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## Hurricanes and Indigenous Families: Understanding connections with discrimination, social support, and violence on PTSD

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### Abstract

The purpose of this article is to use the culturally grounded Framework of Historical Oppression, Resilience, and Transcendence (FHORT) to examine (a) the experiences and impacts of hurricanes on Indigenous (i.e., Native American) family members in the Gulf Coast and (b) to identify how experiencing hurricanes and natural disasters, family and community support, adverse childhood experiences (ACE), discrimination and intimate partner violence (IPV) may be related to post-traumatic stress disorder (PTSD) among two Southeastern tribes. Results were drawn from a convergent mixed-methodology design, which incorporates ethnographic qualitative data and a culturally grounded quantitative follow-up survey. Thematic analysis of qualitative data with 208 participants from a coastal Indigenous community revealed several emergent themes, namely (a) *the Impact of Federal Recognition on Hurricane Affected Communities*; (b) *Rapidly Changing Landscape, Lives, and Communities*; and (c) *Family and Personal Effects of Hurricane Experiences*. Descriptive and hierarchical regression analysis of 127 participants across two Southeastern tribes indicate that many participants frequently thought of losses from hurricanes and disasters and that over one-third of the sample met the criteria for clinically significant PTSD. Regression results affirmed the independent effects of hurricane experiences, ACE, community and family support as they relate to PTSD; yet IPV and discrimination were the strongest predictors of PTSD. Results reveal the extensive repercussions of hurricanes on Indigenous families of the Southeast, which are inseparable from and exacerbated by the insidious historical oppression, including discrimination, already experienced by these groups.

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## Keywords

Hurricanes; Family; Indigenous; PTSD; Intimate Partner Violence; Adverse Childhood Events; Discrimination; Historical Oppression; Community and Family Support

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Despite the increasing frequency and severity of hurricanes, social work literature examining their impact on individuals, families, and communities remains limited. Recent hurricanes have devastated many parts of the United States and other countries, but the U.S. Gulf Coast is an area that is particularly vulnerable to both tropical storms and hurricanes. Recent studies have shown that one of the many impacts of climate change on this region is the greater frequency and intensity of extreme weather events (Lambeth, 2016). Residents of the Gulf Coast have suffered devastating material and emotional losses as a result of multiple hurricanes over the past several decades, the most notable being the duo in 2005 of Hurricanes Katrina and Rita. Although 15 years have passed since they hit New Orleans and surrounding areas, studies of Katrina remain prominent in the scholarly literature - a testament to the gravity, complexity, and longevity of the storm's impact (Burton, 2015; Fussell, 2015; Lai, Kelley, Harrison, Thompson, & Self-Brown, 2015; Lenane et al., 2018; Liang, Hayashi, Bennett, Johnson, & Aten, 2015; Marable & Clarke, 2016). Yet, research remains limited, with significant gaps in knowledge regarding ethnic minority groups' and families' experiences of hurricanes and their sequelae.

Like other ethnic minorities, Indigenous peoples of the Gulf South were affected by hurricanes in specific ways that differ from other groups (d'Oney, 2008). We utilize the Indigenous-based Framework of Historical Oppression, Resilience, and Transcendence (FHORT) to situate this inquiry and understand how a context of historical oppression has set the stage for living on the margins, both in terms of geography and vulnerability to natural disasters, along with access to the resources, privileges, and quality of life that are afforded to those with greater economic, social, and political power (Author(s), 2017). Historical oppression encompasses the insidious, systematic, and intergenerational imposition of oppression that undermines the daily lives of many Indigenous American peoples including individuals, families, and communities (Author(s), 2015c; Author(s), 2015d). Historical oppression includes historical traumas (e.g., forced relocation, boarding school, land dispossession, religious suppression), environmental injustice, chronic poverty, discrimination, and marginalization, and is thought to be intricately connected to the health inequities experienced by Indigenous peoples (Author(s), 2017; Kirmayer, L. J., Gone, & Moses, 2014; Wexler, 2014). These disparities represent a failure of the U.S. federal government to uphold their treaty agreements with Indigenous governments to provide for the health and wellness of Indigenous peoples from federally recognized tribes (US Civil Rights Commission, 2004), not to mention state-recognized tribes, who, because they are not afforded the same rights, experience even greater oppression.

Indeed, historical oppression is thought to drive the health disparities experienced by Indigenous peoples of the United States who continue to be overburdened with severe health conditions (American Psychological Association, 2010; Breiding et al., 2014; Centers for Disease Control and Prevention, 2013; Centers for Disease Control and Prevention (CDC),

2016a; Centers for Disease Control and Prevention (CDC), 2016b; Espey et al., 2014; US Civil Rights Commission, 2004), such as a 5.5-year lower life expectancy rate than the general U.S. population (Indian Health Service, 2018). Among these, Indigenous peoples are reported to experience psychological distress at one and a half times the rate of the general population and are at twice the risk for posttraumatic stress disorder (PTSD) (American Psychological Association, 2010). This higher rate of PTSD, particularly among women, has been shown to be related to greater exposure to violence and trauma, as well as vulnerability to adverse life events due to constrained economic and social status (Ka'apu & Author(s), 2018). Indigenous peoples experience a high risk for violence as well; rates of intimate partner violence (IPV), on average, are 1.7 times higher for American Indian and Alaska Native (AI/AN) women (Breiding, Chen, & Black, 2014), and rates of child maltreatment tend to be 1.5 times higher for AI/AN children as compared with Whites (US Department of Health and Human Services, 2013). Given the striking difficulties experienced by AI/AN peoples in their everyday lives, it is easy to imagine how these emotional and behavioral health issues might be exacerbated in the wake of a hurricane, a potentially stressful and traumatic event for survivors and their families (Barnes, 2018; Komarovskaya et al., 2014; Raveis, VanDevanter, Kovner, & Gershon, 2017; Ursano et al., 2014). Moreover, this context of historical oppression and resultant health disparities place Indigenous peoples at even greater risk in the face of natural disaster.

## Hurricanes and the FHORT

Given that health disparities extend across physical and mental domains, any approach to significantly addressing disparities associated with hurricanes must be holistic and incorporate the context of historical oppression. Hurricanes and natural disasters can adversely affect anyone, regardless of race, class, gender, and other identity categories. The consequences of hurricanes on marginalized groups can differ due to limitations on resources, protective factors, and buffers that absorb the shock and ripple effects of hurricanes. Indeed, members of ethnic minority groups may experience additional barriers and difficulties in recovering from such disasters as a result of identity characteristics, due to the political, cultural, and structural factors that shape their everyday lives (e.g., poverty, discrimination, marginalization). Recognizing this, some scholars have examined the differential experiences of ethnic minorities during and after Hurricane Katrina and other storms that affected the Gulf South. However, to date this research tends to focus on African American experiences (Alawiyah, Bell, Pyles, & Runnels, 2011; Hamilton-Mason et al., 2012; Rivera & Miller, 2007; Thomas, 2012; Toldson, Ray, Hatcher, & Straughn Louis, 2011; White, Philpot, Wylie, & McGowen, 2007).

Extant research on the differential consequences of Hurricane Katrina on ethnic minorities highlights the salience of ethnic and cultural differences in hurricane survival and recovery (Alawiyah et al., 2011; Hamilton-Mason et al., 2012; Rivera & Miller, 2007; Toldson et al., 2011; VanLandingham, 2017; White et al., 2007). In a study comparing the long-term impacts of Hurricane Katrina on White and Black hurricane survivors, Toldson et al. (2011) found that "Black hurricane survivors were significantly more likely than Whites to report a long-term negative impact on finances, health, and emotional well-being" (p. 372). Other studies have found that Blacks were more likely than Whites to experience feelings of

depression and anger in the wake of the storm (White et al., 2007), and that African-Americans coped with hurricane experiences through faith and spirituality (Alawiyah et al., 2011; Hamilton-Mason et al., 2012; Thomas, 2012). Research on racial differences in experiences of Hurricane Katrina has also examined cultural factors contributing to the resilience of the Vietnamese population, a sizable ethnic minority in New Orleans East (VanLandingham, 2017). This body of literature reveals the importance of studying the potentially differential experiences of ethnic minorities in the face of natural disaster, as they face unique political and structural challenges in navigating these crisis situations, and draw on culturally-specific strengths and resources during recovery.

However, the hurricane experiences of the Indigenous peoples of the Gulf South have received only limited scholarly attention (Bailey, Gramling, & Laska, 2014; Collins, 2008; Dardar, 2008; d’Oney, 2008; Jolivette, 2008; Lambeth, 2016; Simms, 2016; Solet, 2006). The Indigenous peoples of the Gulf South depend on the eroding coastal waterways for their livelihoods, making them even more vulnerable to material and environmental losses in the wake of Katrina, despite their efforts to defend and restore “what was being eaten up by the avarice of industry and commerce” (Dardar, 2008). Yet both the mass media and academic discourse have overlooked the effects of Katrina on Indigenous peoples, rendering their experiences invisible and further complicating their recovery (Collins, 2008). This scholarship demonstrates that the experiences and impacts of hurricanes on Indigenous peoples in the Gulf South must be examined within the context of historical oppression in which they live.

### **Resilience and Transcendence and Indigenous Peoples.**

The FHORT proposes that historical oppression has set the stage for and contributed to the health inequities experienced by Indigenous peoples, yet resilience and transcendence have been continually demonstrated among such populations despite their experiences of chronic adversity (Author(s), 2017; Goodkind, Hess, Gorman, & Parker, 2012). The FHORT (Author(s), 2017) works from a non-linear, relational worldview—encompassing the context and mental, physical, spiritual, and emotional realms—that are proposed and recommended by Indigenous scholars (Author(s), 2017; Fleming & Ledogar, 2008). This article focuses on historical oppression as a major risk factor for wellness in the wake of hurricanes, as it has led to a disruption in cultural continuity, cultural knowledge, and community. It can interact with other risk factors, such as violence, and protective factors, such as family and community support, to affect quality of life and contemporary outcomes that heavily impact the daily lives of Indigenous peoples (Author(s), 2017). Historical oppression is in constant tension with the protective factors related to family and community wellness, especially when struggling to cope with adverse events like hurricanes that necessitate external intervention to facilitate the recovery process.

Historical oppression in its many forms has created significant adversity for Indigenous peoples, who, through the very act of survival and continuance, have demonstrated resilience and in many cases transcendence. According to the FHORT (Author(s), 2017; Kirmayer, L. J. et al., 2014), people, cultures, and communities may develop new insights and degrees of actualization in response to historical oppression, which challenges the idea that people may

be damaged goods as a result of exposure to adversity (Fleming & Ledogar, 2008). For example, with the absence of formal support structures that effectively serve Indigenous communities, informal social and family support structures may be more prominent (Author(s), 2015b; Author(s), 2017). This is not meant to trivialize the severe degree of exploitation and imposition on the quality of life historical oppression has imposed upon Indigenous peoples, but to highlight their incredible resilience in the face of adversity. We emphasize the need for equity in access to the highest degree of wellness for Indigenous and all peoples.

Goodkind and colleagues (2012) indicate one of the most profound consequences of historical oppression is the disruption of connection, closeness, and communication across generations and relationships. The breakdown of social cohesion may be further aggravated by hurricanes and other adverse weather events that uproot tribal families. Additionally, repressed anger due to chronic oppression can lead to violence, depression, and substance abuse as coping methods—which mirror extant social and behavioral health disparities (Author(s), 2015a; Author(s), 2015c; Burnette & Renner, 2016; Burnette et al., 2016; Gone & Trimble, 2012).

Researchers note that ethnic identification and connectedness, in contrast, seem to buffer or protect against adverse experiences (Bersamin et al., 2014; Brady, 1995; Whitbeck, Chen, Hoyt, & Adams, 2004; Zimmerman, Ramirez, Washienko, Walter, & Dyer, 1998). Indigenous identity is inherently social; being connected to one's ethnic identity (known as enculturation) is widely understood to contribute to health and wellness (King et al., 2009). Family connectedness has been identified as a culturally-based protective factor against a variety of adverse health conditions and behaviors among Indigenous people (McMahon, Kenyon, & Carter, 2012; Mohatt et al., 2011; Philip, Ford, Henry, Rasmus, & Allen, 2016; Ungar, 2008; Walls, Chapple, & Johnson, 2007). However, historical oppression has resulted in widespread disruption in families and communities, the transmission of values, languages, and traditions (King et al., 2009). Thus, rebuilding family, cultural, and community connections is needed to begin to repair the negative effects of such oppression (Mohatt, Fok, Burket, Henry, & Allen, 2011); providing resources to rebuild communities affected by hurricanes may be a first step.

Resilience is generally characterized as making positive adaptations despite experiencing significant adversity, encompassing the development of wellness despite being at high risk for negative outcomes, sustained competence despite experiencing stress, and recovering well after experiencing trauma, such as a hurricane (Fleming & Ledogar, 2008). In the aftermath of a hurricane, a family's level of resilience may be connected to their ability to bounce back economically, emotionally and physically, adopting a holistic point of view reflective of Indigenous notions of sociocultural health and mental health, which differ from Western views. The FHORT is commensurate with Indigenous notions of health and wellness, which also tend to place importance on persons living harmoniously with their environment, a key factor of interest related to hurricanes, and values the balance of physical, social, emotional, and spiritual life elements (Brady, 1995; Hodge, Limb, & Cross, 2009; King et al., 2009; Kirmayer, Laurence J., Sehdev, & Isaac, 2009). The Indigenous view of balance extends beyond the individual to include living in harmony with the

community, others, and the spirit world (Hodge et al., 2009; Kirmayer, Laurence J. et al., 2009). The absence of wellness or an imbalance includes imbalance between people and the natural environment, and connections to family and relations are essential to wellness (King et al., 2009). While there is some evidence of the protective nature of family connectedness in relation to wellness, there is little research specifically focused on the hurricane experiences of Indigenous families, and the potential risk and protective factors for family wellness in the face of natural disaster.

## Federal Recognition and Historical Oppression

For this article, we view hurricanes and federal recognition complexities as interacting risk factors that relate to overall wellness. American Indians and Alaska Natives represent diverse groups of over 576 federally recognized tribes (Bureau of Indian Affairs, 2018), over 60 state- recognized tribes (National Conference on State Legislatures, 2016), and around 400 tribes that exist outside either jurisdiction (U.S. Government Accountability Office, 2012). The majority (approximately 80%) of state- recognized tribes live in the southeastern U.S., with over half of these state- recognized tribes residing on the Gulf Coast or hurricane affected areas.<sup>1</sup> State-recognized tribes are characterized not only as having decreased access to many resources available to Federally recognized tribes, they are primarily located in the eastern U.S., with many being landless, or not having land reservations (National Conference on State Legislatures, 2016; Salazar, 2016). Federally recognized tribal members are eligible for health care through Indian Health Service (IHS) as part of treaty agreements, whereas state-recognized tribes do not receive this benefit. Many Southeastern tribes experienced intersecting oppressions such as being first hit by colonization, and despite many of the original members being killed or forcibly removed West, continuing to fight for basic rights and federal recognition. Distinct trust relationships based on treaty agreements with politically sovereign tribes warrant the examination of Indigenous health disparities separately from those of other ethnic minorities (US Civil Rights Commission, 2004).

For the particular tribe that is the focus of this manuscript, a lack of federal recognition has severely impacted the ability of Indigenous members to access resources following natural disasters such as hurricanes. Its lack of federal recognition undermines the right of the tribe to protect their water, air, and land (Crepelle, 2018). This occurs because federally recognized tribes are generally given authority over the land under tribal control, in addition to having criminal and civic jurisdiction over individuals on tribal land (Crepelle, 2018). Environmental regulation is an important part of this tribal sovereignty (Crepelle, 2018). This undermining of tribal sovereignty over the land is particularly concerning for this coastal tribe, who depend on the land for both economic subsistence and for social and cultural resources (Billiot, 2017).

Not being federally recognized has important practical implications not only related to recovery, because the tribe is ineligible for federal aid because of its lack of tribal recognition, but also negatively impacts the experience of Indigenous members living in the

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<sup>1</sup>\*Alabama, Arkansas, Florida, \*Georgia, Kentucky, \*Louisiana, Mississippi, \*North Carolina, \*South Carolina, Tennessee, \*Maryland, \*Virginia, and West Virginia. Those with state recognized tribes are denoted with an asterisk (\*).

community, who continually have their identity questioned by others (Crepelle, 2018). Continuing land loss and political and social marginalization exacerbates the vulnerability of Indigenous people to environmental changes, though little research has explored the relationship of environmental change and its impact on Indigenous people, particularly related to health outcomes (Billiot, 2017). Indeed, excluding tribal communities from the protection of the levee system seems to be a clear form of environmental racism (Crepelle, 2018). Lack of recognition also facilitated the exploitation of the land by oil companies, who would have been limited in their ability to cut channels of canals through the land of the tribe if it had been held in federal trust (Crepelle, 2018). Following the devastating BP Oil Spill, BP refused the claim filed by the tribe, stating that while they did process claims from federally recognized tribes, they would not recognize a claim from a non-recognized tribe (Crepelle, 2018). Though the impact of climate change and natural disasters such as hurricanes is difficult for any coastal community, for this Indigenous tribe, not being federally recognized has compounded existing barriers and limited the ability of tribal members to access resource related to rebuilding and recovery.

## Effects of Hurricanes on Family

### Disaster and IPV.

After a disaster, IPV and gender-based violence often increases (Anastario, Larrance, & Lawry, 2008; Anastario, Shehab, & Lawry, 2009; Buttell & Carney, 2009; First, First, & Houston, 2017; Harville, Taylor, Tesfai, Xiong, & Buekens, 2011; Lauve-Moon & Ferreira, 2017). After Hurricane Katrina, for example, the New Orleans Police Department experienced an approximate 7% increase in proportion of calls reporting domestic violence as compared to the three years prior to Katrina (Buttell & Carney, 2009). Women living in trailer parks due to displacement after Katrina experienced an increase in IPV of approximately 5% two years after the storm (Anastario et al., 2009). Hurricane survivors reported increased relationship conflict and use of violence in conflicts, particularly those who experienced damage in the storm (Harville et al., 2011). Displaced women who experienced violence after a disaster also reported some depressive symptoms, including changes in sleep and appetite, thoughts of suicide, and low self-esteem, further demonstrating the tremendous impact of disaster on individuals and families (Anastario et al., 2008).

In the aftermath of a hurricane, safety nets for people impacted by IPV such as informal social supports, medical support, and law enforcement support can become fragmented (Jenkins & Phillips, 2008). Further, while more women seek support services after a disaster, shelters and other resource providers report operating with less resources (Enarson, 1999). After the Deepwater Horizon Oil Spill those who reported IPV after the disaster reported receiving no or extremely limited social and emotional support as compared to those who did not experience IPV (Lauve-Moon & Ferreira, 2017). For parents, disrupted kinship and family networks pose unique challenges for families, particularly for women and low-income families (Peek & Fothergill, 2008). Past research on disasters and IPV has not broken down the unique experiences of subgroups related to race, class, ability, environment, and more (First et al., 2017). Of the aforementioned studies, only one study included

participants identified as AI/AN (2%, (Lauve-Moon & Ferreira, 2017)) and one study included participants identified as “other” (2%, (Harville et al., 2011)). Some studies did not include Indigenous people at all (Jenkins & Phillips, 2008; Peek & Fothergill, 2008) or reported incomplete demographics (Anastario et al., 2008; Anastario et al., 2009). Due to the higher rates of IPV in Indigenous communities (Breiding et al., 2014) further research is needed on the relationship between disaster and family violence with a specific emphasis on Indigenous communities.

### **PTSD and Disaster.**

Development of PTSD symptoms and Acute Stress Disorder (ASD) often occurs after a natural disaster (Coker et al., 2006; David et al., 1996; Galea et al., 2007; Ironson et al., 1997; Kessler et al., 2008; Mills, Edmondson, & Park, 2007). One week after Hurricane Andrew, approximately one third of participants sampled met the criteria for PTSD, with those reporting a perceived loss at greatest risk (Ironson et al., 1997). After Hurricane Andrew, approximately 36% of participants sampled met criteria for PTSD 6–12 months after the hurricane (David et al., 1996). Further, participants reporting more frequent disruptions in the rebuilding process one year after Hurricane Andrew were associated with higher prevalence rates of PTSD (Burnett et al., 1997). Two studies interviewed evacuees of Hurricane Katrina in the first two weeks after the storm and found that approximately 40% had symptoms of PTSD (Coker et al., 2006) and 60% had ASD (Mills et al., 2007). Approximately six months after Katrina, approximately 16% of participants in hurricane affected areas screened positive for PTSD with the prevalence closer to 30% for the metro New Orleans area (Galea et al., 2007). Furthermore, one year after the storm, prevalence rates of PTSD rose by approximately 6% when compared to the 5–8 month rate (Kessler et al., 2008).

Race likely intersects with mental health outcomes in storms, as participants who identified as Black reported more severe symptoms of ASD overall (Mills et al., 2007). However, indigenous people’s experiences were not the focus of any of the studies mentioned, and only one study included any indigenous peoples in its sample (Ironson et al., 1997). In some studies, Indigenous peoples experiences were not visible as race was defined as “other” for those not identifying as Non-Hispanic White or Non-Hispanic Black (Galea et al., 2007; Kessler et al., 2008). While it is evident from previous studies that exposure to hurricanes may increase risk for PTSD or ASD, there is a need for more research on the specific impact on Indigenous peoples.

### **Research Aims**

To fill gaps in the existing literature, the aim of the current study was to explore indigenous families’ experiences of hurricanes through a mixed-methods approach, and draw implications and recommendations for policy and practice that might support indigenous families’ resilience in the wake of hurricane experiences. The overarching research question was “How have tribal members experienced hurricanes, and how might such stressors be related to family functioning, historical oppression, and sociodemographic factors?” To provide rich, detailed descriptions of indigenous families’ hurricane experiences, we drew



on qualitative data collected from one Coastal Tribe. Results from qualitative data drove further exploration of indigenous families' hurricane experiences through quantitative methods, testing three hypotheses: (a) Personal experience of hurricanes will be higher in the Coastal Tribe than the Inland tribe; (b) Historical losses from disasters, flooding, pollution and natural resources, adverse childhood events (ACE), discrimination, and experiencing IPV will be risk factors (positively associated) for PTSD symptoms; and (c) Social and family support will be protective factors (negatively associated) with PTSD.

## Method

### Research Design

This convergent mixed-methods study merges findings from both quantitative and qualitative data (Creswell, 2015), incorporating the "Toolkit for Ethical and Culturally Sensitive Research with Indigenous Communities" (Author(s), Sanders, Butcher, & Rand, 2014). A critical ethnography (study of culture that considers power dynamics in the analysis) was used to understand tribal community members' experiences of hurricanes and how such stressors may be related to family functioning, historical oppression, and sociodemographic factors. Critical ethnographies prioritize the voices of participants, reporting results using language in participants' own words. After qualitative data collection and analysis were complete, we conducted a survey to examine whether themes identified in qualitative research (i.e., IPV, trauma, family and community resilience, and discrimination) were statistically significant depending on personal hurricane experience. This survey was administered to members of two Southeastern tribes who have been exposed to hurricanes, including, but not limited to, tribal members participating in the qualitative portion of the study, who are exposed to hurricanes most frequently as they live on the coast. Multiple forms of data were collected, as prescribed by this study's ethnographic methodology (Carspecken, 1996).

### Setting

To enable an understanding of commonalities and differences across Indigenous populations, we included two tribes in this research process: one that is federally recognized (termed "Inland Tribe" to protect anonymity) and another that is state-recognized but not federally recognized (termed "Coastal Tribe"). The names of these tribes are kept confidential to protect each community's identity. We leave any details that could reveal the tribal identities of either tribe out of this publication as part of our agreements with the tribes, and in accordance with the aforementioned toolkit (Author(s), 2014). Tribes have experienced colonialism in distinct ways at different historical periods, therefore tribes and regions vary considerably and should be considered a heterogeneous group. As discussed previously, tribal recognition can have a substantial influence on resources, social and health outcomes, and community infrastructure.

The Inland Tribe is a federally recognized tribe located further inland from the Gulf of Mexico. It has experienced significant economic development and has its own schools, health care and medical services, police force, fire department, land management agency, and health and human services facilities. The Coastal Tribe is a state-recognized tribe

located in proximity to water and the Gulf Coast. The Coastal Tribe has fewer economic resources, and the absence of federal recognition has undermined its ability to provide tribal infrastructure for its members. The Coastal Tribe offers employment, educational, and other individual programs for youth and tribal members.

Both tribes have experienced severe historical oppression related to the history of race relations and civil rights issues in the Deep South, where they have experienced educational discrimination and economic marginalization. During the early to mid-1900s (i.e., the time of segregation), tribal members from both locales were restricted from attending either White or African American schools. Many tribal members were not afforded the opportunity for any formal education, and others either attended missionary or tribal schools. Tribal members over 55 often completed less than a middle-school level of formal education. Serving as sharecroppers or living off the riverine, estuarine, and coastal environments of the Gulf South severely restrained their capacity for upward economic mobility. Thus, both tribes depended on informal social networks and subsistence for their living and livelihood until other economic forms of income became available after the 1970s.

### Data Collection

Recruitment efforts for all data (qualitative and quantitative) included word of mouth and disseminating fliers through Facebook, community agencies, tribal websites, and newsletters. The focus now turns to data collection for the qualitative and quantitative study components.

**Qualitative.**—After tribal and Tulane IRB approval, data collection included: (a) participant observation; (b) individually-focused interviews; (c) family interviews; (d) and focus groups with both tribes. Participant compensation for individual interviews and focus group was a \$20 gift card to a local department store, and compensation for family interviews was a \$60 gift card for the whole family. Interviews took place where the participant preferred, either in a private conference room, homes, or local agencies. Participants were purposively assigned to different focus groups and sub-samples by their age (youth (ages 11–23), adults (ages 24–55), elders (ages 56 and older) and their expertise (i.e., professional experience with behavioral health, social services, and family services). Participants were notified about the study with its information and showed up to their interview(s) where they formally consented at that time. All participants who consented to participate were interviewed. Research questions derived from our research aims were developed into a semi-structured interview guide for focus groups and interviews. Following the methodological and cultural recommendations, individually-focused interviews took a life history approach (Carspecken, 1996). Examples of probes from the semi-structured interview guide included: “Describe a hard time growing up and how your family responded to that challenge? What helped you get through this challenge?” Importantly, hurricanes were not directly asked about, but came up as a major theme in the qualitative results, adding to the credibility and trustworthiness of results. All participants who could be reached were given a copy of their individual life history interview, and interview question wording was geared for 5<sup>th</sup>-grade comprehension to enhance understanding. A total of 208 Coastal Tribe members participated in the qualitative portion of this study through individual

interviews, family interviews, and focus groups. We gained perspectives from participants across the lifespan (elders, adults, youth, and professions). Interviews and focus groups lasted approximately one hour each.

**Quantitative.**—Participants from the qualitative portion of the study, participants from the Inland Tribe, and all tribal community members were eligible to participate in the survey. This survey was made available electronically through Qualtrics, either via an online survey link or through email for participants who enrolled in the qualitative component (Qualtrics, 2014). All survey participants were entered into a drawing for \$50 gift cards with over half ( $n=70$ , 55%) of the participants receiving this gift card. Participants' names were kept separately from data and collected only for compensation purposes. In total, 161 participants started the survey with 79% completing the survey ( $n=127$ ). Participant demographics are depicted in Table 1.

### Data Analysis

**Qualitative.**—Collaborative, team-based data analysis methods were used given the extensive ethnographic data collected (Guest & MacQueen, 2008). All qualitative data were professionally transcribed before being transferred to NVivo Version 11<sup>3</sup> for analysis. To enhance cultural sensitivity, data analysis teams included Indigenous PhD students from each tribe and two non-Indigenous PhD students along with the first author. Reconstructive analysis, a specific method of thematic qualitative analysis, was used throughout, which involved: (a) reading and listening to audio files multiple times, arriving at preliminary interpretations with a holistic conception of data; (b) completing line-by-line coding to create the hierarchical codes and sub-codes that were achieved through consensus of the preliminary analysis; and (c) identifying implicit and explicit meanings of the data, which were on a continuum between obvious and more remote or requiring more interpretation. Bi-weekly meeting provided the opportunity for dialogic discussion of results. Inter-rater reliability was evaluated using Cohen's Kappa coefficients (McHugh, 2012) at the beginning, with checks throughout data analysis to ensure rigor and consistency; these inquiries yielded extremely high Kappa coefficients (.90 or above).

Unifying and culturally-specific themes were identified by indicating the tribe in the results for reference. The theme "hurricane" was coded across 34 sources (20 individual interviews, 10 family interviews, and 4 focus groups) and referenced 91 times. Regarding gender breakdown, hurricanes were mentioned by 37 female participants and 11 male participants.

**Rigor.**—Meeting the standards of rigor for this particular method (Carspecken, 1996), each participant who was reachable received a summary of the results, copies of their interview, survey information, and opportunities to make any changes to the interview transcript or results (i.e., member-checks). No participants disagreed with interpretations, and many extended and elaborated upon findings. Results were disseminated to tribes on more than 10 occasions through trainings, along with tribal agency, tribal council, and community group presentations and community dialogue groups. Weekly debriefing took place across research

<sup>3</sup>A qualitative data analysis software program.

team members, and ‘consistency checks’ ensured participants’ explanations were congruent with what was reported. Multiple participants (55.5%) were interviewed more than one time.

**Quantitative.**—We used qualitative results to investigate the emergent hypotheses that (a) Personal experience of hurricanes will be higher in the Coastal Tribe than the Inland tribe; (b) Historical losses from disasters, flooding, pollution and natural resources, adverse childhood events (ACE), discrimination, and experiencing IPV will be risk factors (positively associated) for PTSD symptoms; and (c) Social and family support will be protective factors (negatively associated) with PTSD. The analyses proceeded in three steps. First, we examined the descriptive characteristics and bivariate relationships between the independent and PTSD symptoms, following the conceptual model. Second, we examined whether there were significant differences in hurricane experience between the Coastal and the Inland tribe using a chi-Square test of independence. Third, we used hierarchical linear regression to see which variables were significantly associated with the outcome of interest, PTSD symptoms, in the following steps: (1) Demographic variables and historical loss from disasters and other environmental risks; (2) The risks of experiencing violence and trauma in one’s upbringing (ACE) and the protective factors of community and family support; and (3) The contemporary risk factors of IPV experiences and discrimination experiences. We created a parsimonious model, excluding demographic factors in the first step that were not shown to be significantly associated with the outcome variable (i.e., income, tribal affiliation, marital status, education), with exception of gender, which was included to fill a gap in research that includes gender in analysis (Ka’apu & Author(s), 2018). This decision was made given the relatively small sample size. Following Kang’s (2013) guidance on handling missing data, listwise deletion was used for such data (Kang, 2013). No multicollinearity problems were observed among all independent variables, as indicated by variance inflation factor scores that were all greater than 1 (Mertler & Vannatta, 2010). All analyses were performed using SPSS Version 24 software.

## Measures.

**Demographics.**—Age (raw) and gender (male/female) were included in the regression analysis, whereas, educational attainment (higher levels indicated by higher numbers), marital status (single, engaged, living together, or married) and household income (ranging from ‘1 = less than \$2,000’ to ‘9 = greater than \$100,000’) were excluded after they were not found to be significant in the first regression model.

**PTSD Symptoms.**—The Primary Care PTSD Screen (PC-PTSD) is a four-item scale used in medical settings with the presence of PTSD considered positive if a respondent answers “yes” to any three of the four items (Prins et al., 2003). Participants indicated if, in their life, they had experienced anything so “frightening, horrible, or upsetting,” that they “have nightmares about it or thought about it when you did not want to” and other items assessing avoiding trauma-triggering situations, being vigilant and easily startled, and feeling numb or dissociating from surroundings within the last month. Answers to each of the four yes/no (1/0) items are added. Any score that is 3 or above is deemed clinically significant with the presence of PTSD being deemed “positive”. Cronbach’s alpha was .875.

**Hurricane Experiences.**—Two items were used to assess hurricane and hurricane-related experience. First, an item from the Life Events Checklist (Gray, Litz, Hsu, & Lombardo, 2004), a measure of exposure to potentially traumatic events was used, which assessed whether a “Natural disaster” (for example, flood, hurricane, tornado, earthquake) had happened to the participant personally (*yes/no* = 1/0). Second, an item was added, inspired from the Historical Loss Scale (Whitbeck, Adams, Hoyt, & Chen, 2004) where participants were asked to indicate how often they thought of losses from man-made disasters, flooding, pollution, and destruction of natural resources from (*never* (1) to *daily* (5)). Higher scores were indicative of greater consciousness about losses of this nature.

**Family and Community Support.**—A total of 17-items from the Social Support Index (SSI), assessed the extent (*Strongly disagree* (1) to *Strongly Agree* (5)) to which participants felt they had community (e.g., “If I had an emergency, even people I do not know in this community would be willing to help; People can depend on each other in this community; My friends in the community are part of my everyday activities”) and family (e.g., “The members of my family make an effort to show their love and affection toward me”) support (McCubbin, Patterson, & Glynn, 1982). Scores are added, ranging from 17–85, with higher scores indicating higher perceived community and family support. Cronbach’s alpha was .751.

**Adverse Childhood Experiences (ACE).**—ACE assessed exposure to childhood trauma and chronic stressors, which occur prior to age 18 (Dube, Felitti, Dong, Giles, & Anda, 2003). This 10-item scale is a yes (1) or no (0) format assessing childhood sexual, emotional, and physical abuse, childhood neglect, and residing in a dysfunctional household (e.g., witnessing IPV; living with parental substance abuse or mental health issues; and losses through divorce or incarceration of a household member). Total items are added to create scores, ranging from 0–10. Chronbach’s alpha was .792.

**IPV.**—IPV was assessed using the five-item Partner Victimization Scale (PVS), a self-report measure that does not produce gender parity (Hamby, 2016). Though this is originally a 5-item scale in a yes (1) or no (0) format, an item assessing verbal abuse was added, making it a 6-item scale. Participants are asked to “Answer the next questions about any boyfriend, girlfriend, husband, or wife you have had, including exes” that might have threatened to hurt, grabbed, pushed or shook them, hit them, beat them up, or forced sexual contact. Scores are added from 0–6, with 6 being the highest severity of IPV. Chronbach’s alpha was .888.

**Discrimination:** The Everyday discrimination scale (EDS) short form (Essed, 1991; Williams, Neighbors, & Jackson, 2003) was used to assess the frequency that participants experience discrimination on a five-item scale with Likert responses from 0 (*Never*) to 5 (*Almost Everyday*). This scale assessed how often “You are treated with less courtesy than other people” and receive poorer treatment, are treated less smart, acted as if you are to be feared, or are threatened and harassed. Items were added with higher scores being higher rates of perceived discrimination, ranging from 0–25. Cronbach’s alpha was 1.0.

## Qualitative Results

The tribal members interviewed spoke passionately about their experiences during and after Hurricane Katrina, and other storms that impacted the Gulf South region. Members of the Coastal Tribe discussed not only the individual- and family-level impacts of hurricanes, but also the community-level impacts and policy implications of their experiences. Many people interviewed related that they had survived multiple hurricanes in their lifetime, with Hurricane Katrina standing out as the most salient in terms of its inextricable relationship to the context of historical oppression in which tribal members are inscribed.

### Impact of Federal Recognition on Hurricane Affected Communities

Several participants expressed how the lack of federal recognition was a primary barrier to attaining adequate hurricane relief and resources. A constrained baseline of resources due to being state- but not federally-recognized led to cumulative oppression that was exacerbated in times of disaster. A man interviewed spoke about the legal acrobatics in trying to attain federal recognition, stating:

The interesting thing is [the] Branch of Acknowledgment and Research is under the Bureau of Indian Affairs, and BAR, and you're supposed to give them your information and show that you qualify ... that department is more of a branch that gives recognition, because they spend their time tearing apart whatever you submit. ... That's kind of the stuff that really makes you wonder, 'What are they doing?' We're not a new tribe. We've always been. ... [It's] Become very political. Even federally recognized tribes, some are against what they call it 'new' tribes. We're not new. We've always been. ... Many of the recognitions were resolved in war, U.S. warring against them. They ended up with a peace treaty, and the peace treaty was used for federal recognition. We were peaceful people, stayed out of the way of everybody, and that worked against us. That's the whole point though.

This participant went on to connect the precarious position of the tribe in relation to adverse weather events to ongoing experiences of historical oppression:

Even in our situation with our major communities, we've been suffering losses since the 1920s, because of erosion and hurricanes. There are a couple of communities that no longer exist. Now there's other communities that are in jeopardy. ... All the erosion caused by saltwater intrusion, which is the result of the drilling companies cutting canals through the marshes and destroy it, and then saltwater's moving in. You almost feel like they hope that they could get us to give up. Of course, we were totally excluded from education in society, which puts anybody at a disadvantage. I was not allowed, so I lived it. ... You couldn't go any further than eighth grade by 1959. No high school. They would keep people out. That was a disadvantage like you wouldn't believe.

When asked whether that affected people today, he replied, "Drastically, drastically. The tragedy of it all, [if] society was lifting up *all* people, you would have had less in poverty. Could get people to good work conditions." Thus, historical and contemporary oppressions including the lack of federal recognition, coastal erosion and vulnerability to hurricanes, and educational discrimination constitute cumulative oppressions that intersect and exacerbate

each other, making Indigenous communities particularly vulnerable to the effects of hurricanes. A woman interviewed went on to add how her tribal community is one of the most vulnerable to hurricanes, erosion, and land loss, stating:

Down here, they have a lot of erosion and it is just not the same. It's eating up the land and it seems like nobody is doing anything about it. The studies say in a certain year there won't be no more [community name]. All it takes is for one hurricane to really hit and it just floods out [community name]. If Katrina had hit [community name], there wouldn't be no more [community name] because [community name] got flooded so bad, I don't know what to say about the levees<sup>4</sup>. They are building levees right down the road. They are building levees but you see, sometimes the levees break and that's how things get flooded. If a real bad hurricane would directly hit [community name], then there is no coming back for [community name], I don't believe.

When asked about how this would affect tribal families and communities, she remarked, "I don't know. It would be a tragedy." As indicated, one sizable hurricane could destroy the community.

Two female participants in a focus group also highlighted the irony of not being federally recognized due to the peace their tribe maintained during the time of colonization:

People were definitely Indian, and they were recognized as Indian [Indigenous], and of course, they couldn't go to school or do whatever, because they're Indian. ... When the US came here, [the state] is so big ... We're not on the western edge, so they're not fighting with us for land or anything. They just obtained it, and then they started issuing land tracks and things like that and left people down here alone. People were already here, and so people weren't trying to move down here and take the land or fight with Indians over the land or anything like that, so you didn't have that sort of thing ... I think it helped in the sense that people were able to survive and weren't removed, but I guess, obviously, for now, in the way that they're interpreting things, though, I don't think that's ... The constitution doesn't say, "Federal government, you need to create a list." There has to be some list or something. Yeah, because you can have claims, tribal claims even if you're not recognized, but our current administration is interpreting a lot of things where the law says something about Indian tribes, to me that you have to be on a list.

This quote shows that the tribe was clearly considered "Indigenous enough" to be excluded from schools during segregation in the Jim Crow Deep South, but they were denied federal recognition which created further barriers to hurricane recovery, as one of the women stated:

That's problematic like with the BP oil spill or with FEMA or dealing with issues impacting the community, because a lot of these issues are impacting unrecognized tribes who aren't on the list. I think one is having that voice in the process, so say for example with the BP oil spill, we were able to advocate and work with the Coast Guard to get a staging area down here, because people were really concerned

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<sup>4</sup>A man-made embankment constructed to prevent flooding.

about our sacred sites and areas, and our village area where people lived, if there was a hurricane, it would have been a super affected site, because there's no levee. There's nobody advocating for us to have our land restored or be included in that conversation, and nobody cares to listen to us, because this area, part of it's in [local government] ... You don't have a place at the table, and we're so small, so they don't really care about us. We're divided into two [constituent voting], so they don't care about what you really think, because then you're only going to be a couple hundred voters at that, because that's how people is *[sic]*.

These women identified how the lack of federal recognition not only created barriers to accessing needed aid and other resources in the wake of Katrina, but also barriers to participating in policy conversations and decision-making processes related to natural disasters that directly impact tribal members: "That's been a big deal, but also with the BP oil spill ... if we were federally recognized, we'd be a trustee, and we'd be part of those conversations determining how the issues are being dealt with." Despite the barrier created by the lack of federal recognition, tribal members showed determination and resilience in claiming their rights to be a part of the political process, stating:

We were an interested party. We participated. Everyone agreed that it doesn't matter if you're recognized or not. You should be able to send a tribal monitor ... especially because it's all about unrecognized tribes who occupied land down here and they know that sort of thing.

However, again, the tribe was denied a voice in these important matters, as explained:

Her sister was a tribal monitor, and one day, she got a call, and it was like, "You can't be a tribal monitor, because you're not from a federally recognized tribe," so they brought in people from tribes in Oklahoma or different [tribe] who didn't know the area or know the history or anything at all. Even though they knew, because they saw emails that were forwarded to me. ... They were finding bones and things like that, because there were whole cemetery areas being washed up, and they're like, "Even though we know that these are their ancestors, they shouldn't know, because they're not federally recognized."

Here, the speaker makes evident a missed opportunity on the part of the government to include tribal members from the region who have intimate knowledge of the land and its history in the recovery process.

### **Rapidly Changing Landscape, Lives, and Communities**

Many members of the Coastal Tribe noted the rapid pace of change in the landscape due to hurricanes, and the concomitant changes in the lives and communities affected, juxtaposed with the slow and complicated process of hurricane recovery. For example, one woman spoke about the seemingly insurmountable challenge of getting hurricane assistance in a timely manner, the complexities of heirship property, and getting priced out of living in the local or nearby communities due to the historical and cumulative oppressions that are interwoven with hurricane recovery:



Now you're 6, 7, 10 generations later, and you're getting storms. If you want to repair your house, you have to go through FEMA. To go apply for FEMA help to repair your house, you have to show you own the land. Well [name] owns the land, and he's been dead for almost 200 years. None of his kids can prove they own the land. There's all these heirs. This is not just [state], this is the entire coast. This was a huge problem after Katrina really because people couldn't get help because it was heirship property. You couldn't do the heirship because now you've got 300,000 descendants, and who's going to pay for that and do the work for that to figure it out? You can't do it, and in the meantime the land is washing away. It's a whole dilemma. This participant also noted obstacles related to being compensated by FEMA and the struggle in having to meet new standards for building new homes set by FEMA.

You want to repair your house? Fine. You need to get a permit. To get a permit, you have to meet FEMA's baseline elevations, which all these coastal ... is almost 100, it's 97% flood zone.... To get a permit you have to meet FEMA's elevation standards, which means, in the lower areas you're going to have to elevate your house to 17, 19 feet high or you can't even get a permit. How are you going to afford that? You have a house that's been in your family for generations. You had no mortgage on it. You lived off of the land and sea so you didn't need a big house note. You didn't have mansion on a beach, you had a shack. It was your shack, and you lived there. Well now, the land is going away, FEMA doesn't want to help you.

Her statement reveals the stark contrast between tribal families' deep roots in the region extending across many generations, and the more recent environmental and political changes that are incompatible with their way of life. This participant acknowledges the intersecting oppressions that tribal members confront in the face of a hurricane, stating:

You have an increased number of hurricanes. You're more vulnerable to the hurricanes because you don't have any wetlands anymore in front of you so you flood more often. They destroying that. You have to fix your house more. You need money because you're living off the land and sea. Oh, wait a minute, they destroyed the gulf, full of oil, so we can't fish this year, and we've lost our whole way of income so we need help, but the house is destroyed, but we can't get a permit until we can elevate it. It costs money to elevate it. You can't get FEMA assistance. You can't get a mortgage unless you can get insurance. Oh, wait, insurance in this flood zone is \$28,000 a year. The house is worth \$40,000. So you can't fix it. Now where are you going to go? ... Essentially, it's pricing them out of being able to live there.

The combination of historical oppression keeping tribal families in poverty and adverse weather events leads to severe economic difficulties following a hurricane, which has resulted in an increasingly dispersed tribal community, as stated:

The thing is, here you have people who fish for a living. Limited education. The institutional educational thing of keeping people impoverished and oppressed. Now they can't argue with the Philadelphia lawyers who are coming down to represent the government and the oil companies. So, they say, "Look, we're going to buy you out. We'll give you \$40,000. Your house is worth \$40,000. It's really not even

worth that because it needs to be fixed. We're going to buy you out. You need to move. We'll tear your house down, and we'll make it green space, but we may end up selling it." This is what the people fear. They're going to buy it out. They'll sell their house for \$40,000, and move away. Then the government's going to come and sell it for gentrification to some rich lawyers and doctors from Boston who come down here, or oil companies and use it as entertainment. So what? In the meantime, the people who've been here lose everything. My problem and my argument is that this is going to happen whether the people like it or they don't like it. They're going to be moved.

The forced relocation of tribal families is certainly not new, but here, this woman expressly recognizes it in relation to hurricanes. Not only are tribal members being displaced, the intersecting oppressions they experience significantly limit their relocation options, forcing them to move far away from the land to which their tribe has been tied for centuries:

If they get \$40,000 for their house, well now they've suffered from Hurricanes Katrina, Rita, Gustav and Ike. Let's be nice and say you owe \$20,000 on your \$40,000 home, when you sell your house to the government they're going to keep \$20,000 because you owed that to the government. Now for a house that you've lived in, that your family has lived in for 200 years, that you own, you own the land. The land is worth nothing because it's washing into the sea. The house is worth nothing because they're tearing it down. You've got \$20,000. You're going to have to move to a place where you can find work. You work as a fisherman. Lo and behold you're not going to live in [local community] because there's no more high land to live on. You can't go buy for \$20,000 land in [local community]. ... What are you going to do? You have a third-grade education. You've got \$20,000 in your pocket. There is no such thing as affordable housing in [state]. ... Where are you going to go with your little \$20,000, with your third-grade education to compete for jobs that you're not qualified for? Where are you going to live? There's no way that that is equitable to these people. It's not only not equitable, it's unjust. ... It's a catch 22, but it's only going to get exponentially worse if nobody plans ahead.

As these statements reveal, the rapidly changing landscape, in concert with the multiple axes of oppression that adversely impact tribal members, have contributed to the disintegration of entire communities and a way of life.

**Shifting communities.**—Despite the power of external forces to uproot tribal members, they have proven resilient in maintaining a sense of community amongst tribal families, though those communities have shifted. A woman interviewed emphasized the cultural strengths of her tribal community, stating:

We're very, very proud people. You know, and very resilient people too, because I don't know too many people that could survive all the trauma that our tribes ... Our tribe just had one disaster after another. Gilbert ... Andrew. Then we had, then Katrina, Gustav. all these storms and everything, a lot of our folks have shifted communities. You know, shifted from being in a concentrated area, moved to [local metropolitan area]. They lived in neighborhoods that Indian people would never

live in before. All these, I call it tragedies, things that's happened in the history of our tribe, have definitely changed our people. Big time. And you see it. You see it. The pride. At one time, you could go down [community name] was the most beautiful place, it was, and now you go and there's a lot of sadness. You know? When I go to certain venues, I'm sad because I know this is where my mom's family's from, and I lived fourteen years on this one particular body, and I look at it now and it's like, it's so sad.

Another woman commented on how the community has geographically spread, but not been defeated by the chronic effects of hurricanes:

We're so scattered, especially on the Indian part, we're scattered. As far as the family community, if somebody's sick, we go and visit. Where we're living right now, we knew when we moved, we knew the people that was in there because that was all my husband's family that had built houses and moved there. There was about four of them. Now, they're in and out, you don't know who lives on your street.

She also emphasized family connectedness in coping with the effects of storms, stating that the community is different "because of the storms and the flood. Of course, we were flooded 3 times where I am right now. ... My husband's daddy, the first flood, he says, 'I never saw water over here this high.'" When asked where she received her help with the flood clean-up, she stated, "My kids did. Yeah. My kids came and helped." She added, it took a toll on her family financially, as stated, "Oh yeah. Because the last one that we had, my step-sister is ... they had a place we could go with her...we spent the night looking for someplace to stay. We didn't get refunded."

Still another woman mentioned how families had dispersed as a result of hurricanes, stating, "When mom and them used to live down there, they only had two or three families living there. Everybody moved from the storms and all that." She added, "It's nice down there. I wish I could go back down there. We used to sit outside all the time and play cards. All night, sometimes." When asked whether it was harder to experience that sense of community since they don't live close, she stated, "Oh, yeah." Similarly, a woman in a focus group stated there were not many families left in the local community; families had scattered as a result of hurricanes and disasters, she stated, "It's not that many [families]." Women from this focus group commented, "It used to be. A lot of people moved away since hurricanes and disasters." When probed later in the interview as to whether hurricanes played a part in this dispersion, a focus group participant answered, "Major." And another stated, "Oh yeah. That [hurricanes] and the BP oil spill." These same women commented how they lost their community stores and businesses as a result of these disasters, as stated:

We used to have a little grocery store down the road. We sure had that. We don't have a bank anymore. We had just a little meat market or something, just a little meat market. Just a little something. That's gone now. No grocery store. We have a dollar store but you can only get some lunch meat or some veal and some bread and stuff.

Indeed, participants were displaced often with little sense of stability for the future, as stated by a mother recalling her young children's experiences during a family interview:

They might not really remember it. Whenever a storm came, actually, we had to move from down there, because our house got flooded. My mom lives right around the corner. Here. Her house was never flooded but it was in really bad shape. They were really little and would get sick from the mold and stuff. We actually went and stayed in a hotel room for a few months until we got the trailer remodeled down there. Then we had FEMA trailers; we lived in FEMA trailers for a little while.

Another woman remarked, "The problem is that, we don't get shit from the federal government." This was contrasted with a federally recognized tribe located several hours inland and hardly impacted, who, "[The] hurricanes paid them well. We're right here! We're the one that got the brunt of this [hurricane]. We have zip because of the federal recognition. It's just wrong. It is so wrong. And I'm glad that they got that now, but how can a tribe, five hours away from us get all this money from BP? ... We're *at the door*. I have oil *on my land*. And we didn't receive." This participant added:

It's just wrong and because they treated the people so wrong. Because after the hurricane, Gustav, there was a water bust, a pipe, underground. These people went without water *for over a month*. That's not acceptable. That's not acceptable. Not in this day and age. People were cleaning their houses from the mud. Out the bayou water. Taking the bayou water to get the mud out their house. People couldn't stay there. ... Our [local non-tribal community] president, he hates that shit. He really doesn't like me at all because I'm very vocal about it. Because I think it's wrong. I said, that would never happen in [community], which is a ritzy neighborhood. That would never happen.

This same woman went on to describe the efforts she made to assist her tribal community in the face of such social injustice:

Right after one of the hurricanes, I don't know if it was Gustav or Ike, I don't know, I can't keep track. But, the community had flooded, and they had never flooded before, and so, I was down there distributing water and, you know some cleaning supplies and stuff like that. I was walking, and its right next to the pits, and they have the ditches, was bubbling with water. The water was bubbling, and so, I looked at the houses and my lungs start burning, and I said, "Man, this is not right." I called my friend from [government agency] and I said, "Look," I said, "I need some help." I said, "This is beyond anything [local issue] over here. This is an environmental issue." I said, "I don't know who else to call." So, I called my friend, he got in touch with his boss, his boss called me the next day.

This inquiry went up through the hierarchy of governmental levels, where this participant received warnings not to push the issue any further. She commented, "Right then and there, I realized how corrupted this state really is. How far up it goes. It's not just a local thing." Thus, even though tribal families have undergone drastic changes and become geographically dispersed due to hurricanes, they continue to garner a sense of community amongst one another, and advocate for their communities.

## Family and Personal Effects of Hurricane Experiences

Many participants living on the Gulf Coast experienced a lifetime of hurricanes and their devastating effects. Having to repeatedly restart one's life from scratch influenced families' abilities to build capital and wealth, a key aspect of socioeconomic status. One woman reflected on her family's experience, stating:

I remember when we were younger, we had hurricanes. ... I remember when I was younger, my aunt [name] is my daddy's sister. There was a hurricane that passed. It was in the nineties. I don't remember exactly what year. She had to start all over, it took her house away.

Participants also discussed personal experiences of material losses due to hurricanes that disrupted family life. When asked about the harder times growing up, a couple in a family interview mentioned:

We had hurricanes all the time, and leaving and coming back home to that house. We'd lost everything. Didn't know what you were going to have when you came back or whatever, and I think that was really hard on children, thinking, "Oh, well, if I don't bring my stuff with me, that's it. We're going to lose it." Lots of times we would come back, and we would have to throw everything out and start over. Digging the mud up. Cleaning everything. Drying everything up. That's just how it was done in those days. ... My grandfather. We would still see him all the time. He died like I think he was 74, so we spent a lot of time with him, or he'd come and spend some time with us, even for the hurricanes. He'd come stay over here. We'd let him stay with us, because he was older and bad heart and all, so he'd stay with us for the hurricanes.

One woman talked about the use of drugs to cope with the losses resulting from a hurricane, stating, "When Katrina hit us. So, he's really, he got kind of messed up a while back, into drugs. He came back. He came back stronger. So, I said [name] I don't like that, mess up your future." Another female participant commented on the impact of hurricanes on tribal families' livelihoods, stating:

Well, you know, each time we have a storm, you can't work, you can't fish for two, three months sometimes, before you can start fishing. ... Then the BP oil spill, after that, they, they couldn't work. We couldn't buy the seafood.

Still, a woman in a family interview remarked on the years it took to fix her family's home:

Hurricane Katrina kind of damaged it ... It took five years before they could fix that, between the insurance and paying them, everybody else. Oh, Lord, yes. Five years for the insurance. We were living in his [family members'] house in [community] but his house was kind of smaller, you know, than all of this.

Others also spoke about delays in getting hurricane and flood assistance. When asked about the main concerns, women in a focus group replied, "Flooding. Definitely, because we've lost so much land and our land and our barrier islands are gone so we have no flood protection.... This community is outside of that levee district anyway, so they're trying to do ... flood gates." When asked what causes flooding, a woman from this focus group replied,

“No, just the hurricanes, we don’t flood for rain.” Although tribal families experienced several material losses during hurricanes, assistance was highly delayed, as stated by another female participant:

You have to apply. It takes a couple years before you ever get approved and whatever. ... The younger generation does not want to stay down there and I can’t blame them because I’m getting to the point where I hope it never happens again.

When the hurricanes come, many tribal members stay with family members, showing their family connectedness and ability to depend on one another, in addition to their increased future vulnerability if families are forced to disperse from each other and if rebuilding barriers increase. As a woman interviewed described, “Each time [a hurricane comes], we have slept away like two or three weeks sometimes before we go home. We usually go to [family]. But then the [family] it flooded.” Another woman also evacuated to a family member’s house, “I have a daughter that lives in [nearby community.] I went over there.” Still another woman explained, “I stayed with my son. I put a little camper in his yard. Then I was staying with my sister, with my daughter before that. Before we got the trailer, that little camper. Stayed with them.” Family ties were vital to hurricane recovery for many tribal members.

Another female participant stated, “I put a double-wide [trailer] on the lot with my mamma, brand new, and I had 3 bedrooms, it was a nice double wide. But I lost it to the storm [hurricane].” A woman in a family interview noted, “We lived there for, maybe, a year or two. ... Then one of the hurricanes came. I think it was Juan, and it was a big one. We lost everything, everything. It was hard.” She added:

Back and forth. ... Yeah, and then moved back, and we stayed with my mom, and then it’s just like our relationship was not [great]. ... I didn’t want to go through the hurricane thing again, because I’ve went through it several times ... That was the first time I had lost everything. That’s why my older sister, the last hurricane ... She lost it all.

She added that her parents, “Then, they didn’t have insurance, couldn’t afford it. We didn’t have vehicles, so how could we afford insurance?”

Not only did participants lose property, close knit community, proximity to family, and homes, lives were lost as a result of hurricanes. As one man stated, “I lost [loved one] in the storm. That really got to me. I couldn’t be there for her at all. ... They had no services for her. They had no funeral for her, nothing, because she didn’t have insurance.” A woman interviewed remembered a similar experience, relating:

That was the hardest thing, because I wanted to go see her that day, and I couldn’t because I had to leave and go [evacuate], ... The day after Katrina, well her son had stayed here and he stayed in the hospital and he finally got in touch with us and told us, to let us know that she had passed away.

One man described the loss of a long-term romantic partner, stating:

I had one. As a matter of fact, she died in Hurricane Katrina. She died, her and her daughter drowned in [city]. They found them in an attic. We was together about 4 years, her and I. That's the longest I had since.

As these participants' perspectives show, members of this Coastal Tribe suffered extensive personal losses, including material possessions, family and economic stability, and loved ones. These individual personal losses were recognized in addition to the collective losses of land, community connectedness and infrastructure, and ways of life, all of which are compounded by the Coastal Tribe's lack of federal recognition and context of historical oppression.

## Quantitative Results

Table 1 portrays demographic variables of survey participants. Participants indicated mean scores of losses related to disasters at 2.72 ( $SD = 1.40$ ), indicating that, on average, participants thought about such disasters close to monthly, with 26.5% thinking about these losses daily or weekly. Regarding the main variables, on average, the PTSD score was 1.65 ( $SD = 1.57$ ), indicating that the average participant had between one and two PTSD symptoms. More than half (56%) had at least one symptom, with 39% meeting criteria for clinically-significant levels of PtSd. The average number of ACEs experienced was 2.65 ( $SD = 2.53$ ), meaning participants experienced between 2 and 3 ACEs on average; a minority (approximately 20%) of participants experienced no ACEs. The mean score for social and family support was 47 ( $SD = 8.00$ ), indicating moderate levels of social and family support. The score for experiencing IPV was 2.02 ( $SD = 2.19$ ), indicating that on average, participants had experienced more than two types of IPV. The average for women (2.29) was significantly higher ( $p < .000$ ) than for men (.76). Participants' mean for discrimination was 12.59 ( $SD = 5.50$ ), indicating the average participant experienced discrimination between weekly and monthly.

In support of the emergent hypotheses that personal experience of hurricanes will be higher in the Coastal Tribe than the Inland tribe, as expected, a significantly greater percentage of the Coastal Tribe, 89% ( $n = 42$ ), had experienced a natural disaster, including hurricanes ( $X^2(1, N = 127) = 36.9, p < .000$ ). The percentage of Inland tribal participants who had experienced this was approximately 34% ( $n = 27$ ). At the bivariate level, with the exception of family and community support and discrimination, each of the independent variables was significantly associated ( $p < .01$ ) with the dependent variable of PTSD symptoms, in the expected direction - which supports our hypotheses (Loss related to disaster,  $r = .21, p < .05$ ; ACE,  $r = -.37, p < .000$ ; IPV,  $r = .43$ ).

Table 2 displays results for the hierarchical regression analysis, which supported the second and third hypotheses: that historical losses from disasters, flooding, pollution and natural resources, adverse childhood events (ACE), discrimination, and experiencing IPV will be risk factors (positively associated) for PTSD symptoms; and that social and family support will be protective factors (negatively associated) with PTSD. For Step 1, demographic variables explained 9.2% of the variance ( $R^2$ ), with younger age and losses due to disasters being significantly associated with higher PTSD symptomatology. In Step 2, the addition of community and family support as well as ACEs explained an additional 13.9% of the

variance for a total of 23.2% of the variance ( $R^2$ ) accounted for in this step. Whereas age was not significant in the 2<sup>nd</sup> model, losses from disasters remained significant. Community and family support was significantly negatively associated with PTSD symptomatology, whereas ACE and PTSD were positively associated, both confirming the hypotheses. In the final step, by adding IPV and discrimination, 32.7% of the variance ( $R^2$ ) was explained, an increase of 9.5% from Step 2. Importantly, only IPV and discrimination were significantly positively associated with PTSD symptoms; none of the other variables were significant in the third model after these final variables were added to the model. All three step changes in the models were significant, as depicted in Table 2.

## Discussion

### Qualitative

Qualitative findings reveal several themes that illustrate how Indigenous families in the Coastal Tribe have experienced, coped with, and navigated their recovery from the impacts of multiple hurricanes affecting their communities. From the perspective of Coastal tribal members, the context of historical oppression that pushes Indigenous families to the margins significantly impedes their ability to successfully recover from hurricanes in a timely and holistic manner, which has important implications for policy and programs that might promote equitable disaster relief for ethnic minority groups in vulnerable social and geographic locations.

For the Coastal Tribe, despite repeated efforts to obtain federally-recognized status and participate in political processes related to disaster recovery, outdated and excessively-demanding criteria and procedures for gaining federal recognition have resulted in their continued status as a nonrecognized tribe, which has created significant barriers to hurricane recovery. Compounding the precarious political position of being a state-recognized tribe, tribal members rely on a rapidly changing coastal environment for their livelihood, suffering land losses due to hurricanes, flooding, and industry, without tribal sovereignty over the land to take protective measures against such environmental losses. As a result, hurricanes impede tribal members' ability to continue residing in their ancestral lands, due to the concomitant loss of land, work, housing, and community resources. Indigenous families in this tribe, the majority of whom are low-income, struggle with the long and arduous process of rebuilding their lives in the wake of multiple hurricanes, often without any form of government assistance, forcing many tribal members to relocate despite limited options for doing so. The tribal community is thus becoming increasingly dispersed, which adversely impacts their levels of family and community support, which have proven vital to hurricane recovery in the absence of more formal support structures.

### Quantitative

The cumulative effects of historical oppression -both through contemporary and historical losses - were apparent through the quantitative results. Participants thought about the effects of disasters regularly, with almost one-third being cognizant of losses daily or weekly. Moreover, almost 40% of participants experienced clinically significant levels of PTSD. This likely had to do with greater exposure to traumatic events, such as experiencing high



levels of ACEs, with only 20% not being exposed to such traumas. IPV experiences were also high, and were significantly higher among women, who had a threefold higher rate of IPV than men. This likely relates to the higher rates of PTSD among women due to greater exposure to IPV (Ka'apu & Author(s), 2018). Experiencing discrimination was also a frequent phenomenon, with the average participant being differentially treated due to discrimination weekly or monthly. As expected, Coastal tribal participants experienced hurricanes more frequently, with this vulnerability being coupled with also being a state-, rather than federally-recognized tribe.

Regarding the regression analysis, losses due to disasters and manmade environmental losses were significant across the first two models in predicting PTSD, indicating that exposure to these disasters does seem to contribute to PTSD symptomatology. Additionally, as expected, ACE was an additional risk factor for PTSD, whereas family and community support were protective against PTSD, mirroring the qualitative results. In the final model, however, exposure to IPV and discrimination were the only significant variables, lowering the effects of the aforementioned predictor variables. Results seem to suggest that although losses from disaster, ACE, and family and community support are important predictors of PTSD, IPV and discrimination may be the most robust predictors of trauma symptomatology, casting a shadow on other variables.

Results hold important implications for lowering PTSD symptoms. Indigenous women experience among the highest rates of IPV, a primary contributor to the health disparity of PTSD, demanding that addressing IPV be a primary focus in ameliorating health disparities. Moreover, in addition to the interpersonal variables of interest, mistreatment from others, a form of historical oppression, seems to directly contribute to PTSD, and thus, a lower quality of life. Family and community support is an important avenue to bolster, along with family health, to offset ACE, including witnessing IPV. Indeed, IPV is thought to be a consequence of historical oppression, and related to the changing gender roles and treatment of Indigenous women, who were traditionally revered as sacred in many matrilineal Indigenous societies; the reversal of these roles through colonization seems to have marginalized both Indigenous men and women in distinct but impactful ways (Author(s), 2017). Because of historical oppression, the accumulation of all of these risk factors heightens Indigenous people's vulnerability to disasters. This finding adds to the limited literature on measuring social vulnerability among Indigenous communities (Cutter & Finch, 2008).

The findings of this study lend further support to the FHORT, illustrating the ways in which a persistent context of historical oppression has impacted Indigenous families' hurricane experiences, and highlighting the resilience and transcendence they have shown in the recovery process, despite their vulnerable social and geographic location. Although federal assistance and formal support structures were not available (or severely delayed in delivery) to the state-recognized Coastal Tribe, tribal members drew upon family and community support to facilitate the recovery process. However, as further highlighted in quantitative results, the impacts of hurricane experiences are long-lasting and related to mental health disparities which might be addressed through health and human services interventions. Recommended practice implications based on both quantitative and qualitative findings

include supportive services and treatment approaches that address the family- and community-systems as a whole, and holistic and culturally-congruent programs and services that aim to alleviate not only difficulties in socio-emotional functioning after a hurricane, but also the oppressive conditions that caused such difficulties for Indigenous people during hurricane response and preparation in addition to the elimination of societal level conditions that continue to present barriers to health equity. Such practice applications affirm Indigenous worldviews and draw on cultural strengths to fortify the resilience of Indigenous families and communities in the face of hurricanes and other natural disasters.

### Limitations

Although the qualitative results of this study may have implications for other Indigenous and/or ethnic minority communities, they should not be generalized beyond the specific setting of this coastal tribe. Each exists in distinct cultural and geographic contexts and these findings are not meant to speak for all tribes and their experience following hurricanes and other natural disasters. However, we believe these findings offer important insight into the experiences of families and communities who have experienced hurricanes within a context of historical oppression for social work practice and research. Though this research is strengthened by the combination of using a mixed-methodological approach, both survey and interview data were cross-sectional. Future studies would benefit from taking a longitudinal approach, which would provide researchers and practitioners with additional knowledge about family experiences following a disaster, such as a hurricane, change over time. Future research would also benefit from an explicit comparison between federally recognized coastal tribal communities and ones such as this tribe and their experience with hurricanes and recovery.

### Implications

Unlike extant research, which focuses on psychological factors, this research indicates that sociopolitical factors are the primary robust predictors of PTSD, including greater exposure to discrimination and violence, along with continually being pushed to the margins geographically, socially, and politically. As such, these macro factors must be addressed to fully eradicate extant health and social disparities. Given the primacy of family, family- and community-focused interventions that promote resilience and health are recommended.

This study's findings also point to needed policy changes that will better support Indigenous families impacted by hurricanes and other natural disasters. First, new criteria and procedures for determining and granting federal recognition to tribes are needed, as evidenced by not only the Coastal Tribe's ongoing struggle to obtain recognition, but also the severe hardships they experienced in the wake of hurricanes as a direct result. Federal recognition should be granted to the Coastal Tribe, and other tribes who are actively seeking it, so that they may exert tribal sovereignty over their ancestral lands. Especially in the case of environmentally vulnerable communities, federal recognition and associated land trusts would allow tribes to autonomously institute culturally-congruent practices and policies to protect and restore their natural surroundings. Such environmental protection and restoration measures would be of benefit to society as a whole, and help buffer Indigenous communities

on the Gulf Coast against the negative physical and emotional impacts of hurricanes, storms, and flooding.

However, as federal recognition is not expected to be granted immediately, several interim measures should also be taken to support and foster the resilience of Indigenous families in the face of adverse weather events. These include: increased environmental regulations, specifically, holding corporate entities accountable for the damage they have done to coastal environments, limiting their intrusion on Indigenous lands, and making them responsible for environmental protection and restoration; including tribal members in policy conversations and other decision-making processes related to hurricane and flood planning and recovery; resolving the burdensome legal procedures involved in claiming heirship property; providing direct material and/or home rebuilding and repair assistance to Indigenous families; and investing in rebuilding community infrastructure (stores, businesses, and other vital resources) as part of the hurricane recovery process to help maintain a sense of community and increase the likelihood that tribal members can continue to reside in hurricane-affected areas. Implementing these urgently needed policies is a vital first step in defending the rights, livelihoods, and self-determination of tribal families and communities in post-disaster contexts.

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**Table 1.**

Participant Demographics and Subsamples: Qualitative and Quantitative Data

<b>Types of Qualitative Data</b>		
	<b>Coastal Tribe (N= 208)</b>	
Individually Focused	<i>n</i> = 109	
Family Focused	<i>n</i> =30 (83 participants)	
Focus Groups	<i>n</i> =13 (104 participants)	
Subsamples	( <i>n</i> , %)	
Professional (18+)	23, 11.1%	
Elder (56+)	61, 29.3%	
Adult (24–55)	71, 34.1%	
Youth (11–23)	53, 25.5%	
Demographics	( <i>n</i> , %)	
Male	63, 30.3%	
Female	145, 69.7%	
Married	64, 30.8%	
Number of children	2.57 ( <i>M</i> )	
Number of siblings	4.61 ( <i>M</i> )	
Participant age (Mean)	42.5 ( <i>M</i> )	
Education	( <i>n</i> =158)	
Less than high school	72, 45.6%	
High school	36, 22.8%	
Some college/vocational	16, 10.1%	
Associates	16, 10.1%	
Bachelors or higher	18, 11.4%	
<b>Quantitative Data Participant Demographics</b>		
Secondary Data	Inland Tribe, <i>n</i> =202	Coastal Tribe, <i>n</i> =293
Quantitative Survey	Number ( <i>N</i> =127)	Percent
Inland Tribe	80	63.0
Coastal Tribe	47	37.0
Male	23	19.1
Female	104	81.9
Age	46.2 ( <i>M</i> )	Range 21–80
Married	51	40.2
Number of children	3.77 ( <i>M</i> )	<i>SD</i> =2.37
Education		
Less than high school	12	9.5
High school or equivalent	18	14.2
Some college/vocational	28	22.1
Associates	27	21.3

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Types of Qualitative Data		
Bachelors or higher	26	20.5
Working full-time	85	66.0
Somewhat difficult to pay bills/economically	69	54.3

*Note.* For group-based interviews (i.e., focus group and family interviews), total participants for each respective groups are displayed in the row below total number of group interviews. The rows for age and number of children depict the average (*M*). Some participants participated in more than one type of interview. For educational attainment in the qualitative data, available/applicable data were less than the total, due to the inclusion of youth, who were still in high school.

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**Table 2.**

Summary of Hierarchical Regression Analysis for Variables Predicting PTSD Symptoms for Indigenous Adults (n=127)

Variable	Step 1	Step 2	Step 3
	$\beta$	$\beta$	B
<b>Constant (PTSD)</b>	<b>1.186</b>	<b>2.805</b>	<b>.836</b>
Demographic Factors			
Gender	.245	.190	.085
Age	-.023**	-.011	-.010
Losses from Hurricanes/Disasters	.268**	.222**	.109
ACE		.181**	.089
Community and Family Support		-.047***	-.022
IPV			.625**
Discrimination			.090***
F	3.829**	6.697***	7.196***
R <sup>2</sup>	.092	.232	.327
F change	3.829**	10.077***	7.732***
R <sup>2</sup> change	.092	.139	.095

\*  
p < .05.

\*\*  
p < .05.

\*\*\*  
p < .005