

POST-TRAUMATIC STRESS DISORDER AND COMORBID DEPRESSION IN A

WEST AFRICAN POPULATION

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## Abstract

Despite the established relationship between Post-Traumatic Stress Disorder (PTSD) and depression in Western cultures, research concerning the prevalence rates and relationship between the comorbid disorders in Non-Western communities remains sparse. The present study explored the relationship between PTSD and comorbid depression in citizens currently living in Ghana, West Africa. Ghanaian Nationals ( $n=140$ ) completed the PTSD and demographic sections of the Structured Clinical Interview for the DSM-IV (SCID-I), as well as the Center for Epidemiological Studies Depression Scale (CES-D). Both measures were administered through interview format. Results revealed a lower prevalence rate of PTSD than expected. Further analysis demonstrated that meeting the diagnostic criteria for PTSD increased the chance of meeting the diagnostic criteria for depression, as well as increased depression scores. To confirm that the prevalence rates found in this study were reflective of actual cases of depression (not measurement error) a scale reliability analysis was conducted on the CES-D. The results of this analysis confirmed internal consistency. Results suggest that although the prevalence rate of PTSD was low, a relationship is present between the disorders in a non-Western sample. The reliability of the measures means that PTSD and depression were assessed for, but what is not certain is whether the actual construct of the disorders could occur differently in a non-Western sample, causing a different presentation of symptoms. Future research is needed to examine the Western construct of PTSD and depression to determine if there is a different presentation of symptoms not accounted for by Western measures.

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## Post-Traumatic Stress Disorder and Comorbid Depression In a West African Population

Post-Traumatic Stress Disorder (PTSD) and depression have been heavily documented in Western samples (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Blazer, Kessler, McGonagle, Swartz, 1994). It has recently become accepted knowledge that PTSD and depression are commonly comorbid (Kessler, 1994; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Gill, Page, Sharps, & Campbell, 2008). Despite the extensive research conducted using Western samples, there is minimal research available examining PTSD and comorbid depression in non-Western samples. Thus, the current prevalence rates of PTSD and comorbid depression and the factors influencing comorbidity in Non-Western communities are unknown.

The purpose of this study is twofold: 1) To contribute information to the growing data-base for PTSD and comorbid depression in a non-Western sample, which will increase cross-cultural validity. 2) To further explore the link between Post-traumatic Stress Disorder and comorbid depression to aid in accurate assessment, effective treatment and to substantiate the theory that the two stem from a similar construct.

*Evidence of Comorbidity*

Several studies have provided empirical evidence that PTSD and depression are often comorbid. One such study is The National Comorbidity Survey ( $n=5,877$ ), which began in the early 1990's and was the first nationally representative mental health survey in the United States that used structured diagnostic interviews to examine the prevalence rates of various DSM-III-R disorders including PTSD and depression (Kessler, 1994). The original data for baseline estimates was collected from 1990-1992 and the report was published in 1994. The results indicated that 56% of respondents with a lifetime history

of one psychiatric disorder had at least one additional diagnosis. Furthermore, a primary diagnosis of an Anxiety Disorder (including PTSD) was significantly associated (68.7%) with a secondary diagnosis of Major Depressive Disorder (Kessler, 1994).

In the next few years, several follow-up studies were conducted to further clarify the relationship between comorbid anxiety and depressive disorders. In 1995, a follow up study was conducted building off the original data and examining the epidemiology of PTSD in the general population. There was a national sample (of U.S. citizens) consisting of 5877 participants ranging in age from 15-54. Modified versions of the DSM-III-R PTSD module from the Diagnostic Interview Schedule and Composite International Diagnostic Interview were used. Information was collected regarding the types of different trauma people experienced, demographic information of participants, and the comorbidity of PTSD with other lifelong psychiatric disorders. Results revealed that around 48% of those meeting the diagnostic criteria for PTSD also met the diagnostic criteria for depression (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995).

A more recent study of comorbidity focused on the development of depression in relation to PTSD. Breslau, Davis, Peterson, and Shultz (2000) sought to further examine the link between PTSD and depression by determining if people exposed to trauma are more likely to develop depression independent of developing PTSD. Data was used from the Epidemiological Study of Young Adults conducted in Michigan ( $n=1007$ ) and from the National Comorbidity Survey. This study used retrospective and prospective data to compare the rates of PTSD and depression among three different groups. The first group was comprised of people who experienced a trauma but did not develop PTSD, the second contained people who experienced a trauma and developed PTSD and depression,

and the third group was a control group of individuals who did not experience a traumatic event. Results suggested that there is an increased risk of depression in those who had PTSD and who experienced a traumatic event, but no significant risk for depression in those who experienced a traumatic event and did not have PTSD (Breslau, Davis, Peterson, & Schultz, 2000). This implies that individuals with PTSD are at an increased risk for depression. Therefore, it is not merely experiencing a traumatic event that increases the likelihood of both disorders, but the real mediating factor in developing depression is the development of PTSD.

In 2004, O'Donnell, Creamer, and Pattison conducted a study that went a step beyond other comorbidity studies. The fact that PTSD and depression are often comorbid was relatively well established at this point, but facets of the two following a trauma was still relatively unclear. This study examined 363 injury survivors prior to their discharge from a hospital and then again at three and 12 months following their injury. The researchers looked at predictor variables and symptom severity to better understand if PTSD and depression represent a single construct following a trauma. Through a multinomial logistic regression, O'Donnell et al. (2004) found that most psychopathology following a trauma can be considered the result of a single traumatic stress factor, indicating that both PTSD and depression are elements of a single construct. Based on these results, the authors concluded that PTSD and depression are indistinguishable from one another and follow an interwoven chronic course. In addition to the original study, follow-up testing was conducted which revealed that there were some cases where depression occurred independently of PTSD and had a separate set of predictor variables. In this minority of cases it was concluded that during the acute phase (<3 months)

following a trauma, depression can occur independently of PTSD (O'Donnell, Creamer, & Pattison, 2004). A possible explanation for this is that, according to the American Psychiatric Association (*DSM-IV-TR*, 2000) PTSD symptoms occurring for the duration of three months or less would be diagnosed as Acute Stress Disorder. In such cases, the PTSD symptoms may be attributed as a transient and expectable reaction to a traumatic event, and therefore if depression occurs during this period it is independent, and not a product of PTSD.

Although it is most common for PTSD and depression to develop simultaneously following a traumatic event, it is also possible for both disorders to occur at separate times following a trauma. A recent review of epidemiological studies conducted by Breslau in 2002 found that a diagnosis of PTSD significantly increases the risk of developing depression. Breslau suggested that although the two disorders sometimes have a simultaneous onset, PTSD and depression are often comorbid because people with PTSD are much more vulnerable to depression than those who do not meet the diagnostic criteria for PTSD (Breslau, 2002). What this information indicates is that the timeline for PTSD and depression following a trauma can take several courses. As indicated by O'Donnell and colleagues (2004), the rates of PTSD and comorbid depression are dependent upon the amount of time following a traumatic event (i.e. acute or chronic). There are three common courses for the development of PTSD and depression following a trauma. The first is the development of PTSD shortly following a trauma and then subsequent development of depression. The second course is when depression emerges directly following a trauma and then PTSD develops months, possibly years after the

traumatic event. And the third course is the simultaneous emergence of PTSD and depression shortly following a trauma (Breslau, 2002).

### *The Effects of Comorbidity*

It is important to identify disorders that are often comorbid because they are more likely to be chronic and have higher severity than a single diagnosis alone (Kessler, 1994). Because people suffering from PTSD with comorbid depression are more likely to have higher severity and chronicity (higher symptom ratings and longer duration), which has been shown to result in greater impairment in functioning and higher subsequent distress (Nixon, Resick, & Nishith, 2004), it is important to look at the comorbidity of PTSD and depression.

A recent study of PTSD and comorbid depression and quality of life supported that those with co-occurring disorders will experience more symptom distress (Chen, et al., 2007). Chen, et al. (2007) investigated quality of life, prevalence of PTSD, and prevalence of depression in 410 firefighters living in Kaohsiung, Taiwan. A two-stage survey method was used in which the first section was comprised of self-report data and the second section included interviews from trained psychiatrists. The results indicated that of those firefighters meeting the diagnostic criteria for PTSD and depression, their score on the quality of life measure was significantly lower than individuals with one diagnosis. Participants with depression scored lower on the mental aspects of quality of life whereas participants with PTSD scored lower on both mental and physical aspects of quality of life. This finding indicates that people suffering from PTSD and depression may present with more symptoms and will subsequently have a lower quality of life (Chen et al., 2007).

In 2005, Oquendo, Brent, Birmaher, Greenhill, Kolko, and Stanley conducted a study to determine whether individuals with PTSD and a current or history of a depressive episode had a higher risk of suicidal behavior than those individuals with PTSD alone. The study examined 230 participants with a lifetime history of one or more major depressive episodes. Fifty-nine of the patients also had comorbid PTSD. Demographic and clinical characteristics of those patients with and without PTSD were compared. The results indicated that PTSD is often prevalent within populations of individuals who have experienced a depressive episode and that their co-occurrence increases the risk for suicidal attempts and gestures. In addition to increased risk for suicidal behavior, the findings also indicate that those suffering from PTSD and comorbid depression have a much lower quality of life (Oquendo, et al., 2005). The prior research has shown that a comorbid diagnosis of depression can increase the severity, duration, and subjective distress of individuals with PTSD. However, a comorbid diagnosis is not the only mediating factor. The type of trauma that is experienced can also have an influence on the symptom presentation and the course that PTSD will follow.

#### *Differences Due to Type of Trauma*

A recent study that was conducted by Gill and colleagues (2008) examined the rates of PTSD and comorbid depression in low-income women. In this study, 250 urban women who were seeking health care were interviewed to determine if they met the criteria for PTSD and/or depression, and to identify what traumatic events they may have endured. The results indicated that more than half of the women who met the diagnostic criteria for PTSD also met the criteria for depression. In addition, an interpersonal

traumatic event (e.g. physical or sexual assault) was the strongest predictor of the development of PTSD and comorbid depression as compared to non-interpersonal traumatic events (e.g. motor vehicle accident, natural disaster). The women who developed PTSD from an assaultive event (which classifies as an interpersonal trauma) reported experiencing PTSD for at least twice the duration as those women who developed PTSD from non-assaultive events (Gill, Page, Sharps, & Campbell, 2008).

The preceding studies examining PTSD and comorbid depression indicate that this is a common co-occurrence. Gill and colleagues (2008) found that this is the case regardless of the type of trauma experienced. Breslau and Anthony (2007) found that relative to other types of traumas, assaultive, or more generally, interpersonal traumas, seem to generate higher rates of PTSD and comorbid depression. Similarly, Kessler and colleagues (1995) in a follow up study to the original National Comorbidity Survey, found that the most common types of trauma associated with PTSD for women is rape or sexual assault (i.e. interpersonal trauma). Conversely, the most common type of trauma associated with PTSD for men is combat, or another type of life threatening situation or accident (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). It is important to note that for both men and women, experiencing a sexual assault is the highest-risk trauma for developing PTSD.

These conflicting results reflect the fact that men are less likely to be the victim of a sexual assault (0.7% lifetime prevalence) whereas women are much more likely (9.2% lifetime prevalence). Men are more likely to be exposed to combat or a life threatening accident (25% lifetime prevalence) (Ballenger et al., 2000). The data from these studies

was collected using both males and females who were currently living in the United States.

In 2004, Nixon conducted a study to examine PTSD and depression in women who were victims of intimate partner violence. Results indicated that women who were victims of intimate partner violence had very high rates of both PTSD (75% of the sample) and depression (54% of the sample). In addition to the high frequency of both disorders, it was also revealed that those women with both disorders had significantly higher severity of PTSD and depressive symptoms and more maladaptive cognitive styles than those women who only met the criteria for PTSD (Nixon, Resick, & Nishith, 2004).

#### *Differences Due to Cultural Factors*

There is a sufficient amount of research concerning PTSD and comorbid depression, but what is lacking in these comorbidity studies are data that are culturally representative for a variety of populations internationally. Few epidemiological studies focusing on trauma or PTSD in general populations have been conducted in third world or developing countries (De Girolamo & McFarlane, 1996). This leaves a critical gap in the research base because even fewer studies have been conducted to examine PTSD and comorbid depression in third-world countries. The research that has been conducted concerning PTSD in developing countries has mostly focused on the relationship between environmental factors and exposure to trauma.

#### *Setting and Environment*

A 2007 study conducted by Schaefer et al. compared levels of PTSD in two groups of missionaries, one group representing a largely stable setting (Europe) and the other representing an unstable setting (West Africa). The results indicated that the rate of

traumatic events and subsequent traumatic stress were significantly higher in the unstable setting. More frequent occurrence of traumatic events was found to be directly related to increased levels of reported post-traumatic stress. Another finding was that there were certain factors associated with the severity of PTSD, the main factor being comorbid depression. It is important to note that the participants in this study were missionaries, and therefore were not nationals of the country in which they were currently residing. There is limited research available about PTSD and depression using a sample of West African Nationals.

The best and most comprehensive prevalence rate information is a public database created by the World Health Organization (WHO). The WHO conducts research on 193 countries, including Ghana, West Africa. According to a database published in 2004, the population estimate for Ghana was 22,057,000 with around 11,000 citizens meeting the diagnostic criteria for PTSD, which is a prevalence rate less than 1% (World Health Organization, 2008).

#### *Expectations for a West African Population*

The World Health Organization identifies West Africa as a region subject to natural disasters, health epidemics, forced displacement, violent crime, and severe political unrest and civil strife. Due to the increased external stressors experienced in economically underdeveloped communities, it follows that the prevalence rates of PTSD in areas such as West Africa (which as specified above is considered an unstable setting), would be higher than the base rates reported in the United States (Schaefer et al., 2007). According to the results of the National Comorbidity survey, it is estimated that the average lifetime prevalence of PTSD in the United States is 7.8 % (Kessler, Sonnega,

Bromet, Hughes, & Nelson, 1995). This can be contrasted with the information mentioned previously, which indicates that the prevalence of PTSD in West Africa is roughly 1%. The current prevalence rate data seems to represent conflicting information. The reported prevalence rates of PTSD in Ghana are much lower than those estimated for the United States, despite the fact that Ghana is a country with increased external stressors. Future research (including the present study) can help determine whether the prevalence rates reported in Ghana are inaccurate, or if there are unidentified variables influencing the relationship between traumatic events and the subsequent development of PTSD.

A summary of the literature suggests that those participants meeting the diagnostic criteria for PTSD will likely have comorbid depression (Kessler, 1994; Blazer, Kessler, McGonagle, Swartz, 1994; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Breslau, Davis, Peterson, & Schultz, 2000; Gill, Page, Sharps, & Campbell, 2008). As indicated by past research, PTSD and depression are commonly comorbid, and a dual diagnosis can be associated with more chronic and severe symptoms (Kessler, 1994), significantly lower quality of life (Chen et al., 2007), and an increased risk of suicidal behavior (Oquendo, et al., 2005).

In addition to the high level of instability and exposure to trauma, many West African nations lack adequate resources to handle the excess of environmental stressors (World Health Organization, 2005). Based on this information, it is essential to examine the prevalence rates of PTSD and comorbid depression in these regions to uncover information that may be useful in both the assessment and treatment for these specific populations. West Africa is a critical place for PTSD and depression research to be

conducted because it has several factors that increase the risk of exposure to trauma and the development of PTSD and comorbid depression. West Africa is classified as an unstable setting (setting/environment) where citizens are at an increased risk for exposure to interpersonal assault and forced exposure to combat, whether it be forced military service or exposure to war (types of trauma). The combination of variables present in West Africa suggests a high prevalence of PTSD and depression. It is disconcerting that there is a lack of research concerning PTSD and depression in West African populations. It seems that West Africa would benefit from research devoted to understanding, assessing, and treating the disorders (cultural variables).

Having a clearer understanding of the relationship between PTSD and depression in West African culture will help professionals be better equipped to address the growing mental health needs of West African populations.

Ghana is currently facing several specific mental health concerns including: lack of trained mental health professionals, availability and high cost of medication, insufficient and unsanitary conditions of psychiatric hospitals, and stigma and maltreatment of people with mental disorders. In 1996, mental health policies were created to create community mental health efforts that would make services available to the general public. However due to lack of funding, these efforts have remained stagnant. It is estimated that only 1% of the National budget is allocated toward mental health services and that funding was decreasing between 2004-2009 (Yaro, 2010). With severe budget constraints, it is not surprising that the community-based initiative was unable to gain momentum, and that mental health disorders continue to remain untreated.

Ghana has the potential to move forward, however funding and further research are needed to facilitate progress.

Ghana is an essential setting for this research because of its unique situation. Although Ghana neighbors unstable West African Nations, Ghana itself is relatively stable and has been since the election of the first president in 1957. Although Ghana is considered a “model” West African Nation, the rates of trauma are still higher than in Western samples, and there is a lack of medical and psychiatric resources, which can explain why the prevalence rates of PTSD and depression are still higher than in other Western samples (Schaefer et al., 2007).

Since a political party change in 2000, Ghana has slowly begun to place greater emphasis on mental health care (Roberts, 2001). The increased awareness regarding mental health has caused the government to examine the types of mental health services being offered. Currently, mental health care in Ghana is provided by very diverse sources that include: psychiatrists, traditional healers, and spiritualist preachers. There is a discontinuity of mental health services employed, but this is actually beneficial to the Ghanaian population because most citizens do not have access to trained psychiatrists and/or may not be able to afford treatment. Although many of the diverse psychiatric services that are offered do not comply with international legal standards and human rights, this does allow for more Ghanaians to have access and the ability to afford treatment (Roberts, 2001). There is sparse research available regarding the presentation and conceptualization of PTSD and depression in Africa populations. Most of the literature that does exist is limited to simply reporting prevalence rates, but there is no actual understanding of how the disorders function in relation to culture and what

interventions would be most appropriate for specific cultures (De Girolamo & McFarlane, 1996).

This study has the potential to provide data concerning the link between PTSD and depression as a function of Ghanaian culture. The literature that exists concerning treatments for PTSD and depression should be combined with the data yielded from this study to determine what types of intervention are not only the most efficacious, but also the most cost-effective and practical for use in the general Ghanaian population. There is a significant amount of research concerning treatment for PTSD and depression, however research for the treatment of PTSD and comorbid depression is limited.

#### *Current Treatment Literature*

For PTSD, there are four empirically validated treatments (based on results from Western populations) that include: coping/skills-focused treatment, exposure-based treatment, cognitive therapy, and combination treatments (which includes eye movement desensitization and reprocessing). Although the preferred treatment may vary based on the type of trauma experienced, the four empirically validated treatments could be used to treat PTSD regardless of the type of trauma experienced. There are also several well-established treatments for depression; the main three are behavioral activation, cognitive therapy, and interpersonal therapy (Barlow, 2008). Although there are a few forms of intervention that have been proven efficacious for both PTSD and depression (cognitive therapy) there is still a need for more research dedicated toward understanding how to best treat the two disorders in conjunction. The current study has the possibility to explore the shared symptomatology between PTSD and depression. The results of this

study have the potential to provide direction for future treatment research concerning an approach to treating PTSD and depression simultaneously.

For the purposes of this study, two measures will be used: The Structured Clinical Interview for the DSM-IV-TR (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) and the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Both of these measures will be discussed in detail in the following methods section.

It is important to use these measures in conjunction because they can suggest a diagnosis of PTSD or depression respectively, can provide information about which symptoms are being most commonly endorsed, and demonstrate what symptom pattern may exist when the disorders are comorbid. By understanding the symptom presentation of the comorbid disorders, future research would be better able to figure out which treatments, or specific techniques could best address the shared symptoms.

In addition to exploring the relationship between PTSD and comorbid depression, the findings could provide practical information concerning how to best adapt current empirically validated treatments to suit the needs of a Ghanaian population. As mentioned in the preceding sections, the limited research concerning the treatment of the comorbid disorders has been conducted with Western samples, and thus the current treatment research is based upon treating the symptoms of PTSD and depression as a function of the Western concept of the disorders. It is possible that PTSD and depression may actually have a different relationship in a Ghanaian sample, and that therefore the effects of comorbidity could be different than anticipated. If this is the case, then the current empirically validated treatments will not necessarily be applicable. The data from

the SCID-I and the CES-D will provide a good indication of the relationship that exists between PTSD and comorbid depression as a function of Ghanaian culture.

Based on reviewing the literature, I have generated a two-part hypothesis. I hypothesize that there will be a high incidence of depression in participants who meet the diagnostic criteria for Post-traumatic Stress Disorder. In addition, those participants meeting the criteria for depression will have more severe and chronic PTSD.

Since it is hypothesized that prevalence rates of PTSD and comorbid depression will be relatively high in the Ghanaian sample, the next step is taking the data provided and using it to better understand the type of treatment and intervention that is most efficacious.

#### Method

The current study was conducted in conjunction with a full-scale epidemiological study of the prevalence rates of PTSD in the general Ghanaian population. The larger study focused solely on PTSD, whereas the current study explored the rates of comorbid depression. Due to the fact that this study was embedded in the epidemiological study, the only difference between the two studies was the measures used. For this reason, the participants and procedure will be discussed for both studies simultaneously, and the measures will be divided accordingly.

#### *Participants*

Participants included 200 adults (male and female) over the age of 18, all of whom are Ghanaian Nationals currently living in Ghana, West Africa. Participants were not required to have experienced a traumatic event to participate. A multi-stage probability sampling was used to recruit adults from a wide range of demographic

backgrounds. Participants were randomly selected from each of the five major regions (most densely populated) of Ghana. These regions include: Upper West, Ashante, Central, Volta, and Greater Accra. The Ghanaian equivalent of census data was used to randomly select 10% of the total number of districts in each of the five regions. Within each of the districts, households were chosen in proportion to the population size within that given area. Participants were notified that they had been selected to participate through door-to-door solicitation and by investigators working at a booth in major public markets in each region. The most appropriate adult (over 18 with the most recent birth-date) was chosen in the selected household (or in the market place). Participants were required to be at least 18 years of age and a Ghanaian National. All participants were paid one New Ghanaian Cedi, GHC (roughly equivalent to one U.S. dollar). In Ghana, one GHC is appropriate compensation because typical Ghanaian daily wages are seldom more than several GHC. In addition, many Ghanaians live in rural settings, and items are typically bought through trading products or services. For this reason, money is relatively novel and highly valued in some communities.

### *Measures*

The full-scale epidemiological study and the current study differ only in the measures that were employed. The larger study was designed to examine the prevalence rates of PTSD in the general Ghanaian population and consisted of only one measure, a structured clinical interview.

#### *Structured Clinical Interview for the DSM-IV-TR*

The Structured Clinical Interview for the DSM-IV-TR (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) is a structured clinical interview for diagnosing Axis I Disorders in

accordance with the DSM-IV-TR diagnostic criteria. For the purposes of the epidemiological study, only two sections of the SCID-I were used, the PTSD and demographic sections. Only two sections were chosen to reduce the amount of time required of participants to reach a diagnosis of PTSD.

The SCID-I is conducted through an interview format, which is preferable to a paper and pencil screener for several reasons. First, it allowed for greater flexibility during administration, which was essential to adapt according to the interview setting (e.g. respondent's home, or marketplace). Second, it allowed for interviewers to provide more detailed explanations of the questions if needed. English is the official language of Ghana, however there is a much higher rate of those who can speak English than can read English. There was always a translator accompanying the interviewers to assist in such cases where the respondent could not speak English, or could only with assistance. And third, it allowed interviewers to detect any negative emotional responses that could be occurring in participants during the interview.

The SCID-I was selected because it is one of the most researched measures of PTSD and has both strong reliability and validity. Several studies utilizing Western Samples have demonstrated that the SCID-I is comparable to other frequently used measures for diagnosing PTSD. The SCID-I was found to be strongly correlated with the Clinician-Administered PTSD Scale (Foa & Tolin, 2000), and had high diagnostic agreement with the Posttraumatic Diagnostic Scale (Foa, Cashman, Jaycox, & Perry, 1997). Although the SCID-I has not been validated on a West African population, it has been validated on non-Western populations such as Brazil (Pupo, Jorge, Schoedl, Bressan, Andreoli, Mello, & Mari, 2011) and Indonesia (Kurihara, Kato, Reverger, &

Tirta, 2009). In addition, the SCID-I has shown strong validity when administered to Vietnamese refugees (Fawzi, Pham, Lin, Nguyen, Ngo, Murphy, & Mollica, 1997) and refugees of varying ethnicities (e.g. Iraqi, Afghani, and Ghanaian) living in Australia (Silove, Steel, Susljik, Frommer, Loneragan, Brooks, le Touze, Vijaya Manicavasagar, Ceollo, Smith, & Harris, 2009).

The current study used the data collected from the larger study, but also added an additional measure to assess for comorbid depression. Depression was assessed using a single measure, a self-report screener given in interview format.

*Center for Epidemiological Studies Depression Scale.*

The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is one of the most commonly used self-report depression screeners for large-scale community studies of adult populations (Perreira, Deeb-Sossa, Harris, & Bollen, 2005). It includes 20 items, each of which is scored on an anchored scale from 0-3 (0 = *rarely or none of the time: <1 day*, 1 = *some of the time: 1-2 days*, 2 = *a lot of the time: 3-4 days*, and 3 = *most or all of the time: 5-7 days*) with higher scores corresponding with more severe symptomatology. The instructions state to endorse those statements that were true of the individual during the past week. All 20 items are summed for a total score (four positively worded items are reverse scored) for a total score ranging from 0-60. The cutoff is suggested to be scores of 16 or above (Radloff, 1977).

The CES-D was chosen because of its excellent psychometric properties and its documented use as a reliable measure for large-scale studies of a selected population or community. In addition, the CES-D is designed for a community sample rather than a psychiatric or inpatient population (Clark, Mahoney, Clark, & Eriksen, 2002). The CES-

D is a good fit for our West African population because we used a large sample of Ghanaian Nationals who were randomly selected from the entire population. The CES-D is a widely accepted tool, and was used previously for a wide variety of populations and ethnic groups (Vega & Rumbaut, 1991). Prior research has consistently proven that the CES-D has excellent psychometric properties. The Cronbach's coefficient  $\alpha$  for reliability has been reported to have a range between .84 (Radloff, 1977) and .93 (Verdier-Taillefer et al., 2001), and is consistently found to be above .80. The CES-D demonstrated good concurrent, construct validity, with the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) with a correlation of  $r = .673$  (Bush, Novack, Schneider, & Madan, 2004). In addition, a 2004 study comparing depressive measures found that when comparing the CES-D and the BDI, neither measure was significantly superior to the other (Fountoulakis, Bech, Panagiotidis, Siamouli, Kantartzis, Papadopoulou, et al., 2007). The main drawback to the BDI is that the items have high face validity, in that the items are very straightforward and it is clear that they are assessing for depression. This could be problematic because of social desirability response bias. Although the items of the CES-D also possess a degree of face validity, this measure would be less prone to social desirability response bias.

The primary issue of concern regarding the CES-D is that it may have differential validity in assessing various ethnic groups and cultures. A 2008 study was conducted to assess the validity of the CES-D when given to Americans with different races and or ethnicities. The results indicated that the CES-D may in fact have differential validity, but that it only affected the scores on 4 items, not the overall diagnostic suggestion (Boutin-Foster, 2008). During the data analysis phase of this study, items that are found

to have differential validity may be removed. Although depression scores may differ, they may be biased by response patterns that differ between ethnic groups. This is not necessarily because a group really has different symptoms or disorders, but rather because a specific group may express psychopathology in a way not adequately assessed by measures based on the Western conceptualization of depression.

A 1991 Literature Review examined the differential validity of the CES-D among various ethnic groups in the United States including: Non-Hispanic Whites, African Americans, Hispanics (Cuban and Mexican), Asian Americans (Chinese, Japanese, Filipino, and Korean), and Native Americans. The findings indicated that most minorities scored slightly higher on the CES-D than Non-Hispanic Whites, however the authors postulate that this could be due in part to external variables effecting minorities. When demographic information was examined, minorities were more likely to be from a lower socioeconomic status and report more physical health concerns. The general conclusion was that the CES-D was a valid screening tool for depression among various minority groups, but that differential manifestations of symptoms based on ethnic group membership should be taken in consideration with use (Vega & Rumbaut, 1991). Based on this information, the CES-D should in fact be applicable to the population in question (Ghana, West Africa) but that demographic and cultural variables should be considered when interpreting the results.

As mentioned, the CES-D has not been studied using a sample of West African Nationals, and therefore it is impossible to definitively predict its utility as a measure of depression in Ghana. The current study has the opportunity to conduct an analysis of the CES-D in a Ghanaian sample. Psychometric properties of the CES-D will be computed

from the data by using a scale reliability analysis to examine the internal consistency of the measure. This can help tease out any issues that may arise with the CES-D (e.g. language barrier) to better understand the applicability of the measure to West African populations.

The SCID-I and the CES-D assess PTSD and depression respectively. Administering the two measures together will assess the prevalence rates of both disorders and indicate whether PTSD and depression are co-occurring. Information can also be gathered regarding chronicity and severity of the disorders and shared symptomatology.

### *Procedure*

#### *Data Collection*

Participants were first recruited either through door-to-door solicitation or from a booth set up in a public marketplace. For household solicitation, households were targeted via random selection: Multistage probability sampling using Ghanaian census data to randomly select 10% of each of the five major regions of Ghana. At the marketplace, participants were selected on a volunteer basis. People who were interested in participating were first given two copies of the Letter of Informed Consent that included a brief description of the study, what is expected from participants, how long the study will last (roughly 30 minutes), and how they will be compensated. One copy was given to the participant to keep. The researcher read the letter aloud to the participant as they followed along on their own copy. An emphasis was placed on the fact that participants were able to withdraw from the survey at any time without penalty and that they could skip questions that they did not feel comfortable answering. Participants

were then allowed to ask questions about the informed consent document or anything relating to the study. If the participant agreed, they then signed the Letter of Informed Consent. After consent was obtained, the interview portion began. All interviews were conducted by a trained interviewer either in a private room in the respondent's home, or at a screened seating area in the marketplace. These interview locations provided the benefit of being a convenient place where participants felt comfortable. The only limitations would have been that locations were not always quiet or confidential. However, it should be mentioned that participants were given the option to find a confidential location before beginning the interview. Most participants indicated that confidentiality was not a concern and that they would rather be interviewed in a place that was comfortable and familiar to them.

Interviewers were trained during the week prior to departure for Ghana. All interviewers participated in five days of training. The training included instruction on the administration of the SCID-I and the CES-D, familiarization with the study protocol, and general Ghanaian cultural expectations and guidelines.

The participants were given interview questions from the PTSD screener on the SCID-I and a depression screener (CES-D). Demographic information was also obtained. Almost all interviews were conducted in English (the official language of Ghana) however there were a few conducted in the local dialect (Twi). There was an investigator who is fluent in Twi, who was ready to translate as needed. Both the SCID-I and the CES-D were administered orally and the interviewer recorded the participant's responses. The entire process typically lasted around 30 minutes.

After the completion of the interview process, the participant was given a debriefing form that included the same information discussed in the Letter of Informed Consent. The participant was compensated (with one new Ghana Cedi; GHC, which is roughly equivalent to one U.S. dollar) after they had the chance to ask questions (or earlier if they chose to discontinue the study). In addition, the participant may have been given a list of resources if they are interested in seeking help or report distress. If any participants reported or demonstrated significant mental distress as a product of participation in the study, they were screened by one of two trained lay counselors (Rev. James Aulto and/or Rev. Joe Williams from the Association of Counselor Training and Trauma Services-an organization which is not affiliated with the current study or larger epidemiological study) on site who could assess mental health status and possible reported suicidal or homicidal ideation. Any participant who was believed to be experiencing severe emotional distress, or was a danger to them self or others, would have the interview discontinued and would be directly escorted to the local health clinic in the region by the translator and a driver. All expenses for short-term medical screening, treatment, or possible hospital admission (up to 100 New Ghana Ceddis) would be paid for by the P.I. (of the larger epidemiological study) until the participant was deemed to be stable by the treating physician. This money would be provided for treatment regardless of whether or not the participant completed the study.

It is important to note that no participants reported or demonstrated significant mental distress as a product of participation in the study, and therefore it was not necessary for any participants to be screened by a lay-counselor, escorted to a health clinic, or admitted to a hospital.

### Results

After all data was collected, the data files were examined to ensure that all data was entered correctly and that there were no missing values present. The screen of the data was completed prior to the onset of analysis. No participant responses were removed for the SCID-I or the CES-D. The maximum number of items omitted from the CES-D (20 items total) was two, and this occurred only twice. There was  $n=140$  for the SCID-I and  $n=138$  for the CES-D, indicating that two participants were administered the SCID-I, but then did not complete the CES-D.

It was hypothesized that there would be a high incidence of depression in those participants who meet the diagnostic criteria for Post-traumatic Stress Disorder, and additionally that those participants meeting the criteria for depression will have more severe and chronic PTSD. To determine the prevalence rates of PTSD and depression in a Ghanaian population, basic percentages were calculated based on the number of participants meeting the diagnostic criteria for the two disorders as compared with the total number in the sample. There were seven participants ( $n=140$ ) who meet the diagnostic criteria for PTSD (prevalence rate of 5%) and 45 participants ( $n=138$ , two participants did not take the CES-D) who met the diagnostic criteria for depression (prevalence rate of 33%). In addition, of the seven participants who met the diagnostic criteria for PTSD, four also met the diagnostic criteria for depression (57% comorbidity) (Table 1).

#### *Scale Reliability*

Due to the lower than anticipated prevalence rates, the CES-D was examined to determine the internal consistency of the measure. The scale reliability for the CES-D

was assessed by calculating the coefficient alpha ( $\alpha = .819$ ) (Table 3). The results of the item-by-item analysis (examining “scale if item deleted”) confirmed that all items were worthy of retention. The only increase in alpha would be due to removing two items, each of which alone would only change the value from .819 to .820. (Table 4) Thus, all items were retained because removing any item would not significantly increase the reliability of the scale.

*Chi Square:*

It was hypothesized that there will be a high prevalence rate of PTSD and comorbid depression in the Ghanaian sample. A Chi-Square test was conducted to determine whether meeting the diagnostic criteria for PTSD affected the chances of also meeting the diagnostic criteria for depression. The alpha level was .05. This test was found to be statistically significant,  $\chi^2(1, N=140)=34.83, p<.000$ . The amount of participants with PTSD who also met the diagnostic criteria for PTSD and depression ( $P=.57$ ) was greater than the hypothesized proportion of .50, while the proportion of participants with PTSD who did not meet the criteria for depression ( $P=.43$ ) was less than .50. Overall, the results suggest that meeting the diagnostic criteria for PTSD does in fact influence the likelihood of meeting the diagnostic criteria for depression.

*Independent Samples T-Test:*

The second part of the hypothesis was concerned with determining if those participants who meet the diagnostic criteria for PTSD and depression have more severe and chronic symptoms. To address this question, an independent samples t-test was conducted to examine the difference in mean scores for participants with comorbid PTSD and depression ( $M= 23.86, SD=10.45$ ) versus those without PTSD ( $M=13.84, SD=9.11$ ).

The alpha level was .05 (Table 2). This test was found to be statistically significant  $t(136)=2.815, p<.05$ . These results confirm the hypothesis, indicating that those participants with PTSD and comorbid depression are likely to experience greater severity of symptoms.

*Chi Square:*

A second chi-square analysis was conducted to ensure that the clinical judgment of each researcher did not cause an uneven distribution of the rate of diagnosis of PTSD and or depression. The alpha level was .05. Two analyses were run to assess for relationship between researcher judgment and PTSD, and researcher judgment and depression. The results for PTSD were not statistically significant,  $\chi^2(9, N=140)=6.27, p>.05$ . The results for depression were also not statistically significant,  $\chi^2(9, N=138)=13.66, p>.05$ . These results indicate that there were no meaningful differences in the clinical judgments of the researchers collecting the data for this study. It should be noted that some of the researchers had a smaller than preferred number of data points (e.g. <5) which could effect the overall accuracy of the chi-square statistic.

*Demographic Information*

As mentioned in the methods section, demographic information was also obtained from all participants. The demographic information was reviewed and categorized according to age to provide additional information that may be helpful for better understanding the present population of Ghanaian Nationals (Table 6).

Discussion

The results of this epidemiological study of PTSD and comorbid depression in Ghana, West Africa indicated that there is a low prevalence rate of PTSD and depression

in this population. The first part of the hypothesis was concerned strictly with prevalence rates, and findings were less than anticipated for PTSD: only 5% of our sample met the diagnostic criteria, whereas 33% met the criteria for depression. The prevalence of PTSD from the Ghanaian sample (5%) can be contrasted with the domestic estimate (7.8%) mentioned in the literature review to provide a point of comparison. Possible explanations for the calculated prevalence rates in the present study will be further discussed later in the discussion section.

The second part of the hypothesis predicted that those participants who meet the diagnostic criteria for PTSD would also meet the criteria for depression. In addition, those participants with PTSD and depression were hypothesized to have more chronic and severe PTSD as indicated by higher scores on the CES-D. Of the participants meeting the criteria for PTSD, more than half had depression, confirming, as expected, a high occurrence of comorbidity between the two disorders. The comorbidity rates in the present sample (57%) were even higher than those previously reported for the United States (48%). Examining the relationship between the disorders revealed that participants with PTSD are significantly more likely to meet the criteria for depression, and that those with comorbid disorders have significantly higher scores on the CES-D, indicating greater depression and distress (Table 2).

These specific findings may seem relatively basic; one would assume that meeting the criteria for two mental health diagnoses would indicate the person is experiencing more symptoms and greater distress. However, what is interesting when examining PTSD and depression is that these two disorders are often comorbid, and that individuals who develop PTSD are at an increased risk for developing depression

(Kessler, 1994; Blazer, Kessler, McGonagle, Swartz, 1994; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Breslau, Davis, Peterson, & Schultz, 2000; Gill, Page, Sharps, & Campbell, 2008). The results of the present study suggest that the pattern of comorbidity between PTSD and depression is also present in the population of Ghanaian Nationals, currently living in Ghana.

When examining the diagnostic criteria for PTSD and depression, it is notable that there are several shared symptoms, such as, restricted range of affect, sleep difficulties, difficulty concentrating, and diminished interest (DSM-IV-TR, 2000). It is expected that PTSD and depression would be comorbid because of shared symptoms (Davidson & Foa, 1991) however it is important to differentiate that they are each distinct and independent constructs. Although the relationship between PTSD and depression has been relatively well-documented in Western Samples (Kessler, 1994; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Gill, Page, Sharps, & Campbell, 2008) the results of this study suggest that a similar pattern exists in non-Western populations, such as Ghana. Although the results suggest similarities, it is essential to remember that caution should be exercised when attempting to make generalizations across cultures.

Later in the discussion section, the topic of generalizing across cultures will be further explored in relation to the use of specific measures. For the purposes of this study, it was necessary to examine the relationship between PTSD and depression because research conducted in a specific culture cannot always “travel” or “transfer” to another culture. A prime example is that the large body of Western research cannot always be generalized to other populations, such as West Africa. The findings from the present study do suggest some similarities, which is very important because it could mean

that it is not necessary to develop an entirely new set of measures, thus speeding up the ability to respond to mental health needs of the Ghanaian population.

The most unexpected result of this study was the low rate prevalence rate of PTSD. There are two main explanations that could account for this finding. The first explanation is that the Ghanaian sample surveyed was experiencing traumatic events, but did not develop PTSD. Data from this study indicated that many Ghanaians experienced a trauma sufficient to elicit PTSD. According to the DSM-IV-TR (2000), the first diagnostic criterion that must be met for PTSD is that the individual “experienced, witnessed, or was 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” and that the individual’s response “involved intense fear, helplessness, or horror.” There were several examples of traumas reported during our study that could meet the DSM-IV criteria. To help classify the traumas, all events reported were divided into categories based on the PDI Scale (Foa, 1996). For a complete list of the traumatic events reported, see Table 5 of the appendix.

The most commonly reported trauma was involvement in a motor vehicle accident. Some other examples included witnessing someone being killed, being attacked, robbed, or assaulted. There were 72 participants who reported at least one trauma, which is roughly 52% of the sample. The total number of traumatic events reported was given (72) because although not all would qualify for the DSM-IV definition, it is impossible to determine which would qualify because it is based on the individual’s perception and response to the event. As mentioned previously, only seven participants met the diagnostic criteria for PTSD, a mere 5% prevalence rate.

It is evident that the Ghanaians are experiencing trauma that could qualify for the first diagnostic criterion, however they are still not endorsing enough of the remaining symptoms of PTSD (re-experiencing, avoidance of stimuli associated with the trauma, increased arousal, and impairment in functioning) to elicit a diagnosis of PTSD. The data suggests that around 24% of participants reported re-experiencing symptoms (e.g. flashbacks and intrusive dreams), 12% acknowledged avoidance of stimuli associated with the trauma or related cognitive symptoms (e.g. avoiding people or places associated with the trauma), 8% indicated experiencing increased arousal (e.g. hypervigilance), and 5% reported impairment in functioning. In addition, 6% of participants reported that their symptoms had persisted at least one month. All of the percentages were calculated by taking the number of participants who met the requirement for each of the six diagnostic criteria and dividing each individual criterion total by the total number of participants ( $n=140$ ).

It has been mentioned that not all people who experience a trauma will develop PTSD, however with the high rates of trauma being reported in the Ghanaian sample, it seems that the prevalence rate of PTSD should be higher than only 5%.

The obvious explanation for the low prevalence rate of PTSD is that the disorder is occurring in the Ghanaian sample at higher rates than determined, but that this study did not correctly assess for PTSD. This implies that PTSD in the Ghanaian population could be represented by a different set of symptoms. As mentioned in the introduction section, few epidemiological studies assessing trauma or PTSD in general populations have been conducted in third world or developing countries (De Girolamo & McFarlane, 1996). Due to the sparse amount of research concerning PTSD and

depression in non-Western samples, it is possible that the construct of PTSD manifests itself differently in other cultures. Essentially, the construct of PTSD as it exists in Western Cultures could be based on symptoms and criteria that are not applicable to non-Western populations.

In order to determine that this explanation is viable, it must first be determined that the measures used were reliable and valid. When examining the data collected for the CES-D, it was noted that a single item was found to be potentially problematic. This item was, "Everything I did was an effort." The results revealed that many participants were endorsing high scores for this item, even if they were not receiving an overall diagnosis of depression. Follow-up discussions among interviewers helped elucidate the issue. Several interviewers reported receiving similar responses to this item, with the main theme being that life was difficult, and most daily activities required a great deal of effort. This is an example of cultural context being imperative for discerning what an item is actually assessing. Many of the Ghanaians that were interviewed lived in towns or villages where the resources for daily needs were not readily accessible. For those Ghanaians living without running water, the most basic functions (showering, using the restroom, finding clean water to drink, cooking) become a much more arduous and time-consuming task. The responses received to this item are better understood when placed in the cultural context because it becomes clear that it did not align with the Western intention for the item to assess for emotional effort or fatigue. This issue will be further explored later in the discussion section.

As mentioned in the results, a scale reliability analysis was conducted on the CES-D, which indicated that the measure has good internal consistency ( $\alpha=.819$ ) and

therefore is assessing a single construct. An additional item analysis was also conducted to assess for problematic items. The results revealed that removing items (including “Everything I did was an effort”) would not change the overall prevalence rates of PTSD and depression, or raise the internal consistency of the CES-D. Based on these results, all items were retained.

Since the CES-D proved to be reliable, the question becomes whether measurement invariance is present, and to what extent. Measurement invariance is “the equivalence of a measured construct in two or more groups...it assures that the same constructs are being assessed in each group”(Chen, 2008). There are many factors that can contribute to measurement invariance. Several are worth mentioning as they could assist in understanding the possible causes of measurement invariance in the present study.

One possibility is that constructs can be unidimensional in one culture, but not in another, indicating that constructs can vary in differentiation (Chen, 2008). For example, the construct of PTSD is represented in the United States as a single construct with several dimensions (re-experiencing, avoidance behaviors, numbing, hyper-arousal) based on categories of symptoms as defined by the diagnostic criteria in the DSM-IV-TR. The construct of PTSD could be differentiated differently in Ghanaian culture causing the factors to not be equivalent between the two groups.

Another possibility is that the definitions and meanings of items on the measures used do not fully extend to other cultures. Problems arise when “the meanings researchers attach to items are not shared by respondents” (Rogler, 1999). Cross-cultural research must always be aware of this possibility, because it can often lead to invalid data

(Kortmann, 1990; Beals et al., 1997). In the present study, validity was a concern because although English is the official language of Ghana, there are cultural idioms which can be lost in translation. Past studies have provided proof of this occurrence, one such article by Rogler (1999) uses an item on the CES-D, as the example. The item, “How often did you feel that you could not shake off the blues even with help from your family and friends?” is problematic, as Rogler indicates, because of the idiom of “shaking off the blues.” In addition, there is also the possibility that a specific item may translate well, but that it does not fit in the cultural context.

Similarly, a 1997 article by Beals, Piasecki, Nelson, Jones, Keane, Dauphinais, Shirt, Sack, & Manson, described a prevalence study of mental health disorders in Indian adolescents using the Diagnostic Interview Schedule for Children (DIS). One problematic item was “Do you often worry a lot about having clean clothes?” This item on the DIS was intended to assess for obsessive thoughts, however it did not take into account that in the communities where participants lived, running water was not readily available, and thus finding water to launder clothes was a constant concern. Even though participants were able to comprehend what was being asked of them, the phrases may actually assess something different in their culture. As previously mentioned, this could have occurred in the present study with the high endorsement of the CES-D item, “Everything I did was an effort.”

A final possibility is that social desirability response bias (SDB) may have been a factor because all information was obtained from participants via self-report measures that were read aloud by an investigator. Social desirability response bias can result in individuals reporting in an overly-positive manner or omitting information that they deem

is not “normal” or “socially acceptable” (Crowne & Marlowe, 1960). SDB can influence “the relationships observed among variables...thereby affect[ing] the reliability and validity of both experimental and survey research findings (Thornton & Gupta, 2004). SDB can be problematic enough in everyday settings when participants are asked to provide personal information, which means the possibility of response bias could easily have increased in the present study when the personal information is being asked, face to face, by an investigator.

The results of this study may have questioned the prevalence rates of PTSD in Ghana, however they did confirm the relationship present between PTSD and comorbid depression. What is most interesting is the implications for the explanation of such results. Although the first part of the hypothesis was disproven, it yielded an important opportunity to explore the cultural aspects of arriving at a mental health diagnosis. If the possibility that PTSD was not accurately assessed for is ruled out, then the implication is that there are other factors involved, which are mediating the relationship between experiencing traumatic events and the subsequent development of PTSD. It is possible that several mediating factors may exist. One such explanation is that the high trauma rates and low PTSD prevalence rates could be indicative of resiliency in Ghanaian culture.

#### *Resiliency in the Ghanaian Sample*

There are several attributes of Ghanaian culture that could increase resiliency against developing PTSD or depression following a traumatic event. One possible source of resiliency is the increased potential for social support. Perceived social support can serve as a buffer against the development of PTSD and depression (Schumm, Briggs-

Phillips, & Hobfoll, 2006) as well as increase reported quality of life (Bras et al., 2010). Furthermore, positive social support has been found to be negatively related to PTSD symptom severity (Andrews, Brewin, & Rose, 2003). Although social support is based on individual perception, it is possible that certain types of communities and living situations foster higher perceived support. Ghana has a high potential for social support because of strong cohesion among communities and families. Ghanaian households are often comprised of nuclear and extended family members living together in a single house or a “compound” of several small dwellings sharing communal areas and facilities (Eshun, 2003). This form of living arrangement provides the potential for consistent social support, a key factor that is negatively related to the development and severity of PTSD and depression.

Another key component of Ghanaian culture that may be relevant for the development of PTSD is religiosity. There are three main religious denominations in Ghana: Christian, Muslim, and Traditional/Tribal. A study comparing Ghanaian college students with their United States counterparts found that Ghanaians reported being significantly more religious (Eshun, 2003). Religion has been found to decrease the onset of physical and mental illness as well as help with adjustment to a physical or mental health diagnosis (George, Larson, Koenig, & McCullough, 2000). There is one predominant theory about the interaction effect between religiosity and the development of PTSD which postulates that religious beliefs help facilitate the integration of sensory and cognitive memories relating to traumatic events. Findings from clinical studies (Ehlers & Clark, 2000) as well as neuro-imaging tasks (Van der Kolk, Burbridge, & Suzuki, 1997) have revealed that individuals with PTSD have difficulty understanding

and forming a cohesive narrative of the trauma they experienced. Individuals who are religious often use their spirituality as a means to explore questions and meanings in life, and thus religion can serve as a positive framework for integrating cognitive and sensory data related to traumatic experiences (Peres, Moreira-Almeida, Nasello, & Koenig, 2007). Another important piece of religion is that it often corresponds with having an external locus of control (LOC). Individuals with a strong sense of religion (regardless of denomination) are more likely to attribute events in their life to the involvement of a higher power, providing a sense of meaning to a trauma. In Ghanaian culture, the idea of trusting in the plan of a higher power may provide comfort following traumatic events, and helps individuals process and make sense of negative occurrences, while giving them hope for the future.

An additional cultural factor is that Ghana is a collectivist society, as opposed to most Western societies that are often individualistic. A collectivist society is one in which there is a focus on shared responsibility and collaboration, where the well being of the needs and goals of the group as a whole is more important than a single individual. Ghanaians see themselves as part of a large society that is comprised of small communities. A sense of collaboration and community is essential to Ghanaian society because social networking and social interactions are often used to define identity, gain support, and accumulate resources (Hanson, 2005).

Even in some of the more modern and urbanized areas of Ghana, a barter economy still exists, which causes individuals to see themselves as interconnected. While conducting field research in Ghana, it was evident that although tangible currency is preferable, it is not always necessary. As foreigners, currency was typically exchanged

for goods, however there were opportunities where prices were based on trading personal items.

In some of the medium sized towns such as Kasoa and Kumasi, it was observed that individuals specialize in specific trades (farming, basket weaving, jewelry making, wood carving). Although these trades do provide an income, that direct monetary amount is not sufficient for survival. Many Ghanaians grow their own foods, or can barter their specific product or trade in exchange for the food or product of another individual. It was witnessed on several occasions that Ghanaians would share or trade food with one another, often exchanging one type of product for another.

This perspective can increase resiliency because each individual sees themselves as a larger piece of the puzzle, with a distinct role and importance to the larger group. A sense of purpose and acceptance as well as feelings of belonging can contribute to the reduction of PTSD symptoms (Nuttman-Shwartz & Dekel, 2009). When examining several components of Ghanaian culture, it helps explain how it is possible that traumatic events are occurring frequently, and yet individuals are not developing PTSD. Evidence of this occurrence is demonstrated by the fact that 72 participants reported experiencing a traumatic event, however as mentioned previously, only seven participants met the diagnostic criteria for PTSD. Therefore, only 10% of the participants who experienced a trauma developed PTSD. This finding may indicate that cultural factors (such as resiliency) are mediating the relationship between traumatic events and the development of PTSD.

The two main factors in this study appear to be the aspects of Ghanaian culture which might create a resiliency toward mental health disorders as well as the possible

presentation of symptoms that differ from a Western sample. The present study was an example of how field research often presents a unique combination of strengths and limitations.

### *Strengths*

The present study offered a valuable opportunity to conduct research in a West African setting. Based on the location of the study as well as the methodological design, several strengths were evident. A main strength of the study is that the measures were administered through interview format. English is the official language of Ghana, however many Ghanaians are much more skilled with speaking English than with reading or writing. The literacy rate in Ghana is estimated to be 65.8% (World Health Organization, 2008). The interview format allowed for participants to ask questions or have an item repeated for them. During interviews, it becomes evident that oral communication is the most effective form of interaction for this population. A poignant example is that at the end of the interview process, participants were compensated, and asked to sign a receipt, and many of these participants did not have a set signature, some were uncomfortable holding a pen, and a few indicated that they did not know how to write or sign their own name. Although there were still some comprehension difficulties involved in communication, the data would have been seriously compromised had the measures been administered in a written format.

Another benefit to the interview format is that it allowed for a significant amount of interaction between interviewers and participants. The two-fold hypothesis of this study was concerned strictly with prevalence rates, comorbidity, severity, and chronicity of PTSD and depression, however much more information was gained than just these

quantitative responses. The interview format facilitated interaction among interviewers and participants and often opened dialogues that extended beyond the interview process. Although additional information was not necessary for confirming or disproving the hypothesis, it was invaluable in terms of the understanding Ghanaian culture and their understanding of PTSD and depression.

The interview format helped to create a good balance of structure and flexibility. Structure was present because standardized measures were used along with a specific research protocol for collecting data. The flexibility was provided by being able to interview participants in a location of their choosing, as well as allowing for others to be present at the request of the participant. As mentioned in the methods, participants were recruited through door-to-door solicitation as well as recruiting from public locations, such as a marketplace. After participants agreed to participate in the interview, they were given the choice to find a nearby location to conduct the interview. Locations varied, but were often inside a participant's store, at a table at a restaurant or marketplace, or simply a quiet spot in a public place. Allowing the participants to be interviewed in a familiar setting helped make the situation more comfortable and also allowed for others to be present.

An interesting thing occurred with several of the interviews, where participants would ask if it was okay for a friend or family member to stay with them throughout the interview. Another common occurrence was that participants did not seem concerned about being interviewed in a confidential setting, but rather preferred to remain in crowded areas. It appeared that many participants were comfortable discussing the interview questions in front of others, and even upon occasion asked for their friends or

family members to help them answer questions, or give their opinion about how accurate the participant's response was. Although this type of interview protocol may not be common in Western cultures, it seemed to be the ideal format for this population. As mentioned previously, Ghana is a collectivist society with a strong sense of collaboration and community. For these reasons, it was beneficial to allow participants to be interviewed while friends and family members were present. Participants were able to create an interview environment that was comfortable and facilitated their ability to answer interview questions with greater ease. The important distinction is that participants were able to choose the location of the interview as well as who would be present.

Another strength of this study was the opportunity for researchers to collect valuable cultural observations while immersing themselves in Ghanaian culture. The format of this study was experimental, and not field research, however there was an element of field observation involved. Researchers spent three weeks in Ghana collecting data as well as participating in a variety of cultural activities. During this time, the researchers travelled around the country to visit the five main regions of Ghana. This allowed researchers to gain a great deal of understanding about Ghana as a nation, while also observing the intricacies of different life styles and cultural variations of Ghanaians based on their region of inhabitation.

Essentially, the experience of actually living in Ghana provided researchers with a cultural context for the data that was obtained. It has been mentioned that the results of this study are best understood when examined as a product of Ghanaian culture. This level of understanding cannot be achieved by anything short of actual tangible

experience. The raw data from the interviews still remains unchanged, but the perception and understanding of certain results were possible due to the knowledge and first-hand experience of actually spending time in Ghana and interacting with Ghanaians multiple times each day.

### *Limitations*

There are specific limitations that should be addressed to better understand the results of this study. As mentioned, the prevalence rates of PTSD were lower than anticipated, and the previous section explored possible explanations.

The most basic area of concern is miscommunication between interviewers and participants. English is the official language of Ghana, and there was also a translator on hand who was familiar with several of the regional dialects. Although this seems sufficient, some language barriers were still encountered. Even though participants were all interviewed in their language of choice (English, or a local dialect, most commonly Twi) there was some difficulty in communication. Participants occasionally had difficulty understanding the actual meaning of certain questions, or found it difficult to articulate their answers. When the translator was used, it seemed possible that some of the specific wording or responses as well as cultural nuances were lost in translation.

A second limitation is some of the aspects associated with utilizing the SCID-I. The measure was selected because it is easy to understand and is designed as an interview. The drawback to using the SCID-I is that it yields strictly categorical data, PTSD: yes or no. Although the question format allows for some variation in answers (some participants explained their answers or provided examples of symptoms), the data is not meant to determine the extent or severity of symptoms. When testing the second

part of the hypothesis, it was difficult to determine if those with comorbid PTSD/depression actually had higher severity of PTSD. For the purposes of this study, this part of the hypothesis was assessed by using the scores on the CES-D as an indicator of severity/distress. The CES-D measures depression as a continuous variable, which allowed for statistical analysis. In addition, it was not possible to calculate reliability analyses on the SCID-I using the Ghanaian data obtained because the measure is categorical.

A third possible limitation is that there were twelve different researchers that conducted interviews and collected data. All researchers underwent a five-day training the week prior to departure for Ghana; however, it is still possible that differences in researchers' clinical judgment, even possibly personality and appearance, could affect the data that was collected. Each of the researchers was given a number (1-12) that was written on the top of the interview forms so that it could be assessed if there were significant differences in the data collected based on the specific researcher conducting the interviews. For this study, data was used from the first 10 researchers. The data from the remaining two researchers was not intentionally discarded, but was unavailable at the time of analysis. As mentioned in the results section, no significant differences were found between the different researchers and the rates of PTSD or depression reported from the interviews. These results indicate that the differences in researchers' clinical judgment was not a meaningful confound in this study.

A final limitation is that this study did not assess for measurement invariance, which is a key factor in determining whether or not the measures could transfer from the United States to West Africa and retain their psychometrics. In particular, it is especially

important to ensure content validity, which can be defined as “the degree to which items of a measure reflect a representative sample of all possible facets of the theoretical characteristics which are supposed to be represented by the instrument.” (Scandura, 1993) In most cross-cultural research, measurement invariance is assumed instead of being assessed, which can lead to “spurious cultural differences that are in fact artifacts of measurements, or...true cultural differences that have been masked by measurement artifacts.” (Chen, 2008) In this study, the prevalence rates as well as comorbidity comparisons could be inaccurate if measurement equivalence does not exist.

The measures that were used have good psychometrics, and have the advantage of being used in previous studies with non-Western sample. However, the fact remains that both the SCID-I and the CES-D are Western derived measures that were standardized using Western samples and are based on the Western constructs of PTSD and depression respectively.

#### *Future Directions*

As the field of cross-cultural research continues to grow, it is important to ensure that measurement equivalence is never forgotten in the selection of measures, or the interpretation of results. Future research would be well directed at continued study of the relationship between PTSD and comorbid depression in non-Western samples, with a focus on evaluating and selecting measures with measurement equivalence.

As mentioned, this study did not evaluate for measurement invariance. A follow-up study could be conducted to determine the level of measurement invariance present for both the SCID-I and the CES-D between Western and non-western samples. If

further analysis can determine that there is in fact measurement equivalence, then future studies of prevalence rates can be concluded to be accurate.

The results of this study indicate that prevalence rates of PTSD are very low in Ghana, however the several possibilities were discussed for why this may not be an accurate conclusion. If researchers continue to use Western-standardized measures, it is important to keep in mind that “if a test travels, so must the conventions on which it is based. Otherwise, cross-cultural misunderstanding results and validity is compromised” (Greenfield, 1997). The present study provided an example of this theory in action demonstrating the need for developing new measures of identifying PTSD and depression that are culturally appropriate for West Africa.

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Appendix A: Interviewer Instructions, Informed Consent Form, Measures, De-briefing  
Statement

Introduction Script

Good day. Do you speak English? (If not, get translator and continue). I am \_\_\_\_\_ (insert first and last name)—a graduate student in clinical psychology from Ball State University in the United States. We are currently conducting a national mental health screening to assess for emotional disorders that may come from exposure to traumatic events. First, may I ask, would it be possible to speak to the person here who is at least 18 years of age and has a date of birth closest to today's date? (If this is the self, continue with survey; if not, wait until eligible participant arrives and reintroduce self and the study).

Our goal is to assess the emotional outcomes of traumatic experiences among West African people. I would like to ask you some questions about any time of violence or trauma that you might have witnessed in your life. You will receive monetary compensation for participating in our study. If you decide to stop participation at any time during the study, you will still receive full compensation. Although we are specifically interested in trauma, anyone, whether you have experienced trauma or not, may participate in this study. The only requirement is that you be 18 years and older to participate. The interview and survey will take about 30 minutes complete. Would you like to participate in our study? [If no, say "Thank you for your time and good day;" if yes, continue...] If you have any questions, please feel free to ask me before we begin. If you feel uncomfortable answering any questions, you do not have to answer them and you can choose to stop the interview at any time without penalty. Thank you.

## Statement of Informed Consent

**Study Title: The West African PTSD Cachement Study**

You are being asked to participate in a confidential research study. Your participation is entirely voluntary. Please ask questions if there is anything that you do not understand.

Why is this study being done?

The purpose of this study is to learn more about the relationship between traumatic experiences and their mental health outcomes. We hope to learn whether exposure to certain traumatic events lead to different types of psychological symptoms among West Africans. This knowledge may help scientists and therapists better understand and treat psychological conditions related to a psychological condition called Post Traumatic Stress Disorder.

What is involved in this study?

This study involves completing an interview and written survey about your life experiences. The questionnaires address issues of your thoughts, feelings and behaviors. Completing the entire study should take around 30 minutes. All participants are being asked to answer the same questions.

How many people will take part in this study?

We will have approximately 500 people (men and women) take part in this study.

How long will I be in the study?

It will take you approximately 30 minutes to complete the interview and questionnaire and you will receive 1 Ghana Cedis for participation regardless of whether you complete the study or not.

What are the risks of participating in the study?

One of the risks of participating in this study is that you may feel some questions are too uncomfortable to answer. Please feel free to skip any questions that you feel are too uncomfortable, and please feel free to stop your participation in the study at any time. You will not be penalized if you decide to stop participating or decline to answer any questions. If you have been traumatized, you may also re-experience symptoms of anxiety or depression. Anyone experiencing feelings of anxiety or stress as a result of participating in this study is encouraged to communicate this to the interviewer so that we may consult with a trained lay counselor who can assess your symptoms. If your psychiatric symptoms are severe, you may be encouraged to seek assessment and treatment for mental health care only at the local hospital (Accra Mental Hospital—Accra, Bomso Clinic—Kumasi, Baron Healthcare Ltd.—Tamale, Comboni Polyclinic—Volta region, or the Justab Clinic—Kasoa) at the expense of the investigator up to \$100 Ghana Cedis. Any costs incurred beyond this will be your responsibility. These facilities can provide mental health screen and medication for severe mental illness, but are limited in the ability to provide counseling services.

What are the benefits of participating in this study?

You may not personally benefit from being in this study. However, there are two ways in which it is possible for you to benefit.

First, you will be debriefed at the end of the study on what scientists currently know about traumatic experiences and mental health. You will also be given sources for more information on

the topic of traumatic experiences and their psychological impact. Second, you may develop a better understanding of how your traumatic life experiences are affecting you.

We hope that gathering the information in this study will help West Africans in the future. For example, determining whether certain societies and cultures have different types of traumatic experiences and show different symptoms would be important for the treatment of PTSD. Therapists and counselors also may be able to use information from this study to more efficiently diagnose and treat patients suffering from traumatic events.

What other options are there?

You have the option of not taking part in this study. You will not be penalized for your decision to decline participation.

What about confidentiality?

Your participation is completely confidential. We do not ask for any identifying information on the survey, and your responses will be stored in an anonymous database. There will be no way for anyone to tell which survey you personally completed. Once the confidential information from all of the surveys has been entered into a computer, all data will be kept in a locked filing cabinet for 5 years, and then will be destroyed.

What are the costs?

There are no direct costs associated with your participation; however, if you should decide to seek private treatment for your trauma symptoms as a consequence of your participation, there may be medical expense associated with this decision. If you report or manifest signs of significant distress (specifically suicide/homicide ideation) or significant impairment in mental status functioning (disorientation to date, location, identity, etc.) the P.I. will provide payment for screening and/or treatment of a psychiatric disorder up to \$100 Ghana Cedis regardless of your completion of this study. Any further expenses will be your responsibility.

What are my rights?

Taking part in this study is completely voluntary. You may choose not to take part in any or all of this study, and you may cease responding at any time. You will not be penalized for your decision to decline a response to individual questions or to the survey as a whole. Please feel free to ask any questions of the survey administrator before signing the Informed Consent form and beginning the study, and at any time during the study.

Who should I contact with questions or problems concerning the study?

Questions about this study or your feelings about this study may be directed to the research advisor: Dr. Lucinda Woodward, Ball State University, Assistant Professor, Department of Psychological Science, Muncie, IN 46239 or The Comfort Guest House, Kasoa, Ghana; phone (\_\_\_\_\_). You may also email Dr. Woodward at

[lewoodward@bsu.edu](mailto:lewoodward@bsu.edu).

For one's rights as a research subject, the following person may be contacted: **Director of Research Compliance, Sponsored Programs Office, Ball State University, Muncie, IN, 47306, 765.285.5034 or [irb@bsu.edu](mailto:irb@bsu.edu).**

If you should have any concerns or questions regarding your participation in this study, please stop now and speak with the survey administrator or contact the principal investigator, Dr.

Lucinda Woodward, at the above local phone number or [lewoodward@bsu.edu](mailto:lewoodward@bsu.edu), before proceeding further.

I, \_\_\_\_\_, agree to participate in this research project entitled, "The West African PTSD Cachment Study." I have had the study explained to me and my questions have been answered to my satisfaction. I have read the description of this project and give my consent to participate. I understand that I will receive a copy of this informed consent form to keep for future reference.

\_\_\_\_\_  
Participant's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Principal Investigator's Signature or her representative

\_\_\_\_\_  
Date

Lucinda Woodward  
Assistant Professor  
Ball State University  
Muncie, IN 47306  
Email: [lewoodward@bsu.edu](mailto:lewoodward@bsu.edu)  
Phone: (765) 285-1693

Date: June 10, 2009

### Debriefing Statement

Thank you for completing our interview and survey regarding The West African PTSD Cachement Study. Your participation will help us better understand the relationship between stressful life events and mental health among West Africans. The current study was designed to assess symptoms of traumatic stress (avoidance, intrusion, numbness and hyperarousal) as well as depression in people who have experienced a traumatic event. It is hoped that a better understanding of the relationship between trauma and psychological well-being will help mental health professionals develop more accurate diagnostic criteria and treatment plans for those suffering from traumatic stress disorders.

For more information on PTSD please see the following:

DeRoma, V., Saylor, C., Swickert, R., Sinisi, C., Marable, T.B., Vickery, P. (2003). College students PTSD symptoms, coping, and perceived benefits following media exposure to 9/11. *Journal of College Student Psychotherapy*, 18, 49-64.

Silver, R.C., Poulin, M., Holman, E.A., McIntosh, D.N., Gil-Rivas, V., Pizarro, J. (2005). Exploring the Myths of Coping with a National Trauma: A longitudinal study of responses to the September 11th terrorist attacks. *Journal of Aggression, Maltreatment and Trauma*, 9, 129-141.

If you should experience any anxiety, distress, or discomfort as a result of having participated in this study, you may speak to the researcher who can refer you to someone who can help you cope with these feelings. You may also speak with a mental health service provider at the local hospital. If you have any further questions or concerns directly related to this study, you may contact the Principal Investigator, Dr. Lucinda Woodward, Ball State University, Dept. of Psychological Science, Muncie, IN 47306, e-mail: [Lewoodward@bsu.edu](mailto:Lewoodward@bsu.edu) *or at our local contact number here in Ghana (insert phone number here).*

SCID-I/P (W/PsyScr) (for DSM-IV-TR)

(APR 2005)

Overview i

**OVERVIEW**

I'm going to be asking you about problems or difficulties you may have had, and I'll be making some notes as we go along. Do you have any questions before we begin?

**DEMOGRAPHIC DATA**

<p>SEX:</p> <p>1 male 2 female</p>	<p>PS123</p>
<p>What's your date of birth?</p> <p>DOB: _____ AGE _____ mon day year</p>	<p>PS124 PS125</p>
<p>Are you married?</p> <p>IF NO: Were you ever?</p> <p>Any children? (What are their ages?)</p> <p>IF YES: How many?</p> <p>Where do you live</p> <p>Who do you live with?</p>	<p>MARITAL STATUS (most recent):</p> <p>1 married or living with someone as if married 2 widowed 3 divorced or annulled 4 separated 5 never married</p> <p>PS126</p>

**EDUCATION AND WORK HISTORY**

<p>How far did you get in school?</p> <p>IF FAILED TO COMPLETE A PROGRAM IN WHICH THEY WERE ENROLLED: Why didn't you finish?</p> <p>What kind of work do you do? (Do you work outside of your home?)</p>	<p>EDUCATION:</p> <p>1 grade 6 or less 2 grade 7 to 12 (without graduating high school) 3 graduated high school or high school equivalent 4 part college 5 graduated 2 year college 6 graduated 4 year college 7 part graduate/professional school 8 completed graduate/professional school</p>	<p>PS127</p>
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SCID-I/P (W/PsyScr) (for DSM-IV-TR)

(APR 2005)

Overview iv

**TREATMENT HISTORY**

When was the first time you saw someone for emotional or psychiatric problems? (What was that for? What treatment(s) did you get? What medications?

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What about treatment for drugs or alcohol?

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(THE LIFE CHART ON PAGE vi OF OVERVIEW MAY BE USED TO DOCUMENT A COMPLICATED HISTORY OF PSYCHOPATHOLOGY AND TREATMENT)

Have you ever been a patient in a psychiatric hospital?

Number of previous hospitalizations (Do not include transfers)

- 0
- 1
- 2
- 3
- 4
- 5 (or more)

PS130

IF YES: What was that for? (How many times?)

IF GIVES AN INADEQUATE ANSWER, CHALLENGE GENTLY: e.g. Wasn't there something else? People don't usually go to psychiatric hospitals just because they are (TIRED / NERVOUS / OWN WORDS)

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Have you ever been in a hospital for treatment of a medical problem?

---

IF YES: What was that for?

**OTHER CURRENT PROBLEMS**

Have you had any other problems in the last month?

---



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What's your mood been like?

---



---

How has your physical health been? (Have you had any medical problems?) (USE THIS INFORMATION TO CODE AXIS III)

**SCID-I (for DSM-IV-TR)****POSTTRAUMATIC STRESS DISORDER**

Sometimes things happen to people that are extremely upsetting—things like being in a life threatening situation like a major disaster, very serious accident or fire; being physically assaulted or raped; seeing another person killed or dead, or badly hurt, or hearing about something horrible that has happened to someone you are close to. At any time during your life, have any of these kinds of things happened to you?

IF NO SUCH EVENTS, CHECK HERE \_\_\_\_\_ AND STOP.

Traumatic Events List

Brief Description	Date(Month/Year)	Age
F103a	____/____/____ F103b	____ F103c
F103d	____/____/____ F103e	____ F103f
F103g	____/____/____ F103h	____ F103i
F103j	____/____/____ F103k	____ F103l
F103m	____/____/____ F103n	____ F103o
F103p	____/____/____ F103q	____ F103r
F103s	____/____/____ F103t	____ F103u

IF ANY EVENTS LISTED: Sometimes these things keep coming back in nightmares, flashbacks, or thoughts that you can't get rid of. Has this ever happened to you?

IF NO: What about being very upset when you were in a situation that reminded you of one of these terrible things?

IF NO TO BOTH OF ABOVE, CHECK HERE \_\_\_\_\_ AND STOP.

**POSTTRAUMATIC STRESS DISORDER CRITERIA**

FOR FOLLOWING QUESTIONS  
FOCUS ON TRAUMATIC  
EVENT(S) MENTIONED IN  
SCREENING QUESTIONS ABOVE.

IF MORE THAN ONE TRAUMA  
IS REPORTED: Which of these do  
you think affected you the most?

IF UNCLEAR: How did you react  
when (TRAUMA) happened? (Were  
you very afraid or did you feel  
helpless or horrified?)

Now I'd like to ask a few questions  
about specific ways that it may have  
affected you.

For Example...

...did you think about  
(TRAUMA) when you didn't  
want to or did thoughts about  
(TRAUMA) come to you  
suddenly when you didn't want  
them to?

...what about having dreams  
about (TRAUMA)?

...what about finding yourself  
acting or feeling as if you were  
back in the situation?

A. The person has been exposed  
to a traumatic event in which  
both of the following were  
present:

(1) the person experienced,  
witnessed, or was 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

(2) the person's response  
involved intense fear,  
helplessness or horror.

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  
(includes a sense of reliving  
the experience, illusions,  
hallucinations and dissociative  
flashback episodes, including  
those that occur on awakening  
or when intoxicated)

? 1 2 3

Stop

? 1 2 3

Stop

? 1 2 3

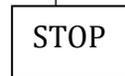
? 1 2 3

? 1 2 3

...what about getting very upset when something reminded you of (TRAUMA)? (4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event ? 1 2 3

...what about having physical symptoms—like breaking out in a sweat, breaking heavily or irregularly, or your heart pounding or racing, when something reminded you of (TRAUMA)? (5) physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event ? 1 2 3

AT LEAST ONE “BE” SX IS CODED “3” 1 3



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:

Since (THE TRAUMA)...

...have you made a special effort to avoid thinking about or talking about what happened? (1) efforts to avoid thoughts, feelings, or conversations associated with the trauma ? 1 2 3

...have you stayed away from things or people that reminded you of (TRAUMA)? (2) efforts to avoid activities, places, or people that arouse recollections of the trauma ? 1 2 3

...have you been unable to remember some important part of what happened? (3) inability to recall an important aspect of the trauma ? 1 2 3

...have you been less interested in doing things that used to be important to you, like seeing friends, reading books or watching TV?	(4) markedly diminished interest or participation in significant activities	?	1	2	3
...have you felt distant or cut off from others?	(5) feeling of detachment or estrangement from others	?	1	2	3
...have you felt “numb” or like you no longer had strong feelings about anything or loving feelings for anyone?	(6) restricted range of affect, (e.g., unable to have loving feelings)	?	1	2	3
...did you notice a change in the way you think about or plan for the future?	(7) sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)	?	1	2	3
	AT LEAST 3 “C” SXS ARE CODED “3”			1	3
				STOP	
Since (THE TRAUMA)...	D. Persistent symptoms of increased arousal (not present before the trauma) as indicated by two (or more) of the following:				
...have you had trouble sleeping? (What kind of trouble?)	(1) difficulty falling or staying asleep	?	1	2	3
...have you been unusually irritable? What about outbursts of anger?	(2) irritability or outbursts of anger	?	1	2	3
...have you had trouble concentrating?	(3) difficulty concentrating	?	1	2	3

...have you been watchful or on guard even though there was no reason to be? (4) hypervigilance ? 1 2 3

...have you been jumpy or easily startled, like by sudden noises? (5) Exaggerated startle response ? 1 2 3

AT LEAST TWO "D" SXS ARE CODED "3"

1 3  
|  
STOP

About how long did these problems—(CITE POSITIVE PTSD SYMPTOMS)—last?

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

? 1 2 3  
|  
STOP

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

? 1 2 3  
|  
STOP

POSTTRAUMATIC STRESS  
DISORDER CRITERIA A,B,C,D,E,  
AND F ARE CODED "3"



**CES-D**

(1=rarely or none of the time, less than 1 day; 2=some or a little of the time, 1-2 days; 3=occasionally or a moderate amount of time, 3-4 days; 4=most or all of the time, 5-7 days)

1 2 3 4

During the last week, how often were you bothered by things that don't usually bother you?

How often did you not feel like eating; that is, your appetite was poor?

How often did you feel that you could not shake off the blues even with help from your family and friends?

Remember, these are about how you felt this past week.

How often did you feel that you were just as good as other people?

How often did you have trouble keeping your mind on what you were doing?

How often did you feel depressed?

How often did you feel that everything you did was an effort?

Remember, these are about how you felt this past week.

How often did you feel hopeful about the future?

How often did you feel your life had been a failure?

How often did you feel fearful?

How often was your sleep restless?

How often did you feel happy?

Remember, these are about how you felt this past week.

How often did you talk less than usual?

How often did you feel lonely?

How often did you feel that other people were unfriendly?

How often did you feel that you were enjoying life?

How often did you have crying spells?

How often did you feel sad?

How often did you feel that people disliked you?

How often did you feel as if you could not "get going?"

## Appendix B: Data Tables

**Table 1.** Prevalence Rates of PTSD and Depression

	PTSD	Depression
Yes	7	45
No	133	93
Total	140	138
Prevalence Rate	5%	33%

*Note.* Total number for depression is different than the total for PTSD because there were two participants who took the SCID-I but not the CES-D.

**Table 2.** Differences in Depression Scores Based on the Diagnosis of PTSD

	PTSD	
	<u>Yes</u>	<u>No</u>
Number of Participants	7	131
Mean Depression Score	23.86	13.84
Standard Deviation	10.45	9.19

**Table 3.** Scale Reliability Analysis for the CES-D

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Item Statistics	
Total Number of Items	20
Mean	1.714
Range	.870
Variance	.037
Cronbach's Alpha	.819

---

*Note.* All items on the CES-D have a possible score of 1-4.

**Table 4.** Scale Reliability Analysis for Individual Items of the CES-D

	Item Total Statistics				
	Scale Mean if Item <u>Deleted</u>	Scale Variance if Item <u>Deleted</u>	Corrected Item-Total <u>Correlation</u>	Squared Multiple <u>Correlation</u>	Cronbach's Alpha if Item <u>Deleted</u>
Bothered By Things	32.62	80.435	.434	.489	.808
Not Feel Like Eating	32.40	80.897	.327	.227	.814
Not Shake Off the Blues	32.59	79.966	.461	.365	.807
Just As Good As Other People	32.52	82.563	.263	.190	.818
Trouble Keeping Mind On What You Were Doing	32.52	79.153	.470	.410	.806
Depressed	32.70	78.392	.565	.518	.802
Everything Was An Effort	32.08	81.075	.285	.330	.818
Hopeful About the Future	32.80	86.929	.071	.144	.825
Life Had Been a Failure	32.71	79.422	.479	.382	.806
Fearful	32.75	81.928	.392	.355	.811
Sleep Restless	32.68	81.645	.352	.287	.813
Happy	32.59	79.884	.466	.330	.807
Talk Less Than Usual	32.58	79.984	.433	.511	.808
Lonely	32.35	78.590	.449	.380	.807
Other People Unfriendly	32.46	83.152	.223	.280	.820
Enjoying Life	32.42	82.443	.280	.337	.816
Crying Spells	32.95	81.080	.525	.479	.806
Sad	32.38	76.451	.645	.563	.797
People Disliked You	32.71	78.930	.536	.449	.803
Could Not "Get Going"	32.61	84.846	.191	.219	.820

**Table 5.** Types of Trauma

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<u>Type of Trauma</u>	<u>Number of Events Reported</u>	
	<u>Men</u>	<u>Women</u>
Accident	18	6
Disaster	-	-
Non-Sexual Assault (acquaintance)	-	-
Non-Sexual Assault (stranger)	5	2
Sexual Assault (acquaintance)	-	-
Sexual Assault (stranger)	-	-
Combat	-	1
Sexual Contact Under 18 with Someone 5 or More Years Older	-	-
Imprisonment	-	-
Torture	-	-
Life-Threatening Illness	-	-
Other Traumatic Event	25	15

---

*Note. The category types of trauma are based on those designated by the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1996). Many of the traumas reported did not correspond with a specific category, and therefore were placed in the "other" category.*

**Table 6.** Demographic Information for Participants

<u>Marital Status</u>	<u>Age</u>				
	<u>18-24</u>	<u>25-34</u>	<u>35-44</u>	<u>45-54</u>	<u>55+</u>
Married	2	14	12	10	5
Divorced	-	3	3	-	-
Widowed	-	1	1	-	-
Separated	-	2	-	-	-
Never Married	49	34	2	2	-
<u>Number of Children</u>					
None	48	32	2	1	-
1-2	3	20	6	2	-
3-4	-	2	10	4	2
5-6	-	-	1	3	1
7+	-	-	-	1	2
<u>Level of Education</u>					
Grade 6 or Less	2	5	5	1	2
Grade 7-12 (without graduation)	17	14	4	3	2
High School or Equivalent	20	15	7	3	-
Completed Some College	6	4	-	1	1
Graduated 2 year College	1	4	2	3	-
Graduated 4 Year College	1	5	-	-	-
Part Grad/Professional School	1	1	-	-	-
Completed Grad/Professional School	1	-	-	-	-

*Note.* The total number of participants was 140, however for the Item "Level of Education" there were nine participants who did not answer the question.

## Author Note

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