-IV-TR symptoms. Participants' accounts were analyzed and coded to surface these differences. The third research question was addressed by analyzing and coding interviews for the strategies participants used to cope with their distress.

Qualitative data are presented in the form of representative quotations in the sections below, along with key quantitative data. Tables 4 to 9 provide key quantitative summaries of the qualitative data. To place the quotations in context, Tables 1a-1l in Appendix D present a synopsis of each participant’s experiences. Readers can refer to these to get a sense of the participants’ overall tsunami and post-tsunami experience.
Research Question 1: Cultural Validity Of The PTSD and Depression Diagnosis

*PTSD Criteria A*

The first criteria for PTSD requires that the person has been exposed to a traumatic event in which he or she experienced or witnessed events that involve actual or threatened death or serious injury of oneself or others. The person's responses have to involve intense fear, helplessness, or horror.

*Quantitative Data*

Because of their geographic location, all of our participants met this criterion. They each described almost uniformly horrific experiences: several had been swept away by the water, two had lost children and grandchildren that they were holding in their arms to the incoming tide, and 7 out of the 12 had lost immediate family members (See Table 4 for a summary of their tsunami experiences, and Appendix D for more information on each participants’ experience).

*Qualitative Data*

The following are three typical accounts of the events of the day.

Participant 9:

*I was carrying my child. I was trying to rock him to sleep, when people outside started shouting, “The sea water is rising! The sea water is rising!” I ran outside the house, but the earthquake stopped so I went inside again. Less than 30 minutes after, there was another earthquake. I sat outside to wait for my husband to come home from selling petroleum. When my husband came home, he carried my child straight away and asked me to run and not to look back, because the seawater was already very high.*
We ran for about 500 meters, before the seawater dragged me in. I was holding on to my son at the time and I was hit by a wooden block. A second wave came and pulled me into the river near the mosque. When the water level went down, I had reached the river mouth and I realized sadly that I had lost grip of my son who I had been holding. I had been thrown into the water, and I had emerged, and got submerged again several times. I could still draw a breath whenever I surfaced, even though I did not always know exactly what was going on. By the time the fifth wave came, I was stuck on top of a tree. For about 30 minutes, I could not stand because my feet were too weak. I just stopped and waited at the water's side for quite sometime because I was exhausted.

I saw that my house and the whole village were gone. Even the people were gone. Only when I reached the mountain did I see anybody alive. The tsunami happened in the morning, but I did not find even one of my remaining children until 3 o’clock in the afternoon. I met my brother on the mountain and he said that three of my children were still alive. I did not dare to go down from the mountain. My sister has a house up there. I had five of my children before the tsunami, but now there are only three, as two of them died including one who was in his father’s arms.

Participant 1 offered a similarly harrowing account:

I was fishing using nets on the beach when the tsunami came. I was carried by the wave and I could not breathe as a lot of water went inside my mouth. I was rolled by the wave and brought about a kilometer away from the shore of Lamreh beach to Malahayati Harbour. I went into a house. Many hours after the tsunami water started to ease off, I was becoming conscious and I tried to remember to remember where I
was. I completely could not recognize where I was at, and my clothes were torn. It could be said that I was not left wearing anything at the time.

Participant 6:

*When the earthquake first happened, I stayed still and watched the sea water dry up. Thirty minutes later, there was another earthquake and the water arose. Then I ran.*

*My husband carried my grandchild. My child and I ran to a different direction. I was dragged by the water but my husband was not. I drank some seawater, swallowed sand, and also ate grasses. An Indonesian National Army (TNI) soldier was the one that found me. I was unconscious and naked. My husband came down from the mountain he had escaped to, to look for me. The funny thing was that one of the TNI soldiers asked him to help me, but he said he was sorry that he could not because he was looking for his wife. After a while he still could not find me and so he came back to the place where he had met me and the TNI soldier. Only then did he realize that I was his wife. My whole body was covered with mud. After my husband found me, he went to look for our child. My parents had found my child in the care of a Brimop (member of the Indonesian police force) but my husband did not know about it. He came back thinking that our child had died. He fainted and was carried up to the mountain.*

*PTSD Criterion B: Intrusive Recollections*

According to this criterion, re-experiencing symptoms must occur such that distressing memories of the trauma intrude into the consciousness repetitively, without warning either in the form of vivid re-enactments, dreams, or other such intrusions that cause intense psychological or physiological reactions (See Table 1 for an outline of the PTSD
Criteria).

Quantitative Data

Of the three main categories of PTSD symptoms, participants reported Category B (intrusive recollections) most often. Eleven of the twelve participants endorsed at least one such re-experiencing symptom, and five endorsed at least three. The most frequently mentioned symptom in Criteria B and across all PTSD criteria was being afraid of loud noises, strong winds, and other cues associated with the tsunami (B4-9 participants), followed by suffering from intrusive thoughts and recollection (B1-8 participants). Recurring nightmares (B2-6 participants) was the third most commonly cited Criteria B symptom, and the fourth most commonly cited PTSD symptom overall. Criteria B symptoms that were recorded least often were physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event (B5-1 participant), and acting or feeling as if the traumatic event were recurring (B3-2 participants). Table 5a provides a breakdown of the symptoms and the frequency of their occurrences.
Table 5a

Category B PTSD Symptoms Endorsed By Participants (Duration > 1 Month)\(^5\)

<table>
<thead>
<tr>
<th>Intrusive Recollections</th>
<th>Participant Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1: Recurrent and intrusive distressing recollections of the event, including images,</td>
<td>1 1 1 1 1 1 1 1 1 8</td>
</tr>
<tr>
<td>thoughts, or perceptions.</td>
<td></td>
</tr>
<tr>
<td>B2: Recurrent distressing dreams of the event.</td>
<td>1 1 1 1 1 1</td>
</tr>
<tr>
<td>B3: Acting or feeling as if traumatic event is recurring.</td>
<td>1</td>
</tr>
<tr>
<td>B4: Intense psychological distress at exposure to internal or external cues that</td>
<td>1 1 1 1 1 1 1 1 1 9</td>
</tr>
<tr>
<td>resembles aspect of traumatic event.</td>
<td></td>
</tr>
</tbody>
</table>

\(^5\) All participants met PTSD criteria for Category A, thus negating the need for a separate Category A table.
B5: Physiological reactivity on exposure to internal or external cues that resembles aspect of traumatic event.

<table>
<thead>
<tr>
<th>Intrusive Recollections</th>
<th>Participant Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 Total</td>
</tr>
<tr>
<td></td>
<td>1 0 2 1 3 4 2 3 2 2 3 3 26</td>
</tr>
</tbody>
</table>

Total per participant (One symptom is necessary to meet PTSD criterion)
Qualitative Study of Trauma Outcomes

Qualitative Data

For many of the participants, these re-experiencing symptoms elicited strong emotions and caused significant impairments to their ability to work and carry on with normal life. Below, a selection of the participants’ quotes that are relevant to Criterion B are organized by the three specific symptoms that were found most frequently.

Symptom B4: Psychological distress at exposure to cues associated with the tsunami.

Participant 11 described being constantly alert for signs of another tsunami. His fears were often triggered by the sound of waves or wind:

*Whenever there is a strong wind or a sound of wave that is rather strong, I will get out of my house immediately and look at the direction of the sea straight away.*

Although the fear of such sounds and quakes were often related specifically to the tsunami, the participants also reported re-experiencing in relation to cues of the bloody civil war that afflicted the region over the past three decades.

Participant 4:

*I still get startled when there is an earthquake or hearing gunshots. Usually I start thinking of weird things.*

The participants presumably heard many screams both during the tsunami and the civil war, and it appears that screams were conditioned to elicit the fear responses they experienced at the time.

Participant 9:

*I am still very afraid to hear a scream.*

Participant 5 found difficulty sustaining her livelihood as a crab-catcher because being at the beach triggered difficult memories of the tsunami. She also reported a similar
fear of gunshots that pre-dates the tsunami and can be attributed to the lengthy civil war:

*Well, sometimes I am very surprised and afraid that I feel like running. Even though it’s only the sound of firecrackers, I think of them as gunshots....Also, whenever I am looking for crabs on the beach, the memories of the tsunami still keeps coming back.*

Participant 6's livelihood is similarly affected by the distress he feels when at the beach. He reported being reminded of the incident every Sunday (the tsunami occurred on a Sunday) and during heavy rains:

*Well, now I do not dare to sell coffee on the beach anymore. I am afraid to go there. I even tried to trade there after tsunami but every time there was wind, I immediately went and ran back home. Even every Sunday I always remember about tsunami. Heavy rains also always remind me of tsunami.*

**Symptom B1 - Intrusive thoughts and recollection.** For other participants, these disturbing recollections were not prompted specifically by exposure to a particular cue. Such uncued, recurrent, and intrusive recollections of the event (including images, thoughts, or perceptions) were the second most common symptoms endorsed under Criterion B (8 participants). Participants described these recollections mainly in terms of the intense sadness that they triggered.

Participant 5

*Whenever I sit down alone, I still cry. I have even become ill because I just keep on remembering the incident.*

Participant 8

*I'm still crying. Even at home, I cry but my husband always tells me not to cry and not to remember it again.*
Participant 9

*I do not get angry, but I still remember and cry about the incident up till today.*

For Participant 11, the intrusive memories of the tsunami were associated less with sadness and more with intense fear and worry. He recalls having to flee from the waves that were fast approaching:

*I was running and the water was chasing about 3 meters behind me. I was really panic-stricken that time. (The memories) make me feel very scared and I always worry. I can sleep safely and peacefully, but I still think about it often before I sleep.*

Participant 6 had similar trouble relieving herself of the painful memories, even when in the company of family and friends:

*I often remember the tsunami incident. When this happens, I am afraid that the tsunami will come again. I have been to visit my friends and family, but only those that are near enough, not too far. Because even when I am being entertained, I am unable to forget that incident.*

Participants often mentioned “daydreaming” as a symptom that brought about significant distress. Participant 6 described the content of his “daydreams” as such:

*I often daydream. Usually I remember the tsunami incident. I am afraid that the tsunami will come again.*

Although the word appeared in this instance to be closely related to re-experiencing symptoms outlined in Criteria B1 of PTSD, in other instances, the Indonesian translation of the word “daydreaming” appeared to be more akin to empty moods (see section on depression). The multiple uses of the word “daydreaming” required that fine distinctions be made in the process of diagnostic evaluation.
Symptom B3: recurrent distressing dreams. The third commonly reported symptom from Criterion B was dreams. The Acehnese do not have a clear concept of dreams, often associating them instead with the work of supernatural spirits (see Discussion section on the “Supernatural”). Despite this, recurrent distressing sleep-time recollections of the event were reported by six participants in our sample. Their dream scenes tended to involve re-enactments of the individual’s experience fleeing from the waves, and many reported re-experiencing the sights and sounds associated with the trauma.

Participant 3 illustrates the confusion between dreams and supernatural. When asked if she had dreams, her description of her experience indicated she did, but she made it clear that she did not have them in the supernatural sense:

Not dreaming, but whenever I sleep I like to talk to myself, mumbling or saying something about tsunami, mentioning the word “tsunami” or “Help, help! Tsunami!”

I don’t know, but my friends tell me I talk to myself.

In contrast, Participant 12 did not make this distinction, and did in fact attribute his dreams to supernatural causes. He described the content of his dreams in vivid detail:

I dream more frequently and am stressed by the dreams. I feel as if there’s water coming closer and I hear many people shouting for help. I try to hold on to their hands and help them but it was actually my wife’s hand that I am holding on to.

Participant 5 reported that her night-time recollections of the tsunami are so disturbing that they often brought her to tears.

I dream until I cry
PTSD Criterion C

Avoidance and numbing symptoms (Criteria C) reflect an individuals' attempt to gain psychological and emotional distance from the trauma.

Quantitative Data

Participants endorsed Criteria C (20 endorsements) to a very slightly lesser degree than Criteria B. The number of endorsements in Criteria C was roughly equal to that of Criteria D. Nonetheless, the most frequently endorsed avoidance and numbing (Category C) symptoms were, making significant efforts to avoid activities, places, or people that aroused recollections of the trauma (C2) and a sense of a foreshortened future (C7). Six participants endorsed each of these symptoms. The least commonly endorsed Criteria C symptoms were restricted range of affect (C6-0 participants), an inability to recall aspects of the trauma (C3-1 participant), efforts to avoid thoughts, feelings, or conversations associated with the trauma (C1-2 participants), and feelings of estrangement from others (C5-2 participants). See Table 5b for a breakdown of Criteria C symptoms and frequencies.
### Category C PTSD Symptoms Endorsed By Participants (Duration > 1 Month)

<table>
<thead>
<tr>
<th>Avoidance/Numbing Symptoms</th>
<th>Participant Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1: Efforts to avoid thoughts, feelings, or conversations associated with the trauma</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>C2: Efforts to avoid activities, places, or people that arouse recollections of the trauma</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td>C3: Inability to recall an important aspect of the trauma</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>C4: Markedly diminished interest or participation in significant activities</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>C5: Feeling of detachment or estrangement from others</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Avoidance/Numbing Symptoms</td>
<td>Participant Number</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td>1  2  3  4  5  6  7  8  9  10  11  12  Total</td>
</tr>
<tr>
<td>C6: Restricted range of affect</td>
<td>0</td>
</tr>
<tr>
<td>C7: Sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)</td>
<td>1  1  1  1  1  1  1  6</td>
</tr>
<tr>
<td>Total per participant (Three symptoms are necessary to meet PTSD criterion)</td>
<td>4  0  3  1  3  3  1  0  2  1  1  1  20</td>
</tr>
</tbody>
</table>
Qualitative Study of Trauma Outcomes

Qualitative Data

A selection of participants' quotes relevant to the two most frequently cited Criterion C symptoms are listed below.

Symptom C2: Avoidance of places associated with the tsunami. All six participants who reported avoiding activities and places that aroused recollections of the trauma avoided the beach. None mentioned making efforts to avoid activities or people associated with the trauma. Efforts to avoid the sea had substantive consequences for an individual's livelihood and family income, as the following examples indicate.

Participant 1 had stopped fishing and restricted his work to making nets for other fishermen. As a result, he reported significant financial pressures and stress from being unable to meet the financial demands of his family.

Interviewer: Do you go to places that remind you of the tsunami?

*participant: I do not go to the beach or the sea. I'm not strong enough to go to sea, and too scared.*

Participant 6 gave up her kiosk selling drinks on the beach, as this was where she was when she was dragged away by the water, stripped naked by the force, and covered with mud. She often ruminates over the loss of income and the added pressure that this has placed on her elderly husband, but has been unable to bring herself to resume trading.

Interviewer: You still dare to go to the beach?

*participant: No, I do not dare to. I have not even seen the place I used to trade again. I have asked my relative to replace me there.*

Participant 11 was making boats on the beach when he was swept away by the wave. He now continues to make such boats on the beach, but avoids going out fishing with his friends in the sea. Fortunately, his skill in boat-making provided a viable alternative source of
income, as the demand for boats increased dramatically in the aftermath of the widespread destruction of such vessels during the tsunami.

_I still go to beaches but I do not dare to go to the sea anymore. Still, until today, I often tremble when I am on the beach. Before tsunami, I went fishing at the sea every night and I made boats on the day. But now I don’t dare to fish at the sea anymore. I only keep making boats._

_Symptom C7: Sense of foreshortened future._ Participants who endorsed a sense of foreshortened future appeared to be somewhat defeated and resigned to their fate. The following responses were typical:

Participant 1:

_Yes, I have no education. I can’t plan too much. I live from day to day._

Participant 3:

_I don’t think I can plan. I just go through things as they are. It is because I don’t know what to do. I just don’t know. Maybe it’s because I have no family and I don’t go to school._

For several participants, the sense of a foreshortened future was related to a real fear that the tsunami will recur.

Participant 4:

_I think too much about the future of my children or family. It seems less clear and certain, and it feels like it will be more responsibility than I can handle. Maybe I am afraid that the tsunami will happen again._
Participant 5:

Well, to be honest I am still afraid to think about the future. Thinking of the tsunami, I am confused about how my future will be.

For other participants, the poor sense of their own future was tied very closely to the economic concerns that weighed heavily on their minds.

Participant 10:

Yes, I feel very miserable because now there is no more aid and I am not trading anymore so I become very miserable thinking about the future of my grandchildren.

**PTSD Criterion D**

The fourth criterion is increased physiological arousal. Individuals scan the environment for danger, have trouble sleeping because of their hyper-vigilance, are unable to concentrate, may be irritable, and may overreact to stimuli.

**Quantitative Data**

Among the arousal (Category D) symptoms, an exaggerated startle response (D5) was the most common (7 participants) symptom, and the third most commonly cited PTSD symptom overall. This is followed by difficulty falling or staying asleep (D1), with six participants endorsing this symptom. Criteria D symptoms that were recorded least often were hyper-vigilance (D4-1 participant) and difficulty concentrating (D3-2 participants). See Table 5c for a breakdown of Criteria D symptoms and frequencies.
<table>
<thead>
<tr>
<th>Increased arousal</th>
<th>Participant Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1  2  3  4  5  6  7  8  9  10  11  12  Total</td>
</tr>
<tr>
<td>D1: Difficulty falling or staying asleep</td>
<td>1  1  1  1  1  1  1  1  6</td>
</tr>
<tr>
<td>D2: Irritability or outbursts of anger</td>
<td>1  1  1  1  3</td>
</tr>
<tr>
<td>D3: Difficulty concentrating</td>
<td>1  1  2</td>
</tr>
<tr>
<td>D4: Hyper vigilance</td>
<td>1  1</td>
</tr>
<tr>
<td>D5: Exaggerated startle response</td>
<td>1  1  1  1  1  1  1  1  7</td>
</tr>
<tr>
<td>Total per participant (Two symptoms are necessary to meet PTSD criterion)</td>
<td>2  0  2  1  1  3  0  1  1  2  2  4  19</td>
</tr>
<tr>
<td>Met PTSD criteria</td>
<td>√  √  √  3</td>
</tr>
</tbody>
</table>
Qualitative Data

Below, a selection of participants' quotes relevant to the two most commonly cited symptoms in Criterion D is presented.

*Symptom D5: Exaggerated startle response.* Participants who endorsed this symptom described being startled more often than before. Often, they were cued by stimuli that were reminiscent of the trauma situation, such as earthquakes and large waves. For others, this generalized to other situations, including listening to disturbing stories about the tsunami. The reliance on translators during the interview process and the lack of fine language distinctions meant that descriptions of this symptom were sometimes wanting in specificity. Differentiations had to be made carefully between an exaggerated startle response, physiological reactivity to cues of the trauma (PTSD symptom B5), and hypervigilance (PTSD symptom D4) using contextual data.

When asked if he got startled easily, Participant 9 replied:

*Yes, especially when there are quakes.*

Participant 3 and 6 had a similar response.

Participant 3:

*I do get shocked more easily, especially if I’m told disturbing stories.*

Participant 6:

*Well, every time there is a slight sound or noise similar to what I heard during the tsunami, I get shocked.*

*Symptom D1: Sleep.* Sleep difficulties were reported often in association with frequent memories of the incident, or an inability to relax.
Participant 12:

Yes, I’ve been having sleeping difficulties and I cannot rest because I am always reminded of the incident.

Participant 1 reported “thinking a lot” and “staying up”:

I think a lot, and stay up a lot. I have trouble resting and my sleep is intermittent.

Interestingly, Participant 6 who earlier reported being unable to trade on the beach because of the traumatic memories it brought her, also reported having trouble sleeping in her home, but not if she went to the mountains further away from the water.

My sleep is affected, but I have never shared this with my children or anybody else.

The strange thing is that if I sleep on the mountain, I can have a very good sleep, but I can’t really sleep well in this house because this house is near the sea.

PTSD Criterion E: Time

To meet diagnostic criteria, PTSD symptoms must persist for at least one month and must be perceived as distressing or cause functional impairment. Although we did not systematically assess the participants’ initial trauma symptoms in the month after the tsunami (because of concerns over the accuracy of such reporting three years later), the majority of them indicated much greater symptomatology immediately after the event and a decline in distress levels in the time since. Nonetheless, from the above accounts, the individuals clearly reported a significant number of symptoms that appear to have persisted well beyond the immediate aftermath of the tragedy.
PTSD Criterion F: Functioning

While most standard PTSD and depression symptoms were identifiable in this population, the impact on functionality was deemed to be particularly important in determining the cultural validity of these diagnoses.

Quantitative Data

Out of the sample of 12, five participants reported significant reductions in their physical, economic, and social functioning. In addition, only five participants still held the same jobs they did before the tsunami. Six reported that their standard of living had fallen since the tsunami, mainly because of reductions in their functionality. The other six reported that their standard of living had either improved or remained unchanged.

See Table 6 for a summary of functioning scores and Table 7 for the correlation between functioning, PTSD and depression symptom counts, and self-reported distress. The total number of PTSD symptoms endorsed was highly negatively related to functioning as measured by the participant's reported physical, economic, social, and other difficulties (See Method section for a summary of how functioning was scored). Increasing PTSD symptoms was associated with lower functioning. Functioning was most significantly negatively related to economic distress, followed by social distress and physical distress such that poorer functioning was related to greater economic, social, and physical distress, but this is not surprising given that these are the factors that made up the functioning scores. In addition, functioning was negatively and significantly related to overall distress, but more modestly so.
Table 6

Symptom Counts, Functioning and Self-reported Distress

<table>
<thead>
<tr>
<th>Part No.</th>
<th>PTSD symptoms</th>
<th>Depression symptoms</th>
<th>Somatic Symptoms</th>
<th>Functioning</th>
<th>Overall Distress</th>
<th>Distress 6 months ago</th>
<th>Economic Distress</th>
<th>Social Distress</th>
<th>Physical Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7*</td>
<td>6#</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>7*</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>10*</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

6 1= Low to 5= High
<table>
<thead>
<tr>
<th>Part No.</th>
<th>PTSD symptoms</th>
<th>Depression symptoms</th>
<th>Somatic Symptoms</th>
<th>Functioning</th>
<th>Overall Distress</th>
<th>Distress 6 months ago</th>
<th>Economic Distress</th>
<th>Social Distress</th>
<th>Physical Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>7*</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mean</td>
<td>5.42</td>
<td>1.80</td>
<td>1.42</td>
<td>3.25</td>
<td>3.17</td>
<td>4.25</td>
<td>3.92</td>
<td>2.83</td>
<td>2.92</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.68</td>
<td>1.62</td>
<td>1.31</td>
<td>1.71</td>
<td>1.70</td>
<td>1.76</td>
<td>1.08</td>
<td>1.53</td>
<td>1.62</td>
</tr>
</tbody>
</table>

Note: * Participants who met PTSD criteria. # Participants who met MDD criteria

7 1= Low to 5= High
Table 7:

<table>
<thead>
<tr>
<th>Core Outcome Variables</th>
<th>PTSD Symptoms</th>
<th>Depression Symptoms</th>
<th>Somatic Symptoms</th>
<th>Functioning</th>
<th>Overall Distress</th>
<th>Distress 6 Mths. Ago</th>
<th>Economic Distress</th>
<th>Social Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression Symptoms</td>
<td>.64*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic Symptoms</td>
<td>.46</td>
<td>.71*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functioning</td>
<td>-.64*</td>
<td>-.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Distress</td>
<td>.46</td>
<td>-.07</td>
<td>.13</td>
<td>-.55*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress 6 Months Ago</td>
<td>.13</td>
<td>.07</td>
<td>.11</td>
<td>.31</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic Distress</td>
<td>.80*</td>
<td>.56*</td>
<td>.41</td>
<td>-.87*</td>
<td>.50*</td>
<td>-.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Distress</td>
<td>.17</td>
<td>.23</td>
<td>.31</td>
<td>-.68*</td>
<td>.46</td>
<td>-.05</td>
<td>.54*</td>
<td></td>
</tr>
<tr>
<td>Physical Distress</td>
<td>.24</td>
<td>-.15</td>
<td>.06</td>
<td>-.58*</td>
<td>.50*</td>
<td>-.11</td>
<td>.46</td>
<td>.54*</td>
</tr>
</tbody>
</table>
Qualitative Data

Individual reports of lower functioning were often directly related to their physical health and their ability to work effectively and support their families. Although their social function was assessed, given the communal nature of the village, it is not surprising that few described diminished social or family relations. Even individuals confined to their homes because of a disability or other reasons are in constant contact with neighbors and relatives who live nearby.

Participant 1’s functioning score was 1 on a 5-point scale (lower scores indicate poorer functioning). He could not work at his previous levels, suffered significant health concerns, had numerous financial worries, and often behaved in a strange manner that worried his children:

*The most difficult thing for me is that I cannot earn a living. I’m not strong enough to go to sea, and too scared. Moreover, the family demand is very high while my condition cannot satisfy their demand. That is what often disturbs my mind, which causes me to seek help at the mental hospital again.*

Participant 10 also had a low functioning score of 2. Her experience of being washed away by the tsunami resulted in significant health problems that were coupled by her advanced age (60) and the emotional trauma of losing many children and grandchildren:

*I began selling fish again five months ago, but had to stop as I got sick. Now I live with my five grandchildren whose parents died because of the tsunami. I feel very miserable because now there is no more aid and I am not trading anymore. I become very miserable thinking about the future of my grandchildren.*
PTSD Criterion Summary

In summary, three individuals met the full-diagnostic criteria for PTSD, namely participants 1, 3, and 6. Eight of the 12 participants reported 5 or more symptoms. Only one participant failed to endorse any PTSD symptoms (See Table 6).

Almost all PTSD symptoms were reported, with “restricted range of affect” being the only symptom that was never endorsed. The most commonly reported symptoms fell under the category of intrusive recollections (Category B). All but one participant endorsed one or more symptom in this category, with five endorsing three or more symptoms. The most frequently mentioned symptoms were a) being afraid of loud noises, strong winds and other cues associated with the tsunami (B4- 9 participants), suffering from intrusive thoughts and recollection (B1- 8 participants), and recurring nightmares (B2- 6 participants).

The most frequently endorsed avoidance and numbing (Category C) symptom was a sense of a foreshortened future (C7) and the making of significant efforts to avoid activities, places, or people that aroused recollections of the trauma (C2), with six participants endorsing each of these symptoms. Among the arousal (Category D) symptoms, an exaggerated, startled response (D5) was the most common (7 participants) followed by difficulty falling or staying asleep (D1), with six participants endorsing this symptom.

The symptoms that were recorded least often were a restricted range of affect (0); an inability to recall important aspects of the trauma (1); physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event (1); hyper-vigilance (1); efforts to avoid thoughts, feelings, or conversations associated with the trauma (2); acting or feeling as if the traumatic event were recurring (2); feelings of estrangement from others (2); and difficulty concentrating (2).
Depression Symptoms

After PTSD symptoms, depression symptoms were a major focus of the current study. Depression symptoms were recorded based on the DSM-IV-TR criteria for an existing mood episode (See Table 2 for DSM-IV-TR Depression criteria).

Quantitative Data

Two individuals met the full-diagnostic criteria for a current mood episode, namely participants 1 and 12. Seven of the 12 participants reported three or more symptoms of depression, and four endorsed no symptoms at all. Participant reports of DSM-IV-TR symptoms of depression are outlined in Table 8. Depression symptoms were significantly correlated with PTSD symptoms (r=.64) and, as expected, even more closely related to somatic symptoms (r=.71). Participants endorsed persistent sad, anxious, or empty moods and a loss of energy or increased fatigue (6 participants each) most often, followed by insomnia or oversleeping (5). The depression symptoms that were mentioned least often were a loss of interest or pleasure in hobbies and activities that were once enjoyed (1); difficulty thinking, concentrating, remembering, or making decisions (1); and thoughts of death or suicide (1).
Table 8:

*Depression Symptoms Endorsed By Participants (Duration > 2 weeks)*

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Participant No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent sad, anxious, or &quot;empty&quot; mood.</td>
<td>1 1 1 1 1 1 1 1 7</td>
</tr>
<tr>
<td>Loss of interest or pleasure in hobbies and activities that were once</td>
<td>1 1 2</td>
</tr>
<tr>
<td>enjoyed, including sex</td>
<td></td>
</tr>
<tr>
<td>Loss of appetite and/or weight loss, or overeating and weight gain</td>
<td>1 1 1 1 1 4</td>
</tr>
<tr>
<td>Insomnia, early-morning awakening, or oversleeping</td>
<td>1 1 1 1 1 1 5</td>
</tr>
<tr>
<td>Loss of energy or increased fatigue</td>
<td>1 1 1 3</td>
</tr>
<tr>
<td>Restlessness or irritability (psychomotor agitation or retardation near</td>
<td>1 1 1 3</td>
</tr>
<tr>
<td>every day and observable by others, not merely subjective feelings of</td>
<td></td>
</tr>
<tr>
<td>restlessness or being slowed down)</td>
<td></td>
</tr>
<tr>
<td>Feelings of worthlessness, inappropriate guilt, helplessness.</td>
<td>1 1 1 1 4</td>
</tr>
<tr>
<td>Symptom</td>
<td>Participant No.</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Difficulty thinking, concentrating, remembering, or making decisions</td>
<td>1 1 2 1 1 3 0 3 2 4 0 7 31</td>
</tr>
<tr>
<td>Thoughts of death or suicide or attempts at suicide</td>
<td>1 1</td>
</tr>
<tr>
<td>Total per participant (5 symptoms are necessary to meet criterion)</td>
<td>6 0 3 0 3 3 0 3 2 4 0 7 31</td>
</tr>
<tr>
<td>Met Depression Criteria</td>
<td>√ √ 2</td>
</tr>
</tbody>
</table>
Qualitative Study of Trauma Outcomes

Qualitative Data

Symptom 1: Persistent sad or empty moods. Participant reports often included descriptions of frequent, intense crying that in many cases was associated either with the intrusive re-experiencing symptoms (See section on “PTSD Symptom”) or profound grief in relation to the loss of family and friends.

Participant 8:

The sadness is overwhelming. I could not even speak because of it. Even at home, I cry often.

Participant 5:

I do not become angry easily - I just become sad. Usually whenever people ask me about tsunami I cry straight away. Whenever I sit down alone, I still cry. I once became ill because I just kept on remembering the incident (crying during interview).

Participant 12 spoke of both increased sadness and increased anger and irritability:

I have become angry more often and I get sad more often. I feel like the tsunami is happening again and it comes with an overwhelming feeling of sadness.

Empty moods were rarely reported directly, but as predicted by the mood episode criteria, they were often lumped together with descriptions of sadness. They were alluded to by the use of the Indonesian translation of the phrase “staring into space” or, “daydreaming.”

Participant 1's brother described his brother's condition since the tsunami as such:

He sits alone at home, staring into space.

Participant 10:

I like to daydream, and I become sad and cry when I am alone and reminded of my family that died during tsunami.
Participant 8:

Interviewer: Did anyone come to give you advice after the tsunami?

There were some people. Usually they asked me not to daydream.

Although “daydreaming” was used in this case to describe empty moods, in some instances the Indonesian translation of the word appeared to be more closely related to re-experiencing symptoms (See Criteria B of PTSD).

In addition to the sad and empty mood, several participants described anxious moods that centered on worries related to the tsunami:

Participant 4:

I am thinner now, maybe because I think too much about the future of my children or family. Maybe I am afraid that the tsunami will happen again.

Participant 12:

I often feel scared and unsure in my daily life.

Participant 5:

I am still scared and in trauma.

Participant 7:

Well, since I have experienced it, therefore, I am still afraid. I become sad and daydream. Until today, I am sad when I remember that incident and I am afraid if it happens again.

Symptom 6: Loss of energy or fatigue. When describing the symptoms of loss of energy or fatigue (second most common symptoms of depression seen in this sample), participants did not recount simply feeling tired, or lacking in energy. Instead, they tended to describe feelings of being spent or completely exhausted.
Participant 12:

Yes, now I get tired and exhausted more easily.

Participant 10:

Maybe because I am getting older so I feel tired or exhausted more easily but I often go for a walk to move my body.

Symptom 4: Insomnia. The third most frequently cited depression symptom was insomnia or early morning awakenings. Participants 1 and 12 met criterion for depression, with a total of six and seven symptoms each. Although Participant 1 did not speak directly about his ability to sleep, his brother reported that his sleep is intermittent, attributing it to the fact that he “thinks a lot.” Participant 12 was the village chief when the tsunami occurred. He took his responsibilities very seriously, and is reported to have gone to incredible lengths to see to the welfare of his charges. Although no longer shouldering the heavy burden, the chief similarly met criteria for depression with the highest number of reported symptoms. Among other things, he continues to experience significant trouble sleeping:

I have been having sleeping difficulties. I cannot rest because I am always reminded of the incident.

Dissociation

Quantitative Data

It was expected that participants would endorse significant dissociative symptoms, but the symptom was reported by only one participant, notably the village chief. Although he had no recollection of this behavior, he reported that other villagers had told him that he had been “possessed” on the anniversary of the tsunami the year before.
Qualitative Data

Although they did not report current symptoms that indicate dissociation, a number of participants reported recollections of what appeared to be dissociative experiences in the immediate aftermath of the tsunami (peritraumatic dissociation). However, because of difficulties with translation, it was difficult to determine if the experiences they described having immediately after the tsunami had the characteristic features of depersonalization and derealization or if they were related to experiencing a loss of consciousness and physical hurt as a result of being swept away or chased by the tsunami waters. The following excerpts from the interviews list several symptoms the participants reported that they had in the immediate aftermath of the tsunami and that hint at possible dissociation. However, they provide little diagnostic clarity.

Participant 1:

A week after the tsunami I did not do anything at all, because I was still surrounded by fear. I did not join them, because I was still under recovery and I was not really conscious at the time - I was just staring into space.

Participant 10:

I was crying all the time and could not do anything because I was thinking about my husband and children who died and could not be found that time. I was between being conscious and unconscious at that time.
*Somatization*

*Quantitative Data*

Eight of our 12 participants reported significant somatic symptoms (See Table 9). Significant correlations were found between the reporting of depression symptoms and somatic symptoms, such that participant report of somatic symptoms appeared to increase with the number of depression symptoms reported. Although PTSD and somatic symptoms were less robustly related, the three participants who met PTSD criteria all reported at least one somatic symptom, with one individual with PTSD reporting four such symptoms.
Table 9:

*Somatic Symptoms Endorsed By Participants*

<table>
<thead>
<tr>
<th>Part. No.</th>
<th>No. Of Symptoms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1* #</td>
<td>4</td>
<td>Cough, muscle aches, headaches, weakness and exhaustion,</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3*</td>
<td>1</td>
<td>Greater frequency of illness, attributed to ghosts she encounters on the haunted beaches</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Greater frequency of illness, low blood pressure attributed to “thinking too much”</td>
</tr>
<tr>
<td>6*</td>
<td>1</td>
<td>Headaches</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>Reported greater fitness and improvements in health</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Headaches, weakness</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Part. No.</td>
<td>No. Of Symptoms</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>High blood pressure, greater frequency of illness, loss of body mass attributed to “thinking too much”</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>“Weak heart,” “swollen scar” that does not heal</td>
</tr>
<tr>
<td>12*</td>
<td>2</td>
<td>Greater frequency of illness and malaria, weakness</td>
</tr>
</tbody>
</table>

Note: * Participants who met PTSD criteria. # Participants who met MDD criteria
Qualitative Data

Apart from being easily exhausted and feeling weak (which are currently included in the depression criteria in the DSM-IV-TR), somatic symptoms that were reported included chronic coughs, headaches, and high blood pressure that does not appear to respond to treatment. Many participants reported falling sick more often after the tsunami, but did not link these specifically to any related trauma-specific experience such as lung infections or broken bones. In talking about their physical symptoms, participants also used several seemingly culture-specific expressions or idioms of distress, such as weakness in the heart, the “inner part of the body,” and their muscles, and being possessed by ghosts.

The following is Participant 5’s account of her physical health since the tsunami. Although she did not meet the criteria for depression, she appeared to the interviewers to be somewhat depressed, and this was expressed to a large extent in her description of the physical toll of the tsunami on her health.

Sometimes I fall ill and my husband does too. Before tsunami, I rarely fell ill.

Usually whenever people asked me about tsunami I would cry straight away...My blood tension has dropped because I think of too many things too often.

Participant 1 met both PTSD and MDD criteria and was receiving psychiatric treatment at the local inpatient psychiatric care facility. He reported:

What I am feeling now is that the inner part of my body feels sick, like in my muscles. I easily get headaches and get exhausted... I will do well only to endure the pain I am feeling in my body.
Participant 11 similarly reported falling sick more often and becoming weaker after the tsunami. Despite the fact that environmental conditions and access to health care have improved dramatically in the last three years, he often falls prey to malaria and other diseases. Although he did not meet criteria for PTSD and reported no DSM-IV-TR symptoms of depression, his self-reported distress ratings were among the highest, second only to Participants 6 and 5 who suffered PTSD and an unknown psychotic disorder, respectively. His self-reported distress rating and the number of somatic responses portray his suffering, even if his symptoms do not meet our diagnostic criteria. He used a common local idiom of distress to describe his difficulties, specifically that his “heart is weak now.” The lack of mind-body dualism that has been found to be a critical difference between Western and non-Western cultures is illustrated by the largely physical explanation Participant 11 provided for the intense reactivity he experiences to psychological and physical cues that are reminders of the tsunami. When asked if he was still afraid or worried when thinking about the future, Participant 11 said:

Yes, I am still very afraid. My heart is very weak now. So when I hear noises I will immediately think that something is going to happen. I will look for the children straight away and ask them to stay put at home.

Association between PTSD, Depression, Functioning, and Self-reported Distress

Quantitative Data

Correlation analysis was performed to examine the links between PTSD, depression, functioning, self-reported distress, and other factors pertinent to the survivor's experience (See Table 6 for raw scores, means, and standard deviations and Table 7 for the correlation between functioning, symptom counts, and self-reported distress respectively). Correlations
were assumed to be significant at the $p < .10$ level to take into account the small number of participants. Although the correlations present some interesting results, the small sample size also means that they should be interpreted with caution. Nevertheless, given the restricted range of scores and/or a bimodal distribution in many of the quantitative measures, the fact that several significant results were found (often at the $p < .05$ level) gives greater credence to these results.

The total number of PTSD symptoms endorsed was highly significantly related to functioning, as measured by the participant's reported physical, economic, social and other difficulties. That is, an increase in reported PTSD symptoms was associated with a significant decrease in overall functioning. PTSD symptoms were also closely correlated with depression and economic distress such that an increase in PTSD symptoms was related to more depression and economic distress. In particular, the relationship between PTSD and economic distress was the most closely related of all the relationships measured in this analysis.

In contrast, there appeared to be a modest but insignificantly positive relationship between the number of PTSD symptoms participants reported and their self-reported current overall distress. Increases in PTSD symptoms was related only to moderate increases in overall distress. Also, PTSD was not closely correlated with physical self-reported distress or somatic symptoms such that increases in PTSD did not bring with them concomitant increases in these factors.

Although PTSD and depression symptoms were relatively strongly related, there appeared to be a weaker connection between the number of depression symptoms reported and overall self-reported distress than that between PTSD symptoms and overall self-
reported distress. Overall self-reported distress tended to increase to a greater degree as PTSD symptoms increased than when depression increased, but neither of these relationships was found to be statistically significant.

Depression symptoms were significantly related to economic distress such that greater depression symptoms co-occurred with greater economic distress. Depression was also negatively but insignificantly related to functioning, such that greater depression was associated with poorer functioning, but this relationship was fairly weak. The relationship between depression and economic distress and that between depression and functioning was far less robust than that between PTSD symptoms and economic distress and PTSD and functioning.

Depression symptoms were, however, highly significantly correlated with somatic symptoms such that participants who reported more depression symptoms also reported significantly greater somatic symptoms. Despite this, depression symptoms were not strongly correlated with physical distress ratings derived from the self-report visual distress scales.

Overall distress was modestly but significantly correlated with economic and social distress such that greater overall distress predicted greater economic and social distress and vice versa. In addition, economic and social distress were significantly but modestly correlated with each other. Although distress six months ago was measured as a means of assessing change in participant perceptions of their well-being over time, this variable did not appear to be related to any other variable in the study, including PTSD and depression symptoms.

The discussion thus far has focused on the identification of symptoms related to PTSD and depression as found among survivors of the Boxing Day tsunami in Aceh and the relationship of these symptoms to individual functioning and distress. We now turn our attention to the second research question, which was addressed in an attempt to identify indigenous symptoms participants report to be troubling, as well as cultural nuances in the way participants describe the symptoms included in the DSM-IV-TR.

*Use of Word “Daydreaming”*

*Quantitative Data*

Eight participants reported that they had the distressing tendency to “daydream.”

*Qualitative Data*

Although coders first saw daydreaming as a possible indigenous symptom, on closer analysis, the Indonesian translation of the word “daydreaming” appeared in several references to be akin to empty moods (See Results section on Depression), unresolved grief, and to re-experiencing symptoms outlined in Criteria B of PTSD.

Participants 6 and 7 used the word “daydream” to refer to intrusive recollections:

**Participant 6**

*I often daydream. Usually I remember the tsunami incident. I am afraid that the tsunami will come again.*

**Participant 7**

*Well, I have become sad and I daydream. Until today, I am sad when I remember that incident and I am afraid if it happens again.*
In contrast, Participant 10 appeared to use the word more in relation to empty moods:

*I like to daydream, and I become sad and cry when I am alone and reminded of my family that died during tsunami.*

_Supernatural Experiences_

**Quantitative Data**

Five participants mentioned supernatural elements as a significant concern.

**Qualitative Data**

Because of the culturally-ascribed role that spirits have in causing suffering, a number of participants alluded to supernatural experiences in unexpected contexts. Participants in our sample gave supernatural explanations for a number of symptoms that they reported, specifically, avoidance symptoms, somatic symptoms, nightmares, and re-experiencing symptoms. Participant 4 explained his avoidance of the sea by attributing his behavior to a fear of the supernatural:

*I have never felt it, but my friends, who go to the sea to look for fish early in the morning, frequently feel that someone or something is leading them to the place where the corpses of tsunami victims are buried in the water. Many people experience the same thing. I do not dare to go to the sea alone without many friends anymore. Even if there is only one friend, I will still be scared.*

_Interviewer: Have you ever heard strange noises or experienced ghosts?_

_What I often imagine is the voices of people yelling for help that time._

Participant 3 cried incessantly throughout the interview on recalling her late parents and the many friends she lost during the tsunami. She met the diagnostic criteria for PTSD, and expressed a sharp sense of hopelessness and a foreshortened future. Interestingly, the
otherwise healthy-looking 17-year-old equated her frequent bouts of unexplained illness after the tsunami not to her traumatic experiences, or her loss of family and friends, but to the presence of ghosts. She attributed her chronic health problems since the tsunami to the work of restless spirits who had not received proper Muslim burials and accepted the village healer's explanation that the spirits of the people who had perished had entered her body and caused her otherwise unexplainable physical symptoms:

**Interviewer:** Did you often get sick after tsunami?

*It became sick more often because I often met ghosts. Because there were many corpses that had not been found.*

**Interviewer:** You were approached by ghosts?

*Not like that, for example when I went to the sea usually I got sick when I came back and when I was treated, they said there were ghosts possessing me. I have not seen but I have heard of stories. I have also been possessed before. Yesterday, the mass graveyard in Kaju was opened. The smell was really strong. And there were only skeletons left. The heads were no longer there, only the hands.*

Adding complexity to the subject of the supernatural is the fact that the Acehnese do not have a word for nightmares and instead relate bad dreams to the work of spirits (Graymon, 2007). The confluence of dreams and possession is illustrated by Participant 12's account:

**Interviewer:** Have you ever heard strange noises like that of ghosts after tsunami?

*Yes, I often hear screams and I sometimes feel as if something is coming inside my body until I can’t breathe. I often see people asking for help and I try to help them*

**Interviewer:** When does this happen?
When I am sleeping, but after I am awakened by my wife, I would return to consciousness and realize that it only happened in my mind.

Participant 8 had significant trouble accepting the death of her youngest son. She appeared to suffer from significant symptoms of complicated grief. She associated a question about her supernatural experiences with the experience of meeting her son in a dream:

I was approached by my son, who was already dead, in my dream. He said he was still in the hospital, his brother as well. It was as if my son was showing me where he was.

The Role Of Social Norms In Inhibiting Symptom Expression

While the participants’ frequent mention of somatic symptoms and their supernatural explanations for psychological symptoms indicate that these may be more acceptable forms of expression of distress, there were other indications that certain symptoms or signs of suffering were unacceptable in their culture.

Quantitative Data

Only one of the 12 participants responded affirmatively to questions regarding suicidal ideation, and none of the participants endorsed alcohol use.

Qualitative Data

Suicide. Participant 3 is a teenager who had been orphaned prior to the tsunami. The symptoms she described clearly caused her to meet criterion for MDD as well as PTSD. She lost a number of her closest friends to the tsunami and appeared deeply disturbed by the memory of gunshots from the assassination of two acquaintances (See Appendix D, Table 3 for a summary of Participant 3’s experience). When asked whether she ever had the thought of committing suicide, she said

I don’t think so. I am afraid of God.
Participant 4, an affectionate father of five, answered the question on suicide not by referencing his desire to stay alive for his children, but the grave religious injunction against it. He said:

*I know that committing suicide is not good and my religion is against it, so I have never thought of doing it.*

Participant 8 lost 17 members of her immediate and extended family and reported overwhelming sadness, frequent recollection, and suffered significant somatic symptoms. On being asked if she ever thought of committing suicide because of her overwhelming sadness, she replied:

*No, because I know that committing suicide is a sin.*

Only Participant 12, the chief of the village who had presided over the immediate aftermath of the tsunami, admitted thoughts of suicide. He endorsed enough symptoms to be diagnosed with depression, and according to friends and neighbors, had experienced significant dissociation in the past. He appeared to be unusually open and comfortable speaking about his emotional difficulties, perhaps because of the close relationship he had with the head of the social service agency who introduced the researchers to him. He stated:

*Looking at my emotional condition that time, maybe I would commit suicide, but I tried hard not to do so.*

*Alcohol Use.* When asked about use of alcohol and drugs, most participants in the study laughed or ignored the question, shrugging their shoulders as if it was preposterous for us to ask that. In one instance, the Indonesian translators responded to the researcher’s question by describing the participant as a “good lady,” implying that only individuals of questionable character would indulge in such activities.
Expressions of Piety. While the use of alcohol and suicidal thoughts are deemed socially unacceptable, it appeared from our participants’ accounts that elderly individuals were culturally expected to demonstrate greater piety in response to difficulties. Expressions of difficulties amongst the elderly are seen as signs of a lack of religious acceptance or faith in God’s designs. On being joined by her children and grandchildren, the only symptoms Participant 10 (62 years old) endorsed were physical symptoms. Her earlier reports of significant re-experiencing and sadness were replaced by frequent references to “God’s will” and the theme of religious acceptance. Participant 2 (52 years old) similarly had crafted a new identity for himself since the tsunami as a preacher in the mosque and a man of God. He was the only participant to endorse zero symptoms of both PTSD and MDD. Even his account of his post-tsunami experience seemed unusually trouble-free, and the local social workers attributed this to his desire to maintain credibility in his role as a religious preacher:

Interviewer: What did you do to forget the tsunami incident?

I prayed and surrendered to God.

Interviewer: Have you drunk alcohol, consumed weed or cigarette to forget?

Oh, no. Others may do this, but I don’t. I let God plan. I am not afraid anymore, because I know that Allah is the one who will decide everything. If the tsunami comes again, I will not be afraid.

Research Question 3: Indigenous coping mechanism

This section provides data on the most commonly cited coping mechanisms used by participants to manage their trauma. Individuals drew on a number of local resources to cope with the emotional difficulties they faced in the aftermath of the tsunami, including greater engaging in religious practices, working more, and interacting with friends and family.
The Role of Religion

Quantitative Data

Greater adherence to religious teaching, religious acceptance, and both individual and community prayer were mentioned most frequently as means of coping with one's difficulties (8 participants).

Qualitative Data

Participants described God as being beneficent, and saw their fate as being in the hands of a higher power. Many mentioned religious acceptance as a key form of coping.

Participant 4:

*Interviewer: How did you get rid of your sadness?*

*I have seen that condition from God's perspective because I believe that God will not test us more than our strength. So I surrender everything to God and study about religion more.*

Participant 7:

*Interviewer: Do you still experience fear when thinking about your future?*

*Well, honestly I still do sometimes. But I know that if it is time for us to die, we will die for sure.*

*Interviewer: Have you ever been afraid to plan for your future?*

*Well, I just leave it all to God. I believe God has planned everything.*

Participant 8:

*Interviewer: Are you afraid to go to beaches?*

*No. I believe God has planned everything so I am not afraid to go there.*
Participant 9:

*Interviewer: What happened to your children when you got swept away?*

_I lost my grip on one of them, and the other died with my husband. I just surrendered to God’s will._

*Interviewer: When you are really upset, do you turn to alcohol, Madam?*

_Oh, no. I just surrender and leave it all to God._

Participant 11:

*Interviewer: Do you have difficulties in making family plans for the future?*

_Yes, I have a great difficulty because of the present unstable economic condition. But I always keep on trying because I believe that the blessings come from God._

Many participants also cited community prayer sessions as a valuable means of coping with the tragedies that had befallen the community.

Participant 1:

_Many people could not help others during the tsunami, and they feel very disappointed. The prayers help relieve some of these feelings. When people die, the whole village gathers in the house for three nights to pray._

Participant 3:

*Interviewer: What are the activities in the village that make you feel better?*

_Usually if there is a prayer announcement in menasah, sometimes to pray for the dead as well._

Participant 9:

*Interviewer: Many people experience sadness, but how did you bear all the suffering?*

_I recite and read religious transcripts more often and listen to preaching._
Interviewer: What did you get from religion that makes you stronger?

Well, how we carry on our daily lives. They make me not as sad as before.

Using Distractions: Work & Family

Quantitative Data

The second most frequently mentioned means of coping was staying busy or using distraction. Six participants spoke of doing this.

Qualitative Data

While participants in the current study did not explicitly mention “forgetting” as a means of distress relief, they made concerted efforts to distract themselves by staying busy and not “daydreaming.” Often, this was in the context of spending more time working, doing household chores, or chatting with family and friends. Participant 3 described the advice she received from a community counselor that had visited her school soon after the tsunami:

There was a counselor that came down to our school three times a week and we discussed our experiences among ourselves. I asked her how I could recover fully and not feel sad anymore.

Interviewer: What did you learn?

She told me not to be overwhelmed by sadness, and to entertain yourself, not to daydream too much, don’t keep yourself alone and socialize more.

Participant 11 was among the participants who found relief by staying busy with his jobs and household chores. When asked what he did when he had re-experiencing symptoms, he answered:

Usually I divert my sadness by looking for things to do so that I won’t have time to think about the sadness and disappointment anymore.
Participant 8 had been manning a food stand on the beach with her daughter on the morning of the tsunami. She managed to escape, but her daughter perished. For two years, she avoided the beach and refrained from doing business. At the time of the interview, she endorsed a significant number of MDD symptoms, and had been advised by the village elders “not to daydream.” To help herself cope, a year prior to the interview, she asked her husband to re-construct their food stand on the beach so that she could chat with others and distract herself from the grief. She said:

*I just started trading again a year ago, because if I just stay at home, I will always remember the incident. I asked my husband to make me a food stall so that I can talk and chat with other people. Actually I like to have a lot of people at home also so that I do not remember the incident so much.*

For some, talking about their experiences with friends and family seemed to be less about distraction and forgetting, and more about sharing the grief. Participant 7 was cut off from her friends and roommates after the hostel they stayed in as students was severely damaged by the flood waters. When asked what it was that helped her cope best, she replied:

*Well, I still like to visit Mulia village and the hostel that I used to stay in. We still like to sit down and tell stories there. We talk about the things our friends used to say and do and I would cry as I tell the stories.*

Interestingly, this form of coping was cited as an admirable trait. When asked about who Participant 6 admired for their ability to cope with the sadness, he replied:

*I look up to my relative. He is quite open and does not want to close himself from others. He wants to sit around and tell stories to people.*
Making Meaning: Post-Traumatic Growth

Participants often mentioned the positive long-term consequences that they had experienced as a result of their tsunami experience, even though these were not part of the interview protocol. These consequences corresponded closely to Neimeyer and his colleagues’ work on post-traumatic growth (2008). The following excerpts from the interviews were coded according to the three major activities related to positive post-traumatic changes: sense-making, benefit finding, and identity change.

Quantitative Data

Although this was not specifically elicited in the interviews, five participants alluded to religious means of making sense of their experiences. Four were able to find benefit from the tragedy, and another three reported positive changes in their identity.

Qualitative Data

Sense-making - Religion as the key lens. Given the deeply religious character of the region, it was not surprising to find that religion featured strongly in both coping and sense making efforts. Religious explanations for the cause of the disaster included the unknowable will of God, retribution for misdeeds such as the perceived decline in female modesty, and the lack of observance among the general public of Islam’s injunction to pray five times a day. Perhaps the most interesting of the religious explanations of the tsunami were the allusions to doomsday. Islam shares Christianity’s belief in the Day of Judgment, and Participant 2 mentioned that the tsunami's occurrence on a Sunday made him think that this was a doomsday warning. He saw the fact that he survived God's retribution as a sign of being “chosen” and as a reminder to himself and others to repent before the real judgment day. He said:
Well, for me the tsunami was beneficial because I used to carry out wrongs but now I have repented. From this incident, I can tell my children what the real meanings of wealth and strength are. All of these will be stories for my children and grandchildren. I am only sad because even though there was a tsunami, there are still many people who do not want to repent.... I am not afraid anymore, because I know that Allah is the one who will decide everything. If the tsunami comes again, I will not be afraid.

Interviewer: How has your emotional condition been?

I have not been angry and anymore after tsunami. I have changed. I have become closer to God.

More poignantly, Participant 7 attributed the loss of her childhood friends to her own sinful acts:

Because I lost a lot of friends during the tsunami, I asked God why all of this happened? I thought about all my sins that caused this to happen. The elders said we had sinned a lot.

Participant 4 also made sense of the disaster in terms of justice and evil, but he took a more global perspective. He explained that people in Aceh and around the world continue to act unjustly, and the disaster was God's punishment for this behavior. Although he did not endorse significant trauma symptoms, he expressed a deep-seated fear that another tsunami would strike because of such continuing injustice. When asked why he was afraid, Participant 4 said:

I see in other countries that natural disasters are still happening. All of them (these disasters) are prayers from those who are suffering, like the grandmother that gets
kicked while she is working, like the many who are starving in India and even in America. Why is there disaster? Why is there rebellion? It’s because somebody is not being fair. It’s the same in every country.

Like Participant 2, he encouraged his family to remember the tsunami, as a way of reinforcing the moral and religious lessons it brought to the community:

_We ate things like salty fish that were about to rot, and even though I used to want them badly at the time, I do not desire them anymore. Still, sometimes at home I ask my wife to cook the same salty fish the way we made them on the mountain to remember the incident._

**Benefit finding and identity change:** Participant 4 hoped to prevent himself and his family from experiencing another tragedy by keeping the impact of the tsunami fresh in their minds. For him, the tsunami had the effect of forcing a re-evaluation of his priorities and he has since focused all his free time on fulfilling his role as a father and a family man:

_I have changed a lot. I used to spend a lot of time outside with friends. But now, I spend a lot more time with my family because I feel that this is an opportunity that I need to use to fix my life together with my family. I feel that my relationship with my family is closer and better and I am very thankful for that._

Despite the multiple tragedies that they endured, many participants, like Participant 4, found that the disaster they experienced brought many unexpected benefits in its aftermath. Participant 4 was particularly pleased by the influx of foreigners who came as part of the international relief effort that was carried out on an unprecedented scale. He said:

_Maybe that is the benefit behind the disaster. Because of the tsunami, I can get to know many foreigners._
The foreigners brought with them significant amounts of relief supplies and, later, aid money that they distributed with the help of local leaders. The Acehnese economy had been in shambles before the disaster because of the intense separatist fighting, but the post-disaster relief efforts saw mosques, schools, and houses being rebuilt using donated materials that were of a much better quality than the villagers could ever have afforded themselves. Not surprisingly, a number of participants paradoxically reported improvements in their quality of life after the tsunami. Participant 2 was among those whose house had been renovated by the aid agencies. He said:

For me, the tsunami was a way for God to bless me because my house is bigger now.

While many lost their traditional livelihoods when animals and farms were destroyed, others were able to take advantage of new opportunities. A large number of rebuilding-related jobs had suddenly become available to those willing and able to work in construction. Participant 4 reported being able to improve his family’s lot after the tsunami using skills he had picked up as a hobby before. Not only did this change bring him and his family significant financial gain, it also instilled in Participant 4 a new, more confident, and efficacious identity:

Interviewer: You used to sell coffee for a living?

Yes, but now it is impossible. Moreover during the tsunami period, why would anyone want to buy my coffee? Since I knew a little about electricity, I switched to work in that field at once.

Interviewer: So after tsunami, what did you do for a living?

I worked in electricity installation service. Before tsunami my house was ugly, but
now it is lovely. Also, there used to be very few motorcycles on the road, but there are many now.

Interviewer: Where did you learn that skill from?

That was one of my hobbies. I used to ask a lot until I mastered the skill. At first, I took paper and pen and self-learned it; I learned which were negative, positive ends, because I thought if other people could do it why couldn’t I do it?

Perhaps the largest positive impact of the tsunami that was reported by the participants was its effect on the decades-long conflict between the Indonesian military and the separatist rebels that go by the name of GAM. Participant 1 summed it up as such:

Interviewer: Between the tsunami and the conflict, which one troubles you more when it is recalled?

Both of them, because for me both are as bitter. During conflict, our lives were wrong in every way; the sound of gunshots was everywhere. Basically, we were not free, that was the worst thing during conflict. But it is better now. Maybe it could be said that the tsunami brought the two fighting groups together.

While the participants above were able to make sense of their experiences, find the benefits, and re-craft their identities in their wake, others experienced very different outcomes. In particular, two participants reported feeling a distinct sense of bewilderment at the events that had assailed them and their community. Interestingly, these participants also were among the three who met PTSD criteria. As she spoke about her difficulties in going to the beach, Participant 3 repeated the following statement several times:

I still cannot believe how such calm water could rise up.

Participant 12 similarly had trouble accepting the loss that came with the disaster. When
asked what saddens him the most, he said:

*I could not believe the incident would take so many lives. Many children lost their parents and many parents lost their children.*

*Interviewer: Did the incident make you angry often?*

*Yes, I become angry more often and get sad more often. I am still bewildered and confused. I cannot believe what has happened. I am already this old but that is the first time such thing happened to me. I really cannot believe all this could happen.*
CHAPTER 4: DISCUSSION

This study was conducted to examine the relationship of the DSM-IV-TR (APA, 2000) categories of PTSD and MDD to the illness behaviors and idioms of distress used among Acehnese villagers and to understand how the Acehnese conceive and cope with trauma-related mental health symptoms. The discussion is structured in three parts. First, the cultural validity of the DSM-IV-TR’s PTSD and MDD diagnoses is assessed in an Acehnese context, along with other clinically-related DSM-IV-TR symptoms, specifically, dissociation and somatization. Second, an effort is made to understand indigenous symptoms of distress that surfaced from the data, as well as cultural nuances in the expression of DSM-IV-TR relevant symptoms and their implications for future attempts to conduct meaningful diagnostic assessments in this population. Finally, coping mechanisms commonly employed by the participants are discussed in terms of their potential in informing therapeutic intervention efforts.

Research Question 1: Cultural Validity Of The PTSD and Depression Diagnosis

A key concern of the current study is the applicability of the PTSD and depression-related symptomatology in the DSM-IV-TR, which has been defined mainly by Western specialists, to this under-developed region of Asia. Such analysis is crucial in the light of the globalization of the Western precepts of mental health. While DSM-IV-TR psychological diagnoses have been widely applied internationally, the fact remains that the research that informs the nosology of psychopathology has been conducted mainly in the US and Western Europe. The findings of this study will relate to only one of a long list of cultures and groups in which key mental health factors remain to be explored. However, such parochial analysis is necessary as the applicability of Western diagnostic categories can be determined only by
the committed replication of efforts to explore their diagnostic validity and to record unique distress symptoms around the world.

The applicability of the DSM-IV-TR diagnoses to the Acehnese population is assessed based on three factors: first, that individuals who are suffering from the traumatic consequences of the tsunami endorse symptomatology similar to the DSM-IV-TR; second, that these symptoms are seen by these individuals to be problematic and to have a direct impact on their daily functioning; and third, that there are few non-DSM-IV-TR symptoms that these individuals find more distressing than the DSM-IV-TR symptoms they reported.

Endorsement of DSM-IV-TR Symptomatology

PTSD

The answer to the first question is relatively clear – the number of DSM-IV-TR symptoms endorsed by participants suggests that post-trauma symptoms in this culture are relatively similar to those in the West. Participants in the current study were approached because of their intense traumatic experience, and 11 of the 12 endorsed PTSD symptoms. Eight participants endorsed five or more symptoms, but not necessarily from each of the required PTSD criterion. Only a small number of symptoms were not reported. Further, the number of individuals meeting the diagnostic criteria for PTSD (3 participants or 25%) is within the wide range expected from prior international disaster studies (Goenjian et al., 1994; Griensven et al., 2006; Keane & Barlow, 2003; Mita et al. 1994; Norris, 2001; North et al. 2004). In particular, the percentage of respondents who appeared to meet diagnostic criteria for PTSD was very similar to that found by Hollifield et al. (2008) in Sri Lanka 21 months after the tsunami. Using translated self-report instruments, 22% of their sample of 89 adults were found to be suffering from PTSD. Their participants matched the profile of the
participants of this study, in that both groups had suffered similar levels of loss and were similarly unfamiliar with the DSM-IV-TR diagnostic category.

Despite the fact that the proportion of participants who met the diagnostic criteria appears consistent with previous studies both in Western and non-Western contexts, there was less consensus within the literature on the breakdown of reported symptoms. Our study found being afraid of loud noises, strong winds, and other cues associated with the tsunami (Criterion B4 of PTSD) to be most commonly cited, followed by intrusive recollections (B1) and an exaggerated startle response (D5). Overall Criterion B (intrusive recollections) was far more prevalent than Criterion C (avoidance) and D (hyper-arousal), with the latter two receiving a similar number of participant endorsements. In comparison, researchers studying PTSD symptoms in Taiwan following the 2001 earthquake (Chen, Yeh & Yang, 2001) found re-experiencing symptoms and arousal to be high, but avoidance to be low. North et al. (2004) similarly found that 4 months after the Great Midwestern Floods of 1993, intrusive recollections were the most commonly cited symptom, followed by insomnia, difficulty concentrating, and irritability. Madakasira and O’Brien (1987), who studied PTSD amongst tornado survivors 6 months after it devastated a rural community in eastern North Carolina, similarly found that intrusive thoughts were the most frequent symptom, followed by easy startle response and concentration difficulties. Avoidance difficulties were not as commonly cited in these and other previous studies as it was in the current study.

The fact that the Acehnese participants live within walking distance from the beach and other areas of profound devastation makes it more unusual that they reported such greater levels of aversion. Although no explanation is readily available, it is possible that this avoidance is in some way related to the indigenous view reported in our study that the souls
of the unburied dead who had drowned in the tsunami waters are a cause of illness and mishappenings.

While the results of the current study were comparable to those of other studies of PTSD conducted in recent years, they differ in that these symptoms were counted more than three years post-trauma. Given the length of time that has passed, the overall number of symptoms endorsed in the study appears to be relatively high, and the chronicity of the symptoms in keeping with the finding in a national epidemiological survey of Americans that PTSD symptoms tend to be long-lasting. Kessler and colleagues (1995) found that more than a third of individuals with PTSD fail to recover after many years. Earlier work has shown also that individuals who display only a limited number of symptoms but fail to meet the full diagnostic criteria tend to contribute significantly to the overall level of morbidity in the community (Weiss et al., 1992). In the context of the current findings, this suggests that there may be a considerable number of individuals who do not meet the full criteria for PTSD but suffer many of the same symptoms and may require approximately the same level of care as individuals diagnosed with PTSD.

**Depression**

Turning to depression, eight of the 12 participants endorsed at least two or more symptoms of depression, and two individuals met the full-diagnostic criteria for a current mood episode (16%). This was again in the range found in previous studies of depression in a post disaster context conducted both in the US and internationally (Ginexi et al., 2000, North et al. 2004). Also as found in earlier international studies, participant depression symptoms were significantly correlated with PTSD symptoms and, as expected, even more closely related to somatic symptoms (North et al., 2004). Participants endorsed persistent sad,
anxious, or empty moods most often, followed by loss of energy or increased fatigue, and insomnia or oversleeping. Participant reports often included descriptions of frequent, intense crying that in many cases was associated either with the intrusive re-experiencing symptoms (See section on “PTSD Symptom”) or profound grief in relation to the loss of family and friends.

As with PTSD, it appears that the DSM-IV-TR symptoms of major depression are a familiar part of our participants’ experience. However, several symptoms appeared to be very rarely endorsed. These were a loss of interest in previously enjoyed activities, difficulty concentrating or making decisions, and thoughts of death and suicide. Two individuals appeared to be significantly depressed to the interviewers and reported relatively high levels of personal distress on the visual scale (Participants 5 and 10). However, they did not meet the diagnostic criterion, suggesting that more culturally nuanced questioning may be necessary to yield more accurate results. For example, greater credence may have to be given to the somatic symptoms that these individuals reported more readily. Care must be taken also to further contextualize questions regarding these symptoms with the help of mental health professionals familiar with this culture. Along the same vein, it is important also to distinguish the intended meaning behind commonly used phrases in the culture, as these have been shown to fit into multiple diagnostic criteria and were distinguished only after carefully analyzing the contextual data (See Research Question 2 section of this discussion).

Along with PTSD and depression, the current study also looked specifically for symptoms of somatization and dissociation that were found to be common comorbid diagnoses both in the West and in international studies. Van der Kolk et al. (1996) made the argument that PTSD, somatization, dissociation, and affect disregulation represent a
spectrum of adaptations to trauma and that they occur together in various combinations of symptoms over time. This argument is partially supported by this study, as indicated by the significant correlation between the reporting of depression symptoms and somatic symptoms. However, the same was not found of dissociative symptoms.

**Somatic Symptoms**

Eight of our 12 participants reported at least one somatic symptom, with half reporting more than two such symptoms. From their reports, it appears that the mind-body dualism that informs Western medicine does not appear to be relevant to the participants in the current study, and their descriptions of physical symptoms may instead represent efforts to draw attention to their personal pain. For example, it was not uncommon for participants to ascribe their fear of re-experiencing symptoms in physical terms (“*my heart is very weak now*”). In addition, many participants reported falling sick more often after the tsunami but did not link these specifically to any related trauma-specific experience such as lung infections or broken bones.

As expected, depression was found to be highly correlated with somatic symptoms. Although PTSD and somatic symptoms were less robustly related, the three participants who met PTSD criteria reported significant somatic symptoms. Again, this finding is similar to that of another study conducted in Sri Lanka (Hollifield et al., 2008), where respondents who met the PTSD and depression diagnosis reported more somatic symptoms than those not diagnosed with PTSD. This is not unique to the Acehnese or Sri-Lankan culture and has been observed in a number of non-Western cultures where the concept of mind-body dualism is not a strongly-held assumption (Kirmayer, 1984; Mumford et al., 1997; Prince, 1968).
Dissociation

Given the similar emphasis of somatic and dissociative symptoms in the literature on PTSD (Bremner et al. 1992) and cross-cultural trauma (Carlson & Rosser-Hogan, 1994; Kirmayer, 1996), it was expected that traumatized participants would endorse significant dissociative symptoms. Although dissociation is not mentioned by either the DSM-III or DSM-IV-TR as a symptom of PTSD, there is growing debate in the professional literature as to whether PTSD is in fact a Dissociative Disorder (Brett, 1996). For example, Carlson and Rosser-Hogan (1994) found that Cambodian refugees in the US had high levels of PTSD, dissociation, and depression, with the level of each symptom correlating positively with the amount of trauma experienced.

Unlike our expectations for somatic symptoms, this expectation did not bear out in the current sample. Dissociation was only reported in one participant, notably the village chief. Although he had no recollection of this behavior, he reported that other villagers had told him that he had been “possessed” on the anniversary of the tsunami the year before. A number of other participants reported what appeared to be dissociative experiences in the immediate aftermath of the tsunami (peritraumatic dissociation) but did not report current symptoms that indicate dissociation. Further, because of difficulties with translation, it was difficult to determine if the experiences they described had the characteristic features of depersonalization and derealization, or if they were mainly related to the physical hurt of being swept away by the tsunami waters or having to flee from danger. The reason for the apparent absence of expected dissociative symptoms in the current symptomology of the participants is not immediately clear. One possible reason for this is the shared nature of the trauma. Although peritraumatic dissociation may be adaptive during a traumatic event to
avoid overwhelming the individual, trauma theorists have posited that dissociation potentiates PTSD symptoms by interfering with normal information processing (van der Kolk & Fisler, 1995; van der Kolk & van der Hart, 1989) and the failure of survivors to process the meaning and the emotions associated with the traumatic experience. In the Acehnese communities that live close to the sea, the avoidance of cues associated with the trauma has not been entirely possible, even if the villagers make concerted efforts to do so (as indicated by the relatively higher rate of avoidance here than found in other post-trauma contexts). Further, the villagers' focus has been collectively tied to recovery efforts and participants have many opportunities to discuss their experiences, process the trauma, and make meaning of it. It is possible to speculate that these conditions forestalled the functional maintenance of dissociative symptoms. However, further study is necessary to better understand this phenomenon.

**Association between DSM-IV-TR Symptoms, Functioning, and Perceptions of Distress**

The second question relevant to our assessment of the validity of the DSM-IV-TR criteria to the Acehnese population is one of subjective distress: For the Western diagnostic categories to be relevant in the Acehnese context, they must be correlated with significant levels of distress. This question is not answered as clearly here, as self-reported distress is weakly correlated to the PTSD and depression symptoms endorsed. Although the small sample size requires that the correlations be interpreted with caution, the total number of PTSD and depression symptoms was far more closely related to subjects' self-reported ratings of economic distress. The reasons for the contrast between high number of symptoms endorsed and the low rating of overall distress are uncertain. In terms of measurement, it can be argued that overall distress may be too vague as a concept, or that despite efforts to
include illustrative cues, the visual Likert-type scale used was unfamiliar and culturally alien to the relatively poorly-educated population. Another methodology-related possibility is that the participants were from villages that had suffered largely uniform levels of devastation, and the fall-out of the disaster was relatively similar for all participants. Since participants were asked to rate their own distress in comparison to their friends and family, it is plausible that, although they experienced significant distress, they did not view themselves as being more or less distressed than these significant others.

Assuming for a moment that the scale was an adequate one, the question remains as to why the self-reported distress ratings appeared to be only moderately related to the number of symptoms reported. One possibility is that the significant number of PTSD and depression symptoms endorsed did not affect the participants’ quality of life to the extent that would be expected by researchers viewing psychopathology from Western lenses. Indeed, Summerfield (1999) argued that PTSD is a pseudo-condition for the majority of disaster survivors, and the medicalization of distress and assumption of a universal human response to trauma is inappropriately and ethnocentrically applied by Western professionals to less individual-centric, non-industrialized cultures. A common view is that concerns of most survivors of mass trauma are outward in nature rather than mental or psychological (Summerfield, 1999), and therefore concerns about rebuilding their lives in the aftermath of the conflict are likely to be of far greater priority than the need for psychological or mental rehabilitation (Kagee, 2004).

However, this argument is somewhat negated when one considers functioning as measured in this study by a participant’s ability to carry out economic, social, and family responsibilities, and the physical symptoms endorsed. Although PTSD symptoms were not
correlated strongly with self-reported distress, they were significantly negatively related to functioning, which indicates that the participants were, in fact, paying a price for the psychological symptoms and that these were impacting their quality of life. The correlation between depression symptoms and functioning was also negative but weaker than that between PTSD and functioning.

Nonetheless, the higher correlation between subjective accounts of economic distress and the total number of PTSD and depression symptoms suggests that economic concerns were foremost in the participants' minds. In fact, individual reports of lower functioning were often directly pertaining to their physical health and their ability to work effectively and support their families (See Results section, “Functioning” for supporting qualitative data). In addition, among the six individuals who endorsed feeling a sense of foreshortened future (Criterion C7 of PTSD), the poor sense of their own future was tied very closely to the economic concerns that weighed heavily on their minds. In the village economy, social-security type benefits are absent and there remains a strong relationship between an adult's ability to perform physical work and his or her income. The relationship between PTSD symptoms and economic distress may be mediated by such functioning. Individuals suffering significant re-experiencing symptoms tend to avoid fishing, which was a common source of income for men. Further, the tsunami's environmental impact and death toll means that most households now have fewer working adults and less arable farmland. This has led to greater pressure on the surviving individuals to maintain family incomes. Although these are plausible explanations, it remains unclear why PTSD symptoms were more related to economic distress and functioning than to overall self-reported distress. This result calls into question both the weight and importance given to the PTSD and depression symptoms
endorsed and the validity of the visual distress scales.

**Presence of More Pertinent Indigenous Symptoms**

The third question relevant to our assessment of the validity of the DSM-IV-TR criteria to the Acehnese population is whether the participants reported indigenous symptoms of distress that were of greater relevance or concern than the PTSD and depression symptoms endorsed. Participants' accounts were analyzed and coded for such symptoms, and non-DSM-IV-TR related themes were found to be limited. The indigenous symptoms that were reported were experienced only by a minority of the participants and pertained mainly to supernatural explanations for distress and the frequent use of the word “daydreaming.” When probed, “daydreaming” appeared in some accounts to be similar to rumination and in others to be more akin to intrusive memories and dissociation. Similarly, on deeper analysis, the supernatural accounts reported appeared to function more as causal explanations for known DSM-IV-TR symptoms such as nightmares, avoidance, and somatization, rather than symptoms in their own right.

In sum, although several seemingly idiosyncratic symptoms of distress were reported by the participants, and there were cultural influences that dictated what symptoms are acceptable to express (see section below on Research Question 2), none of these appeared to cause significantly greater concern than the DSM-IV-TR symptoms. In addition, in many instances, their intended meanings fit well with known PTSD and depression symptoms, and they cannot be seen as unique local symptoms of distress. Therefore, the third requirement that there not be a multitude of culturally unique symptoms that appear to hold greater weight than the DSM-IV-TR symptoms has been met.

Thus far, the validity of diagnoses of PTSD and MDD based on the DSM-IV-TR in
this culture has been fairly clearly demonstrated. Similar to the findings of Norris (2001) in Mexico and Kagee (2004) in South Africa, the data here suggest that Acehnese victims of traumatic stress exhibit many of the PTSD and depression symptoms found in the DSM-IV-TR, and that these symptoms have a moderate impact on participant functioning and perceptions of distress. Although financial concerns appeared to be paramount, no indigenous symptoms were found to be of greater concern than the DSM-IV-TR symptoms assessed. However, like all cultures, the Acehnese culture colors and shapes its expressions of illness and disease and the variations in forms of expression, and the poor correlation between symptom endorsement and reported distress make it important that we refrain from over-emphasizing the direct exportability of the diagnostic categories.


Participants were encouraged to talk freely about the symptoms that caused them most distress, and an attempt was made to understand indigenous symptoms of distress that surfaced from the data, as well as cultural nuances in the expression of DSM-IV-TR relevant symptoms. This was deemed important because of its potential to inform meaningful diagnostic assessments in this population. In addition to the culture-specific reporting of several DSM-IV-TR symptoms, participant responses also appeared to demonstrate strong cultural injunctions against the endorsement of suicidal thoughts and alcohol use. Another interesting observation was the tendency for elderly participants to view symptom endorsement as a reflection of a lack of religious faith that is expected amongst elders in the community.
Daydreaming and Supernatural Encounters

In examining the presence of indigenous symptoms, daydreaming (See section on Depression Symptoms) appeared at first to be a recurring theme, mentioned by seven participants. However, when probed, the expression appeared in some to be similar to rumination, and in others to be more akin to intrusive memories and dissociation. The multiple use of the Indonesian translation of the word “daydreaming” required that fine distinctions be made in the process of diagnostic evaluation, and future attempts to study symptoms in this region must take into account the variable meaning of the word.

Following daydreaming, supernatural experiences were the second most frequently reported indigenous symptoms. Much like somatization and dissociation, supernatural experiences are not uncommonly reported internationally, in the context of community-wide experience of extreme violence and trauma. Although Islam does not condone supernatural beliefs and condemns the practice of witchcraft, beliefs such as the existence of spirits who dwell in trees, wells, rocks, and stones, persist among the Acehnese. In particular, psychological symptoms are often associated with being possessed by evil spirits (Bahari, 2006), and dreams especially are viewed as the work of spirits and ghosts. It is not surprising then that what appeared on first mention to be a supernatural experience was later found to refer to dreams on two occasions (see Results section on “Supernatural experiences”). Dreams about the deceased are generally considered to be valuable portents from the dead, even though many who ascribe to this interpretation find these portents to be distressing.

Another mention of ghosts referred to their theorized role in causing a participant's many unexplained illnesses and not specific encounters, and a fourth mention was made in reference to a participant’s avoidance of the sea. He was intensely afraid of resuming work as
a fisherman, citing the wandering souls of those who had drowned as the reason for his reluctance to return. This lack of willingness to return to the sea had significant impact on his livelihood and ability to function at pre-tsunami levels. However, his symptoms have to be understood in the context of the wider cultural belief that if not properly buried or at peace, the ghosts of people who meet violent deaths, especially murder victims, are considered capable of harming the community at large. This might help explain the relatively high number of avoidance symptoms endorsed in the sample. In any case, like somatic symptoms, possession and other supernatural experiences appear to be a legitimate means in the Acehnese culture of drawing attention to one's pain, both physical and psychological.

While somatic symptoms, daydreaming, and supernatural experiences hold special significance as expressions of distress, the Islamic nature of the society appears also to have impacted the reporting of two symptoms that are commonly associated in the West with PTSD, namely suicide and greater alcohol use.

PTSD sufferers have been reported in a number of studies to be up to six times more likely to attempt suicide than the general population, and some studies suggest that high levels of intrusive memories can predict the relative risk of suicide (Amir et al., 1999). Alcohol use has similarly been found in the literature to be elevated after traumatic experiences. For example, Oklahoma City residents showed increases in alcohol use after the 1995 bombing of the Murrah Federal Building (Smith et al., 1999) and 25% of Manhattan residents acknowledged increased alcohol consumption in the first 5-8 weeks after the Sept 11 terrorist attacks (Vlahov et al., 2002).

However, when asked about use of alcohol and drugs, most participants in the study laughed or ignored the question, shrugging their heads as if it was preposterous for us to ask
that. In one instance, the Indonesian translators responded to the researcher’s question by describing the participant as a “good lady,” implying that only individuals of questionable character would indulge in such activities.

Similarly, although intrusive memories were widely reported in this study’s sample, only one individual admitted to having thoughts of suicide. The lone individual to do so was the village chief, who had a particularly intimate relationship with the head of the charitable organization that had coordinated our field work. Other individuals who suffered great loss and whose narratives of their post-tsunami experiences pointed to overwhelming grief and/or clinical and sub-clinical PTSD symptoms failed to endorse greater levels of suicidality or alcohol use as would be expected from data derived in industrialized nations.

Responses to questions related to the participant's suicidal thoughts and alcohol use reflected a strong social desirability effect related to religious injunctions against these practices and their status as grave sins. As previously stated, Aceh is a deeply religious province, and is colloquially known as the “verandah of Mecca.” Individuals in this deeply religious region may be understandably wary of admitting suicidal thoughts and alcohol use to others, much less to social workers from the same culture with whom they have had prolonged contact.

Just as the use of alcohol and suicidal thoughts were rarely admitted, it appeared from our participants’ accounts that elderly individuals were expected to demonstrate greater piety in response to difficulties, and that expressions of difficulties were signs of a lack of religious acceptance or faith in God’s designs. For example, Participant 10 began the interview by describing a significant number of post-tsunami difficulties and symptoms. However, when her children and grandchildren stopped by out of curiosity to watch and listen as the
interview was taking place, the only symptoms she endorsed were physical symptoms. Her earlier reports of significant re-experiencing and sadness were replaced by frequent references to “God’s will” and the theme of religious acceptance. This account suggests that physical symptoms are closely related to psychological symptoms in the Acehnese culture, and that there is a greater acceptance of reporting physiological symptoms rather than psychological or emotional ones, especially for elders in the presence of their young. It also speaks to the importance of religion in this population and to the expectation of piety among respected elders. Similar to what has been demonstrated in many Western and non-Western societies, sensitive attempts to study psychological distress in this population must take into account seemingly physical accounts of mental suffering, and perhaps greater efforts need to be made to ensure privacy in order to minimize the likelihood of obtaining socially desirable responses.

In addition, questions about suicidality and alcohol should be prefaced by acknowledging that suicide is a sin, and by providing assurances that the interviewer understands that the participant is unlikely to seriously consider it by saying, for example: “Although suicide/consuming alcohol is a sin punishable by Allah, and you were probably unlikely to carry out such a sin, did you ever think that you would be better off by doing so?”

Research Question 3: Coping Mechanism

We turn now to the coping mechanisms commonly mentioned by individuals in this culture. Greater adherence to religious teaching, religious acceptance, and both individual and community prayer were mentioned most frequently as means of coping with the anguish of the disaster. Participants frequently described God as being beneficent and saw their fate as being in the hands of a higher power. Many mentioned community prayer sessions as
being useful in helping them come to an acceptance and to feel at peace about the souls of their loved ones.

The second most frequently mentioned means of coping was staying busy or using distraction, and this included spending more time on household chores and work. Interestingly, talking about their experiences with friends and family, sharing the grief and supporting each other was cited as an admirable trait by two study participants, pointing toward a recognition of the role of social support in ameliorating distress. This finding was in keeping with that of North et al. (2001) who consolidated the results of all the disaster outcome studies that had been published to date. The authors cited several studies that showed that received support mediates the impact of disaster on victim mental health. However, the previous studies North and colleagues examined also found that perceived support has a greater impact than actual support gained and any effort to foster this coping mechanism may have to address not just social support, but participant awareness and perceptions of the support they receive.

The coping methods reported by the current participants are also similar to those reported in a study by Harvard medical anthropologists in collaboration with the International Organization for Migration (Good et al., 2006). In that study, 91% reported using prayer or consulting a religious leader, 68% reported talking with a friend or family member, and 56% reported trying to forget about the experience. The relatively common use of distraction strategies may be related to the persistence of PTSD symptoms in this culture, especially the unusually high rate of avoidance, and it may be wise to target this aspect of participant experience in future intervention efforts.

Perhaps most interestingly, many participants independently made reference to the
idea of post-traumatic growth. Like most severe traumas, the tsunami had the effect of shaking the individuals’ narratives about themselves and their understanding of the world around them. Neimeyer et al. (2008) writes that those who succeed in integrating the traumatic loss into their existing narratives and mental structures tend to bounce back relatively quickly and resume their familiar pre-loss sense of self. Research has shown that the processes by which participants reassess and revise their sense of how the world works after their worldview has been challenged by loss (Neimeyer, 2002) has an ameliorative impact on the pain that follows, and that such post-traumatic growth is a protective factor that moderates the impact of disaster on mental health (Davis, Nolen-Hoeksema, & Larson, 1998; McIntosh, Silver, & Wortman, 1993; Tedeschi, Park, & Calhoun, 1998a, 1998b). In two longitudinal studies, McMillen and colleagues (McMillen et al., 1997) found that perceiving benefits four to six weeks after a disaster decreased the odds of having PTSD three years later by 62 percent.

Certainly in the current sample it appeared that the individuals who reported significant post-traumatic growth also reported lower mental health symptoms than those who reported having difficulties accepting and understanding the disaster. Further, the two individuals who expressed a sense of bewilderment and continuing confusion were among the three who met diagnostic criteria for PTSD. However, the cross-sectional nature of the study and the small sample size preclude firmer conclusions. Nonetheless, these participants’ accounts provide useful hints at practical psychological interventions based on culturally nuanced perceptions of how benefits and growth can be derived as a by-product of adverse events and the struggle to cope with them.

Neimeyer (2000, 2001) posited that there are three major activities related to positive
post-traumatic changes: sense-making, benefit-finding, and identity change. Although not elicited specifically by our interview questions, all three elements of such post-traumatic growth emerged repeatedly from the participants' narratives as participants took the time to talk about the changes in their own outlooks.

Given the deeply religious nature of the society, it was not surprising to find once again that religion was the predominant theme in participant sense-making efforts. Religious explanations for the cause of the disaster included the unknowable will of God, community-wide retribution for misdeeds such as the perceived decline in female modesty, and the lack of observance of Islam’s injunction to pray five times a day. Perhaps the most interesting of the religious explanations of the tsunami were the allusions to doomsday and an unwillingness to repent. Islam shares Christianity’s belief in a day of judgment, and many saw their suffering as punishment for both individual and collective sins or early warning from God to change their ways before it is too late.

For example, framing the tsunami as an opportunity to repent and viewing it as judgment day allowed Participant 2 to secure his positive self-concept and see himself as “chosen” for his devotion. He found benefit and boosted his identity as a devout Muslim in that he became closer to God, and he could teach his children better. Further, he spoke of the benefits the tsunami brought, the biggest of which were the substantial improvements to his house. At the same time, he appeared to take pride in his new identity as a preacher and religious man. From a clinical perspective, these conceptualizations appeared to be highly adaptive, and Participant 2 reported few symptoms of distress and complained little of the difficulties he had faced, despite the largely uniform impact the disaster had on most survivors.
The idea that great good can come from great suffering is an old one. Although the warning to repent was seen by some as the main benefit of the tsunami, the more tangible improvements in the participants’ lifestyles were also frequently cited. None of the study’s participants foresaw the wave of international aid and attention that came after the disaster. By late 2005, the World Bank reported that there were 95 agencies working on shelter in Aceh and another 60 agencies working in Aceh’s education sector. In one stretch of the western coast of Aceh alone, there were 22 medical agencies working in the health care sector (Thuburn, 2007). For most of the villagers, this was their first encounter with the wider world, and specifically with the diverse range of individuals and materials they had previously only seen on television. For example, the tsunami relief efforts saw an influx of foreigners into Aceh who brought with them significant amounts of relief supplies and, later, aid money that they distributed with the help of local leaders. While the Acehnese economy had been in shambles before the disaster because of the intense separatist fighting, the disaster brought in its aftermath a lasting peace agreement between the warring factions and saw mosques, schools, and houses being rebuilt using donated materials that were of a much better quality than the villagers could ever have afforded themselves. Several participants took advantage of the new opportunities for work and learned new skills in aid-money financed projects in construction, boat building and electrical installation, which improved their standard of living. Identity change occurred out of these developments and others, and participants reported significant benefits from having changed profession, becoming more religious, or increasing their devotion to family.

While some participants were able to make sense of their experiences, find the benefits, and re-craft their identities in their wake, others experienced very different
outcomes. In particular, two participants reported feeling a distinct sense of bewilderment at the events that had assailed them and their community. As Neimeyer (2004) predicted, often these feelings of bewilderment were associated with greater symptomatology and difficulties coping. Of the two, one (Participant 12) met the diagnostic criteria for depression, while the second (Participant 3) met the criteria for PTSD.

Clinical Implications of Coping Related Findings

Given the alien nature of traditional one-on-one psychotherapeutic interventions in this culture, it is important to consider indigenous methods with which local victims have come to deal with their suffering. From the qualitative data presented, it appears clear that future efforts to target the persistent symptoms of distress in a culturally appropriate manner should take into account the role of religion in fostering acceptance of the trauma and trauma outcomes. They should also take into account the importance of community prayer in furthering a perception of the peace and well-being of participants’ departed loved ones, as well as that of other individuals who may not have received a proper burial. In the case of the latter, the perception of proper religious intercession could have a role in reducing the fear of the presence of malicious supernatural forces that appear to further symptoms of avoidance and somatization.

Further, although distraction appears to be a common form of coping, its prevalent use may be less than helpful in that it may have a role in the continued presence of avoidance symptoms. In contrast, being open and sharing one’s grief with friends and family appears to be an admired way of dealing with one’s psychological pain and could be encouraged as a more efficacious alternative practice. Finally, efforts to foster indigenous means of coping may take into account the factors that appear to be related by participants to post-traumatic
growth. Such efforts may highlight the material benefits that arose out of the post-tsunami years, along with positive changes that have occurred in the person’s identity. While the suggestions above were derived from our participants’ qualitative reports, translating them into efficacious interventions would require a deeper understanding of the working of individual villages and the co-operation and insights of key opinion leaders such as community elders and social workers established in the community since the relief efforts began.

Conclusion

Key limitations of this study include the small sample size and the fact that interviews had to be conducted through the use of local relief workers who were not always aware of nuances in the DSM-IV-TR symptoms that were the focus of the study’s attention. As a result, participant reports were not consistently clarified, and contextual information had to be used to discriminate between similar symptoms. In addition, interviewers did not consistently allow participants to report symptoms independently before prompting for DSM-IV-TR symptoms, raising the concern of demand characteristics influencing the applicability of the DSM-IV-TR symptoms to this population. Another limitation was that the study was conducted three years after the tsunami occurred, which meant that most participant reports were retrospective and no longitudinal data were obtained. Last, the participants had suffered multiple traumas in addition to the tsunami as a result of the protracted civil war, and often provided conflated accounts of these experiences.

Nonetheless, the current study contributes to the literature in a number of ways. It helps to “ground” (Glaser & Strauss, 1967) attempts at research and treatment by broadening understanding of psychopathology from the perspective of the victims in a society that is
outside the scope of usual PTSD research. Such explorations are vital in the creation of culturally appropriate assessment instruments and in assessing external and internal validity of existing diagnostic demarcations. In addition, it provides insights into successful culturally rooted attempts at meaning making, benefit finding, and identity change that appear to moderate the effect of the disaster on the mental health of participants who demonstrated greater coping. These insights may be useful in formulating culturally appropriate intervention strategies for victims of other disasters in the politically volatile and earthquake-prone region.

Friedman and Marsella (1996) advised researchers to remain open to the possibility that ethno-cultural differences in the expression of traumatic stress around the world may not strictly conform to DSM-IV-TR (APA, 2000) diagnostic criteria, so that highly traumatized cohorts could exhibit surprisingly low rates of PTSD. However, the findings of the current study ran somewhat contrary to this precautionary advice. Participants endorsed a significant number of PTSD and depression symptoms, with many demonstrating clinical and subclinical pathology. At the same time, attempts to elicit other non-DSM-IV-TR symptoms that were viewed as significant by the participants did not bear fruit, and participant interviews on their post-trauma experience did not point to significant indigenous symptoms. Taken together, these findings suggest that the Western developed DSM-IV-TR symptomatology may be largely valid in this culture. Although the low correlations between PTSD and depression symptoms and self-reported distress raise doubts about the significance placed on these symptoms by the local participants, the high correspondence between PTSD symptoms, functioning, and economic distress is a clear indication that the symptoms have a real and profound effect on the individuals’ quality of life. These symptoms should therefore be
assessed and treated in the context of good cultural knowledge that takes into account how they are expressed locally. Possible therapeutic strategies were explored, but further work is necessary in order to craft culturally nuanced interventions that can be implemented on a wide scale.
REFERENCES


New York: Routledge.


Appendix A:

IRB Approval Letter
Appendix B:

Informed Consent

Informed Consent Agreement

(Translated into Bahasa Indonesia)

A Qualitative Study of Trauma Outcomes Among Acehnese Tsunami Survivors

Investigators: Ellen Koch, Ph.D and Amrit Kaur

Purpose: The purpose of this research study is to understand the emotional and psychological symptoms experienced by persons who experienced trauma as a result of the tsunami of 2004.

Procedure: If you agree to participate, the researcher will conduct an interview lasting an average of 90 minutes, in which you will be asked various questions about your experience before, during and after the tsunami. The interview will be recorded using a digital device.

Risks: As the interview involves questions relating to your experience of the tsunami, you may experience elevated anxiety. If you begin to feel very uncomfortable, you may take a break or stop responding to the interviewer at any time. The researcher will be able to help reduce some of the symptoms by conducting a series of deep breathing exercises. Those with health problems that may be exacerbated by anxiety should not participate in this study.

If you experience extreme distress or express thoughts or plans of suicide, a person of your choosing will be informed and the research team as well as staff of HighPoint...
Community Services (Singapore) will be on hand to provide any assistance necessary. Please name the person who we should contact should you be in need of assistance, and where in the village they can be located. This person can be a friend or family you are close to and whom you trust who will be in the village both during and after the interview:

Support person:

_________________________________________________________________

Benefits: You will be given a set of items of daily use as a token of appreciation for your efforts. In addition, your participation will increase our knowledge of the complexities of PTSD in tsunami survivors anxiety and help us to improve treatment by determining cultural specific symptoms.

Confidentiality: All information obtained from participants will remain confidential. The interviews will be recorded, and the data files without identifying information will be stored in a locked cabinet in a locked office. Once data is entered into the computer, it will be stored in a password protected computer file in a locked office. Your information will be identified by a unique participant number to conceal your identity and your identity will not be disclosed to any unauthorized individuals. This study may be submitted for publication or may be presented at various conferences. Your name and identifying information will not be mentioned in any written document or verbal presentation regarding this study.
Withdrawal Without Penalty: Participation in this study is voluntary. You will not be penalized for refusing to participate in the study. Further, you are free to withdraw consent and discontinue your involvement in the study at any time without penalty. You are also free to request a brief break at any point in the study.

Information regarding what to do if you have questions:

If you have any questions about your participation in this study, please feel free to contact Amrit Kaur while she is at the village. If the researcher is no longer present in the village, the staff of HighPoint Community Services will ensure phone contact between you and the researchers within 48 hours. You may also contact Eastern Michigan University’s Human Subjects Review Committee, which is located in Boone Hall on the campus of Eastern Michigan University.

University Human Subjects Review Committee: 1 734 487-0042 (USA)

Amrit Kaur (primary student investigator): 1 734 383 9958 (USA), 65 64434832 (Singapore)

Dr. Ellen Koch (primary investigator/faculty advisor): 734 487-0189 (USA) or ellen.koch@emich.edu.

This research protocol has been reviewed and approved by the Eastern Michigan University Human Subjects Review Committee for use from December 2007 to June 2008. If you have questions about the approval process, please contact Dr. Deb de Laski-Smith (734.487.0042, Interim Dean of the Graduate School and Administrative Co-chair of UHSCR, human.subjects@emich.edu).
Your consent should be indicated verbally in the presence of the researcher and a witness (Executive Director, HighPoint Community Services). The consent will be audio recorded for verification purposes.

Acknowledgment

I acknowledge that I have read, understood, and accepted the terms outlined above and have received a copy of this form.

Verbal Agreement Provided: Yes _____ No ______

Agreement Witnessed By:

___________________________________  _____________
Daniel Jesudasan,                Date
Executive Director,
High Point Community Services

___________________________________  _____________
Amrit Kaur,                Date
Principal Student Researcher
Eastern Michigan University
Appendix C:

Interview Questions

1. Tsunami Experience

Please describe your experience of the tsunami

Ask the following only if they did not specifically mention these feelings in their answer:

Did you feel fear?

Did you feel helpless?

Were you horrified?

Were you involved in rescue efforts, searching for food, burying the dead, putting up shelters, etc?

2. Life changes

How did your life change as a result of the tsunami?

Ask about:

- Housing
- Livelihood (farming, fishing practices etc.)
- Family living arrangements (e.g., new combined family, adoption of orphans, living alone, etc.)
- Income (reduction, increase, uncertainty, etc.)
- Alcohol/substance use and abuse (how often, how much each time)
- Social Relations
- Physical health
3. Loss as a result of the tsunami
   - Who did you lose because of the tsunami and how did they pass away?
   - Did you find their body?
   - Was there a proper burial?

4. Indigenous Psychological symptoms
Describe the most painful things you experienced after the tsunami.
What has caused you the most pain or physical suffering?
(Steer participants away from discussions of physical losses or changes that were covered in the earlier questions, unless the information pertains to the psychological consequences of such losses)
After the participant has described the experience by him/herself, ask the following questions if he/she did not mention them in his/her answer. For each question, ask about intensity and duration.
   - Have your feelings or moods changed a lot since the tsunami?
   - Are you troubled by painful thoughts? What are they?
   - Do you keep remembering the event? What do you remember most often?
   - Do you have dreams or nightmares of the tsunami or about people you have lost?
   - Have you ever felt the same feelings you felt when the tsunami came? Have you ever behaved the same way you behaved when the tsunami came?
   - Do you have trouble remembering certain aspects of your tsunami experience?
   - Do you avoid certain places or certain items that remind you about the tsunami? Do
you avoid talking about the tsunami to spare yourself the pain of remembering?
- Have you had any supernatural experiences or have you felt like your left your body temporarily?
- Does your body feel different since the tsunami? Do you have new aches and pains or illnesses?
- Have your sleep patterns changed? Do you get up very early, or fall asleep very late?
- Have you gained or lost a lot of weight since the tsunami?
- Do you feel responsible for certain events related to the tsunami (e.g., death of a family member)?
- Have you reduced your interactions with family members or people in the community? Do you feel more or less interested in interacting with the people around you?
- Do you still enjoy the things you used to enjoy doing before the tsunami?
- Do you find it hard to plan for the future?
- Do you get angry more often or more easily since the tsunami?
- Do you have trouble concentrating on what you do?
- Are you often scared or worried?
- Do you get shocked or startled easily?
- Do you get tired easily?
- Do you find it hard to relax?
5. Impact on Functioning

How do you cope with the disturbances discussed earlier?

Do they affect your ability to:

- work?
- look after your family?
- socialize with your friends and relatives?

6. Culturally Appropriate Responses

Everyone has suffered a great deal as a result of the tsunami.

How are you supposed to bear your suffering?

Is it okay to talk about it? Are people expected to tolerate it (sabar)?

Who do you admire for the way they handled themselves after the tsunami? Why?

Was there anything done by the village, or by members of your family to help people feel at peace?

Ask about healing rituals, ceremonies, daily prayer or other practices.
Appendix D:

Visual Distress Scale

1. How are you doing overall? Choose the face that best describes you now.
   Code: __________

2. Compared to your neighbors, how do you think you are doing financially? Choose the face that best describes you in comparison to them.
   Code: __________

3. Compared to your neighbors, how do you think you are doing socially? Choose the face that best describes you in comparison to them.
   Code: __________

4. Compared to your neighbors, how do you think you are doing physically? Choose the face that best describes you in comparison to them.
   Code: __________
Table 1

<table>
<thead>
<tr>
<th>Participant 1, Male, 45</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tsunami experience</strong></td>
</tr>
<tr>
<td>- Washed away by the water as he was fishing on the beach</td>
</tr>
<tr>
<td>- Suffered significant trauma and was incapacitated by fear for weeks after.</td>
</tr>
<tr>
<td>- Unable to join the relief effort or to search for corpses.</td>
</tr>
<tr>
<td>- Immediate family remained intact, but lost 50 relatives including an older and younger brother.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
- Avoids the beach and the sea, and does not feel strong enough to farm so he makes nets for fishermen. Family income significantly impacted

- Lives with his brother, under his care

- Other activities significantly curtailed by his 'lack of strength”

- Trouble making plans for future

- Professed feelings of bewilderment as to why the tsunami occurred.

- Functioning appears to be significantly reduced

- Self-reported distress appears much lower than suggested by the interview.

Self-report Visual Distress Scale  (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 2

- Which picture most closely describes your feeling six months ago: 1 (got worse)

- Compared to your neighbors, how do you think you are doing financially?: 4

- Compared to your neighbors, how are you doing socially?: 4

- Compared to your neighbors, how do you think you are doing physically: 3
## Table 2

**Participant 2, Male, 52**

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Assumed the sound of the earthquake was gunfire and explosions linked to the separatist struggle</td>
<td>- Continues to fish and maintain his standard of living</td>
</tr>
<tr>
<td>- Fainted as he tried to run from his home to the mountains</td>
<td>- Interpreted the tsunami as a warning from God to repent and described the tsunami as a blessing as it prompted him and many others to become more religious, and to repent.</td>
</tr>
<tr>
<td>- Assumed it was “doomsday” as described in the Islamic texts</td>
<td>- Described the tsunami as being good for people who are devout, and bad for those who are not.</td>
</tr>
<tr>
<td>- Was incapacitated for two weeks after the tsunami – was unable to join the relief or burial efforts</td>
<td>- God “blessed” him through the tsunami as his house is now bigger as a result of aid</td>
</tr>
<tr>
<td>- Spent time staring into space for a month, surviving on aide</td>
<td>- Repeatedly professed religious surrender – he responded to questions related to fear, emotional pain and other disturbances by saying he was not bothered because “Allah will decide”. <em>(suspicion of denial)</em></td>
</tr>
<tr>
<td>- Loss extended family members, including in laws, a grandchild and his spouse</td>
<td>- Often remembers friends who have died, and feels sad</td>
</tr>
<tr>
<td></td>
<td>- Feels guilty for being unable to save his friends and neighbors, but reminds himself that there was</td>
</tr>
</tbody>
</table>
who was washed away by the tidal wave not much he could have done at the time.

- Copes with difficulties by praying, and preaching
- Functioning appears to be high
- Self report of distress appears to be much lower than suggested by the interview

Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 2
- Which picture most closely describes your feeling six months ago: 2 (no change)
- Compared to your neighbors, how do you think you are doing financially?: 2
- Compared to your neighbors, how are you doing socially? 2
- Compared to your neighbors, how do you think you are doing physically: 2
Table 3

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Fled the tsunami with several friends.</td>
<td>- Chronic sadness</td>
</tr>
<tr>
<td>- Friends were separated, unable to help each other</td>
<td>- Frequently ill after the tsunami</td>
</tr>
<tr>
<td>- Several died</td>
<td>- Met “ghosts” who she has been told caused her illness</td>
</tr>
<tr>
<td>- Stayed on the mountain and was terrified of the corpses below</td>
<td>- Often stares into space</td>
</tr>
<tr>
<td>- Helped cover the corpses of children who had been stomped, but not adults because of fear</td>
<td>- Reduced social contact because of the death of many friends</td>
</tr>
<tr>
<td>- Felt helpless- could not find food for herself, much less others</td>
<td>- Describes herself as being “quieter” than before, and not as carefree</td>
</tr>
<tr>
<td>- Lost two relatives and many friends</td>
<td>- Most affected by death of friends and parents who died prior to the tsunami – still grieving</td>
</tr>
<tr>
<td></td>
<td>- Financial concerns</td>
</tr>
<tr>
<td></td>
<td>- Has nightmares of the tsunami in which she screams for help</td>
</tr>
<tr>
<td></td>
<td>- Avoids beaches unless accompanied by friends</td>
</tr>
<tr>
<td></td>
<td>- Flashbacks triggered by sounds associated with the tsunami</td>
</tr>
<tr>
<td></td>
<td>- Bewildered by the loss of innocent life – both in</td>
</tr>
</tbody>
</table>
the tsunami and during the civil conflict

- Guilty over the loss of friends
- Unable to plan for future
- Continuing grief over friends and parents
- Frequent crying
- Copes by recalling happier times
- Functioning appears to be adequate
- Self-reported distress appears to largely match the
  levels suggested in the interview

Self-report Visual Distress Scale (1- Happy to 6 – Crying)

- Which picture most closely describes your feelings now: 1
- Which picture most closely describes your feeling six months ago: 3 (significant improvement)
- Compared to your neighbors, how do you think you are doing financially?: 4
- Compared to your neighbors, how are you doing socially? 2
- Compared to your neighbors, how do you think you are doing physically: 4
### Participant 4, Male, 36

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- His extended family fled to a house on the mountain, sharing it with three others</td>
<td>- Fears a recurrence of the tsunami</td>
</tr>
<tr>
<td>- Feared he lost his son, separated for hours</td>
<td>- Sees as arising as a result of the injustices human beings around the world carry out to each other</td>
</tr>
<tr>
<td>- Assisted in the relief effort soon after</td>
<td>- Switched from being a coffee shop assistant to an electrician as a result of observing electricians involved in the rebuilding effort.</td>
</tr>
<tr>
<td>- Received food and clothing from relatives unaffected by the tsunami</td>
<td>- Tears more easily, described himself as more “soft-hearted”.</td>
</tr>
<tr>
<td>- Home destroyed but rebuilt</td>
<td>- More generous with children, and more attentive to their needs and desires.</td>
</tr>
<tr>
<td></td>
<td>- More devoted to family - spends more time at home with family and less outside of home with friends</td>
</tr>
<tr>
<td></td>
<td>- Sees the benefit of the tsunami as being that his family is closer, the conflicting forces were brought together in a ceasefire, and he had the opportunity to meeting many foreigners for the first time.</td>
</tr>
<tr>
<td></td>
<td>- Previously suffered sleep difficulties, including nightmares, but these no longer concern him</td>
</tr>
</tbody>
</table>
- Does not avoid places associated with the tsunami, but will not go out to see in a boat unless accompanied by many friends for fear of encountering ghosts.

- Easily startled by loud noises – reminds him of tsunami.

- High functioning.

- Self reported distress appears to be in keeping with that suggested by the interview.

Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 2

- Which picture most closely describes your feeling six months ago: 5 (significant improvement)

- Compared to your neighbors, how do you think you are doing financially?: 2

- Compared to your neighbors, how are you doing socially? 2

- Compared to your neighbors, how do you think you are doing physically: 1
### Table 5

**Participant 5, Female, 45**

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ran to the mountains, lived in a vegetable garden</td>
<td>Significant family problems and conflict with neighbors – beaten by family over unsanctioned marriage of her child.</td>
</tr>
<tr>
<td>Saved an older lady from the water, who later died from a lack of water and exposure to the elements</td>
<td>Falls ill often</td>
</tr>
<tr>
<td>Searched for the corpses of her dead relatives – lost 40 extended family members</td>
<td>Cries frequently on mention of the tsunami, and describes feeling chronic sadness</td>
</tr>
<tr>
<td>Fainted while searching</td>
<td>Grieving lost relatives, and lost valuables</td>
</tr>
<tr>
<td>Home damaged, but not destroyed</td>
<td>Nightmares of the tsunami which end in tears</td>
</tr>
<tr>
<td>Loss livestock</td>
<td>Frequent recollections of the incident, and of family troubles</td>
</tr>
<tr>
<td></td>
<td>Does not avoid the beach as it is the source of her livelihood as a crab seller, but often cries because of memories associated with the seashore</td>
</tr>
<tr>
<td></td>
<td>Low blood pressure since the tsunami</td>
</tr>
<tr>
<td></td>
<td>Unable to plan for future – often confused</td>
</tr>
<tr>
<td></td>
<td>Easily startled, runs on hearing loud noises.</td>
</tr>
<tr>
<td></td>
<td>Difficulties relaxing, resting</td>
</tr>
</tbody>
</table>
- Suspicions of psychosis/schizophrenia, although it is unclear from community reports if this predates the tsunami

- Significantly impaired functioning, although it is unclear if this predates the tsunami

- Self-report distress appears to be in keeping with presentation during interview

Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 5

- Which picture most closely describes your feeling six months ago: 5 (no change)

- Compared to your neighbors, how do you think you are doing financially?: 4 (has just enough to eat)

- Compared to your neighbors, how are you doing socially? 6 (people think she's crazy)

- Compared to your neighbors, how do you think you are doing physically: 6
Table 6

**Participant 6, Female**

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Selling drinks on the beach when the earthquake happened</td>
<td>- Avoids the beach, fearful of the wind, loud noises and heavy rain which bring instant reminders of the tsunami</td>
</tr>
<tr>
<td>- Was dragged away by the water, husband found her naked and covered with mud</td>
<td>- Easily startled</td>
</tr>
<tr>
<td>- Separated from son, assumed he was dead, but later reunited</td>
<td>- Claims to have forgotten most of the tsunami</td>
</tr>
<tr>
<td>- Hospitalized for wounds associated with being dragged by the waves</td>
<td>- Has trouble concentrating, causing her to over-fry fish.</td>
</tr>
<tr>
<td>- Home damaged but not destroyed. Has currently been rebuilt to a very high standard</td>
<td>- Re-experiences earthquake sensations</td>
</tr>
<tr>
<td>- Lost many friends and family - does not know the exact number</td>
<td>- Does not like to speak about the tsunami unless specifically asked</td>
</tr>
<tr>
<td></td>
<td>- Falls ill more often, usually with headaches coming on after she hears loud noises associated with the tsunami</td>
</tr>
<tr>
<td></td>
<td>- Able to function well at home and looks after pets on the mountain</td>
</tr>
<tr>
<td></td>
<td>- Stares into space</td>
</tr>
<tr>
<td></td>
<td>- Unable to continue trading in her stall on the beach</td>
</tr>
</tbody>
</table>
- Too afraid of corpses to leave the mountain
- Reduced contact with friends and neighbors – such interactions and other forms of entertainment do not help her forget.
- Can’t sleep well at home, only in the mountains
- Goes to the mountain to avoid memories of the tsunami when they plague her
- Ruminates over loss of income and added pressure that this has placed on her elderly husband
- Slightly reduced functioning outside of home – still productive in home-based tasks
- Self reported distress appears to be more negative than suggested from interview data, but is focused largely on financial concerns.

Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 5 (worried about finances)
- Which picture most closely describes your feeling six months ago: 2 (significant decline due to financial loss)
- Compared to your neighbors, how do you think you are doing financially?: 5
- Compared to your neighbors, how are you doing socially? 2
- Compared to your neighbors, how do you think you are doing physically: 2
### Table 7

**Participant 7, Female, 26**

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Not native to Aceh</td>
<td>- Occasionally fearful about future and about earthquakes, but believes that death will come when it must.</td>
</tr>
<tr>
<td>- Sleeping in hostel at the time of the tsunami</td>
<td>- Grieves the friends she lost during the tsunami and cries when she remembers them</td>
</tr>
<tr>
<td>- Ran with four friends, lost one, and split up at times from the others who were wounded, and lost their clothes to the strong wave</td>
<td>- Attributes the troubles to her sins</td>
</tr>
<tr>
<td>- Uncle's entire family of 14 went missing, with no bodies found. A “paranormal” was consulted who said that they were killed</td>
<td>- Sad on recalling the events of the tsunami</td>
</tr>
<tr>
<td>- Felt dazed, as though she and her friends were the only ones left alive</td>
<td>- Copes by visiting old friends and sharing stories about those who passed on.</td>
</tr>
<tr>
<td>- Returned to Medan by flight after coming across a mosque's donation box filled with cash. This was her first time on an airplane.</td>
<td>- Feels some guilt over the death of her friends</td>
</tr>
<tr>
<td>- Returned to Aceh a month later to rebuild her life there</td>
<td>- Slightly reduced social contact because of death and migration</td>
</tr>
<tr>
<td></td>
<td>- Sometimes afraid of noises that remind her of the tsunami.</td>
</tr>
<tr>
<td></td>
<td>- Recently married and gave birth.</td>
</tr>
<tr>
<td></td>
<td>- High functioning</td>
</tr>
<tr>
<td></td>
<td>- Self-reported distress appears in keeping with the interview data</td>
</tr>
</tbody>
</table>
Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 0

- Which picture most closely describes your feeling six months ago: 0 (no change)

- Compared to your neighbors, how do you think you are doing financially?: 2

- Compared to your neighbors, how are you doing socially? 0

- Compared to your neighbors, how do you think you are doing physically: 2
Table 8  

*Participant 8, Female, 42*

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Had just had an operation when the tsunami came</td>
<td>- Intense grief over the loss of her youngest son</td>
</tr>
<tr>
<td>- Ran with son and grandchildren to the mountains</td>
<td>- Experiences overwhelming sadness that make it hard to speak</td>
</tr>
<tr>
<td>- She kept thinking about her younger son who was attending a ceremony on the beach</td>
<td>- Cries often, even if only slightly annoyed</td>
</tr>
<tr>
<td>- Daughter had been trading in her mother’s foodstall on the beach.</td>
<td>- Often experiences early awakening, at which time she reports thinking of her lost son</td>
</tr>
<tr>
<td>- House destroyed</td>
<td>- Has frequent dream of deceased son</td>
</tr>
<tr>
<td>- Did not eat for a week, until surviving son walked all night to the town to bring</td>
<td>- Resumed trading on the beach a year ago to increase interaction, and to prevent herself from ruminating over the traumatic memories and grief of losing her son</td>
</tr>
<tr>
<td></td>
<td>rice and noodles.</td>
</tr>
<tr>
<td>- Deceased son was buried by villagers, but exact site remains unknown.</td>
<td>- Prays to God never to inflict anything like the tsunami again on them.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Lost 17 members of her family including her mother, mother-in-law, brother and grandchildren.

- Reminds herself that “God has planned everything” and this allows her to go to the beach and other places associated with the tsunami

- Finds herself staring into space, but she cannot recall what she thinks about.

- High functioning

- Current self-report appears to be in keeping with self-report

**Self-report Visual Distress Scale (1 - Happy to 6 - Crying)**

- Which picture most closely describes your feelings now: 0

- Which picture most closely describes your feeling six months ago: 5 (significant improvement)

- Compared to your neighbors, how do you think you are doing financially?: 2

- Compared to your neighbors, how are you doing socially? 1

- Compared to your neighbors, how do you think you are doing physically: 0
### Table 9

**Participant 8, Female, 32**

<table>
<thead>
<tr>
<th>Tsunami Experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Was rocking her baby to sleep when the waters came,</td>
<td>- Now survives by trading in oil from the ruins of her old home</td>
</tr>
<tr>
<td>- Husband was holding one child, she held her baby</td>
<td>- Very afraid, even to hear a scream</td>
</tr>
<tr>
<td>- Both got swept by the wave</td>
<td>- Takes comfort in the fact that burials were conducted properly by the village chief in keeping with local traditions.</td>
</tr>
<tr>
<td>- She survived by grabbing a coconut tree while in the water, her baby had been separated from her grip in the water</td>
<td>- Is most saddened by the loss of her son's hand and her husband's death</td>
</tr>
<tr>
<td>- Husband and the child he was holding both died</td>
<td>- Cries often at the memory</td>
</tr>
<tr>
<td>- Found her husband's corpse and met her three surviving children only late in the afternoon when she made her way to the mountain. They were in her sister's house</td>
<td>- Continues to work near the sea</td>
</tr>
<tr>
<td>- Would not go down, could not eat.</td>
<td>- Concerned that children do not have a father</td>
</tr>
<tr>
<td></td>
<td>- Sometimes irritable</td>
</tr>
<tr>
<td></td>
<td>- Uses prayer to calm her heart</td>
</tr>
<tr>
<td></td>
<td>- No somatic symptoms, sleep disturbances, avoidance or change in weight</td>
</tr>
<tr>
<td></td>
<td>- Enjoys gathering with her surviving family</td>
</tr>
<tr>
<td></td>
<td>- Functioning well, motivated by the upbringing of her surviving children</td>
</tr>
</tbody>
</table>
- Felt that her heart would be broken if she went to the seashore where she lost her children

- Home destroyed, not yet rebuilt

- Ceramic ware business destroyed.

- Lived in refugee camp for two years, continues to live there

- Lost a total of 16 family members, including her husband and children. Corpses were unrecognizable and buried in the mass graveyard

Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 2

- Which picture most closely describes your feeling six months ago: 3 (slight improvement)

- Compared to your neighbors, how do you think you are doing financially?: 2

- Compared to your neighbors, how are you doing socially? 2

- Compared to your neighbors, how do you think you are doing physically: 1
Table 10

Participant 10, Female 60

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Was holding on to her grandchild when the waves came. She was carried away and</td>
<td>- Has significant health concerns after the tsunami, particularly high blood pressure</td>
</tr>
<tr>
<td>the child died. She found a wooden block and hung on to it until she was rescued</td>
<td>and was hospitalized for two months.</td>
</tr>
<tr>
<td>nine hours later.</td>
<td>- Often sad and tearful when she is alone as she is reminded of family that died.</td>
</tr>
<tr>
<td>- Home destroyed</td>
<td>- Begun to sell fish again as a means of livelihood but unable to sustain this</td>
</tr>
<tr>
<td>- Lost 15 people in her immediate family including 4 of her children, 10</td>
<td>because of poor health and a lack of capital</td>
</tr>
<tr>
<td>grandchildren and her husband. In addition, she lost 40 people from her</td>
<td>- The participant did not endorse significant symptoms of sleeplessness or re-experiencing,</td>
</tr>
<tr>
<td>extended family</td>
<td>and responded by alluding to “God's will” every time a possible difficulty was raised.</td>
</tr>
<tr>
<td>- Stayed on the mountain for two years before she opted to return to her old</td>
<td>- Feels frightened whenever a strong wind blows, and still startles easily</td>
</tr>
<tr>
<td>shack on the shore.</td>
<td>- Lost weight thinking about the family and their unpredictable economic outlook</td>
</tr>
<tr>
<td>- Responsible for the care of five orphan grandchildren whose parents died because</td>
<td>- Reduced functioning as a result of the tsunami – this is related to a combination of</td>
</tr>
<tr>
<td>of the tsunami</td>
<td>the health toll of being washed by the volcanic waters, her advanced</td>
</tr>
</tbody>
</table>
age and the emotional trauma

- Current self-reported distress appears to be lower than suggested by her circumstances, but in keeping with her self-report during the interview.

- (It is possible that the truthfulness of her report could have been somewhat compromised by the arrival of her surviving children and grandchildren who were curious about the presence of the interviewers.

Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 2

- Which picture most closely describes your feeling six months ago: 3 (slight improvement)

- Compared to your neighbors, how do you think you are doing financially?: 3

- Compared to your neighbors, how are you doing socially? 2

- Compared to your neighbors, how do you think you are doing physically: 0
Table 11

*Participant 11, Male, 59*

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Was making a boat not far from the beach when the tsunami came, ran toward home</td>
<td>- Reports that his “heart is weaker” now</td>
</tr>
<tr>
<td></td>
<td>to get children and wife</td>
</tr>
<tr>
<td>- Was swept away and found unconscious by his son in another town and brought to the</td>
<td>- Goes to the beach, but trembles while there.</td>
</tr>
<tr>
<td></td>
<td>mountain</td>
</tr>
<tr>
<td>- Survived by tying himself to a tree</td>
<td>- Does not go fishing anymore, only makes boats on shore</td>
</tr>
<tr>
<td>- Suffered a broken rib</td>
<td></td>
</tr>
<tr>
<td>- Lived on the mountain under a canvas that they found in the water</td>
<td>- Watching footage of the tsunami causes him to feel as if it is happening again</td>
</tr>
<tr>
<td>- Ate food provided by aid workers by helicopter.</td>
<td>- Can't rest in the daytime because of concerns over multiple family demands</td>
</tr>
<tr>
<td>- Was ill, could not work for a year</td>
<td>- Feels sad that he could not help his family and friends, but says he was helpless</td>
</tr>
<tr>
<td>- House destroyed, but now rebuilt.</td>
<td></td>
</tr>
<tr>
<td>- Lost brother and 5 members of brother's family, corpses were found two weeks later</td>
<td>- Worries about economic future, but maintains faith in God</td>
</tr>
<tr>
<td></td>
<td>but were unrecognizable</td>
</tr>
</tbody>
</table>
- Did not lose any immediate family  
  - Tries to tell stories whenever the opportunity arises so as to reduce the fear associated with the memories  
  - Claims that “I don't want to be sad anymore”  
  - Functioning appears to be high - boat making job appears to be rewarding  
  - Current self-reported distress appears higher than suggested from the interview data

**Self-report Visual Distress Scale (1 - Happy to 6 - Crying)**

- Which picture most closely describes your feelings now: 4  
- Which picture most closely describes your feeling six months ago: 5 (no change)  
- Compared to your neighbors, how do you think you are doing financially?: 2  
- Compared to your neighbors, how are you doing socially? 0  
- Compared to your neighbors, how do you think you are doing physically: 3
Table 12

**Participant 12, Male 45**

<table>
<thead>
<tr>
<th>Tsunami experience</th>
<th>Post Tsunami Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village chief at the time of the tsunami</td>
<td>Difficult to plan for the future because he cannot forget the incident</td>
</tr>
<tr>
<td>Was stomped over as he competed with other villagers to take rice aid for his own village</td>
<td>Frequent recollections and flashbacks</td>
</tr>
<tr>
<td>Was not swept away</td>
<td>Re experiences the ground-shaking that occurred just prior to the tsunami when he sits down</td>
</tr>
<tr>
<td>Organized burial of corpses a week after</td>
<td>Gets sick more often - often suffers from malaria</td>
</tr>
<tr>
<td>Managed the rebuilding efforts by coordinating with the NGOs</td>
<td>Bewildered by the massive loss of life, and the fact that so many parents lost children, and children lost their parents</td>
</tr>
<tr>
<td>Says he did his best to meet everyone's needs without being concerned about his own benefit, but that people were still dissatisfied with his efforts</td>
<td>Has trouble sleeping because he is always reminded of the incident</td>
</tr>
<tr>
<td>Home destroyed but rebuilt</td>
<td>Often dreams that the water is coming closer, and hears people's screams for help. He feels himself trying to hold on to their hands. Wakes up clinging on to his wife's arms. At times, he hears screams, and feels as if something is entering his body. These dreams stopped once he was relieved of his duties as the village head 2 years ago.</td>
</tr>
<tr>
<td>Onion and chili plantations destroyed</td>
<td></td>
</tr>
</tbody>
</table>
- Saddened by other's recounts of the incident – no longer afraid of other people's descriptions
- Contemplated suicide soon after the tsunami
- Felt responsible for the death of family and other villagers, but was able to organize their burial
- Currently works as a construction worker, and plants vegetables
- Has trouble concentrating on work
- Often feels scared and unsure about life
- Easily startled by strong winds and loud sounds
- Easily exhausted
- Avoids having free time as it allows him to ruminate. Looks for jobs, activities and prayer sessions
- High functioning
- Current self-reported distress appears lower than that suggested from interview data
Self-report Visual Distress Scale (1 - Happy to 6 - Crying)

- Which picture most closely describes your feelings now: 1
- Which picture most closely describes your feeling six months ago: 5 (no change)
- Compared to your neighbors, how do you think you are doing financially?: 3
- Compared to your neighbors, how are you doing socially? 0
- Compared to your neighbors, how do you think you are doing physically: 0