Psychological Outcomes in Asian and Asian American Survivors of the April 16th Shooting at Virginia Tech: Roles of Acculturation and Parental Overprotection

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ABSTRACT

The negative impacts of mass shootings on mental health have been documented within the general trauma literature. Substantial research has also shown the Asian population to be a minority group especially vulnerable to negative psychological outcomes following trauma and stress. Acculturation has been studied extensively as a predictor of psychological outcomes in several minority groups. Furthermore, parental overprotection has also been found to have a negative impact on mental health. The relationship between acculturation and parental overprotection and psychological outcomes following mass shootings in the Asian population, however, has not been studied adequately. The purpose of this study was to examine exposure, acculturation, and parental overprotection as predictors of negative mental health outcomes, and as moderators of the relationship between exposure to trauma and negative outcomes. Results indicate that overprotection predicted higher levels of both posttraumatic stress and anxiety-mood symptoms. Exposure predicted posttraumatic stress but not anxiety-mood symptoms. Acculturation was not found to significantly predict either outcome. Overprotection was found to moderate the relationship between exposure and anxiety-mood symptoms. Implications of these findings are discussed.

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1. Introduction

On April 16, 2007, a Virginia Tech student named Sueng Hui Cho shot 49 VT students and faculty in two separate attacks (Virginia Tech Review Panel, 2007). The first attack killed 2 students at Ambler Johnston hall, a residential building, prompting responses by several ambulances and police officers. Many students observed the police and emergency services before they were made aware of any ongoing danger by the VT administration. The second attack started two hours later in Norris Hall, an academic building. The shooter killed 30 students and faculty and wounded 17 others in 4 classrooms before shooting and killing himself. Ten students in one of the classrooms escaped by jumping out of the 2nd floor classroom windows as the professor held the door shut. The professor, a Holocaust survivor, was shot fatally through the door. Students in another classroom successfully barricaded the door and held off the shooter in spite of several shots being fired by the shooter in attempts to enter the room. Over 120 students were in Norris Hall classrooms and labs during the shootings.

An email was sent to all VT students, faculty, and staff alerting them of the shooting in the residence hall just before the second shootings began (Virginia Tech Review Panel, 2007). As the second incident was ending, another email alerting them of a possible gunman on the loose on campus was sent out to all VT students, faculty, and staff, along with an announcement broadcast on loudspeakers around the campus. Several buildings on campus were locked by school officials for several hours, during which occupants could not leave and experienced uncertainty about their safety and the safety of friends and colleagues. Emails were subsequently sent out informing everyone about cancellation of classes and instructing people to stay where they were. A large number of rescue squads, ambulances, and police SWAT teams responded to the second incident and were active near or within several academic and administration

buildings. Live television broadcasts of the events also started soon after the second incident unfolded. Images of the emergency teams in action, people leaving Norris Hall with hands raised, injured being assisted, and students looking out of locked buildings were broadcasted live and viewed by students, faculty, and staff who were both on and off campus.

1.1 Impact of Mass Shooting

Several studies have shown that mass shootings can have a long term negative impact on psychological health of the survivors and witnesses (Johnson, North, & Smith, 2002; North, Smith, & Spitznagel, 1994). North and colleagues (1994) investigated a mass shooting in a cafeteria in Texas in which 24 people were killed. The study found that among 136 survivors interviewed approximately a month after the disaster, 20% of the men and 36% of the women met DSM-III-R criteria for PTSD. One-half of the women and one-fourth of the men with PTSD following the shooting also met criteria for other psychiatric disorders, of which major depression was the most prevalent. A follow-up study three years post-disaster (North, McCutcheon, Spitznagel, & Smith, 2002) showed that 18% of the survivors still qualified for a PTSD diagnosis, with an increased number of symptoms. However, no delayed cases of PTSD were identified in the follow-up. In a study by Johnson et al. (2002) involving a courthouse shooting, 80 courthouse employees who had been present at the event were interviewed approximately six to eight weeks after the incident and followed up 1 year and 3 years later. The results from this investigation showed that there was a 5% prevalence of DSM-III-R PTSD. Ninety six percent of the respondents had at least some PTSD symptoms after six to eight weeks, while 3% of the respondents still had PTSD after three years.

A small number of studies have also shown that mass shootings at schools can have a negative impact on children (Brymer, 2007; Hawkins, McIntosh, Sliver, & Holman, 2004;

Scrimin et al., 2006). For example, Hawkins and colleagues (2004) studied the impact of the 1999 shooting at Columbine High School in Columbine, Colorado on four students directly exposed to the event. Seven parents were also interviewed in the study. The interviewees reported feelings of numbness immediately after the event, while guilt, anxiety, and irritability were stated to have increased over the next two weeks. They also reported troubling ruminations over what could have been done to prevent the shooting. However, the study also found that positive emotions between students and their parents increased following the tragedy.

Scrimin and colleagues (2006) examined PTSD and other types of psychological distress in a sample of children and their caregivers following the Beslan school massacre in Beslan, Russia where the children and their parents had been taken hostage in the school. Seventy seven percent of the children and 95% of the parents met full diagnostic criteria for PTSD 3 months after the event based on parent reports. The study also investigated attention and memory problems in the children and found that they had difficulties sustaining attention and problems with short-term memory. In another study, Brymer (2007) examined the effects of the shootings at Santana High School in Santee, California in 2001 on 1,160 students 8 to 9 months after the event. The study found a PTSD rate of 4.9% and a depression rate of 15.4%. Being in the room where the shooting occurred and having a relationship to the deceased, the injured, and the shooter were associated with PTSD and depression. Being female and older were associated with both PTSD and depression.

Although there have been many more mass shootings in the U.S., very few of them have been carefully researched. Norris (2007) reviewed the existing literature on twelve mass shootings in the U.S. and found three studies on high school shootings and two on elementary school shootings. However, no study addressing the aftermath of mass shootings on college

campuses was found. Another major shortcoming of the current literature on mass shootings is the lack of a careful consideration to the role of race and ethnicity in the development, maintenance, and recovery following these events. Studies of racial and ethnic minorities are needed to provide adequate explanations for the similarities and/or differences among minorities after traumatic events. This issue is of particular relevance to the current study as the shooter was Asian, which may have increased stress in the members of this ethnic group.

1.2 Dose-Response Model of Trauma Exposure and Psychological Outcomes

Many studies about psychological disorders such as PTSD and depression following stressful events have found that the level of exposure to the event is an important predictor of outcome. The dose-response model of psychological disorders has been tested and supported by several studies (Hoven et al. 2005; Goenjian et al., 2005). Goejian and colleagues (2005) evaluated children in three cities in Armenia after a devastating earthquake and found that 1.5 and 5 years after the event, the residents in the city closest to the epicenter scored significantly higher than residents in other cities on the Child PTSD Reaction Index and the Depression Self-Rating Scale. Similarly, Hoven and colleagues (2005) investigated the prevalence of mental disorders in children in New York City public schools following the 9/11 attacks on the World Trade Center and found that greater direct and family exposure to the attacks predicted a higher prevalence of PTSD as well as other anxiety and depressive disorders.

La Greca, Silverman, Vernberg, and Prinstein (1996) studied the effects of Hurricane Andrew in children and found results supportive of the dose-response model. The study revealed that children's exposure to life-threatening experiences during the disaster and loss and disruption after it were major contributing factors in the prediction of PTSD symptoms 7 and 10 months after the disaster. The study highlighted the significance of loss and disruption following

the disaster in addition to the direct exposure to life-threatening situations. The findings also suggest that the higher the level of these types of exposure the longer the symptoms persist. Association between exposure to Hurricane Katrina and psychological distress was also observed in Kessler et al.'s study (2008). The study found higher rates of anxiety-mood disorders, measured by the K6 scale of nonspecific psychological distress (Kessler et al., 2003), among residents of New Orleans who experienced high levels of exposure to physical illness, injury and adversity. Similar results were also observed in Galea et al.'s study (2007) with survivors of Hurricane Katrina.

The model has also been used to study the 2001 shooting at Santana High School. Brymer (2007) found that the closer students were to the shooter, the higher the level of PTSD. The severity of the symptoms 8 to 9 months after the shooting was also predicted by the students' objective and subjective exposure to the traumatic event. The objective exposure included geographical proximity to the shooter, direct threat to life because of the shooting, exposure to grotesque scenes, and experiences following the shooting. The study found that 9.7% of students who were directly exposed to the shooting had PTSD, while an overall PTSD rate of 4.9% was observed overall at 8 to 9 months post-event. The students directly exposed to the shooting had the highest mean scores on the PTSD measure, followed by students who were exposed to the immediate aftermath of the shooting, and then by students who were not exposed to any part of the shooting.

Subjective exposure, as assessed by using a scale of items including level of fear during the shooting, perceived threat to life of self and others, feeling of uncontrollability, confusion, and dissociation, was found to have an effect on the severity of PTSD independent of the objective exposure. Subjective exposure made a large contribution to predicting severity of

PTSD (18%) and also of depression (10%) over and above the effects of objective exposure. Other factors involved in predicting PTSD were gender, with females showing higher levels of PTSD, relationship of the student with the deceased, relationship with the injured, and relationship with the shooter. Otto et al. (2007) found that the rate of PTSD was also positively correlated with indirect exposure in the form of media coverage. It was reported that the amount of television viewing and other media-based traumatic images predicted increased risk of PTSD symptoms in children. Zimering, Gulliver, Knight, Munroe, and Keane (2006) also found that indirect exposure to 9/11 terrorist attacks through survivor narratives predicted high rates of PTSD among relief workers at Ground Zero. Silver et al. (2004) found that simple degree of exposure or proximity to the 9/11 attacks was not enough to explain psychological responses. They found that indirect exposure such as watching the attacks on television and/or other forms of low dose exposure were very traumatic and led to development of symptomology. These studies show that although the severity of PTSD is predicted by the level of objective exposure, supporting the dose-response-model, other factors associated with the shooting such as subjective experiences, relationships, and indirect exposure are also important predictors.

While a number of variables may be examined within the dose-response model including socioeconomic status, coping styles, previous history of trauma exposure, and social response, support and resources, among others (Briere & Scott, 2006), there remains a lack of adequate research on the role of race and ethnicity, acculturative stress among minorities, and family functioning in the relationship between exposure to traumatic events and PTSD symptomology. The current study will examine the role of acculturative stress and parental overprotection in the context of the dose-response model of psychological outcomes following the April 16th shootings among students who identified their race as Asian.

1.3 Impact of Trauma on Ethnic Groups

A brief review of the prevalence of PTSD among minorities will be presented followed by negative outcomes specific to Asians and Asian Americans. Pole, Gone, and Kulkarni (2008) reviewed the psychopathology literature for differences in prevalence and treatment of PTSD in African Americans, Latino Americans, Asian and Pacific Islander Americans, and American Indians. Their review found mixed evidence for elevated PTSD among African Americans as compared to European Americans. However, studies examining Vietnam Veterans have found higher PTSD symptoms in African Americans, with rates between 20.6% to 47% as compared to 13.7% and 30% among their European American counterparts (Green, Grace, Lindy, & Leonard, 1990; Kulka et al., 1990). Pole and colleagues (2008) also reported higher rates of PTSD among Latino Americans in several studies addressing various trauma-survivor groups such as war veterans (Kulka et al., 1990), natural disaster survivors (Norris, Perilla, & Murphy, 2001; Perilla, Norris, & Lavizzo, 2002), and 9/11 survivors (Adams & Boscarino, 2006; Galea et al., 2002) when compared to non-Latino European Americans. Likewise, literature on Native Americans, although sparse, has shown lifetime prevalence of PTSD in Native American veterans nearly double that found in European American veterans (Beals et al., 2002).

With reference to Asian and Asian Americans, Pole and colleague's (2008) review found differential PTSD outcomes in different geographical subgroups of Asian Americans. In one of the studies reviewed, Matsuoka and Hamada (1991, 1992) found that of 44 Asian Pacific Islander Vietnam Veterans, 0% of Japanese Americans, 13% of Chinese Americans, 29% of Native Hawaiians, and 40% of Koreans, Filipinos, and Samoans combined had PTSD. Friedman, Schnurr, Sengupta, Holmes, and Ashcraft (2004) also found that Native Hawaiian veterans of the Vietnam War had higher PTSD rates than did Japanese American veterans. This

difference was not fully explained by statistical adjustment for wartime exposure. In a study by Mizuta et al. (2005), college-aged Japanese women reported significantly lower rates of childhood trauma than those found in Western samples. A possible explanation for lower PTSD rates among Japanese Americans could be lower childhood exposure to trauma, since childhood trauma has been shown to increase the vulnerability to adulthood PTSD (Brewin, Andrews, & Valentine, 2000; Pole et al., 2007).

While the subtleties regarding the definitions of race and ethnicity have been discussed elsewhere (Betancourt & Lopez, 1993; Cox, 2004), and go beyond the scope of this study, there are numerous reports in the trauma literature regarding the relative impact of race on traumatic outcomes. According to Ford (2008), racism may be related to PTSD as a risk factor for exposure to psychological trauma, and may increase the risk of PTSD by intensifying the impact of psychological traumas. Racism itself may also serve as a form of psychological trauma. This effect could result from either a direct relationship between racism and psychological trauma, as in the case of stigmatization when racism becomes a stressor, or because of an indirect relationship where racism acts as a diathesis. Indirect relationships between racism and PTSD might consist of the reduction of accessibility to protective factors that may help lessen the adverse effects of trauma and stressors. Racism itself often results in emotional and physical violence that can be traumatic and cause PTSD (Ford, 2008).

Race has also been known to be a factor in the development of PTSD in war-related trauma. Loo, Singh, Scurfield, and Kilauano (1998) conducted a study with data from Asian American veterans of the Vietnam War and found that race-based stress or trauma could be considered an additional stressor of war that was above and beyond the combat-related stress. Loo and colleagues (1998) define race-based stress in the Asian American veterans in terms of

three major features of the Vietnam War; the war was against people of the same or similar race, the war was located in a country of the same race, and the American military personnel displayed race-related prejudice against the "enemy" of the race. The Asian American veterans reported higher degrees of maladjustment and greater vulnerability to PTSD than their White counterparts because they experienced additional stressors associated with being mistaken for Vietnamese, being subjected to verbal or physical assault, racial stigmatization, dissociation from one's Asian identity, and marginalization. Racial stigmatization, defined as discrediting attributions to people of a certain racial group based on negative stereotypes of that group, was found to be an important predictor of PTSD in Asian American Vietnam veterans.

Marsella, Friedman, and Spain (1994) found that refugees have higher rates of PTSD, as well as depression and anxiety, when compared to the general population. Cambodian, Vietnamese, Laotian, and Hmong refuges living in the United States, collectively known as Southeast Asian refugees, have been found to exhibit high rates of PTSD because of the nature of their trauma history, which includes war, torture, political persecution, loss of family members and personal possessions, and incarceration (Hsu, Davies, & Hansen, 2004). Kinzie, Leung, and Boehnlein (1997) estimated that about 20% of Southeast Asian refugees in the community and 50-70% of Southeast Asian refugees in a psychiatric clinic were affected by PTSD and depression. Changes accompanying immigration can increase stress and hence increase vulnerability to PTSD symptoms among refugees (Carr et al., 1997). Immigration to the United States greatly impacts families, which are the primary social units of Asian culture, and can cause changes in gender roles, role reversal between children and parents, and generational differences in acculturation (Hsu et al., 2004; Mollica, Wyshak, & Lavelle, 1987).

High rates of PTSD have also been found with a sample of adult Thai survivors following a natural disaster. More specifically, among survivors of the 2004 Southeast Asian earthquake-tsunami, it was found that 22% of the survivors presented with traumatic stress symptoms 2 weeks postdisaster, while 30% presented with such symptoms at 6 months postdisaster (Tang, 2007). Norris, VanLandingham, and Vu (2009) found partial PTSD in 21% and full PTSD in 5% of Vietnamese American adults assessed one year after Hurricane Katrina. The study also found that the severity of exposure to the floodwaters, property loss, and subjective trauma were independently related to posttraumatic symptoms. Ahmad et al. (2010) found high rates of posttraumatic symptoms among survivors of earthquakes recruited from a remote village in Northwestern Pakistan. In that study, female gender, lower education, and geographical proximity to the epicenter were significant predictors of higher PTSD symptoms. Although high rates of exposure to personal and community violence have also been reported among Asian youth (Ho, 2008; Ozer & McDonald, 2006), studies addressing the possible posttraumatic symptoms following such exposures in this population seem to be lacking (Chen, 2010).

1.4 Mental Health among Asian and Asian American Students

Asian Americans have been viewed as a well adjusted and adapted ethnic "model minority" population because of the relatively high educational, occupational, and economic attainments as well as the low criminal activity and divorce rate (Sue, Sue, Sue, & Takeuchi, 1995; Wong & Halgin, 2006). The assumption that Asian Americans have few mental health problems has led to limited research focusing on this population. Lee, Lei, and Sue's (2001) review of literature on Asian American mental health status found that Asian Americans experience significant levels of PTSD, depression, anxiety, and somatization. Studies that have found low rates of mental disorders in Asian Americans have used relatively small samples that

may not have been representative of Asian Americans in general (Lee et al., 2001). As noted earlier, studies have shown that, in fact, Asian Americans do have high rates of PTSD.

Young, Fang, and Zisook (2010) studied the prevalence of depression among undergraduate students in a college campus using the nine item Patient Health Questionnaire and observed that Asian American respondents exhibited significantly elevated levels of depression when compared to Caucasian respondents. In another study by Eisenberg, Gollust, Golberstein, and Hefner (2007) with undergraduate and graduate college students, Asian or Pacific Islander students were found to exhibit higher levels of Major Depressive Disorder and suicidal thoughts. Research on Asian American college students who were mostly foreign-born Chinese Americans, Korean Americans, and Japanese Americans found that the Asian American students had more depression than White students (Okazaki, 1997).

Differences in the level of depression have also been observed among various ethnic groups within the Asian community in America. Kuo and Tsai (1986) found that the depression rate among Koreans was twice as high as those among Chinese, Japanese, and Filipino groups. In that study, the Koreans were the most recently arrived immigrants and had less social support. Additionally, Kuo and Tsai (1986) found that immigrants who had wide social networks of relatives and friends exhibited fewer depressive symptoms. In a study on depression in Korean college students in the U.S., Aldwin and Greenberger (1987) found that Korean students had higher levels of depression than did White students. Perceived parental traditionalism was associated with higher depression in the Korean students while parental modernism in White students was associated with lower depression. Similar results were also found in Hurh and Kim's study (1988) in which Korean immigrants in Chicago exhibited more depressive symptoms than Chinese, Japanese, and Filipino immigrants. Young and colleagues (2010) also

found that, among the Asian American college students, Korean Americans had the highest level of depression, which was significantly higher than that for Chinese Americans and other Asian Americans.

A recent study by the Centers for Disease Control and Prevention (2008) highlighted the significant rates of suicide among Asian samples. For example, the study found that Asian American and Pacific Islander (AAPI) females have the highest rate of suicide (14.1%) among the age group 15-24, as compared to Whites (9.3%), Blacks (3.3%), and Hispanics (7.4%). Among males of the same age group, AAPIs have the second highest rate of suicide deaths (12.7%), when compared to Whites (17.5%), Blacks (6.7%), and Hispanics (10%). Kisch, Leino, and Silverman (2005) also found that Asian American students were more likely to attempt suicide than European American students.

In addition to the high levels of depression, and suicidality, elevated levels of anxiety and symptoms of anxiety disorders and somatization have also been reported among Asian Americans. Several studies have found higher levels of anxiety among Asian American college students when compared to their White counterparts (Fritz, Chin, & Demarinis, 2008; Lau, Fung, Wang, & Kang, 2009). Similar results were observed earlier in Okazaki's study (1994) in which Asian American students reported higher levels of anxiety than did their White counterparts. The process of immigration itself can be stressful and anxiety provoking, and hence recent immigrants are highly susceptible to developing anxiety symptoms (Iwamasa, 1997). Furthermore, rates of social anxiety have been shown to be especially high among students of Asian decent when compared to White students, which can be attributed to the high interpersonal-related expectations in Asian cultures which might make social interactions more

anxiety provoking (Eisenberg, Golberstein, & Gollust, 2007; Hsu & Alden, 2007; Xie, Leong, & Feng, 2008).

Studies on somatization have also shown that people in non-Western cultures exhibit higher levels of somatic symptoms than Whites do (Lee et al., 2001). Saint Arnault and Kim (2008) found high rates of somatic distress symptoms in Asian female college students. The study used a convenience sample of Japanese and Korean college students and found that Korean students were more likely to exhibit somatic distress symptoms. High levels of somatic symptoms are also observed among Asian American students (Choi, Rogers, & Werth., 2009) and Asian immigrants (Karasz, Dempsey, & Fallek, 2007) when compared to their White counterparts. Hsu and Folstein (1997) also found that in addition to physical pain, gastrointestinal, pseudoneurological, and sexual symptoms that both Chinese American and White somatizers complain about, Chinese American somatizers also complained about cardiopulmonary and vestibular somatic symptoms, which are not listed in the DSM-IV and are less frequently experienced by White somatizers. The higher rates of somatization among Asians may be attributed to cultural values and practices that discourage open display of emotions (Lee et al., 2001). The unwillingness to experience and express emotions, combined with the stigmatization of mental illness in Asian societies, facilitate somatization as an outlet for psychological distress (Chun, Enomoto, & Sue, 1996). Although somatization has been found to be an important outcome in Asians following stress and trauma, information regarding somatic symptoms in the participants of the current study is not available, and hence the current study will not address the relationship between exposure to the April 16 shootings and somatization.

1.5 Acculturation and Mental Health in Asians and Asian Americans

Hwang and Ting (2008) studied acculturation level among Asian American college students and its effect on these individuals' psychological distress and clinical depression. The study found that low levels of acculturation were associated with increased psychological distress and risk for clinical depression whereas high levels, as indicated by the ability to maneuver successfully within the dominant society, were associated with psychological well-being. Similar results have also been seen in other studies assessing acculturation level and mental health (Ryder, Alden, & Paulhus, 2000; Wang & Mallinckrodt, 2006). It should be noted that Hwang and Ting excluded International Asian American students and focused on students who were U.S. born or had lived in the U.S. for a considerably long period of time (mean length of stay in the U.S. was 12.89 years).

While some studies have shown that immigration status is not a significant predictor of acculturative stress among Asian adolescents (Virta & Westin, 1999), others have found that first-generation immigrants experience greater acculturative stress, lower self-esteem, and higher depression than individuals of later-generations (Kim & Omizo, 2006; Sam, 2000). Significant differences in acculturative stress were also found between non-immigrant (U.S-born) and immigrant (Korea-born) Korean adolescents living in the United States (Park, 2009). However, Park found that non-immigrant adolescents had higher acculturative stress than first generation immigrant adolescents. Park also found that acculturative stress was positively correlated with depression and negatively correlated with self-esteem.

In another study by Yeh (2003), Asian immigrant high school students of Chinese, Korean, and Japanese decent were asked to identify themselves as relating more to American culture or to Asian culture. Youths who were more American-identified reported fewer mental

health symptoms than those who were Asian-identified, indicating that higher assimilation could lead to better psychological adjustment. The study also found that acculturative stress had the largest effect on reported general mental health problems.

In a study by Tsai and Pike (2000), acculturative differences among Asian American college students and their scores on the validity and clinical scales in the Minnesota Multiphasic Personality Inventory (MMPI-2) were examined. The study used Asian American college students from a private university, a community college, and a church college-career class. The students were administered the MMPI and the Suinn-Lew Self-Identity Acculturation Scale (Sl-ASIA; Suinn, Rikard-Figueroa, Lew, & Vigil, 1987) to assess their level of acculturation to the U.S. The results showed that all the Asian Americans who scored as low-acculturated were foreign born, while majority of those who scored as high-acculturated were U.S. born. This indicates that U.S. born Asian American college students are more acculturated than those who are foreign born. The study also found that the low-acculturated group had significantly more elevated profiles which were generally indicative of a chaotic lifestyle with anxiety problems and emotional confusion.

Studies, although in limited number, have also found acculturative stress to be an important factor in predicting psychological outcomes in international college students, i.e. students who do not have U.S. citizenship (Park, Kim, Chiang, & Ju, 2010; Wilton & Constantine, 2003). In a study with Asian students attending a predominantly white university, it was found that greater length of stay in the U.S. was associated with lower levels of psychological distress, and higher levels of distress in adjusting to U.S. cultural norms (Wilton & Constantine, 2003). Higher acculturative stress and intercultural competence concerns were also

associated with higher levels of psychological distress even after controlling for the effect of length of stay in the U.S.

Regarding PTSD, Lee et al. (2009) found that low acculturation increased the risk of PTSD among a Taiwanese aboriginal population exposed to an earthquake in Taiwan. The study assessed the aboriginal people's acculturation to the majority Han Chinese culture in Taiwan and PTSD and concluded that subjects with a lower degree of acculturation had significantly higher risk for PTSD after the earthquake, suggesting that the less acculturated aboriginal individuals are at greater risk for PTSD as they may be less prepared to handle traumas from a disaster. Similar results regarding the relationship between acculturation and PTSD were also found by Norris and colleagues (2009) in the study with Vietnamese Americans following Hurricane Katrina. In that study, acculturation was found to be the strongest predictor of PTSD following the disaster and was inversely related to symptoms. The findings indicate that participants with stronger preferences for Vietnamese language and culture experienced more PTSD symptoms than did participants who had equal preferences for Vietnamese and American language and culture. Chen et al. (2007) also found a negative relationship between acculturation and PTSD in the Vietnamese American population in New Orleans after Hurricane Katrina. Specifically, English proficiency was the most significant aspect of the respondents' acculturation level. Low proficiency in English was associated with lower capacity of accessing resources and dealing with complex insurance issues after the hurricane, contributing to severe financial strain and higher negative health outcomes.

Ngo, Tran, Gibbons, and Oliver (2001) investigated the role of acculturation in premigration traumatic experiences (PTEs) and depression among adult Vietnamese refugees in America. PTEs looked at in this study were several types of trauma including lack of food and

water, torture, rape, and murder of family or friends these people had been exposed to prior to immigration while detained in reeducation camps. In that study, depression was measured using the Center for Epidemiologic Studies- Depression Scale after a cross-cultural translation procedure. The study found that respondents who had more traumatic experiences were more likely to suffer from higher degrees of depression. The study evaluated both the mediator effect and the moderator effect of acculturation on PTEs and depression and found that while the mediator effect was not supported, the moderator effect of acculturation was supported as a buffer of PTEs. PTE had a much stronger effect on depression if the participants reported lower levels of acculturation than those with higher levels of acculturation. In fact, the study found that the impact of PTE on depression was twice as large among less acculturated respondents than among more acculturated respondents.

Although studies assessing acculturation as a moderator between traumatic stress and psychological outcomes are limited, some studies have found acculturation to be a moderator between other types of stress and outcomes. Deng, Kim, Vaughan, and Li (2010) studied the effects of cultural orientation, as indicated by acculturation level, on the relationship between stress due to perceived discrimination and the development of delinquent behaviors among Chinese American adolescents. The study found that the negative impacts of perception of discrimination were significant only when the adolescents reported a low level of acculturation, as indicated by high levels of Chinese cultural orientation or low levels of Western cultural orientation. When they reported high acculturation, as indicated by high levels of Western cultural orientation and low levels of Chinese cultural orientation, the risk-maladjustment outcome link was not significant. Similar results supporting acculturation as a moderator

between risk of discrimination and psychological outcomes have been noted in studies by Lee (2005) and Yoo and Lee (2008).

A number of different explanations have been posed by several researches as to why acculturation is an important factor in mental health outcomes. Hwang and Ting (2008) suggest that lack of identification with mainstream U.S. culture may lead to cultural alienation and decrease feelings of belongingness. Furthermore, low fluency in English might increase stress associated with accessing public services, finding competitive jobs, and extending one's social support network. Chen et al. (2007) also suggest that the association between low acculturation and higher rates of PTSD can be attributed to the lack of proficiency in English, leading to lesser knowledge of and access to resources following traumatic events. On the other hand, Tsai and Pike (2000) suggest that the difference in mental health status observed between Asian Americans with high acculturation and with low acculturation is a function of social support. Higher acculturated Asian Americans tend to have more familial and social support in the U.S. whereas lower acculturated Asian Americans tend to have stronger ties to family, friends, and relatives in their native lands which results in smaller local social support system and fewer available local resources. Furthermore, Deng and colleagues (2010) suggest that acculturation moderates the relationship between stress due to perceived discrimination and psychological outcomes because highly Western oriented Asian Americans are more likely to be perceived as Americanized and therefore less discriminated against. They also suggest that lower acculturated individuals tend to view their ethnic group as favorable. When they face discrimination, strong cognitive dissonance arises due to the discrepancies between their own beliefs and others' actions, which in turn places the individual at increased risk for adjustment problems.

The current review of the literature on acculturation and psychological distress among Asians and Asian Americans suggests that higher the acculturation level, the lower the psychological distress (Hwang & Ting, 2008; Park, 2009; Virta & Westin, 1999; Wilton & Constantine, 2003). Studies have also shown the inverse relationship between acculturation and PTSD (Chen et al., 2007; Norris et al., 2009; Lee et al., 2009). Studies also support a moderating effect of acculturation on the relationship between stress and psychological outcomes (Deng et al., 2010; Ngo et al., 2000). However, the effects of acculturation in Asian Americans on psychological outcomes following mass shootings are yet to be examined. Hence, the current study will attempt to address this shortcoming in the trauma and acculturation literature. For the purpose of the study, Asian American students who identify themselves as American citizens will be classified as having high acculturation, while Asian students who identified themselves as foreign nationals will be classified as having low acculturation. This classification is supported by previous research on acculturation which suggests that Asian Americans who are U.S. nationals tend to be more acculturated than Asians who are foreign nationals (Tsai & Pike, 2000). Although various factors such as length of stay (Wilton & Constantine, 2003) can have an effect on the acculturation level of Asian American and international Asian students, information regarding such factors in the current sample are unavailable, and hence will not be looked at in the present study.

1.6 Parental Overprotection and Psychological Outcomes in Collectivistic Asian Cultures

Many Asian cultures are collectivistic and highlight a connectedness of human beings that is inextricable, as opposed to individualistic cultures that emphasize independence from others. Collectivistic cultural values emphasizing close relationship and strong family ties can influence how individuals in those cultures cope with stress. The behaviors, emotions, thoughts,

and motivation of interdependent selves are seen as closely embedded with close relations and family. Collectivistic Asian cultures also see it as the family's responsibility to take care of each other (Yeh & Wang, 2000). Furthermore, in collectivistic cultures, problems are shared by the family as a whole rather than owned by specific individuals and hence seeking help from a stranger such as a psychologist may be perceived as inappropriate (Markus & Kitayama, 1991).

Collectivistic cultures emphasize interdependence on the family. The close relationship between parents and children in Asian societies is culturally accepted, more so than in Western societies. The primary identity of the Asian is as part of the family and seeking a definition of self is constrained by elaborate system of family rules and obligations (Huang, 1997; Tang, 1992). Studies have consistently found that parents in collectivistic Asian societies, in keeping with the tradition of interdependence, use an authoritarian parenting style much more than authoritative parenting or permissive parenting (Inman, Howard, Beaumont, & Walker, 2007; Keshavarz & Baharudin, 2009; Park et al., 2010). Authoritarian parenting is characterized by high control and demand, low warmth, and low independence of children's behavior, while authoritative parenting is characterized as warm, responsive, and demanding but involved, and permissive parenting is characterized by high warmth and responsiveness but low control and demand (Baumrind, 1991). Although many Asian American parents are becoming more aware of their children's need for emotional independence and autonomy, other Asian American parents still maintain the traditional notion of parental discipline and control of children (Lowinger & Kwok, 2001). Overprotective parenting is generally accepted in traditional Asian cultures, but such overprotective parenting is found to be deleterious to the development of Asian children and adolescents growing up in modern societies, both in the West, and in Asia (Greenberger, Chen, Tally, & Dong, 2000; Lowinger & Kwok, 2001). Excessive parental

overprotection could be a salient etiological factor in parent child conflict and child psychopathology in Asian American children (Lowinger & Kwok, 2001).

Parental overprotection, regardless of culture, has been associated with several psychological symptomologies. Although only limited research has been done in this field, some consistent and significant findings suggest that parental overprotection can lead to low social adjustment (Nelson et al., 2006), depression (Martin, Bergen, Roeger, & Allison, 2004), somatic symptoms (Janssens, Oldehinkel, & Rosmalen, 2009), and various externalizing disorders (Enns, Cox, & Clara, 2002). In Nelson et al.'s (2006) study with mothers of preschool-age children from mainland China, maternal overprotection was seen to be positively related to reticent and solitary-passive behaviors and negatively related to modest behavior for girls. Martin and colleagues (2004) observed that maternal overprotection makes strong and independent contributions to moderate and serious levels of depressive symptomology, even after controlling for sex and effects of disrupted family structures. Maternal overprotection was also associated with an increased risk of externalizing disorders, specifically substance abuse disorder and antisocial personality disorder in Enns and colleagues' (2002) study from the US National Comorbidity Survey. Maternal overprotection was seen to be a predictor of the development of Functional Somatic Symptoms in young adolescent girls, whereas paternal overprotection was seen to be a predictor of the development of those symptoms in boys in Jannsens and colleagues' (2009) prospective cohort study with 2,230 Dutch adolescents.

Although studies have shown that higher levels of parental support are associated with lower levels of PTSD following traumatic events (La Greca et al., 1996), parental overprotectiveness and infantalization of children and adolescents have been found to have the opposite effect on PTSD symptoms (Bokszczanin, 2008; McFarlane, 1987). McFarlane's classic

study looked at family functioning and overprotection following bushfires in South Australia. He observed that parental overprotectiveness was associated with the development of PTSD symptoms in children. Bokszczanin (2008) found that in a sample of adolescents 28 months after a huge flood in Poland, higher levels of parental overprotectiveness as perceived by adolescents were associated with more PTSD symptoms. In the study, parental overprotectiveness was found to be a disaster-stress moderator. Excessive parental control in combination with higher levels of exposure predicted the highest levels of PTSD symptoms among the adolescent victims of disaster. In summary, the current literature on the effects of parental overprotectiveness on PTSD is very limited and progress in this area is important in understanding the effects different parenting approaches can have on the PTSD symptomology following a traumatic event.

Although the current field of research on parental overprotection and its role in trauma and psychological outcomes is sparse, some studies have shown a moderational role of authoritarian parenting style in general on risk factors and outcomes. Yeates et al. (2010) found that among children with traumatic brain injury (TBI), those whose parents reported higher levels of authoritarian parenting had more pronounced effects of TBI on maladjustment. Furthermore, the results from this study suggested that authoritarian parenting may suppress behavior problems initially following TBI, but may exacerbate problems over time. Yeates and colleagues (2010) suggest that the moderating effect of parenting style might be due to the effect that parenting can have on the home environment, with authoritarian parenting allowing limited stimulation that could potentially help lessen the effects of brain injuries. Dorius, Bahr, Hoffmann, and Harmon (2004) found a moderating role of parenting practices in the relationship between peer drug use and adolescent marijuana use. Furthermore, Cook (2010) found that

authoritarian and permissive parenting style acted as a moderator between the relationship between maternal trauma and child depression. The study found that mothers experiencing high levels of trauma symptoms who parent with high authoritarian and low permissive behaviors had children who experience more depression.

Various explanations as to why parental overprotection has such significant effects on children and adolescent mental health have been posed by several authors. Bokszczanin (2008) suggests that parental overprotection increases interpersonal negativity in the family, which are losses in social support resources that determine adolescents' experiences of stress. Lowinger and Kwok (2001) suggest that parental overprotection lowers the child's autonomy and independence, and their ability to develop and express their own feelings. A child with overprotective parents is thus likely to be low in assertiveness and high in internalizing problems, causing their emotions to be displaced. Furthermore, Lowinger and Kwok also suggest that parental overprotection can lead children and adolescents to feel distant from their parents, decreasing the adolescent's sense of being loved and of available social support. Nelson and colleagues (2006) report that parents might respond to perceived stress in their children with intrusive or overprotective behaviors which rather than help the children might actually exacerbate the problem by not allowing the children to develop regulatory and coping skills to deal with such problems.

The current research literature on parenting style and psychological outcomes suggest that authoritarian parenting and parental overprotection have deleterious effects on child and adolescent mental health (Janssens et al., 2009; Lowinger & Kwok, 2001; Martin et al., 2004; Nelson et al., 2006). Some studies also show that parental overprotectiveness and infantalization of children and adolescents have negative outcomes related to PTSD symptoms (Bokszczanin,

2008; McFarlane, 1987). Although studies suggest that Asian parents tend to use authoritarian and overprotective parenting style more often than other parenting styles (Inman et al., 2007; Keshavarz & Baharudin, 2009; Lowinger & Kwok, 2001; Park et al., 2010), studies looking at the effects of such parenting style on children and adolescents of this minority group seem to be lacking. Studies also show that parenting style can serve as a moderator between risk factors and psychological outcomes (Bokszczanin, 2008; Cook, 2010; Dorius et al., 2004; Yeats et al., 2010), but studies looking at the moderating effects of parenting behaviors in the relationship between college students' exposure to mass violence and psychological outcomes seem to be lacking. The current study will attempt to add to the parenting behavior and trauma literature by looking at the effects of perceived parental overprotection on posttraumatic and anxiety-mood symptoms following exposure to a mass school shooting among Asian and Asian American college students.

Although some studies have shown that Asian and Asian American parents' acculturation level to the U.S. can have an effect on the parenting style they use, which can eventually have an effect on youth distress (Lim, Yeh, Liang, Lau, & McCabe, 2009; Park et al., 2010), studies looking at the interaction of the youth's acculturation and perceived parental overprotection appear to be lacking. Due to the lack of sufficient research regarding the relationship between youths' acculturation and perceived overprotection, this matter is beyond the scope of the current study and will not be explored.

1.7 Rationale for Thesis

Although the relationship among exposure, acculturation, parental overprotection, and mental health outcomes has been examined across several studies, only a handful have looked at these factors in college students following a traumatic event. Given the associations among

exposure, acculturation, parental overprotection and Asian adolescent mental health, the current project will attempt to further explain these relationships within the context of shootings where Asian and Asian American college students were involved. The study aims to understand the following relationships:

1. It is hypothesized that the higher the exposure to the shootings, the greater the level of posttraumatic stress and anxiety-mood disorders. This hypothesis will test the dose-response relationship between trauma exposure and outcomes.
2. It is hypothesized that acculturation, as measured by nationality status, will be negatively correlated with psychological outcomes. That is, the higher the acculturation, the lower the level of reported posttraumatic stress and anxiety-mood disorders.
3. The study also intends to test for acculturation as a moderator between exposure and psychological outcomes. It is expected that, given the results in Hypothesis 1 testing the dose-response model, the association of higher exposure to greater posttraumatic stress and anxiety-mood disorders will be stronger for respondents who are less acculturated than for respondents who are more acculturated.
4. Parental overprotection will be positively correlated with negative psychological outcomes. Students who perceive their parents as being overprotective will exhibit higher levels of posttraumatic stress and anxiety-mood disorders.
5. The study also intends to test for a possible moderating effect of parental overprotection on the relationship between exposure and psychological outcomes. It is expected that, given the results in Hypothesis 1 testing the dose-response model, the association of higher exposure to greater posttraumatic stress and anxiety-mood disorders will be

stronger for respondents who report higher perceived parental overprotection than for respondents who report lesser perceived parental overprotection.

2. Method

2.1 Participants and Procedure

Participants of the current study were taken from a larger dataset of 4639 survivors of the April 16th shootings at Virginia Tech (Hughes et al., 2011). The baseline target sample for the larger study was all VT students enrolled at the Blacksburg campus on April 16, 2007. Three months after the shootings, on July 10, an online email survey was administered by the VT Center for Survey Research. The three month period allowed sufficient time for normal short-term symptoms of distress to subside. An advance email notifying all potential respondents about the survey, encouraging them to participate, and assuring them that the survey would be confidential preceded the survey email. Consent information, which had to be completed in order for the respondent to be administered the rest of the survey, was included in the first section of the survey. Respondents who indicated that they did not want to participate were not contacted further, while the non-respondents were sent reminder emails until August 19. At the close of the survey, 20% of the target sample of 23,214 students had completed the survey, .1% refused, and 79.9% provided no response.

A non-response survey was conducted to create weights to compensate for non-response. A random sample 1093 students non-respondents was selected for a brief telephone non-respondent survey beginning in September and continuing into October 2007. The survey included a small subset of the questions from the main survey in order to determine how much the non-respondents differed from the respondents on trauma exposure and selected emotional reactions. Of the target 1093 non-respondents, only 574 were interviewed, leading to an overall response rate of 57.8% and weighted response rate of 66.2%. The non-response telephone interview sample was weighted so that it had the same distribution on gender, year in school, and

race/ethnicity as did the entire sample of 1000 non-respondents in the sample. The non-response data, including the weight, were merged with the online survey data. A factor was then added to the weight for the non-respondent sample so the overall weight would be 18,575, the number of students in the sampling frame who did not respond to the online survey. A number of logistic regression analyses were conducted using variables common to the non-respondent telephone interview and the online survey to predict being a non-respondent or a respondent. The findings suggest that the non-respondents and the respondents were similar overall. A final weight was then created to adjust for non-response. A factor was then added to the weight to correct for sampling error that occurred in the selection of the random sample of 1000 non-respondents. When the final online sample is weighted, the distributions on gender, race/ethnicity, and school year are identical to those of the sampling frame used for the main online survey. The same variables that predicted participation in the online study for targets also predicted participation in the online study for the Asians. The sizes of the coefficients were not the same for Asians as for everyone else, but the pattern was similar. Hence, the weight used for the entire online sample is appropriate for use for Asians only.

Nationality information about the respondents was not included in the original online survey and was obtained through the Office of Institutional Research via the Center for Survey Research. The Center for Survey Research obtained the nationality information for all of the survey respondents from the Office of Institutional Research using the respondents' Virginia Tech identification numbers. The Center for Survey Research then connected the nationality information to the respondent IDs, stripped off the VT PID and other identifying information, and sent it to the researcher, who merged the acquired data with the data from the online survey. 331 respondents of the online survey indicated Asian as their race. Of these 331 respondents, 20

also selected another race from the options provided while further racial information about 33 respondents was not available. Data on other variables on 24 respondents were not available. For the purpose of this study, those 77 respondents (20 biracial, 33 unreported race, and 24 non-respondents) were not included, leaving the total number of respondents as 254.

2.2 Power Analysis

G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009) for power analysis was used to estimate the effect size likely to be observed at alpha = .05 and power = .8 with 254 participants in a logistic regression model taking into consideration the estimates of likelihood that a person would be exposed to trauma, the likelihood of having posttraumatic stress, as well as covariates that may be present based on the results of the study by Hughes et al. (2011). The analysis found an odds ratio of 2.3, suggesting adequate effect size.

2.3 Measures

An online survey questionnaire primarily based on questionnaires used in previous trauma studies as well as insights gleaned from preliminary focus group interviews with a small number of VT students and employees was administered to the participants.

2.3.1 Mental disorders. Given the special importance of Posttraumatic Stress Disorder (PTSD) in trauma situations, a PTSD screening scale was included in the survey. This scale is based on the Trauma Screening Questionnaire (TSQ, Brewin et al., 2002), a validated screen for PTSD that was used in a study of survivors of Hurricane Katrina (Kessler, Galea, Jones, & Parker, 2006). The Hurricane Katrina version of the TSQ uses dimensional response options as opposed to the yes-no response format of the original. It is also based on a two-week recall period. A clinical reappraisal study indicated that the diagnoses based on the TSQ used in the

Hurricane Katrina sample had excellent concordance with diagnoses based on DSM-IV PTSD, with sensitivity of .89, specificity of .93 (Brewin, 2005).

The PTSD screening measure used in this study contained 13 items- three reexperiencing items, five avoidance/numbing items, three hyperarousal items, and two distress/impairment items. Respondents who reported 4-5 days a week or more often for at least one reexperiencing symptom, at least two avoidance/numbing symptoms, and at least one hyperarousal symptom, and "a lot' or "extremely" for at least one distress/impairment symptom were categorized as "high posttraumatic stress". All other respondents were classified as "non-case".

The survey also included the K6 scale of nonspecific psychological distress (Kessler et al., 2003) to screen for DSM-IV anxiety-mood disorders. The K6 contains six items addressing anxiety-mood symptoms, each rated on a scale of 0 to 4, 0 being "none" and 4 being "all". Total scores were obtained by summing the six responses. Scores on the K6 range from 0 to 24, with scores of 13 to 24 classified as probable serious mental illness (SMI), scores of 8 to 12 classified as probable mild/moderate mental illness (MMI), and scores of 0 to 7 classified as noncases. A clinical reappraisal study of the three K6 categories with the Structured Clinical Interview for DSM-IV (SCID) suggested that the K6 has excellent psychometric properties with sensitivity of 1.0 for SMI classification, .90 for MMI classification, and 1.0 for either SMI or MMI classification and specificity of 1.0 (First, Spitzer, Gibbon, & Williams, 2002). In the study, 5 respondents were selected randomly from each of the three K6 categories. The results confirmed the K6 classification for 14 of the 15 respondents, with the exception being a SMI classification by K6 but MMI classification by the SCID based on the global assessment of functioning (GAF) score. For the purpose of this study, the respondents in the SMI and the MMI categories were

combined to form “SMI/MMI” group, and all other respondents will be classified as “Non-cases”.

2.3.2 Exposure to the events of April 16, 2007. The VT shooting incident included the first shooting in the residence hall, the lockdown period, the second shooting incident in Norris Hall, and the post-shooting period of uncertainty, making it a very complex trauma with several major components. A chronological set of questions regarding where the students were and what happened to them during each phase of the crisis period was included in the online survey to tap into these difference exposures. Five dimensions of exposure to the April 16, 2007 events are examined: awareness of the events as they were unfolding, close proximity to the events, exposure to potentially traumatizing features of the events, indirect exposure, and exposure to loss. For awareness, proximity, and trauma, separate measures for the first shooting at Ambler-Johnston Hall and second shootings at Norris Hall are included. A total of 18 component stressors were used to measure these dimensions. A study by Hughes et al. (2011) with all the respondents of the online survey found that six of the 18 exposure components were significant predictors of posttraumatic stress. A total of 13 items in the survey were used in measuring those six components. For the purpose of this study, these 13 items from the six components were used as indicators for exposure. Each of these items was coded 0 for “yes” and 1 for “no”. The responses were then added to form an exposure scale with values ranging from 0 to 13.

2.3.3 Acculturation. Acculturation to the U.S. culture was assessed using the nationality information of the respondents. As the original online survey did not include a measure for acculturation and administration of such a measure was not possible for the purpose of this study, nationality information will be used as a measure of high and low acculturation. As indicated above, respondents with U.S. citizenship will be classified as the high acculturation group and

those with foreign citizenship will be classified as the low acculturation group. Of the 254 respondents included in this study, 153 were identified as Asian with U.S. citizenship, while 101 were identified as Non-resident Alien Asians, meaning they were of foreign nationality. For the purpose of this study, the 153 American citizens were considered as higher acculturated, and the 101 foreign citizens were considered lower acculturated.

2.3.4 Parental overprotection. Four items addressing parental concerns and protective behaviors towards the respondents were included in the original online survey. The responses from each of the items were recorded in a five-point Likert scale ranging from "not at all" to "extremely". A Maximum Likelihood Factor Analysis showed that the four items load onto the same factor, with 45.93% of variance accounted by the factor. A Scree plot from the analysis also indicated a one-factor solution with a chi square value of 4.565 which was non-significant, indicating that a one factor solution is sufficient. Cronbach's coefficient alpha was used to assess internal consistencies for the measure and was found to be .738. Based on the factor scores and variance explained by each item, the item "been overprotective" was the most important. This item also had the most face validity regarding measurement of parental overprotection. The other three items had validity issues and might not have been appropriate measures of parental overprotection. Hence, for the purpose of this study, only the item "been overprotective" was used as a measure for parental overprotection. Respondents who answered either "a lot" or "extremely" on this item were categorized as experiencing high overprotection, whereas all other respondents were classified as experiencing low overprotection.

3. Results

Preliminary statistical analyses were run on all the variables to obtain their frequencies. On the posttraumatic stress symptoms scale, 15 (5.9%) of respondents were classified as high posttraumatic stress whereas 239 (94.1%) respondents were classified as non-cases. On the K6, 77 (26%) respondents were classified as SMI/MMI group while 188 (74%) were classified as non-cases on. The low number of high posttraumatic stress and SMI/MMI cases indicated that the dichotomization of these variables might not be suitable for logistical analyses. Furthermore, the scales are meant for estimation and screening of mental disorders and were not designed for diagnostic purposes. The current study is intended to increase understanding of the impact of the mentioned independent variables on the level of posttraumatic stress and anxiety-mood symptoms rather than to predict diagnostic caseness. Justification to examine posttraumatic stress and anxiety-mood symptoms as continuous variables follows.

Several studies that have looked at the level of posttraumatic stress have used validated continuous scales such as the Clinician Administered PTSD Scale (CAPS, Black et al., 1990; Ifergane et al., 2009), PTSD CheckList (PCL, Weathers, Litz, Herman, Huska, & Keane, 1993; Hines & Douglas, 2011), and the Impact of Events Scale-Revised (IES, Weiss & Marmar, 1997; Polusny et al., 2011). Furthermore, some studies have also used the K6 as a continuous scale to assess the level of anxiety-mood symptoms in addition to assessing the likely presence of SMI and MMI (Swartz, 2007; Swartz & Lurigio, 2006). Given the use of these continuous measures in previous studies and the purpose of the current study, the posttraumatic stress scale and the K6 were used as continuous scales. The dichotomized scores from the posttraumatic stress scale and the K6 were only used to estimate the prevalence rates of PTSD and anxiety-mood disorders respectively.

For the purpose of the study, continuous scales for both outcome variables were created by adding the reported scores on each of the items in the respective scales. For posttraumatic stress, which was assessed using 13 items each rated on a scale of 1 to 5, 1 being "never" and 5 being "just about everyday," a Posttraumatic Stress Scale ranging from 13 to 65 was created. For anxiety-mood disorders, which was assessed using six items each rated on a scale of 0 to 4, 0 being "none" and 4 being "all," a Anxiety-Mood Symptoms Scale ranging from 0 to 24 was created.

3.1 Measures Description

A summary of all demographic variables is presented with their means and standard deviations (see Table 1). Frequencies, means, standard deviations, and internal consistency coefficients obtained for each measure used in this study are also presented (see Table 2). Each of the measures, except the exposure scale (alpha = .40), had acceptable internal consistency coefficients. The exposure scale for the current project was based upon the findings of Hughes et al. (2011) and includes assessment of exposure to the shootings, inability to contact friends, death of someone close or friend, and injury of someone close or someone distant. The low internal consistency coefficient for this scale is likely due to the complexity of the types of exposure included in the scale. The scale consisted of six different types of trauma which could have been differentially experienced by the respondents. Most studies assessing the level of exposure following traumatic events have generally found some degree of inconsistency regardless of the type of trauma being assessed or how broadly or narrowly the event is defined (Weathers & Keane, 2007). Weathers and Keane (2007) report that there can be a number of understandable reasons for the inconsistency in reports of exposure such as ambiguity in the wording of items, differences in subjective exposure, temporary factors such as fatigue and

distraction, etc. Due to the difficulties in assessing exposure level and high inconsistency in existing exposure measures, the current exposure scale will be used as the best available estimate of the level of exposure among the participants following the April 16 shootings.

3.2 Relationships among Variables

Correlations were calculated among scores of the exposure, overprotection, acculturation, posttraumatic stress and anxiety-mood symptoms measures, as well as demographic factors (see Table 3). Among the demographic variables, age was significantly related to all other variables, indicating that younger respondents reported higher levels of exposure (r = -.268, p <.01), posttraumatic stress (r = -.113, p <.05), anxiety-mood symptoms (r = -.135, p <.05), overprotection (r = -.114, p <.05), being U.S.-born Asians (r = -.714, p <.01). Gender and age were also significantly correlated with each other (r = -.124, p <.05), indicating that female respondents tended to be younger and male respondents tended to be older. No other significant correlations among demographic variables were found.

Exposure was significantly correlated with posttraumatic stress (r = .210, p <.01), overprotection (r = .125, p <.05), and acculturation (r = .236, p <.01), indicating that respondents who reported higher level of exposure also reported higher level of posttraumatic stress, overprotection, and being U.S.-born. Overprotection was significantly correlated with both posttraumatic stress (r = .336, p <.01), and anxiety-mood symptoms (r = .246, p <.01), indicating that respondents who reported overprotection also reported higher levels of posttraumatic stress and anxiety-mood symptoms. Acculturation was significantly correlated with overprotection (r = .149, p <.01), indicating that U.S.-born Asians reported higher exposure and overprotection.

3.3 Prediction of Posttraumatic Stress and Anxiety-Mood Symptoms

Hierarchical weighted least square regression analyses were conducted to explore exposure, overprotection, and acculturation as potential predictors of posttraumatic stress and anxiety-mood symptoms. In each of these analyses, gender and age were entered first into the regression to control for their effects, followed by the predictor. Before conducting the analyses exposure and age were centered to eliminate problematic multicollinearity effects between first-order terms and the higher order terms (Holmbeck, 1997).

The first regression analysis tested the relationship between exposure and posttraumatic stress (controlling for the effects of gender and age). The model indicated a significant relationship between exposure and posttraumatic stress, $B = 1.51$, $p = .025$ (see Table 8). Exposure and the covariates collectively accounted for 5.28% of the variance in posttraumatic stress, $R^2 = .053$, $F(3, 251) = 4.34$, $p = .005$.

The second hierarchical regression analysis tested the relationship between exposure and anxiety-mood symptoms (controlling for the effects of gender and age). The model did not indicate a significant relationship between exposure and anxiety-mood symptoms, $B = .13$, $p = .618$ (see Table 9).

The relationship between parental overprotection and posttraumatic stress (controlling for the effects of gender and age) was tested by the third hierarchical regression analysis. The model indicated a significant relationship between parental overprotection and posttraumatic stress, $B = 13.24$, $p = .005$ (see Table 4). Overprotection and the covariates collectively accounted for 12.4% of the variance in posttraumatic stress, $R^2 = .124$, $F(3, 251) = 5.22$, $p = .001$.

The fourth hierarchical regression analysis tested the relationship between parental overprotection and anxiety-mood symptoms (controlling for the effects of gender and age). The

model indicated a significant relationship between parental overprotection and anxiety-mood symptoms, $B = 3.97$, $p = .002$ (See Table 5). Overprotection and the covariates accounted for 7.99% of the variance in anxiety-mood symptoms, $R^2 = .079$, $F(3, 251) = 5.18$, $p = .007$.

The relationship between acculturation and posttraumatic stress (controlling for the effects of gender and age) was tested by the fifth hierarchical regression analysis. The model did not indicate a significant relationship between acculturation and posttraumatic stress, $B = .366$, $p = .901$ (see Table 6).

Finally, the sixth hierarchical regression analysis tested the relationship between acculturation and anxiety-mood symptoms (controlling for the effect of gender and age). The model did not indicate a significant path between acculturation and anxiety-mood symptoms, $B = .121$, $p = .925$ (see Table 7).

3.4 Moderator Model Tests

Four separate hierarchical weighted least square regression analyses were conducted to test the hypothesized moderating role of parental overprotection and acculturation. Specifically, the potential moderating role of each of these variables on the relationship between exposure and posttraumatic stress and the relationship between exposure and anxiety-mood symptoms were examined. Before conducting the analyses, exposure and age were centered to eliminate problematic multicollinearity effects between first-order terms and the higher order terms (Holmbeck, 1997). Each of these analyses included four steps. In the first step gender and age were entered to control for their effects. In the second step, exposure was entered. The proposed moderator (i.e., overprotection or acculturation) was entered in step three. The last step consisted of entering the interaction variable (i.e., exposure X overprotection). A moderation effect is present if the interaction term is found to be a significant predictor of posttraumatic

stress or anxiety-mood symptoms when the main effects have been included in the model (Aiken & West, 1991).

In the model examining the moderational role of overprotection on the relationship between exposure and posttraumatic stress (see Table 8), exposure was found to predict a significant proportion of variance in posttraumatic stress, $B = 1.53$, $p = .002$. Overprotection significantly predicted posttraumatic stress, $B = 13.38$, $p = .002$, indicating that those who experience a high level of overprotection have higher levels of posttraumatic stress. The interaction term of exposure X overprotection was not significant, suggesting that overprotection is not a moderator between exposure and posttraumatic stress, $B = -2.53$, $p = .333$. The full model accounted for 15.58% of the variance in posttraumatic stress, $R^2 = .156$, $F(5, 249) = 6.3$, $p < .001$.

In the model examining the moderational role of overprotection on the relationship between exposure and anxiety-mood symptoms (see Table 9), overprotection emerged as a significant predictor of anxiety-mood symptoms, $B = 4.43$, $p < .001$, indicating that those who experience high level of overprotection have the highest levels of anxiety-mood symptoms. Exposure, however, did not emerge as significant predictor of anxiety-mood symptoms in this model. The interaction term of exposure X overprotection was significant, suggesting that overprotection is a moderator between exposure and anxiety-mood symptoms, $B = -1.66$, $p = .037$. The full model accounted for 10.19% of the variance in anxiety-mood symptoms, $R^2 = .102$, $F(5, 249) = 4.45$, $p < .001$. Post-hoc probing of the interaction revealed that the slope was not significant for low overprotection ($p > .05$) but was significant for high overprotection ($p < .05$) (see Figure 1).

In the model examining the moderational role of acculturation on the relationship between exposure and posttraumatic stress (see Table 10), exposure was again found to contribute a significant proportion of variance in posttraumatic stress, $B = 1.79$, $p = .019$, indicating that those who experience the highest level of exposure have the highest level of posttraumatic stress. Acculturation, however, did not emerge as significant predictors of posttraumatic stress in this model. The interaction term of exposure X acculturation was not found to be significant suggesting that acculturation is not a moderator between exposure and posttraumatic stress, $B = -.44$, $p = .688$. The full model accounted for 5.34% of the variance in posttraumatic stress, $R^2 = .053$, $F(5, 249) = 3.10$, $p = .009$.

In the model examining the moderational role of acculturation on the relationship between exposure and anxiety-mood symptoms (see Table 11), exposure and acculturation did not emerge as significant predictors of anxiety-mood symptoms. The interaction term of exposure X acculturation was not found to be significant suggesting that acculturation is not a moderator between exposure and anxiety-mood symptoms, $B = .053$, $p = .914$. The full model accounted for 2.8% of the variance in anxiety-mood symptoms, $R^2 = .028$, $F(5, 249) = 1.49$, $p = .192$.

4. Discussion

4.1 Summary of Findings

This study aimed to determine whether the level of exposure to the April 16th, 2007 shootings at Virginia Tech significantly predicted subsequent post-traumatic stress symptoms and anxiety-mood symptoms in Asian and Asian American students. Second, it aimed to assess acculturation and parental overprotection in terms of their abilities to predict post-traumatic stress symptoms and anxiety-mood symptoms. Building on the findings of previous studies looking at exposure, acculturation, parental overprotection, and psychological outcomes, it was hypothesized that higher level of exposure, lower acculturation, and higher level of parental overprotection would predict higher level of posttraumatic stress and anxiety-mood symptoms.

The demographic control variable age was found to be highly correlated with acculturation and exposure, indicating that younger respondents reported higher levels of exposure and tended to be foreign-born. The demographic control variable of gender was not found to be significantly correlated with the other variables. Exposure was found to significantly predict posttraumatic stress but not anxiety-mood symptoms. Overprotection, but not acculturation, was found to significantly predict both posttraumatic symptoms and anxiety-mood symptoms.

Additionally, this study aimed to test the moderational roles of acculturation and parental overprotection in the relationship between exposure and psychological distress. Overprotection was found to moderate the relationship between exposure and anxiety-mood symptoms but not the relationship between exposure and posttraumatic stress. Acculturation did not interact with exposure significantly in the prediction of posttraumatic stress and anxiety-mood symptoms.

4.2 Influences of Demographic Variables

The relationship between the demographic variables gender and age and the other variables were examined in the current study. Gender was not found to be significantly correlated with posttraumatic stress and anxiety-mood symptoms. The finding contradicts previous research on psychological functioning following traumatic events which have found female gender to be associated with higher levels of distress (Blain, Galovski, & Robinson, 2010; Galea et al., 2007). However, a study by Kessler et al. (2008), which also used the K6 for assessing anxiety-mood disorders and a TSQ-based scale for PTSD screening, did not find significant relationship between gender and psychological distress following Hurricane Katrina. While this finding in Kessler and colleagues' study may be due to the magnitude of the hurricane's overall impact, in the current study it is likely due to factors such as peritrauamtic experience and use of social support. While these factors have been proposed as possible mechanisms for the gender differences in posttraumatic outcomes (Irish et al., 2010; Swickert, & Hittner, 2009), they may have been experienced equally across males and females during the shootings.

The study also found age to be highly correlated with acculturation and exposure. These findings indicate that younger respondents tended to be U.S born and more exposed to the traumatic events, which are consistent with the Virginia Tech student demographics. The majority of the Asian American students at Virginia Tech are undergraduates whereas the majority of foreign born Asians are graduate students. The first shooting took place in an undergraduate residential building and the second took place in an academic building. Given that the undergraduate population at Virginia Tech is larger than the graduate population, it is likely that undergraduates, who tend to be younger, were exposed to the traumatic events and

their immediate aftermath than the older graduate students. However, age was not found to significantly predict posttraumatic stress and anxiety-mood symptoms. This finding is inconsistent with previous research on the impact of age on psychological stress following traumatic events (Acierno et al., 2000; Norris, 1992) which have found younger survivors of trauma to have higher levels of psychological distress.

4.3 Influences of Exposure, Overprotection, and Acculturation

In order to examine the relationship between exposure and psychological distress, the first hypothesis of the current project stated that higher the exposure to the shootings, the greater the level of posttraumatic stress and anxiety-mood symptoms will be. This hypothesis with respect to posttraumatic stress was supported by the data. This finding demonstrates the effect being exposed to traumatic events has on reexperiencing, avoidance, numbing, and hyperarousal and supports the existing literature on the dose-response model of posttraumatic symptoms (Brymer, 2007; Hoven et al. 2005; Goenjian et al., 2005). The hypothesis stating that higher level of exposure would predict higher level of anxiety-mood disorder was not support by the data. This finding is inconsistent with the existing literature supporting the dose-response model of psychological distress following traumatic events (Brymer, 2007; Hoven et al. 2005; Goenjian et al., 2005). It is likely that significant influence of exposure on anxiety-mood symptoms were not observed for two possible reasons, the characteristics of the exposure measure and the nature of the trauma and its aftermath.

As mentioned in previous sections, assessing the level of exposure following a traumatic event can be problematic (Weathers & Keane, 2007). The internal consistency coefficient of the exposure scale used in the current study is low, which suggests difficulty in measuring the types and levels of exposure experienced by the respondents. The exposure scale used might not have

sufficiently captured the complexities of this event and its aftermath. That is, rather than assessing unique types of exposures separately, the current study looked at a composite of such exposure types. Contrarily, Brymer (2007) examined two unique features of exposure namely, objective exposure (i.e., location, initial behavioral response, level of life threat, level of exposure to grotesque scenes) and subjective exposure (i.e., fear for self and others, anger, being upset about one's actions courage). Media exposure and relationship to the deceased and injured were also included. It was found that the subjective features of exposure made significant contributions to psychological outcomes over and above the effect of objective exposure. Conversely, the current study simply grouped several types of exposures (i.e., location, inability to contact friends, loss and injury of close ones) into a single scale, which may not have successfully captured the full dose of exposure in regards to anxiety-mood symptoms.

With regard to the second explanation, the nature of the event, the sense of community and development of social networks on campus following the disaster (Ryan & Hawdon, 2008) may have served as important protective factors. Following the April 16 shootings, several displays of solidarity occurred including a convocation to honor the victims, a candlelight vigil held the day after the shootings, and a picnic on the Drill Field. Mass displays of solidarity may have been shown to generate collective sentiments which serve as key factors in the re-establishment of normalcy and recovery following community tragedies (Turkel, 2002). Similar findings regarding solidarity have been reported in communities following terrorist attacks (Collins, 2004) and natural disasters (Carroll, 2006). The shared solidarity and sense of community in the aftermath of the shootings possibly mitigated the degree of depression and anxiety that often erupts following traumatic events. Indeed, the positive impact of these types

of social support on depression has been documented in several studies (Dingfelder, Jaffee, & Mandell, 2010; Peirce, Frone, Russell, Cooper, & Mudar, 2000).

Additionally, the Virginia Tech community acted promptly and appropriately to the immediate aftermath of the shootings by developing and implementing post-disaster intervention and prevention programs. Steps such as the coordination and development of services and continued coordination and maintenance of public health/prevention strategies at the university and surrounding communities were employed. For example, mental health professionals attended select classes during the first day of classes following the shootings. Information was shared with students and faculty about reactions to trauma, coping strategies, and the location of sites where assistance could be obtained. Similar steps leading to positive results were implemented in the post-disaster intervention and prevention programs after the Santana school shootings (Pynoos, Steinberg, Schreiber, & Brymer, 2006) and Columbine High School tragedy (Weintraub, Hall, & Pynoos, 2001). These early intervention and prevention initiatives used at Virginia Tech might have well mitigated the impact of the traumatic event on anxiety-mood symptoms.

It is possible that exposure was found to predict posttraumatic stress but not anxiety-mood symptoms due to the difference in these two outcomes. Posttraumatic stress symptoms are directly related to the traumatic experience itself, whereas the anxiety-mood symptoms are functions of the experience and its aftermath. It is likely that the sense of community and solidarity and the intervention programs provided by the university mitigated the impact of the exposure on anxiety-mood symptoms via social support, but were unable to have the same effect on posttraumatic symptoms which are more affected by the exposure rather than the aftermath.

Further research on the differential impact of exposure and subsequent social support on posttraumatic stress and anxiety-mood symptoms is needed to understand these findings fully.

Despite the differential findings regarding the impact of exposure on the outcomes, the study found relatively low rates of both posttraumatic stress (5.9%) and anxiety-mood symptoms (26%). A possible explanation for the low rates of psychological distress may be the underreporting of symptoms by the Asian students. Studies with Asian samples have consistently shown that these individuals tend to underreport their symptoms due to fear of stigmatization and collectivistic thinking of not talking about mental disorders outside of the immediate family environment (Inman & Yeh, 2007; Loya, Reddy, & Hinshaw, 2010; Wong, Kim & Tran, 2010). Alternately, the demographic characteristics of the respondents may have also played a role. That is, the Asian students at Virginia Tech traditionally come from medium to high SES families and have high GPAs. Previous studies on the impact of trauma on mental health have found that SES and high educational achievement can serve as protective factors and help build resilience against psychological distress (Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Hobfoll et al. 2008). It is likely that these general characteristics of the current sample influenced the amount of psychological distress the respondents experienced.

The second hypothesis stated that acculturation would have an inverse relationship with posttraumatic stress and anxiety-mood disorder symptoms. The findings do not support this hypothesis. Acculturation, as classified by nationality status, did not significantly predict either posttraumatic stress or anxiety-mood symptoms.

As noted in the measures section, the current study used nationality as a proxy for acculturation. Studies that have found a significant relationship between acculturation and psychological distress used more precise measures of acculturation such as the Suinn-Lew Self-

Identity Acculturation Scale (Sl-ASIA; Suinn et al., 1987; Tsai and Pike, 2000; Yeh, 2003) and the Cultural Adjustment Difficulties Checklist (CADC, Sodowsky & Lai, 1997; Yeh, 2003). Both of these instruments measure various cognitive and behavioral aspects of acculturation such as preferences, values, and customs. Some studies have also used preference for native language as an indicator of low acculturation and preference of majority language as indicator of high acculturation (Norris et al., 2009), while others have used length of stay in the U.S. (Wilton & Constantine, 2003), assuming that greater length of stay is indicative of higher acculturation. The findings from the current study as well as other studies looking at immigration status and acculturation (Virta & Westin, 1999; Wilton & Constantine, 2003) indicate that nationality status may not be an adequate measure of acculturation for prediction of psychological distress following traumatic events. This may well have been the case in the present investigation. As such, further research is needed to understand the relationship between nationality, immigration status, and acculturation and their respective effects on mental health.

It might also be noted that a number of studies dealing with adjustment among immigrants have documented what is called the "immigrant paradox". This immigrant paradox maintains that second-generation immigrants who were U.S. born and are presumably more acculturated tend to experience worse outcomes compared to first-generation immigrants (Schwartz et al., 2011). Schwartz and colleague's study on acculturation in relation to health risk behaviors among first and second generation college students found that East Asian participants with U.S. cultural orientation engaged in more sexual risk taking, illicit drug use, and hazardous alcohol use. Furthermore, heritage-cultural identification was negatively associated with hazardous alcohol use for South Asian participants. Similar results with Hispanic immigrants have also been noted by Alegria et al. (2008), Allen et al. (2008), and Malonado-Molina,

Reingle, Jennigs, and Pradi (2011). However, most of the studies on the immigrant paradox have focused on externalizing behaviors such as substance abuse and conduct and oppositional problems. Research in internalizing behaviors such as anxiety, depression, and somatization and this paradox seems to be sparse. The results of the current study do not support the immigrant paradox in that a significant negative association between immigrant status and psychological outcomes was not found. As such, the phenomenon of immigrant paradox with regards to internalizing behaviors following traumatic events needs to be explored further.

The third hypothesis which stated that acculturation would serve as a moderator in the relationship between exposure and posttraumatic stress and the relationship between exposure and anxiety-mood disorder symptoms was not supported by the data. Again, the studies that supported such moderational role used measures of acculturation other than immigrant status. The lack of support for this hypothesis could stem from the same issues regarding acculturation measures and the immigrant paradox as discussed in the context of the second hypothesis. Furthermore, as discussed earlier, the exposure scale may have contributed to this non-significant finding. It is possible that exposure and acculturation interacted based on specific types of exposure rather than the overall level of exposure. For example, subjective exposure such as fear, anger, and courage could have been processed less by less acculturated individuals. This may have been the case here given that traditional Asian values discourage expression of such emotions. In summary, additional studies regarding this matter appear necessary.

The fourth hypothesis which stated that parental overprotection would be positively associated with posttraumatic symptoms and anxiety-mood disorder symptoms was supported by the data. The current findings are consistent with previous studies that have found parental overprotection to be predictive of psychological stress (Bokszczanin, 2008; Enns et al., 2002;

Martin et al., 2004; McFarlane, 1987; Nelson et al., 2006). For example, Martin and colleagues (2004) found an association between maternal overprotection and depressive symptomology using the Parental Bonding Instrument (PBI; Parker et al., 1979) to assess for parenting behaviors. Similarly, the results from Bokszczanin's study indicated that higher levels of overprotectiveness predicted greater PTSD symptomology among survivors of a natural disaster. The current study found a significant effect of perceived parental overprotection on both posttraumatic stress symptoms and anxiety-mood disorder symptoms. It is particularly noteworthy that the single item regarding parental overprotectiveness led to this outcome. This finding indicates that simply perceiving parental reactions following traumatic events as being overprotective can have a significant impact on the development and persistence of psychological distress.

With regard to adolescents and college students, studies have consistently shown that excessive parental involvement can have negative impact on psychological adjustment (Barber, Olsen, & Shagle, 1994; Soucy & Larose, 2000). Specifically, in one of the few published studies, Soucy and Larose (2000) found that psychological control by parents (i.e., emotional manipulation, interference in psychological and emotional development) was negatively associated with adjustment in college. The authors add that psychological control can send adolescents ambiguous messages about their personal image, which can have an impact on their behavioral autonomy.

Further explanations for the relationship between parental overprotection and psychological functioning are provided in the child and adolescent literature. Vasey and Dadds (2001) reported that perception of excessive control by parents can convey the perception of continual presence of threat, which can prevent children from facing and processing the disaster

adequately. These authors further report that such parental control can hinder children's ability to face the disaster and develop good coping skills. Manfredi et al. (2011) found that parental overprotection in childhood and adolescence predicted ruminative brooding and worry in adulthood. Manfredi and colleagues suggest that parents' overprotection can prevent the learning of action-oriented coping strategies because of the hindrance to individual's exploration experiences. They add that overprotection can foster abstract and inactive responses. Such ruminative brooding and worry might serve as mechanisms for increased posttraumatic stress and anxiety-mood symptoms following parental overprotection. In summary, while very little is known about the impact of parental overprotection on college students, the wealth of information from child and adolescent literature may serve as basis for future research in this area.

The fifth hypothesis stated that parental overprotection would serve as a moderator in the relationship between exposure and psychological distress. The findings showed a significant interaction between parental overprotection and exposure in the prediction of anxiety-mood disorders. Contrary to the hypothesis, however, higher levels of exposure in combination with higher level of overprotection resulted in lower levels of anxiety-mood symptoms. The interaction between parental overprotection and exposure in the prediction of posttraumatic stress was not significant. These findings are inconsistent with the literature on parenting practices and their moderational role on stress and psychological outcomes (Bokszczanin, 2008; Cook, 2010; Dorius et al., 2004; Yeats et al., 2010). Studies have previously found that overprotection can significantly increase the effects of level of stress exposure on psychological outcomes.

It is possible that the relationship between exposure and posttraumatic symptoms is moderated by specific parenting behaviors following different levels of exposure to trauma that

might be perceived as overprotection, and that the unitary construct of overprotection used in the current study might not have sufficiently captured the impact of parenting practices on posttraumatic stress. Furthermore, different types of exposure might interact differently with different parenting behaviors in the prediction of posttraumatic stress. It is possible that students who experienced more objective exposure such as level of life threat, witnessing the shootings, and initial behavioral response may have had parents who showed higher overprotection than did parents whose children were not exposed to such objective features of the trauma. Further research is needed to examine this hypothesis.

The finding regarding the interaction between exposure and overprotection in the prediction of anxiety-mood symptoms suggests that high overprotection following high exposure might mitigate rather than exacerbate the impact of exposure. Some research has shown that in high risk populations, parental overprotection may serve as a protective factor. Moore, Rothwell, and Segrott, (2010) found that high level of parental monitoring served as a protective factor among adolescents who were at high risk for alcohol abuse. High parental control was also found to be a protective factor for substance abuse among adolescents who were at high risk for problem behaviors (Ciairano, Kliewer, & Rabaglietti, 2009). In the current study, it is possible that students who experienced a high level of trauma perceived their parents' overprotectiveness as care and additional social support, which worked as protective factors for anxiety-mood symptoms. It is clear that further research on the impact of parental overprotection on survivors of mass trauma is needed to understand more fully how parenting behaviors might interact with the levels of exposure in producing and maintaining psychological distress.

4.4 Benefits and Implications of the Current Findings

The most important implications of the current study come from the findings regarding parental overprotection. The data suggest that higher parental overprotection predicted higher level of psychological distress. In general, this implies that excessive intrusion and concern by parents can prevent the proper processing of traumatic events that is necessary for healthy post-disaster psychological functioning. This finding also suggests that parents should be made aware of how they can assist their young adult offspring who survive traumatic events. These findings further add to the sparse literature on parenting behavior and psychological functioning of college students following traumatic events.

For example, Soucy and Larose (2000) reported that psychological control by parents hinder adjustment in college students by negatively impacting their behavioral autonomy. Studies in the Millennial Generation, which make up the college student population today, suggest that adolescents and young adults are provided greater supervision, more structure, and are pressured to excel in all facets of their lives by their parents (Howe & Strauss, 2000), which might place them at a disadvantage. The findings from this study suggest that over involvement of parents with the Millennial Generation young adults might present adjustment difficulties and poor psychological health in a stressful college environment. However, the findings also imply that excessive control and involvement of parents might be beneficial in high risk population. As such, it seems especially important to make the parents aware of how and under what circumstances they can assist their young adult offspring.

The findings of the current study regarding acculturation, nationality, and psychological outcomes suggest that the nationality of the survivors may not play an important role in the development of psychological distress among the Asian April 16 survivors. Being of U.S. or

foreign nationality did not appear to have an impact on psychological functioning. These findings point out that the impact of acculturation and immigration difficulties on psychological functioning goes beyond nationality and immigration status. Additionally, studies regarding acculturation and immigrant paradox provide opposing views regarding psychological adjustment among the immigrant population (Hwang & Ting, 2008; Schwartz et al., 2011; Tsai & Pike, 2000). For example, Hwang and Ting (2008) report that second and later generation immigrants fare better because of higher acculturation, whereas Schwartz and colleagues report that first generation immigrants do better because of adherence to traditional values. The current findings suggest that these perspectives should be assessed with constructs broader than immigration status.

Additional insight gained from this study was that the beneficial actions taken by the university and the community might have mitigated the impact of the shootings on the students' mental health, as indicated by the relatively low rates of posttraumatic stress and anxiety-mood. Many of the intervention procedures were consistent with the three-tiered recovery model used following other school shootings (Pynoos et al., 2006; Weintraub et al., 2001). Mirroring the first tier, counselors intervened within 30 minutes of the first shooting with crisis intervention. Volunteer professionals also visited classes to provide psychoeducation regarding reactions to trauma and information regarding mental health assistance. As per the goals of the second tier, a student needs assessment survey was developed and greater availability to mental health services was offered. For the final tier of the model, students who were either in classrooms during the shooting or who were injured were assisted by medical and mental health experts. Furthermore, the Virginia Tech community fostered a great sense of solidarity and cohesion following the shooting through the provision of community picnics, candlelight vigil, as well as other

community activities. Such initiatives likely afforded students, faculty, and staff a sense of normalcy which aided their recovery regarding anxiety and mood symptoms. The findings from the current study highlight the importance of such early interventions and actions in decreasing the harmful impact of such tragic events on mental health.

4.5 Limitations of the Current Study

Although the findings add to the sparse literature on the impact of exposure, acculturation, and parenting practices in the field of trauma, a deeper investigation into each of these constructs and their underlying theories is essential in understanding more fully how they interact. As indicated in prior sections, the survey used in the study included a variety of questions to identify levels of exposure. Unfortunately, the scale had low internal consistency, indicating that exposure might not have been assessed adequately in the current sample. Another limitation was that the scale was used as a unitary construct of exposure. Assessment of different types of exposures such as objective exposure, subjective features, media exposure, and relationships with the deceased and injured might have been better suited. Additionally, the retrospective nature of the scale could have led to recall bias.

The survey used in the collection of the data was designed for the entire Virginia Tech population and not specifically geared towards the population of interest (i.e., Asian students). The Asian student respondents may have been affected by exposure types not represented on the scale used. Additionally, some respondents might have felt uncomfortable reporting certain symptoms and may have been reluctant to report negative interactions with parents.

As stated earlier, nationality status was used instead of a validated acculturation scale to assess the level of acculturation in the current study which may have led to a number of problems. A related shortcoming of the present study was the measure for overprotection. That

is, parental overprotection was assessed using only one item. The item might have been construed differently by different respondents, which might have jeopardized the validity of the item. For example, some respondents might have thought of overprotection as intrusive and controlling, whereas some might have perceived it as excessive concern and care. Furthermore, the study did not include assessment of specific parenting behaviors that might have been perceived as overprotective or helpful. The types of parenting behaviors perceived as overprotective might have been relevant in better understanding the relationship between overprotection and exposure.

The current study also used screening scales for PTSD and anxiety-mood disorders rather than structured diagnostic instruments. Although the scales upon which these current measures are based have been shown to have good psychometric properties (Galea et al., 2007; Kessler et al., 2008), interpretations regarding prevalence should be made with caution. Furthermore, assessment of different types of symptoms such as reexperiencing, hyperarousal, avoidance, depression, and other internalizing problems were not obtained in the current study. Somatic symptoms that are found in high rates in the Asian population (Ryder et al., 2008; Saint Arnault & Kim, 2008) were also not assessed. It is highly likely that psychological distress in the current sample might have manifested as somatic symptoms rather than posttraumatic stress and anxiety-mood symptoms. Given the differential findings regarding the impact of exposure on different outcomes, a more thorough assessment of each of these outcomes seems imperative.

Culturally relevant factors such as fear of stigmatization (Loya et al., 2010), collectivistic thinking regarding expression of emotions (Inman & Yeh, 2007), and low use of mental health services among Asian and Asian Americans (Wong et al., 2010) were not assessed in the current study. These factors might also have affected survey response rate, as Asians have been found to

participate less in mental health related research and services than Caucasians (Lee et al., 2009; Loya et al., 2010; Shea & Yeh, 2008). This fact may have also limited the external validity of the current findings. Furthermore, some studies have shown that Asians of different ethnicities have differential psychological adjustment difficulties (Sue et al., 1995; Yeh, 2003). The current study grouped all Asian ethnic groups into two categories of U.S. citizens and foreign nationals and did not ascertain psychological functioning across the diverse racial and ethnic groups that make up the Asian population at Virginia Tech.

4.6 Recommendations for Future Research

Given the complexity of experiences involved in exposure to traumatic events, future studies should carefully assess these different experiences to understand levels of exposure and their potential impact on successive psychological functioning. Development of an exposure scale that takes into account the multi-faceted nature of traumatic experiences would make a vital addition to the field of trauma research and clinical practices. Future research should also take into consideration the nature of the traumatic event and adapt the exposure scale to adequately assess exposure levels.

The findings from the current study indicate that parental overprotection has significant impact on the development and persistence of psychological stress following traumatic events. Different types of parenting behaviors may also have differential impact on psychological outcomes. Future research should assess parenting practices following traumatic events in detail to understand which specific parenting behaviors have negative impact on mental health and which ones might function as protective factors. Additionally, future research on the Asian population should be aware of the cultural values and belief systems that may influence their perception of parenting behaviors as protective or overprotective.

The current study did not find a significant impact of nationality on psychological functioning. However, nationality might not necessarily be significantly related to acculturation. Future studies should assess acculturation using validated measures so as to understand fully the impact of adherence to traditional culture versus integration into the majority culture on mental health. Furthermore, it might be beneficial to study the impact of acculturation on perceived parental overprotection and vice-versa.

Additionally, the specific mental health problems assessed should also be geared towards the population of interest. Studies have shown that people of the Asian race often minimize their mental health issues, which often lead to physical manifestations of psychological problems in the form of somatization. Future research on the psychological functioning of Asian students following traumatic events should take such cultural issues into consideration while formulating the research questions.

Although the current study contributes to the somewhat sparse trauma literature on school shootings, further studies are needed to fully understand the impact of levels of exposure, acculturation, and perceived parental overprotection on psychological functioning of Asian students. The cultural issues specific to this population should be taken into consideration in future research.

4.7 Conclusion

The current study aimed to understand the impact of exposure, parental overprotection, and acculturation on psychological functioning in the Asian student population following the April 16 shootings at Virginia Tech. The findings indicate that the level of exposure significantly predicts the level of posttraumatic stress but not anxiety-mood symptoms. The study also found that high parental overprotection predicts higher levels of posttraumatic stress

and anxiety-mood symptoms. Being Asian American or Asian of foreign nationality did not significantly predict differential levels of posttraumatic stress and anxiety-mood symptoms. Overprotection was a moderator in the relationship between exposure and anxiety-mood symptoms but not posttraumatic stress. Acculturation did not emerge as a significant moderator of the relationship between exposure and posttraumatic stress and anxiety-mood symptoms. However, further research of these constructs with thorough and validated measures might shed light into the complex relationships among these constructs.

References

Acierno, R., Kilpatrick, D. G., Resnick, H., Saunders, B., De Arellano, M., & Best, C. (2000). Assault, PTSD, family substance use, and depression as risk factors for cigarette use in youth: Findings from the national survey of adolescents. *Journal of Traumatic Stress, 13,* 381-396. doi: 10.1016/j.avb.2010.09.001

Adams, R. E., & Boscarino, J. A. (2006). Predictors of PTSD and delayed PTSD after disaster: The impact of exposure and psychosocial resources. *Journal of Nervous and Mental Diseases, 194,* 485-493. doi: 10.1097/01.nmd.0000228503.95503.e9.

Ahmad, S., Feder, A., Lee, E. J., Wang, Y., Southwick, S. M., Schlackman, E.,… Charney, D. S. (2010). Earthquake impact in a remote South Asian population: Psychosocial factors and posttraumatic symptoms. *Journal of Traumatic Stress, 23,* 408-412.

Aiken, L. S., & West, S. G. (1991). *Multiple Regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Aldwin, C., & Greenberger, E. (1987). Cultural differences in the predictors of depression. *American Journal of Community Psychology, 15,* 789-813. doi: 10.1007/BF00919803

Alegría, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., Torres, M., Chen, C., & Meng, X. (2008). Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups. *The American Journal of Psychiatry, 165,* 359-369. doi: 10.1176/appi.ajp.2007.07040704

Allen, M. L., Elliott, M. N., Fuligni, A. J., Morales, L. S., Hambarsoomian, K., & Schuster, M. A. (2008). The relationship between Spanish language use and substance use behaviors among Latino youth: A social network approach. *Journal of Adolescent Health, 43,* 372-379. doi:10.1016/j.jadohealth.2008.02.016

Barber, B. K., Olsen, J. E., & Shagle, S. C. (1994). Associations between parental psychological and behavioral control and youth internalized and externalized behaviors. *Child Development, 65,* 1120-1136.

Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *The Journal of Early Adolescence, 11,* 56-95. doi: 10.1177/0272431691111004

Black, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D., Charney, D. S., & Keane, T. M. (1990). The development of a Clinician-Administered PTSD Scale. *Journal of Traumatic Stress, 8,* 75-90. doi: 10.1007/BF02105408

Beals, J., Manson, S. M., Shore, J. H., Friedman, M., Ashcraft, M., Fairbank, J. A., & Schlenger, W. E. (2002). The prevalence of posttraumatic stress disorder among American Indian Vietnam Veterans: Disparities and context. *Journal of Traumatic Stress, 15,* 89-97. doi: 10.1023/A:1014894506325

Betancourt, H., & Lopez, S. R. (1993). The study of culture, ethnicity, and race in American psychology. *American Psychologist, 48,* 629-637. doi: 10.1037/0003-066X.48.6.629

Blain, L. M., Galovski, T. E., & Robinson, T. (2010). Gender differences in recovery from posttraumatic stress disorder: A critical review. *Aggression and Violent Behavior, 15,* 463-474. doi: 10.1016/j.avb.2010.09.001 (2010)

Bokszczanin, A. (2008). Parental support, family conflict, and overprotectiveness: Predicting PTSD symptom levels of adolescents 28 months after a natural disaster. *Anxiety, Stress & Coping: An International Journal, 24,* 325-335. doi: 10.1080/10615800801950584

Bonanno, G. A. Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographiocs, resources, and life stress. *Journal of Consulting and Clinical Psychology, 75,* 671-682. doi: 10.1037/0022-006X.75.5.671

Brewin, C. R. (2005). Systematic review f screening instruments for adults at risk of PTSD. *Journal of Traumatic Stress, 18,* 53-62. doi: 10.1002/jts.20007

Brewin, C. R., Andrews, B., & Valentine, J. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68,* 748-766. doi: 10.1037/0022-006X.68.5.748

Brewin, C. R., Rose, S., Andrews, B., Green , J., Tata, P., McEvedy, C., Turner, S., & Foa, E. B. (2002). Brief screening instrument for post-traumatic stress disorder. *British Journal of Psychiatry, 181,* 158-162. doi: 10.1192/bjp.181.2.158

Briere, J., & Scott, C. (2006). *Principles of trauma therapy- A guide to symptoms, evaluations, and treatment.* Thousand Oaks, CA: Sage Publications, Inc.

Brymer, M. J. (2007). *The psychological impact of a school shooting on high school students.* (Unpublished doctoral dissertation). Nova Southeastern University, Florida.

Carr, V. J., Lewin, T. J., Kenardy, J. A., Webster, R. A., Hazell, P. L., Carter, G. L., & Williamson, M. (1997). Psychological sequelae of the 1989 Newcastle earthquake: III. Role of vulnerability factors in post-disaster morbidity. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences, 27,* 179-190. doi: 10.1017/S003329179600428X

Carroll, M. S., Higgins, L. L., Cohn, P. J., & Burchfield, J. (2006). Community Wildfire events as a source of social conflict. *Rural Sociology, 71,* 261-280. doi: 10.1526/003601106777789701

Center for Disease control and Prevention (CDC). (2008). *10 Leading Causes of Deaths, United States, 2005 (Vol. 2008).* Atlanta: CDC.

Chen. A. C., Keith, V. M., Leong, K. J., Airriess, C., Li, W., Chung, K. Y., & Lee, C. C. (2007). Hurricane Katrina: Prior trauma, poverty, and health among Vietnamese-American survivors. *International Nursing Review, 54,* 324-331. doi: 10.1111/j.1466-7657.2007.00597.x

Chen, W. (2010). Exposure to community violence and adolescents' internalizing behaviors among African American and Asian American adolescents. *Journal of Youth and Adolescence, 39,* 403-413. doi: 10.1007/s10964-009-9427-7

Choi, J. L., Rogers, J. R., & Werth, J. L. Jr. (2009). Suicide risk assessment with Asian American college students: A culturally informed perspective. *The Counseling Psychologist, 37,* 186-218. doi: 10.1177/0011000006292256

Chun, C., Enomoto, K., & Sue, S. (1996). Health care issues among Asian Americans: Implications of somatization. In P. M. Kato and T. Mann (Eds.), *Handbook of Diversity Issues in Health Psychology, The Plenum Series in Culture and Health.* (pp. 347-365). New York, NY: Plenum Press. doi: 10.1007/978-0-585-27572-7_18

Ciairano, S., Kliewer, W., & Rabaglietti, E. (2009). Adolescent risk behavior in Italy and the Netherlands: A cross-national study of psychosocial protective factors. *European Psychologist, 14,* 180-192. doi: 10.1027/1016-9040.14.3.180

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Collins, R. (2004). Rituals of solidarity and security in the wake of terrorist attack. *Sociological Theory, 22,* 53-87. doi: 10.1111/j.1467-9558.2004.00204.x

Cook, E. (2010). *Parenting Style as a Moderator between Maternal Trauma Symptoms and Child Psychological Distress.* (Doctoral Dissertation, University of Maryland). Retrieved from http://hdl.handle.net/1903/10470

Cox, T. (2004). Problems with research by organizational scholars on issues of race and ethnicity. *Journal of Applied Behavioral Science, 40,* 124-145. doi: 10.1177/0021886304263851

Deng, S., Kim, S. Y., Vaughan, P. W., & Li, J. (2010). Cultural orientation as a moderator of the relationship between Chinese American adolescents' discrimination experiences and delinquent behaviors. *Journal of Youth and Adolescence, 39,* 1027-1040. doi: 10.1007/s10964-009-9460-6

Dingfelder, H. E., Jaffee, S. R., & Mandell, D. S. (2010). The impact of social support on depressive symptoms among adolescents in the child welfare system: A propensity score analysis. *Children and Youth Services Review, 32*, 1255-1261. doi: 10.1016/j.childyouth.2010.04.016

Dorius, C. J., Bahr, S. J., Hoffman, J. P., & Harmon, E. L. (2004). Parenting practices as moderators of the relationship between peers and adolescent marijuana use. *Journal of Marriage and Family, 66,* 163-178. doi: 10.1111/j.0022-2445.2004.00012.x

Eisenberg, D., Gollust, S. E., Golberstein, E, & Hefner, J. L. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American Journal of Orthopsychiatry, 77*, 534-542. doi: 10.1037/0002-9432.77.4.534

Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care, 45*, 594-601. doi: 10.1097/MLR.0b013e31803bb4c1

Enns, M. W., Cox, B. J., & Clara, I. (2002). Parental bonding and adult psychopathology: Results form the US national comorbidity survey. *Psychological medicine: A Journal of Research on Psychiatry and the Allied Sciences, 32,* 997-1008. doi: 10.1017/S0033291702005937

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV Axis-I Disorders, Research Version, Non-patient Edition (SCID-I/NP).* New York, NY: Biometrics Research, New York State Psychiatric Institute.

Ford, J. D. (2008). Trauma, posttraumatic stress disorder, and ethnoracial minorities: Toward diversity and cultural competence in principles and practices. *Clinical Psychology: Science and Practice, 15,* 62-67, doi: 10.1111/j.1468-2850.2008.00110.x

Friedman, M. J., Schnurr, P. P., Sengupta, A., Holmes, T., & Ashcraft, M. (2004). The Hawaii Vietnam Veterans Project: Is minority status a risk factor for posttraumatic stress disorder? *Journal of Nervous and Mental Disease, 192,* 42-50. doi: 10.1097/01.nmd.0000105999.57129.ee

Fritz, M .V., Chin, D., & Demarinis, V. (2008). Stressors, anxiety, acculturation and adjustment among international and North American students. *International Journal of Intercultural Relations, 32,* 244-259. doi: 10.1016/j.ijintrel.2008.01.001

Galea, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucuvalas, M., Gold, J., & Vlahiv, D. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *The New England Journal of Medicine. 346*, 982-987. doi: 10.1056/NEJMsa013404

Galea, S., Brewin, C. R., Gruber, M., Jones, R. T., King, D. W., King, L. A., McNally, R. J., Ursano, R. J., Petukhova, M., & Kessler, R. C. (2007). Exposure to hurricane-realted stressors and mental illness after Hurricane Katrina. *Archives of General Psychiatry, 64*, 1427-1434. doi: 10.1001/archpsyc.64.12.1427

Goenjian, A. K., Walling, D., Steinberg, A. M., Karayan, I., Najarian, L. M., & Pynoos, R. S. (2005). A prospective study of posttraumatic stress and depressive reactions among treated and untreated adolescents 5 years after a catastrophic disaster. *American Journal of Psychiatry, 162*, 2302-2308. doi: 10.1176/appi.ajp.162.12.2302

Green, B. L., Grace, M. C., Lindy, J. D., & Leonard, A.C. (1990). Race differences in response to combat stress. *Journal of Traumatic Stress, 3,* 379-393. doi: 10.1002/jts.2490030307

Greenberger, E., Chen, C., Tally, S. R., & Dong, Q. (2000). Family, peer, and individual correlates of depressive symptomology among U.S. and Chinese adolescents. *Journal of Consulting and Clinical Psychology, 68*, 209-219. doi: 10.1037/0022-006X.68.2.209

Hawkins, N. A., McIntosh, D. N., Sliver, R. C., & Holman, E. A. (2004). Early responses to school violence: A qualitative analysis of students and parents' immediate reactions to the shootings at Columbine High School. *Journal of Emotional Abuse, 4*, 197-223, doi: 10.1300/J135v04n03_12

Hines, D. A. & Douglas, E. M. (2011). Symptoms of posttraumatic stress disorder in men who sustain intimate partner violence: A study of helpseeking and community samples. *Psychology of Men & Masculinity, 12*, 112-127. doi: 10.1037/a0022983

Ho, J. (2008). Community violence exposure of Southeast Asian American adolescents. *Journal of Interpersonal Violence, 23*, 136-146. doi: 10.1177/0886260507307653

Hobfoll, S. E., Canetti-Nisim, D., Johnson, R. J., Palmieri, P. A., Varley, J. D., & Galea, S. (2008). The association of exposure, risk, and resiliency factors with PTSD among Jews and Arabs exposed to repeated acts of terrorism in Israel. *Journal of Traumatic Stress, 21*, 9-21. doi: 10.1002/jts.20307

Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical psychology, 65*, 599-610.

Hoven, C. W., Duarte, C. S., Lucas, C. P., Wu, P., Mandell, D. J., Goodwin, R. D., … Susser, E. (2005). Psychopathology among New York City public school children 6 months after Spetember 11. *Archives of General Psychiatry, 62,* 545-551. doi: 10.1001/archpsyc.62.5.545

Howe, H., & Strauss, W. (2000). *Millennials Risings: The Next Great Generation.* New York: Vintage Books.

Hsu, E., Davies, C. A., & Hansen, D. J. (2004). Understanding mental health needs of Southeast Asian refugees: Historical, cultural, and contextual challenges. *Clinical Psychological Review, 24,* 193-213. doi:10.1016/j.cpr.2003.10.003

Hsu, L., & Alden, L. (2007). Social anxiety in Chinese- and European-heritage students: The effects of assessment format and judgments of impairment. *Behavior Therapy, 38,* 120-131. doi: 10.1016/j.beth.2006.06.006

Hsu, L. K., & Folstein, M. F. (1997). Somatoform disorders in Caucasian and Chinese Americans. *Journal of Nervous and Mental Disease, 185*, 382-387. doi: 10.1097/00005053-199706000-00004

Huang, D. (1997). The role of parental expectation, effort and self-efficacy in the achievement of high and low track high school students in Taiwan. *Dissertation Abstracts International Section A: Humanities and Social Sciences,* 3882.

Hughes, M., Brymer, M., Chiu, W. T., Fairbank, J. A., Jones, R. T., Pynoos, R. S., Rothwell, V., Steinberg, A. M., & Kessler, R. C. (2011). *Post-traumatic Stress Disorder among Students after the Shootings at Virginia Tech.* Manuscript submitted for publication.

Hurh, W. M., & Kim, K. C. (1988). *Uprooting and adjustment: A social study of Korean immigrant's mental health.* Macomb: National Institute of Mental Health.

Hwang, W., & Ting, J Y. (2008). Disaggregating the effects if acculturation and acculturative stress on the mental health of Asian Americans. *Cultural Diversity and Ethnic Minority Psychology, 14,* 147-154. doi: 10.1037/1099-9809.14.2.147

Ifergane. G., Buskila, D., Simiseshvely, N., Jotkowitz, A., Kaplan, Z., & Cohen, H. (2009). Post-traumatic stress disorder is not over-represented in a sample population of migraine patients. *European Journal of Internal Medicine, 20,* 182-185. doi:10.1016/j.ejim.2008.05.001

Inman, A. G., Howard, E. E., Beaumont R. L., & Walker, J. A. (2007). Cultural transmissions: Influence of contextual factors in Asian Indian immigrant parents' experiences. *Journal of Counseling Psychology, 54,* 93-100. doi: 10.1037/0022-0167.54.1.93

Inman, A. G., & Yeh, C. J. (2007). Asian American stress and coping. In F. T. L. Leong, A. Ebreo, L. Kinoshita, A. G. Inman, L. H. Yang, & M. Fu (Eds.), *Handbook of Asian American Psychology, 2nd Ed,* (pp. 323-339). Thousand Oaks, CA: Sage Publications, Inc.

Irish, L. A., Fischer, B., Fallon, W., Spoonster, E., Sledjeski, E. M., & Delahanty, D. L. (2010). Gender differences in PTSD symptoms: An exploration of peritraumatic mechanisms. *Journal of Anxiety Disorders, 25,* 209-216.

Iwamasa, G. Y. (1997). Behavior therapy and a culturally diverse society: Forging an alliance. *Behavior Therapy, 28,* 347-358. doi: 10.1016/S0005-7894(97)80080-9

Janssens, K.A., Oldehinkel A. J., & Rosmalen, J . G. M. (2009). Parental overprotection predicts the development of functional somatic symptoms in young adolescents. *The Journal of Pediatrics, 154,* 918-923. doi: 10.1016/j.jpeds.2008.12.023

Johnson, H., & Thompson, A. (2008). The development and maintenance of post-traumatic stress disorder (PTSD) in civilian adult survivors of war trauma and torture: A review. *Clinical Psychology Review, 28,* 36-47.

Johnson, J., Maxwell, A., & Galea, S. (2009). The epidemiology of posttraumatic stress disorder. *Psychiatric Annals, 39,* 326-334.

Johnson, S. D., North, C. S., & Smith, E. M. (2002). Psychiatric disorders among victims of a courthouse shooting spree: A three-year follow-up study. *Community Mental Health Journal, 38,* 181-194. doi: 10.1023/A:1015269521969

Karasz, A., Dempsey, K., & Fallek, R. (2007). Cultural differences in the experience of everyday symptoms: A comparative study of South Asian and European Asian women. *Culture, Medicine and Psychiatry, 31*, 473-497. doi: 10.1007/s11013-007-9066-y

Keshavarz, S. & Bharudin, R. (2009). Parenting style in a collectivistic culture of Malaysia. *European Journal of Social Sciences, 10*, 66-73.

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., Howes, M. J., … Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General psychiatry, 60,* 184-189. doi: 10.1001/archpsyc.60.2.184

Kessler, R. C., Galea, S., Gruber, M. J., Sampson, N. A., Ursano, R. J., & Wessely, S. (2008). Trends in mental illness and suicidality after Hurricane Katrina. *Molecular Psychiatry, 13,* 374-384. doi: 10.1038/sj.mp.4002119

Kessler, R. C., Galea, S., Jones, R. T., & Parker, H. A. (2006). Mental illness and suicidality after Hurricane Katrina. *World Health Organization Bulletin, 84,* 930-939.

Kim, B. S., & Omizo, M. M. (2006). Behavioral acculturation and enculturation and psychological functioning among Asian American college students. *Cultural Diversity and Ethnic Minority Psychology, 12,* 245-158. doi: 10.1037/1099-9809.12.2.245

Kinzie, J. D., Leung, P. K., & Boehnlein, J. K. (1997). Treatment of Depressive Disorders in Refugees. In E. Lee (Ed.), *Working with Asian Americans: A Guide for Clinicians*. New York, NY: Guilford Press.

Kisch, J., Leino, E. V., & Silverman, M. M. (2005). Aspects of suicidal behavior, depression, and treatment in college students: Results from the Spring 2000 national college health assessment survey. *Suicide and Life-Threatening Behavior, 35,* 3-13. doi: 10.1521/suli.35.1.3.59263

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., & Weiss, D. S. (1990). *Trauma and the Vietnam war generation: Report of findings from the National Vietnam Veterans Readjustment Study*. Philadelphia, PA: Brunner/Mazel.

Kuo, W. H., & Tsai, Y. (1986). Social network , hardiness and immigrant's mental health. *Journal of Health and Social Behavior, 27,* 133-149. doi: 10.2307/2136312

La Greca, A. M., Silverman, W. K., Vernberg, E. M., & Prinstein, E. M. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: A prospective study. *Journal of Consulting and Clinical Psychology, 64,* 712-723. doi: 10.1037/0022-006X.64.4.712

Lau, A. S., Fung, J., Wang, S., & Kang, S. (2009). Explaining elevated social anxiety among Asian Americans: Emotional attunement and a cultural double bind. *Cultural Diversity and Ethnic Minority Psychology, 15,* 77-85. doi: 10.1037/a0012819

Lee, C., Chang, J., Liu, C., Chang, C., Chen, T. H.H., Chen, C., & Cheng, A. T.A. (2009). Acculturation, psychiatric comorbidity and posttraumatic stress disorder in a Taiwanese aboriginal population. *Journal of Social Psychiatry and Psychitric Epidemiology, 44*, 55-62. doi: 10.1007/s00127-008-0405-2

Lee, J., Lei, A., & Sue, S. (2001). The current state of mental health research on Asian Americans. *Journal of Human Behavior in the Social Environment, 3*, 159-178. doi: 10.1300/J137v03n03_11

Lee, S. R. (2005). The effects of acculturation and parental factors on adolescent delinquency among Asian Americans. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 3443.

Lim, S., Yeh, M,. Liang, J., Lau, A. S., & McCabe, K. (2009). Acculturation gap, intergenerational conflict, parenting style, and youth distress in immigrant Chinese American families. *Marriage ad Family Review, 45*, 84-106. doi: 10.1080/01494920802537530

Loo, C. M., Singh, K., Scurfield, R., & Kilauano, B. (1998). Race-related stress among Asian American veterans: A model to enhance diagnosis and treatment. *Cultural Diversity and Mental health, 4,* 75-90.

Lowinger, R. J., & Kwok, H. (2001). Parental overprotection in Asian American children: A psychodynamic clinical perspective. *Psychotherapy: Theory, Research, Practice, Training, 38*, 319-330. doi: 10.1037/0033-3204.38.3.319

Loya, F., Reddy, R., & Hinshaw, S. P. (2010). Mental illness stigma as a mediator of differences in Caucasian and South Asian college students' attitude toward psychological counseling. *Journal of Counseling Psychology, 57,* 484-490. doi: 10.1037/a0021113

Maldonado-Molina, M. M., Reingle, J. M., Jennings, W. G., Prado, G. (2011). Drinking and driving among immigrant and US-born Hispanic young adults: Results from a longitudinal and nationally representative study. *Addictive Behaviors, 36,* 381-388. doi: 10.1016/j.addbeh.2010.12.017

Manfredi, C., Caselli, G., Rovetto, F., Rebecchi, D., Ruggiero, G. M., Sassaroli, S., & Spada, M. M. (2011). Temperament and parental styles as predictors of ruminative brooding and worry. *Personality and Individual Differences, 50,* 186-191. doi: 10.1016/j.paid.2010.09.023

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253. doi: 10.1037/0033-295X.98.2.224

Marsella, A. J., Friedman, M. J., & Spain, E. H. (1994). Ethnocultural aspects of posttraumatic stress disorder. In *Posttraumatic stress disorder: A clinical review*. R. S. Pynoos. Baltimore, MD, The Sidran press. 17-41.

Martin, G., Bergen, H. A., Roeger L., & Allison, S. (2004). Depression in young adolescents: Investigations using 2 and 3 factor versions of the Parental Bonding Instrument. *Journal of Nervous and Mental Disease, 192*, 650-657. doi: 10.1097/01.nmd.0000142028.10056.c6

Matsuoka, J. K., & Hamada, R. S. (1991/1992). The wartime and postwar experiences of Asian-pacific American Vietnam veterans. *Journal of Applied Social Sciences, 16(1),* 23-36.

McFarlane, A. C. (1987). Family functioning and overprotection following a natural disaster: The longitudinal effects of post-traumatic morbidity. *Australian and New Zealand Journal of Psychiatry, 21*, 210-218. doi: 10.3109/00048678709160914

Mizuta, I, Ikuno, T., Shimai, S., Hirotsune, H., Ogasawara, M., Ogasawa, A., Honaga, E., & Inoue, Y. (2005). The prevalence of traumatic events in young Japanese women. *Journal of Traumatic Stress, 18,* 33-37. doi: 10.1002/jts.20001

Mollica, R. F., Wyshak, G., & Lavelle, J. (1987). The psychological impact of war trauma and torture on Southeast Asian refugees. *The American Journal of Psychiatry, 144*, 1567-1572.

Moore, G. F., Rothwell, H., & Segrott, J. (2010). An exploratory study of the relationship between parental attitudes and behaviour and young people's consumption of alcohol. *Substance Abuse Treatment, Prevention, and Policy, 22,* 6. doi: 10.1186/1747-597X-5-6

Mullett-Hume, E., Anshel, D., Guevara, V., & Cloitre, M. (2008) Cumulative trauma and post-traumatic stress disorder among children exposed to the 9/11 World Trade Center attack. *American Journal of Orthopsychiatry, 78,* 103-108.

Nelson, L. J., Hart, C. H., Wu, B., Yang, C., Roper, S. O, & Jin, S. (2006). Relations between Chinese mothers' parenting practices and social withdrawal in early childhood. *International Journal of Behavioral Development, 30,* 261-271. doi: 10.1177/0165025406066761

Ngo, D., Tran, T V., Gibbons, J. L., & Oliver, J. M. (2001). Acculturation, premigration traumatic experiences, and depression among Vietnamese Americans. *Journal of Human Behavior in the Social Environment, 3*, 225-242. doi: 10.1300/J137v03n03_14

Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology, 60*, 409-418. doi: 10.1037/0022-006X.60.3.409

Norris, F. H. (2007). Impact of mass shootings on survivors, families, and communities. *PTSD Research Quarterly, 18*, 1-7.

Norris, F. H., Friedman, M. J., Watson, P. J., Bryne, C. M., Diaz, E., Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry: Interpersonal and Biological Processess, 65*, 207-239. doi**:** 10.1521/psyc.65.3.207.20173

Norris, F. H., Perilla, J. L., & Murphy, A. D. (2001). Postdisaster stress in the United States and Mexico: A cross-cultural test of the multicriterion ceonceptual model of posttraumatic stress disorder. *Journal of Abnormal Psychology, 110*, 553-563. doi: 10.1037/0021-843X.110.4.553

Norris, F. H., Vanlandingham, M. J., & Vu, L. (2009). PTSD in Vietnamese Americans following Hurricane Katrina: Prevalence, Patterns, and Predictors. *Journal of Traumatic Stress, 22*, 91-101. doi: 10.1002/jts.20389

North, C. S., McCutcheon, V., Spitznagel, E. L., & Smith E. M. (2002). Three-year follow-up of survivors of a mass shooting episode. *Journal of Urban Health, 79*, 383-391. doi: 10.1093/jurban/79.3.383

North, C. S., Smith, E. M., & Spitznagel, E. L. (1994). Posttruamatic stress disorder in survivors of a mass shooting. *The American Journal of Psychiatry, 151*, 82-88. doi: 1994-25700-001

Okazaki, S. (1994). Cultural Variations in the self and emotional distress. *Dissertation Abstracts International: Section B: The Sciences and Engineering,* 1675.

Okazaki, S. (1997). Sources of ethnic differences between Asian American and White American college students on measures of depression and social anxiety. *Journal of Abnormal Psychology, 106,* 52-60. doi: 10.1037/0021-843X.106.1.52

Otto, M. W., Henin, A., Hirshfield-Becker, D. R., Pollack, M. H., Biederman, J, Rosenbaum, J, F. (2007). Posttraumatic stress disorder symptoms following media exposure to tragic events: Impact of 9/11 on children at risk for anxiety disorders. *Journal of Anxiety Disorders, 21*, 888-902. Doi: 10.1016/j.janxdis.2006.10.008

Ozer, E. J., & McDonald, K. L. (2006). Exposure to violence and mental health among Chinese American urban adolescents. *Journal of Adolescent Health, 39*, 73-79. doi: 10.1016/j.jadohealth.2005.09.015

Park, W. (2009). Acculturative stress and mental health among Korean adolescents in the United States. *Journal of Human Behavior in the Social Environment, 19*, 262-634. doi: 10.1080/10911350902910542

Park, Y. S., Kim, B. S., Chiang, J., & Ju, C. M. (2010). Acculturation, enculturation, parental adherence to Asian cultural values, parenting styles, and family conflict among Asian American college students. *Asian American Journal of Psychology, 1,* 67-79. doi: 10.1037/a0018961

Parker, G., Tupling, H., & Brown. L. B. (1979). A parental bonding instrument. *British Journal Medical Psychology, 52*, 1–10.

Peirce, R. S., Frone, M. R., Russell, M., Cooper, M., & Mudar, P. (2000). A longitudinal model of social contact, social support, depression, and alcohol use. *Health Psychology, 19*, 28-38. doi: 10.1037/0278-6133.19.1.28

Perilla, J. L., Norris, F. H., & Lavizzo, E. A. (2002). Ethnicity, culture, and disaster response: Identifying and explaining ethnic differences in PTSD six months after Hurricane Andrew. *Journal of Social and Clinical Psychology*, *21*, 20-45. doi**:** 10.1521/jscp.21.1.20.22404

Pietrzak, R. H., Johnson, D. C., Goldstein, M. C., Malley, J. C., & Southwick, S. M. (2009). Psychological resilience and post-deployment social support protect against traumatic stress and depressive symptoms in soldiers returning from operations enduring freedom and Iraqi freedom. *Depression and Anxiety*, *26*, 745-751.

Pole, N., Gone, J. P., & Kulkarni, M. (2008). Posttraumatic stress disorder among ethnoracial minorities in the United States. *Clinical psychology: Science and Practice, 15*, 35-61. doi: 10.1111/j.1468-2850.2008.00109.x

Pole, N., Neylan, T. C., Otte, C., Metzler, T. J., Best, S. R., Henn-Hasse, C., & Marmar, C. R. (2007). Associations between childhood trauma and emotion-modulated psychophysiological response to startling sounds: A study of police cadets. *Journal of Abnormal Psychology*, *116*, 352-361. doi: 10.1037/0021-843X.116.2.352

Polusny, M. A., Ries, B. J., Meis, L.A., DeGarmo, D., McCormick-Deaton, C. M., Thuras, P., & Erbes, C. R. (2011). Effects of parents' experiential avoidance and PTSD on adolescent disaster-related posttraumatic stress symptomology. *Journal of Family Psychology, 25,* 220-229. doi: 10.1037/a0022945

Pynoos, R. S., Steinberg, A. M., Schreiber, M. D., & Brymer, M. J. (2006). Children and families: A new framework for preparedness and response to danger, terrorism and trauma. In L. A. Schein, H. I. Spitz, G. M. Burlingame, & P. R. Mushkin (Eds.), *Psychological Effects of Catastrophic Disasters: Group Approaches to Treatment* (pp. 85-112). New York: Haworth Press.

Ryan, J. & Hawdon, J. (2008). From individual to community: The "framing" of 4-16 and the display of social solidarity. *Trauamtology, 14,* 43-51. doi: 10.1177/1534765607312686

Ryder, A .G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology, 79,* 49-65. doi: 10.1037/0022-3514.79.1.49

Ryder, A. G., Yang, J., Zhu, X., Yao, S., Yi, J., Heine, S. J., & Bagby, R. M. (2008). The cultural shaping of depression: Somatic symptoms in China, psychological symptoms in North America? *Journal of Abnormal Psychology, 117,* 300-313. doi: 10.1037/0021-843X.117.2.300

Saint Arnault, D., & Kim, O. (2008). Is there an Asian idiom of distress? Somatic symptoms in female Japanese and Korean students. *Archives of Psychiatric Nursing, 22,* 27-38. doi: 10.1016/j.apnu.2007.10.003

Sam, D. L. (2000). Psychological adaptation of adolescents with immigrant backgrounds. *The Journal of Social Psychology, 140,* 5-25. doi: 10.1080/00224540009600442

Schwartz, S. J., Weisskirch, R. S., Zamboanga, B. L., Castillo, L. G., Ham, L. S., Huynh, Q., Park, I. J. K., Donovan, R., Kim, S. Y., Vernon, M., Davis, M. J., & Cano, M. A. (2011). Dimensions of acculturation: Associations with health risk behaviors among college students from immigrant families. *Journal of Counseling Psychology, 58,* 27-41. doi: 10.1037/a0021356

Scrimin, S., Axia, G., Capello, F., Moscardino, U., Steinberg, A. M., & Pynoos, R. S. (2006). Posttraumatic reactions among injured children and their caregivers 3 months after the terrorist attack in Beslan. *Psychiatry Research, 141,* 333-336. doi: 10.1016/j.psychres.2005.11.004

Silver, R. C., Poulin, M., Holman, E. A., McIntosh, D. N., Gil-Rivas, V., & Pizarro, J. (2004). 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. doi: 10.1300/J146v09n01_16

Shea, M., & Yeh, C. J. (2008). Asian American students' cultural values, stigma, and relational self-construal: Correlates and attitudes toward professional help seeking. *Journal of Mental Health Counseling, 30,* 157-172.

Sodowsky, G. R. & Lai, E. W. (1997). Asian immigrant variables and structural models of cross-cultural distress. In A. Booth, A. C. Crouter, & N. Landale (Eds.) *Immigration and the family: Research and policy in U.S. immigrants.* (pp. 211-234). New Jersey: Lawrence Erlbaum Associates, Inc.

Soucy, N., & Larose, S. (2000). Attachment and control in family and mentoring contexts as determinants of adolescent adjustment to college. *Journal of Family Psychology. 14,* 125-143. doi: 10.1037//0893-3200.14.1.125

Sue, S., Sue, D. W., Sue, L., & Takeuchi, D. T. (1995). Psychopathology among Asian Americans: A model minority? *Cultural Diversity and Mental Health, 1,* 39-51. doi:10.1037/1099-9809.1.1.39

Suinn, R. M., Rickard-Figueroa, K., Lew, S., & Vigil, P. (1987). The Suinn-Lew Asian Self-identity Acculturation Scale: An initial report. *Educational and psychological Measurement, 47,* 401-407. doi: 10.1177/0013164487472012

Swartz, J. A. (2007). Using the K6 scale to screen for serious mental illness among criminal justice populations: Do psychiatric treatment indicators improve detection rates? *International Journal of Mental Health Addiction, 6,* 93-104. Doi: 10.1007/s11469-007-9107-3

Swartz, J. A., & Lurigio, A. J. (2006). Screening for serious mental illmess in populations with co-occuring substance use disorders: Performance of the K6 scale. *Journal of Substance Abuse Treatment, 31,* 287-296. doi:10.1016/j.jsat.2006.04.009

Swickert, R., & Hittner, J. (2009). Social support coping mediates the relationship between gender and posttraumatic growth. *Journal of Health Psychology, 14,* 387-393. doi: 10.1177/1359105308101677

Tang, C. S. (2007). Trajectory of traumatic stress symptoms in the aftermath of extreme natural disaster: A study of adult Thai survivors of the 2004 Southeast Asian earthquake and tsunami. *Journal of Nervous and Mental Disease, 195*, 54-59. doi: 10.1097/01.nmd.0000242971.84798.bc

Tang, N. M. (1992). Some Psychoanalytic implications of Chinese philosophy and child-rearing practices. *The Psychoanalytic Study of the Child, 47,* 371-389.

Tsai, D. C., & Pike, P. L. (2000). Effects of acculturation on the MMPI-2 scores of Asian American students. *Journal of Personality Assessment, 74*, 216-230. doi: 10.1207/S15327752JPA7402_4

Turkel, G. (2002). Sudden Solidarity and the Rush to Normalization: Toward an Alternative Approach. *Sociological Focus. 35*, 73–79.

Vasey, M. W., & Dadds, M. R. (2001). *The developmental psychopathology of anxiety*. London: Oxford University Press.

Virginia Tech Review Panel. (2007). *Mass Shootings at Virginia Tech April, 2007: Report of the Review Panel*. Retrieved from http://www.ncjrs.gov/App/Publications/abstract.aspx?ID=241568

Virta, E., & Westin, C. (1999). *Psychological Adjustment of Adolescents with Immigrant Background in Sweden.* Occasional Papers, No. 2. Stockholm: Center for Research on International Migration and Ethnic Relations, Stockholm University.

Wang, C. D., & Mallinckrodt, B. (2006). Acculturation, attachment, and psychosocial adjustment of Chinese/Taiwanese international students. *Journal of Counseling Psychology, 53*, 422-433. doi: 10.1037/0022-0167.53.4.422

Weathers, F. W. & Keane, T. M. (2007). The criterion a problem revisited: Controversies and challenges in defining and measuring psychological trauma. *Journal of Traumatic Stress, 20,* 107-121. doi: 10.1002/jts.20210

Weathers, F. W., Litz, B. T., Herman, D.S., Huska, J. A., & Keane T. M. (1993). The PTSD checklist: reliability, validity and diagnostic utility, *IXth Annual Meeting of the International Society for Traumatic Stress Studies* San Antonio.

Weintraub, P., Hall, H., & Pynoos, R. S. (2001). Columbine High School Shootings: community response. In Shafil, M., Shafil, S. L. (Eds.) *School Violence: Assessment, Management, Prevention.* (pp. 129-161). Washington DC: American Psychiatric Publishing.

Weiss, D. S., & Marmar, C. R. (1997). The Impact of Event Scale-Revised. In J. P. Wilson, & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399-411). New York: Gilford Press.

Wilton, L., & Constantine, M. G. (2003). Length of residence, cultural adjustment difficulties, and psychological distress symptoms in Asian and Latin American international college students. *Journal of College Counseling, 6,* 177-187.

Wong, F., & Halgin, R. (2006). The "model minority": Bane or blessing for Asian Americans? *Journal of Multicultural Counseling and Development, 34*, 38-49.

Wong, T. J., Kim, S., & Tran, K. K. (2010). Asian Americans' adherence to Asian values, attributions about depression, and coping strategies. *Cultural Diversity and Ethnic Minority Psychology*, *16,* 1-8. doi: 10.1037/a0015045

Xie, D., Leong, F. T., & Feng, S. (2008). Culture-specific personality correlates of anxiety among Chinese and Caucasian college students. *Asian Journal of Social Psychology, 11*, 163-174. doi: 10.1111/j.1467-839X.2008.00253.x

Yeates, K. O., Taylor, H. G., Walz, N. C., Stancin, T., & Wade, S. L. (2010). The family environment as a moderator of psychosocial outcomes following traumatic brain injury in young children. *Neuropsychology, 24*, 345-356. doi: 10.1037/a0018387

Yeh, C. J. (2003). Age, acculturation, cultural adjustment, and mental health symptoms of Chinese, Korean, and Japanese immigrant youths. *Cultural Diversity and Ethnic Minority Psychology, 9,* 34-48. doi: 10.1037/1099-9809.9.1.34

Yeh, C. J., & Wang, Y. (2000). Asian American coping attitudes, sources, and practices: Implications for indigenous counseling strategies. *Journal of College Student Development, 41,* 94-103.

Yoo, H. C., & Lee, R. M. (2008). Does ethnic identity buffer or exacerbate the effects of frequent racial discrimination on situational well-being of Asian Americans? *Journal of Counseling Psychology, 55,* 63-74. doi: 10.1037/0022-0167.55.1.63

Young, C. A., Fang, D. Z., & Zisook, S. (2010). Depression in Asian-American and Caucasian undergraduate students. *Journal of Affective Disorders, 125,* 379-382. doi:10.1016/j.jad.2010.02.124

Zimering, R., Gulliver, S. B., Knight, J., Munroe, J., & Keane, T. M. (2006). Posttraumatic stress disorder in disaster relief workers following direct and indirect trauma exposure to ground zero. *Journal of Traumatic Stress, 19,* 553-557. doi: 10.1002/jts.20143

Appendices

APPENDIX A:

Posttraumatic Symptoms

Here is a list of problems people sometimes have after exposure to violent events. How often did each problem happen to you over the past two weeks?

Just about everyday 4-5 days a week 2-3 days a week 1 day a week Never

1. When something reminded you of the shootings, you got very upset or afraid.
2. You felt more irritable or easily angered than usual.
3. You had dreams about April 16 or other bad dreams.
4. You felt more emotionally distant or not close to other people than usual.
5. You tried not to talk about, think about, or have feelings about what happened.
6. You had more trouble than usual going to sleep or often waking up during the night.
7. You tried to stay away from people, places, or things that made you remember what happened.
8. You had more trouble than usual concentrating or paying attention.
9. You had upsetting thoughts, pictures, or sounds of what happened some into your mind when you did not want them.
10. You worried more than usual about bad things that might happen to you or your loved ones in the future.

Cognitive Reactions to the Events of April 16: How much did the events of April 16 affect you in each of the following ways over the past two weeks?

Not at all A little Some A lot Extremely

11. You were less able to have positive feelings or take pleasure in things
12. Your reactions to the tragedy interfered with your ability to work or carry out your daily activities.
13. You were upset or distressed by memories of the tragedy.

APPENDIX B:

K6

During the past two weeks, about how often did you feel…

All of the time Most of the time Some of the time A little of the time None of the time

1. Nervous?
2. Hopeless?
3. Restless or fidgety?
4. That everything was an effort?
5. Worthless?
6. So depressed that nothing could cheer you up?

APPENDIX C:

Parental Overprotection

Families are often concerned and protective of their loved ones after violent events. Since April 16, how much has your family…

	Not at all	A little	Some	A lot	Extremely
Been overprotective					

APPENDIX D:

Exposure

Between the first and second shootings, which of the following experiences did you have?

Yes No

- Saw someone who had been wounded or killed
- Saw activities of the police SWAT team
- Helped someone who had been injured

Please indicate which of the following experiences you had in the first hour or two after the Norris Hall shootings?

Yes No

- Had close friend(s) you tried unsuccessfully to contact to confirm their safety

How many of the people who died in the shootings were…

- Your boyfriend, girlfriend, or spouse
- A close friend
- A friend, but not a close friend
- Someone you knew well, but not a friend
- Anyone else who you knew at all, even if only distantly

How many of the people who were injured but not killed in the shootings were…

- Your boyfriend, girlfriend, or spouse
- A close friend
- A professor or teacher of yours
- Anyone else who was close to someone you know

Table 1

Means and Standard Deviations of Age and Gender

Variable	N†	N	Mean	SD	Range
Age	254	302	23.87	4.755	18-40
Gender					
Male	127	197	-	-	-
Female	127	105	-	-	-

† *Unweighted N*

Table 2

Means, Standard Deviations, and Internal Consistencies of Measures

Variable	N†	N	Mean	SD	Range	Alpha
Exposure	254	302	2.1089	1.4668	0-9	.402
Posttraumatic Stress	254	302	24.9432	11.7652	13-65	.934
Anxiety-Mood Symptoms (K6)	254	302	5.0346	4.966	0-23	.900
Overprotection						
Yes	23	28	-	-	-	-
No	231	275	-	-	-	-
Nationality						
Asian	153	142	-	-	-	-
Asian American	101	160	-	-	-	-

† *Unweighted N*

Table 3

Zero-Order Correlations among Variables

Variables	1.	2.	3.	4.	5.	6.	7.
1. Posttraumatic Stress	1						
2. Anxiety-Mood Symptoms	.703**	1					
3. Exposure	.210**	.077	1				
4. Overprotection	.336**	.246**	.125*	1			
5. Nationality	.091	.105	.236**	.149**	1		
6. Gender	.097	.111	.092	.040	.112	1	
7. Age	-.113*	-.135*	-.268**	-.114*	-.714**	-.124*	1

*Correlation is significant at the 0.05 level; **Correlation is significant at the 0.01 level.

Table 4

Summary of Hierarchical Regression Analyses for Variables Predicting Posttraumatic Stress from Overprotection

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.019	.019	2.81	.062		
Gender					2.074	.241
Age					-.254	.11
Step 2	.124	.105	5.22	.001		
Gender					1.861	.264
Age					-.165	.257
Overprotection					13.235	.005

† = values were obtained for the entire model

Table 5

Summary of Hierarchical Regression Analyses for Variables Predicting Anxiety-Mood Symptoms from Overprotection

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.027	.027	3.49	.032		
Gender					.995	.184
Age					.129	.105
Step 2	.079	.052	5.18	.007		
Gender					.932	.193
Age					-.102	.177
Overprotection					3.967	.002

† = values were obtained for the entire model

Table 6

Summary of Hierarchical Regression Analyses for Variables Predicting Posttraumatic Stress from Acculturation

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.019	.019	2.81	.062		
Gender					2.074	.241
Age					-.254	.11
Step 2	.019	.000	1.91	.129		
Gender					2.065	.248
Age					-.227	.386
Nationality					.336	.901

† = values were obtained for the entire model

Table 7

Summary of Hierarchical Regression Analyses for Variables Predicting Anxiety-Mood Symptoms from Acculturation

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.027	.027	3.49	.032		
Gender					.995	.184
Age					.129	.105
Step 2	.027	.000	2.32	.075		
Gender					.992	.183
Age					-.119	.377
Nationality					.121	.925

† = values were obtained for the entire model

Table 8

Summary of Hierarchical Regression Analyses of Overprotection as a Potential Moderator for Posttraumatic Stress

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.019	.019	2.81	.062		
Gender					2.074	.241
Age					-.254	.11
Step 2	.053	.035	4.34	.005		
Gender					1.797	.312
Age					-.132	.429
Exposure					1.514	.025
Step 3	.146	.093	4.60	.001		
Gender					1.639	.32
Age					-.067	.655
Exposure					1.264	.022
Overprotection					12.629	.006
Step 4	.156	.010	6.30	.000		
Gender					1.549	.340
Age					-.067	.652
Exposure					1.528	.002
Overprotection					13.379	.002
Exp X OP					-2.532	.333

† = values were obtained for the entire model

Table 9

Summary of Hierarchical Regression Analyses of Overprotection as a Potential Moderator for Anxiety-Mood Symptoms

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.027	.027	3.49	.032		
Gender					.995	.184
Age					.129	.105
Step 2	.029	.002	2.48	.062		
Gender					.972	.191
Age					-.118	.710
Exposure					.130	.618
Step 3	.080	.051	3.92	.004		
Gender					.923	.192
Age					-.098	.230
Exposure					.052	.830
Overprotection					3.492	.003
Step 4	.102	.022	4.45	.001		
Gender					.864	.212
Age					-.098	.220
Exposure					.225	.349
Overprotection					4.434	.000
Exp X OP					-1.659	.037

† = values were obtained for the entire model

Table 10

Summary of Hierarchical Regression Analyses of Acculturation as a Potential Moderator for Posttraumatic Stress

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.019	.019	2.81	.062		
Gender					2.074	.241
Age					-.254	.11
Step 2	.053	.035	4.34	.025		
Gender					1.797	.312
Age					-.132	.429
Exposure					1.514	.025
Step 3	.053	.000	3.45	.009		
Gender					1.797	.316
Age					-.135	.626
Exposure					1.515	.022
Nationality					-.029	.992
Step 4	.053	.000	3.10	.009		
Gender					1.801	.312
Age					-.121	.654
Exposure					1.793	.019
Nationality					-.078	.978
Exp X Na					-.443	.688

† = values were obtained for the entire model

Table 11

Summary of Hierarchical Regression Analyses of Acculturation as a Potential Moderator for Anxiety-Mood Symptoms

Variable	$R^{2\dagger}$	$\Delta R^{2\dagger}$	$F^{\dagger}$	$p^{\dagger}$	*B*	*p*
Step 1	.027	.027	3.49	.032		
Gender					.995	.184
Age					.129	.105
Step 2	.029	.002	2.48	.062		
Gender					.972	.191
Age					-.118	.710
Exposure					.130	.618
Step 3	.029	.000	1.86	.118		
Gender					.970	.190
Age					-.112	.421
Exposure					.128	.622
Nationality					.087	.946
Step 4	.029	.000	1.49	.192		
Gender					.969	.186
Age					-.114	.408
Exposure					.095	.799
Nationality					.093	.942
Exp X Na					.053	.914

† = values were obtained for the entire model

Figure 1

Effects of Exposure on Anxiety-Mood Symptoms by Parental Overprotection and Gender