Research Article

Differences in PTSD Symptomatology Among Latinos with Childhood and Adult Trauma: The Moderating Effect of Acculturation

Julia A DiGangi[1], Andrea J Goddard[3], Steven A Miller[4], Gabriela Leon[2] and Leonard A Jason[2]*

[1]VA Boston Healthcare System, Harvard Medical School, Boston, USA

[2]Center for Community Research, DePaul University, Chicago, Illinois, USA

[3]Clinical Psychology, The Adler School of Professional Psychology, Chicago, Illinois, USA

[4]Department of Psychology, Rosalind Franklin University of Medicine and Science, North Chicago, Illinois, USA

Abstract

The development of PTSD has been shown to be dependent on a variety of factors, including ethnicity, whether the trauma was experienced as a child or adult, and degree of acculturation. Using 104 Latinos who had completed treatment for substance abuse disorder(s), this study compared PTSD symptomatology for individuals reporting their Worst Traumatic Event (WTE) in childhood versus adulthood. The moderating effect of acculturation was also examined. Although many studies have reported on the pernicious effects of childhood trauma, very few have provided direct comparisons of child and adult trauma in terms of PTSD symptoms. Results indicated that those reporting their WTE in childhood had greater PTSD symptomatology than those reporting in adulthood. Acculturation moderated the relationship between timing of the trauma and PTSD symptoms. Specifically, those who reported their WTE in childhood and had the lower levels of acculturation, reported the higher number of PTSD symptoms. Implications and future directions are discussed.

Keywords: Acculturation; Adulthood trauma; Childhood trauma; Cumulative stress; Latinos; Posttraumatic stress disorder

PTSD is a psychiatric condition marked by a failure to recover from initial symptoms associated with trauma exposure. PTSD symptoms include re-experiencing the traumatic event (e.g., flashbacks), avoidance and numbing (e.g., blunted affect, avoidance of trauma-related stimuli), and hyperarousal (e.g., exaggerated startle response; American Psychiatric Association, 2000). While PTSD is a diagnosis that has been documented across cultures, there is considerable evidence that demonstrates that the expression of PTSD is culture dependent [1-5].

In the case of Latinos, now the largest minority in the USA, research suggests that Latinos may be at higher risk for both the traumas that lead to PTSD [6-9] and PTSD itself [10-13]. Although it appears that while the lifetime prevalence of PTSD among Latinos does not typically differ from their white and black counterparts [14], Latinos do appear to be at greater risk for PTSD in samples of Vietnam veterans [11,15].

Ample evidence has indicated that the timing of when trauma occurs on the developmental continuum (i.e., childhood vs. adulthood) can affect both the development of PTSD and its subsequent symptomatology in adulthood. The few studies that have compared the impact of adult versus childhood trauma found that child trauma leads to more severe symptomatology [16-19]. Abuse experienced during childhood places adults at greater risk for the development of psychopathology, including PTSD [20].

Developmental theory suggests that the more pernicious effects of childhood trauma can be explained through a combination of factors. First, the nature of childhood abuse is such that it is typically protracted in nature whereas adults may be more likely to experience trauma confined to a single assault [21]. Secondly, because children have a relatively limited social network, perpetrators are likely to be intimate companions of the child such as a parent, stepparent, or sibling [22]. This betrayal often shatters fundamental interpersonal trust, which is highly problematic for future social development. Third, the situations are often intractable as children may be both dependent on these adults for their survival and lacking in resources to determine to bring such abuse to an end [22].

While trauma is nearly ubiquitous, PTSD is not. In fact, epidemiological estimates suggest that while 40-90% of adults will experience a Criterion A traumatic event in their lifetime, only 7% will develop PTSD [23]. Subsequently, much research has been devoted to understanding factors that predict or moderate this relationship. In the case of Latinos, one factor that is particularly salient is acculturation. Acculturation is the process of adaptation into a host culture [24]. Given that 36% of Latinos living in the USA are immigrants [25] and another 39% are first-generation Americans [26], acculturation is a critical concept in research examining Latino functioning. While substantial attention has been devoted to the topic of acculturation, the findings are mixed. Some research has demonstrated that higher levels of acculturation (i.e., greater adoption of the USA cultural norms) led to negative physical and psychological health outcomes [27-35], while other studies have shown that lower levels of acculturation have deleterious health effects [36-40].

With specific regard to PTSD, mixed support was found for the effect of acculturation when comparing immigrant Latinos with their USA-born counterparts. To understand the significance of acculturation among Latinos, the acculturative stress theory suggests that the migration process involves cultural, social economic, and

personal challenges and changes that influence mental health outcomes depending on the level of stress experiences [41]. Moreover, the acculturation process may affect protective factors of traditional Latino culture, such as close relationships with extended family members that may buffer the influences of stress and prevent the development of psychopathology [42]. Some researchers have found that Latinos low on acculturation to the USA "host" culture report more severe PTSD symptoms [43-45]. In contrast, other studies support the notion that higher levels of acculturation may serve as a risk factor for PTSD. For example, Williams et al., [46] reported increased odds of PTSD onset among USA-born Latinos relative to foreign-born Latinos following musculoskeletal injuries. Adding more complexity, another study found no significant effect of acculturation and PTSD among Latinos [47]. These studies demonstrated that acculturative factors might play an important role in shaping how Latinos respond to traumatic events; however, given the mixed results, further study is necessary to understand how acculturation relates to PTSD symptoms.

While many studies have suggested that when trauma occurs on the developmental continuum, it has much to do with the subsequent psychopathology that ensures, but few studies have provided direct comparisons of traumatic events in childhood versus adulthood. We hypothesized that individuals reporting their Worst Traumatic Event (WTE) in childhood would exhibit greater levels of PTSD symptomatology. We also predicted that the relationship between timing of the trauma and PTSD symptomatology would be moderated by acculturation where individuals who reported their WTE and had the lowest level of acculturation would report the highest number of PTSD symptoms.

Methods

Study sample and design

This study was part of a NIH funded study that examined Latinos use of substance abuse aftercare, called Oxford Houses. Oxford Houses are democratically self-run recovery homes in which same-sexed individuals live together to establish sobriety; they are the largest residential self-help recovery program in the USA [48,49]. After IRB approval was obtained, participants for this study were recruited from multiple community-based organizations and health facilities from a large metropolitan area in the Midwest. Inclusion criteria required that participants 1) were Latino and 2) had completed a substance abuse treatment program. Study recruitment was structured such that while Latino individuals were being introduced to Oxford Houses, they were also given information about this research study. Recruiters explained that participation in the study was entirely voluntary and that it did not exclude them from being assigned to an Oxford House. If interested, participants could indicate their interest by approaching the recruiter and giving informed consent by signing the consent form provided. Consent forms were provided in both Spanish and English. No Latino participant based on any individual characteristics, such as criminal justice involvement or legal status, was refused participation in this study. Although Substance Use Disorders (SUDs) were not the focus of this paper, the use of a formerly substance abusing population was a strong proxy population to study trauma as rates of trauma among substance abusing populations ranges between 30-58% [50-52]. At the time of this study, all participants had completed substance use treatment and, therefore, no one was using substances. Interviews were completed by bilingual research assistants and participants received $30 after completing the interview [53].

This sample consisted of 104 Latinos (Table 1). The sample was predominately male (n = 87, 82.9%). The mean age of participants was 37.1 years (Range = 18-63, SD = 10.5). In terms of the ethnic breakdown, 37.5% (n = 39) were Mexicans, 45.2% (n = 47) were Puerto Ricans and 17.3% (n = 18) were other (i.e., Cuban, Guatemalan, El Salvadorian). Of these 104, 27% (n = 29) self-reported that they were immigrants. The average time in the USA was 21.2 years (SD = 14.0). The average score on the Psychological Acculturation Scale (PAS) [54] was 3.9 (i.e., 1.0-3.5, Latino; 3.6-6.5, bicultural; 6.6-9.0 American), signifying that the average participants was bicultural. The sample was highly traumatized with participants reporting an average of 9.6 (SD = 14.0) Criterion A events.

Variable		M	SD
Age		37.13	10.52
Education		11.45	2.03
Time in US		21.2	14
		n	%
Sex			
	Male	87	82.9
	Female	13	17.1
Ethnicity			
	Puerto Rican	47	45.2
	Mexican	39	37.5
	Other	18	17.3
Acculturation Status			
	Latino	44	42.3
	Bicultural	51	49
	American	9	8.7
Employment			
	Full-time (35+ hours per week)	38	36.5
	Part-time (regular hours)	13	12.5
	Part-time (irregular hours)	21	20.2
	Unemployed	20	19.2
	Other	11	10.6

Table 1: Sociodemographic Characteristics of the Patient Sample.

Measures

Only Section E of the Diagnostic Interview Schedule-IV (DIS) [55], which is based upon the diagnostic and statistical manual of mental disorders, fourth edition [56] was used to assess participants' PTSD symptoms as well as the nature and number of Criterion A events experienced. The first and second hypotheses were predicated on the DSM-IV-TR's conceptualization of PTSD. Participants who endorsed experiencing multiple traumatic events, were asked to nominate a WTE and to say at what age this event occurred. Examples of WTEs included sexual assaults, incest, physical abuse, and sudden death of friend/family member. The DIS was used because non-clinicians (i.e., research assistants) are able to administer this measure to participants. The PTSD section of the current version of the DIS was tested for reliability and validity in a study of substance abusers and had fair to good inter-rater reliability (kappa .40 - .67). The results are consistent with the literature on reliability of PTSD with substance abusers. While an English version of the DIS-IV was available, there was no published or commonly used Spanish version.

A team of translators worked to translate and back-translate the DIS. The translators were native Spanish speakers from Spanish-speaking locales that were appropriate for the study's participants in Chicago (e.g., Mexico, Puerto Rico). Furthermore, the Spanish version was piloted on Latinos with SUDs and was implemented clearly and effectively.

Acculturation was measured with the Psychological Acculturation Scale (PAS) [54]. The PAS is a 10-item, 9-point Likert-type scale (1 = only with Latinos to 9 = only with Anglos) self-report measure that assesses sense of attachment to and belonging within the USA and Hispanic/Latino cultures. An item sample includes "with what group of people do you feel you share most of our beliefs and values?" A mean total score is derived from the scale, where a score of 5 indicates bicultural orientation. Both the English and Spanish versions of the PAS have good internal consistency (α = .90 and .83) and correlate with language and cultural preferences, along with percentage of life spent in the USA and measures of cultural values [57].

Results

To ensure that individuals reporting WTE in childhood simply had not accrued more Criterion A events given that their trauma histories potentially began at an earlier age, differences in number of traumas between individuals reporting WTE in childhood and those reporting in adulthood were examined, and no significant differences were found (b = 1.79, SE = 2.80, t = .64, p = .52). To test if acculturation was a true moderator of the relationship between timing of the trauma and PTSD symptoms, the potential confound of a significant relationship between timing of the trauma and acculturation was examined; this potential confound was ruled out (b = 0.22, SE = 0.35, t = 0.63, p = .53).

To analyze the main hypotheses, a multiple regression analysis was conducted. Because of the relatively smalls sample size (i.e., 104 participants), data were bootstrapped to 5000 samples with a 95% confidence interval. For the first hypothesis, there was a significant relationship between timing of trauma such that participants who experienced their self-identified most traumatic event in childhood (i.e., before 18 years of age) exhibited greater levels of PTSD symptomatology than those who experienced their self-identified WTE in adulthood (b = 6.52, 95% CI = 2.91-9.79, SE = 1.80, p = .001). Acculturation was not a significant predictor of PTSD symptomology (b = 0.58, 95% CI = -0.09-1.20, SE = 0.32, t = 1.80, p =.08).

We explored the moderating effect of acculturation on the relationship between timing of the trauma and PTSD symptoms. There was a significant moderation effect (b = -1.06, SE = 0.49, t = -2.18, p = .03, CI = -1.95-0.15). The simple slopes of acculturation were examined. For those reporting WTE in childhood, the slope of acculturation was negative and not significant, (b = -0.48, SE = 0.37, t = -1.32, p = .19, CI = -1.21-0.24). For adults, the slope of acculturation was positive and not significant (b = 0.58, SE = 0.32, t = 1.80, p = .08 CI = -.06 -1.22; see figure 1).

Three simple slopes analyses were performed, fixing acculturation levels at the mean, one standard deviation below the mean, and one standard deviation above the mean [58]. For participants scoring average on PAS, the average difference in PTSD symptomology between those with childhood vs. adult trauma was 2.42 symptoms (95% CI = 0.73-4.12, SE = .85, t = 2.83, p < .01). Simple slopes analyses indicated that for participants one standard deviation below
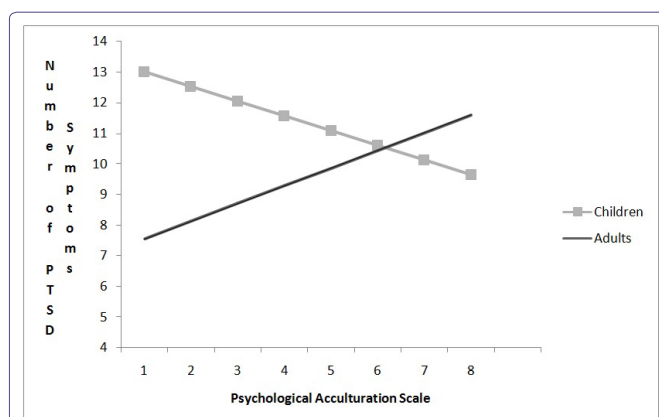

Figure 1: Interaction of Acculturation and Timing of Trauma (Child versus Adult) on Symptoms.

the mean on PAS (i.e., PAS score of 2.09), the average difference in PTSD symptomatology between those reporting child trauma as their WTE and those reporting adult trauma as their WTE was significantly different such that those reporting WTE in childhood had more PTSD symptoms (b = 4.30, 95%CI = 1.87-6.72, SE = 1.22, t = 3.52, p < .01). However, at one standard deviation above the mean (i.e., PAS score of 5.63), there was no significant difference between child WTE and adult WTE in terms of PTSD symptoms (b = 0.55, 95% CI = -1.84-2.94, SE = 1.20, t = 0.46, p = .65; see figure 2). A Johnson-Neyman technique was used in order to examine how far apart on acculturation participants needed to be in order for there to be a difference in the effect of trauma on symptomology. Hayes's PROCESS (2013) was used to examine the Johnson-Neyman significance regions; when acculturation score on the PAS was less than 4.47, the group with childhood and non-childhood traumas differed on symptomology.
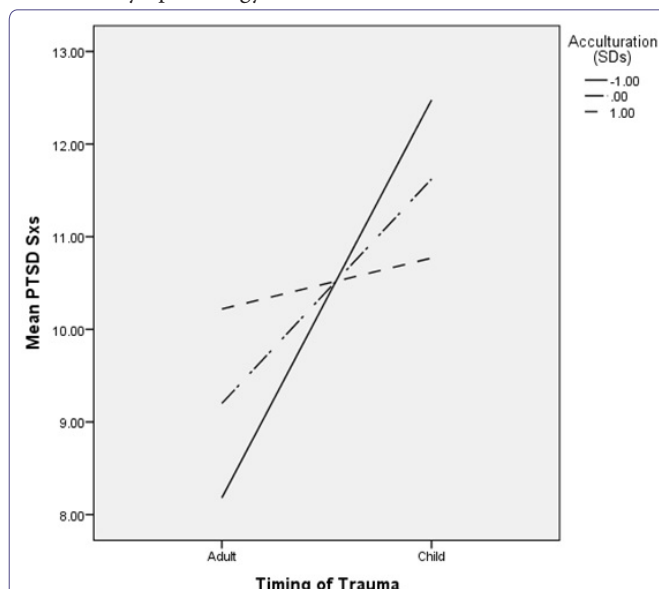

Figure 2: The Impact of Timing of Trauma (Child versus Adult) on Three Levels of Acculturation.

Acculturation (SDs) refer to three simple slopes analyses, fixing acculturation levels at the mean (0), one standard deviation below the mean (-1), and one standard deviation above the mean (+1).

Mean PTSD Sxs refers to PTSD symptomology

Two further simple slopes analyses of acculturation were examined, to further examine the interaction effect. For those

reporting WTE in childhood, the slope of acculturation was negative and not significant, (b = -0.48, 95% CI = -1.21-0.24, SE = 0.37, t = -1.32, p = .19). For adults, the slope of acculturation was positive and not significant (b = 0.58, 95% CI = -.06 -1.22, SE = 0.32, t = 1.80, p = .08).

Discussion

Findings from this study indicated that individuals who reported their worst traumatic event occurred in childhood had greater PTSD symptomatology than individuals reporting their WTE in adulthood. Our study is one of the few studies to provide a direct comparison of child versus adult trauma in terms of PTSD symptomatology. Our finding-that child trauma leads to worse symptomatology than adult trauma-is consistent with findings in neurobiology that stress experienced during periods of rapid brain development can lead to worse symptomatology [59].

The other main finding relates to acculturation. In the present study we found that the moderation effect of acculturation depends on the timing of the WTE with the influence of acculturation different for individuals reporting their WTE in childhood. Specifically, those who reported their WTE in childhood and had the lowest level of acculturation reported the highest number of PTSD symptoms. There was no significant effect for those reporting their WTE in adulthood.

Acculturation is a multifaceted and dynamic phenomenon. On one side, acculturation has been linked to the erosion of core institutions of social cohesion, like culture and family systems [37,60]; and on the other side, higher levels of acculturation have been linked to greater help-seeking behaviors [61,62], fewer barriers to care [63-65] and more resources [66].

In the present study, it was individuals who reported the lowest level of acculturation and their WTE in childhood who were at greatest risk for PTSD. One plausible explanation for this scenario may be that individuals who experienced trauma as children and were not acculturated to USA cultural norms had the least opportunity to seek the services that would lead to the attenuation of trauma symptoms. Moreover, if the child is unacculturated, it is likely that the family has similarly low levels of acculturation, subsequently rendering them less likely to access appropriate services. Thus, a low acculturated family might be less able to seek services for their traumatized child. Additionally, given that that child trauma is most often perpetrated within the context of a family system [21,22], this raises questions about whether the very system responsible for the abuse would be the most likely source of its remediation. Thus, instead of the child's family reporting the abuse, it may be that children reach outside of the family to disclose (e.g., teacher, counselor), which may lead to intervention. It may also be that more acculturated children-who are more comfortable within the system, have more frequent contacts with individuals outside of their family and have greater command of English-are more likely to either be noticed by or confide in an adult. In summary, more acculturated children may more easily navigate the social structures that would permit disclosure, facilitate intervention and, subsequently, lead to lower PTSD symptomatology.

Another explanation that may elucidate the relationship between child trauma, low acculturation, and PTSD symptomatology draws from work on the effects of cumulative stress [67-69]. Converging research from both behavioral and neurobiological studies demonstrates the idea that increasing cumulative exposure to stressful events leads to greater psychopathology and neurobiological changes.

In terms of psychopathology, cumulative adversity and repeated exposure to stressful life events are known to increase risk of mood and anxiety disorders [70-75] and addictive disorders [69-73]. Likewise, a recent study by Ansell and colleagues found that cumulative stress was related to smaller gray matter volume in prefrontal and limbic regions involved in stress, emotion and reward regulation and impulse control [76].

Acculturation in the context of Latinos living in the USA is inherently predicated on the immigration process. This notion of cumulative stress applies to the immigration and acculturation processes because substantial research supports the idea that immigration and the subsequent acculturation processes are highly stressful [24,77-80]. Low acculturated families often contend with stressors related to economic, linguistic, and cultural barriers [81-83].

These chronic and unremitting stressors may accumulate in insidious ways-both directly and indirectly-and foster the development of psychopathology. First, if a child has been traumatized and lives within a larger social ecology that is chaotic and stressful, the child may experience the cumulative effects of both the trauma and the larger social context. Second, the reaction of the family, namely the parents, has been shown to be a more powerful predictor of the child's subsequent symptom development than the abuse-related factors [84-89]. For the lowly acculturated parents who are also living in a high-stress environment, they may be unable to respond to the child appropriately to both attenuate the effects of the trauma and teach appropriate coping methods (e.g., self-soothing). If these individuals, traumatized as children, did not receive appropriate intervention for PTSD related symptoms, it is unlikely that these symptoms would have spontaneously remitted [90-92]. Thus, it is quite plausible that the participants of the current study, though adults, may have chronic PTSD related to trauma(s) in childhood.

In terms of individual who reported their worst traumatic event occurred during adulthood, they had lower PTSD symptomatology. Earlier research has supported the notion that adult trauma is less pernicious because adults have developed more efficacious coping strategies and have better access to resources to deal with the overwhelming event [18,19]. Thus, regardless of acculturative status, individuals who reported their WTE as adults may have been better equipped to deal with sequelae of the WTE.

A limitation of this study included its cross-sectional design. Therefore, the temporal ordering of acculturation processes and trauma cannot be established. Relatedly, the measures were all given to adult participants who were asked to recall their WTE and then attribute symptoms to an event that, in some cases, occurred decades ago. This issue of retrospective recall bias is one that is well documented [93] and beleaguers the entire set of cross-sectional trauma literature. Future studies that examine trauma and acculturation with a longitudinal design may do much to assist in understanding more about the temporal ordering of these phenomena and may even elucidate the most effective time to intervene. Another limitation deals with issues related to trauma typology. While we collected data on the timing of when the WTE occurred, we did not investigate the trauma typology. Future work that looks at the intersection of trauma typology and timing of WTE would enrich understanding of trauma and its sequelae. Also, while an English version of the DIS-IV was available, there was no published Spanish version; therefore, there are no psychometric properties. Our study

represents the first time the DIS-IV was used in Spanish, a team of native Spanish speakers worked to translate and back-translate the instrument. Another limitation was that ethnicity was not directly tested in this study by comparing to another group. Finally, the nature of the study's sample hinders generalizability. Although trauma and SUDs are highly comorbid, the fact that this was a treatment-seeking population limits the generalizability of its conclusions. Future work that seeks to replicate these findings with non-substance abusing populations would help clarify the broader relationship that trauma shares with symptomatology and acculturation. Similarly, future work that explores how PTSD symptoms may manifest differently in samples with and without substance abuse histories would do much to enhance our understanding of both the course and treatment of PTSD.

Implications from the current study suggest that individuals with child trauma and low acculturation may be at risk for psychopathology. Interventions that target these especially vulnerable individuals, particularly during childhood, in ways that promote cultural sensitivity and inclusion may do well to attenuate PTSD and other disorders. However, it is important to note that interventions that target only the trauma may be missing the larger social ecology in which these individuals live. Low acculturation is linked to a host of social and economic stressors. The effects of high-stress, chaotic environments in which cumulative stress accrues may have more to do with subsequent symptomatology than the trauma itself [94]. At present, there is only limited research that looks at the effects of cumulative stress on humans [76]. Thus, future work that examines the causes and effects of cumulative stress will do much to facilitate the treatment of mental disorders and the prevention of the circumstances that cause them. Additionally, the full ramifications of acculturation are not yet understood. More work is needed to precisely delineate when acculturation is a risk factor and when it's protective. Likewise, research that elucidates how interventions can accentuate the benefits of acculturation while attenuating its adverse effects may be of use in designing appropriate interventions.

Acknowledgment

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