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# American Indian and Alaska Native Mental Health Research

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# Ethnic Racial Identity Development and Self-Esteem among Native American<sup>1</sup> Adolescents: The Mediating Role of Peer Belonging

Zainab Hosseini, PhD, LCSW, and Teresa LaFromboise, PhD

**Abstract:** While ethnic racial identity (ERI) development is associated with a variety of psychological well-being outcomes, the mechanisms through which this association operates is yet to be fully explained. During adolescence, social belonging is a developmentally salient process that can play a key role in how ERI impacts well-being. We sought to explore the mediating role of belonging to peer networks in the association between ERI and self-esteem among Native American adolescents. In this cross-sectional, mediational study, we used survey data from 317 Native American students attending a reservation high school (46.9% female; *M* age = 16). Students' levels of ERI development were measured by combining items from two scales pertaining to ethnic identity development and racial identity. We employed a structural equation modeling approach to explore the mediating role of peer belonging in the association between ERI and self-esteem. Results suggest that our 4-item index of peer belonging was an acceptable measure of this construct. Further, the significant indirect effect of peer belonging explains a notable portion ( $\beta = .22, p < .05$ ) of the total effects of ERI on self-esteem ( $\beta = .54, p < .05$ ). This finding suggests that higher levels of ERI achievement contribute to higher levels of peer belongingness, which in turn lead to improved self-esteem among students. Implications for research and practice are discussed.

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<sup>1</sup> We recognize that the preferred term in this journal is "American Indian and Alaska Native." Since at the time of the data collection in this study we used the term "Native American" with the participant population, we feel it is more appropriate to maintain this term throughout the manuscript. However, and as recommended, we have increased the use of the term "Native Adolescents."



## INTRODUCTION

Identity formation has been noted to be a staple of adolescent development, and identity achievement has been conceptualized as a goal of this developmental stage (Erikson, 1968). For ethnic and racial minority adolescents, ethnic racial identity (ERI) development is a key aspect of identity achievement (Phinney, 1989). Achieved ERI has been linked with a number of indicators of positive psychological well-being, including high self-esteem (Goodstein & Ponterotto, 1997; Mandara, et al., 2009; Umaña-Taylor & Updegraff, 2007), greater number of friends in school (Zirkel, 2004), low incidence of mental health symptomatology (Wong, et al., 2003), body image (Newman, et al., 2005), and higher quality of life (Lim, et al., 2016; Utsey et al., 2002). Extant literature has explored various mechanisms through which ERI development can contribute to such positive outcomes. However, despite unequivocal support for the developmental relevance of peer network dynamics during adolescence (Delgado et al., 2016; Furman & Rose, 2015; Larson et al., 1996), limited research explores whether peer interactions can serve as a mechanism through which ERI impacts psychological well-being.

Shortcomings in the literature are especially evident when exploring the experiences of Native American adolescents. The current study seeks to address these gaps by investigating the nuances of how the importance of peer relationships in this developmental age interacts with Native adolescents' ERI and self-esteem. We propose and test one specific model through which perceptions of belonging to peer groups mediates the strong association between ERI development and self-esteem. Our model is driven by the general developmental relevance of peer relationships as well as the particular cultural valence of this construct for Native American students.

### Theoretical Foundations

#### *Psychological Well-Being in Native Communities*

Indigenous scholarship on the roots of psychological well-being among Native American people has emphasized balance between the four domains of health and wellness indicated in the medicine wheel: heart, mind, body, and spirit (Cross, 1998; Tanner et al., 2022) and interrelationships across interconnected environmental levels (O'Keefe et al., 2022). Focusing on children in particular, the Indigenous Connectedness Framework by Ulrich (2019) encourages us to contextualize well-being through a relational prism whereby children's functioning is situated

in the context of their connections. The experience of connectedness with a variety of domains, such as spiritual, intergenerational, family, community, and environment, has “sustained” Native American children (Ulrich, 2019, p.121). That is, the author contends that because children are nested within their ancestral, familial, and communal relationships, their well-being is protected. This experience is reciprocal in that children also play a role in the well-being of their environments because others’ relationships and responsibilities towards children protects Native American well-being. For Native American children, knowing who they are through their connections and their place within time and space is a powerful skill, and ERI is one aspect of how they exercise this interrelatedness during adolescence.

### ***ERI Development and Psychological Outcomes***

Scholarship on ethnic and racial identity processes is trending towards combining what was once considered two distinct areas of development. The field has evolved to recognize the intertwined nature of individuals’ racial and ethnic identities and their influences on psychosocial functioning, leading to the creation of a meta-construct called *Ethnic Racial Identity* (Umaña-Taylor et al., 2014). Importantly, ERI is operationalized as both the beliefs and attitudes towards ethnic/racial group memberships as well as the processes through which they evolve over time. Generally, theories of ERI posit developmental frameworks through which individuals move within hierarchical stages of identity formation. Phinney (1989) divides this process into three stages: (a) unexamined ethnic identity—individuals have yet to reflect and process the positive or negative views they may hold about their group membership; (b) ethnic identity search (or exploration)—individuals have begun to explore what it means to be a group member; and (c) achieved ethnic identity—individuals have examined their ethnic group membership and hold a solid understanding of the meaning of their ethnicity in their life. Phinney asserts that a positive sense of ethnic group membership is a staple of successful ethnic identity development. During adolescence, the outcomes of navigating this hierarchical process can include different dimensions such as *centrality*, the extent to which racial identity matters to self-concept; *private regard*, affective attitudes towards in-group members; and *public regard*, beliefs about how others perceive in-group members (Sellers et al., 1998). In addition to taking a developmental outlook, scholars have also emphasized the need to contextualize ERI processes and outcomes within socio-historical realities. That is, different social contexts and realities can give rise to different trajectories for ERI development and can lead to different outcomes. Notwithstanding, recent research into the impact of ERI development on various indicators of psychological well-being,

including self-esteem, mental health symptomology, and quality of life of minoritized students, especially under conditions of discrimination, suggest a general positive association (Rivas-Drake et al., 2014; Umana-Taylor et al., 2014; Yip et al., 2019). That is, individual adolescents at more achieved levels of ERI exhibit better outcomes than those at less achieved levels.

While the above mentioned research is substantial, experiences of Native adolescents are typically unexplored in this field. To our knowledge, only two studies employing Native adolescents were found: Jones and Galliher (2007) reported an association between ethnic identity and psychosocial functioning in Navajo adolescents. Furthermore, Smokowski et al. (2014) established that self-esteem mediated the relationship between ethnic identity and mental health in research involving an ethnically diverse sample consisting of 28.5 percent Lumbee youth. In Canada, Gfeller and Armstrong (2012) discovered explicit evidence for a positive association between the level of ethno-cultural affiliation and indicators of adaptive functioning in a study of First Nation adolescents' ERI.

#### *Self-Esteem and Ethnic Minority Adolescents*

Evidence for a link between ERI and positive development is especially robust when utilizing self-esteem as an indicator of psychological well-being (Phinney & Chavira, 1992; Umaña-Taylor, 2004). Self-esteem defined here refers to one's overall sense of self-worth or value. Meta analyses that have explored the link between ERI development and psychological well-being have consistently included studies utilizing self-esteem as a proxy (Rivas-Drake et al., 2014; Smith & Silva, 2011). These studies found stable associations between positive ERI and self-reported self-esteem. Jones and Galliher (2007) used this theoretical framework to explore its implications for Native adolescents and found corroborating results. Navajo adolescents demonstrated higher levels of self-esteem if they had traversed through the exploration stage of ethnic identity development and achieved a strong sense of ethnic heritage. Notwithstanding, we recognize two complicating factors in the use of self-esteem as our outcome variable.

First, Phinney and Chavira (1992) stress the nuances of the reciprocal relationship between ethnic identity development and self-esteem. While higher stages of ethnic identity achievement can lead to higher self-esteem, it is crucial to recognize that individuals with higher self-esteem may also hold skills that enable a successful examination of their ethnic identities. This is especially salient for minoritized adolescents who must navigate identities that are often socially marginalized. Second, scholars of Native American psychology often argue for a reconsideration

of how the self is defined (Trimble, 1987; Tsethlikai et al., 2018). For instance, Fryberg and Markus (2003) have found that Native American adolescents conceive of their sense of individuality through a far more socially interconnected lens than their European American counterparts. This scholarship leads us to be cognizant of how extant measures of self-esteem, a concept centered around the sense of self, may be operationalized in a way that does not align with how our target population understands it.

Nuances of the relational worldviews held by Native American communities encourage us to critically consider both how to analyze results obtained through existing measures, as well as how to formulate conclusions. While we use a popular measure of self-esteem previously employed with Native adolescents (Goodkind et al., 2012), we explore the need for more holistic measures of this construct in our proceeding sections.

### ***Mechanisms***

While psychological literature provides support for the impact of ERI development on psychological outcomes, fewer studies have explored the mechanisms through which this impact occurs. Two distinct mechanisms can be gleaned from previous scholarship in this area. First, Brewer (1991) argues that a positive ethnic racial identification contributes to positive psychological outcomes because it can simultaneously fulfill two psychological needs: “the need for inclusion” and “the need for feeling different” (Bratt, 2015, p. 674). That is, individuals experience a sense of belonging through their shared experiences and a sense of self-esteem through distinguishing themselves from members of other ethnic racial groups. Kiang et al. (2006) further lend support to this finding by noting that increased ethnic identification can facilitate opportunities for social integration that, in turn, can afford health benefits (e.g., happiness, calmness). Other scholars have argued that identifying with socially marginalized groups leads individuals to experience greater levels of racial centrality and attachment (Spencer-Rodgers & Collins, 2006). Spencer-Rodgers and Collins argue that conceptualizing discrimination as a collective experience shared by other group members can play a role in developing a strong sense of self as a member of an ethnic group (centrality), which in turn can foster belonging (group attachment). The increased cohesiveness among members of a group leads to more positive in-group interactions, increasing self-esteem.

A second noteworthy mechanism through which ERI impacts psychological outcomes is the buffering impact of ERI in the face of adversities. Kiang et al. (2006) found that a higher positive regard for one’s ethnic group membership offered an “extra boost of positivity” (p. 1348)

in the lives of ethnic minority adolescents. Positive affect towards one's ethnic group thus helped individuals cope more effectively with daily stressors and mental health symptoms. Graham et al. (2009) lend support to this framework by noting that increased levels of peer belonging among ethnic minority adolescents serve as key mechanisms through which they can more adeptly navigate life challenges. Phinney and Chavira's (1992) circular framework for understanding the mechanism through which self-esteem is impacted is especially salient to this study. According to their model, higher levels of self-esteem can enable individuals to navigate through the challenges associated with developing a strong sense of ethnic identity (e.g., facing up to stereotypes that may exist against their ethnic group). Reconciling trials faced by one's ethnic group can lead to the development of a resolute understanding of one's background, which can foster a positive self-concept. Next, we will discuss how these two mechanisms (i.e., fulfilling the need for social integration and belonging as well as serving a protective role in the face of adversities) can manifest themselves in a sense of peer belonging.

### ***Peer Belonging in Schools as a Potential Mediator***

Peer relationships are key to adolescent development as individuals transition into interpersonal relationships with people outside of their immediate families (Furman & Rose, 2015; Rubin et al., 2008). As such, models capturing predictors of adolescent academic performance (Delgado et al., 2016) and psychological well-being within school contexts—such as belongingness (Williams & Hamm, 2018)—have stressed the important role of peer networks. Faircloth and Hamm (2005), for instance, use friendship nominations in school as an indicator of how well an individual is situated within a peer network. Position within a peer network system is then used as a sign of how adolescents experience belonging in school. The authors note that the way students experience their place within a peer network can speak to a number of school-related outcomes, including motivation and positive school affect. Given Indigenous scholarship that emphasizes ties between people as the potent element driving resilience, for Native American students, the quality of relationships with peers can be an especially relevant conduit for well-being (Ulrich, 2019).

We situate the experiences of Native adolescents with other youth in the Indigenist Ecological Systems Model (IESM; Fish et al., 2022) to understand the association between peer relationships, ERI, and psychological well-being. The IESM is an evolved version of Bronfenbrenner's Ecological Systems Model (1979) which advocates for benefiting from



Indigenous epistemologies to restructure the levels involved in the framework. Importantly, the IESM places the chronosystem at the epicenter of Native American development. The chronosystem refers to the sociohistorical dynamics that intergenerationally impact the individual and related others in the past, present, and future. Importantly, Fish and colleagues (2022) recognize not only the past, but also the future, such as the legacy of current people for future generations. The macrosystem follows the chronosystem, emphasizing the impact of sociocultural factors on people's functioning in this world. The framework then introduces the individual as the third level, a juxtaposition with Bronfenbrenner's framework, which initially starts with the individual. The IESM stresses that Indigenous peoples' development is first and foremost situated on a time continuum between historical/generational incidents and future directions (chronosystem). Furthermore, the model emphasizes the potency of Indigenous sociocultural belief structures, such as language, relationality, and spirituality, on the functioning of individuals (macrosystem). This approach, the authors argue, is in contrast with Western models that place the macrosystem as a distal factor shaping development.

In the IESM, peer relationships in school settings can be situated at the microsystem level whereby adolescents build patterns of relationships with other youth that are informed by sociohistorical and sociocultural contexts. Fish and colleagues (2022) argue that interactions with the microsystem, such as peer groups, is especially relevant for Indigenous youth given their unique experiences as they navigate multiple ethnocultural spaces that are distinct from each other throughout their development (Fish et al., 2022, p.624).

Combining the previously discussed mechanisms through which ERI generally impacts psychological outcomes with Indigenous scholarship on the unique sociocultural contexts within which Native adolescents operate, we postulate two pathways wherein ERI distinctly impacts self-esteem through peer relationships. First, and at a more general level, adolescents who are aware of their ERI likely view their ethnically similar peer groups as a space for exercising optimal levels of connectedness as well as individuation. Additionally, it is possible that they feel a special connection with their peers in navigating life adversities. Stronger levels of ERI can therefore contribute to more affiliative experience with peers, which in turn can impact well-being. Second, and specific to the experience of Native Americans living on reservations, students who experience higher levels of ERI are likely known by their peers as individuals committed to their cultural heritage, which in turn can garner more respect and affiliation. The unique socialization experiences of adolescents within reservation settings encourages them to value individuals who

actively engage in cultural practices within their community. Students with higher levels of ERI may therefore perceive higher levels of respect and affiliation by their peers, which in turn directly translate into higher levels of self-esteem.

Support for the consideration of peer belonging as a mediating mechanism can especially be garnered from a qualitative study of Native adolescents attending a reservation high school (Hosseini et al., 2018). In this study, students pointed to two trends. First, students consistently noted that their relationships with peers played a significant role in their well-being, specifically their sense of school belonging, their ability to cope with adversities, and their overall psychological functioning. This is an excerpt capturing a male student's comments on the essence of peer relationships in promoting his psychosocial functioning in school: "So when I, when I come to school, I'm looking forward to seeing all my friends here. Cause they [keep me] sane and stuff. And so ... if it wasn't for them, I probably wouldn't have the grades I have now, because they're always bringing me up." A female student added, "I kind of feel lost when like all my friends are gone from school. Like, like that's happened before, and I feel like I was...did not fit in here or something...".

Second, students emphasized that they care about how their peers navigate their ERI development. They are attuned to whether peers respect versus disrespect their cultural norms, and they associate meaning to their friendships depending on what they observe in peers. A female student noted, "I don't know, like I don't think some kids around here are proud of our Native culture. That's how I feel, like sometimes I walk around, and another thing that really grinds my gears is when I see kids walking around here, wearing like Indian, like a naked girl on their shirt with an Indian headdress on...". Another student adds, "[There are kids who are] trying to do the drum ceremony, burn sage or whatever, then there's kids playing on their phones while...Yeah there's like some kids that are like actually--like who actually does want to do it, then like the others, like they don't care."

Taking note of these two perspectives, we label this type of peer integration in the context of ERI development as "peer belonging" and note its central role in predicting positive school experiences and positive psychological outcomes. We operationalize peer belonging as students' perceptions of how well they are accepted and received by their peer groups. The fact that these adolescents centered their school experiences and psychosocial well-being around how they were received by their peers can at least be partially explained by the powerful role of peoplehood in Native American socialization practices (Holm et al., 2003). These comments exemplify previous

scholarship on the importance of understanding Native American psychological processes through a relational lens (Tsethlikai et al., 2018). Scholars have consistently advocated for understanding the nuances of how a collectivist worldview can impact psychological processes and outcomes among diverse groups of Native Americans. The sense of relatedness and attachment among peers can therefore be an especially relevant construct in the association between ERI and psychological well-being.

### **The Current Study**

In the present study, our focus on peer networks is driven by the literature supporting the centrality of peer relationships during adolescence, adolescent voices from the current sample delineating the pivotal role of their friends in their day-to-day functioning and in relation to the ERI experiences, and the supremacy of relational worldviews among Native Americans (Ulrich, 2019).

We postulate that ERI development predicts self-esteem as one measure of psychological well-being, and this association is mediated by a sense of peer belonging such that stronger ERI increases students' abilities to perceive belonging to their peer groups, which in turn leads to higher self-esteem. Scholarship on ERI urges explorations in this field to consider the nuances of how each specific ERI dimension interacts with developmental and sociohistorical contexts to impact outcomes. We are particularly interested in ERI domains that have visible behavioral manifestations because we are especially interested in how students' ERI is perceived by other students, in turn impacting peer belonging. As such, we have focused on ethnic exploration, ethnic commitment, and racial centrality. We assume that exploration includes clear behavioral tendencies that other students can observe, and belonging and centrality both entail positive interactions and affiliations with other in-group members that other students can observe. We avoid including domains that are affective, e.g., private and public regard, because they are personal attitudes that may not necessarily reflect external behavioral manifestation. Finally, we use the concept of peer belonging to address gaps in the literature regarding the potential function of peer relationships in schools as a salient developmental and cultural concept. We hypothesize that: 1) an index of peer belonging can be obtained with adequate factor loadings from items across the Everyday Experience, Identity, and School Life Survey (EEISL); and 2) a sense of peer belonging can mediate the relation between ERI and self-esteem. A structural equation modeling approach allowed for a factor analysis of a peer belonging index while also elucidating the mediating role of the construct.

## METHOD

### Context

The data for this study were collected from Native American adolescents attending one reservation high school in the Upper Midwest. The reservation is located in a sparsely populated region that must withstand extreme climatic conditions. Over time, individuals from “other tribes” moved into this reservation through intertribal alliances and workforce opportunities. The nearest major metropolitan area is within a driving time of five hours, and there is no public transportation. During much of the school year, mobility is limited by the severely cold weather and distances between the reservation center and most homes are miles apart. There are limited public social gathering areas in this community. As such, students traveling to and from high school in buses often lack opportunities to gather with members of their peer groups outside of school. Most formal activities (e.g., athletic events, wedding receptions, winter pow wows) take place on school grounds. The particular reservation population is remarkably young: 37 percent are under the age of 20.

### Participants

Using a stratified sampling method based on gender and grade level, 344 students (47.1% female;  $M$  age =16,  $SD$  =1.5) from all four high school grades were recruited to participate in the EEISL study. Since we were studying peer belonging and ERI among Native American students, this analysis included only those who self-designated as Native American, Native Hawaiian, and/or Other AI/AN within the overall sample. A total of 27 participants (7% of total participant population) who did not identify as Native American, Native Hawaiian, and/or AI/AN were excluded from the analysis. These students identified as White ( $n=16$ ), Hispanic ( $n=2$ ), African American ( $n=2$ ), other ( $n=3$ ), and chose not to respond ( $n=4$ ). The final sample consisted of 317 participants who identified as Native American (46.9% female;  $M$  age =16).

Students were able to choose multiple response options when determining their ethnic identity. As such, some students only chose one ethnicity, while others chose multiple ethnicities. Of the total number of students included in this study, 111 (35.1%) chose more than one ethnic affiliation, while 205 (64.9%) exclusively chose one. Of these 205 students who chose just one affiliation, 134 students (65.3%) exclusively self-identified with the local tribe, 69 students



(33.7%) exclusively self-identified as other AI/AN, and two students (1%) exclusively self-identified as Native Hawaiian.

## **Procedure**

This study was part of a larger project that examined school connectedness, identity, psychological well-being, and academic engagement. The invitation to conduct this project came from the Native American school guidance counselor in the participating school for this study. For detailed information regarding the collaborative process, see Ruedas-Gracia et al. (2020). In accordance with standard operating procedures in the schools and with cooperation of the school administration, we obtained passive consent. Parents received a letter from the school describing the study and providing assurances that their child's participation was both voluntary and confidential. Parents were invited to contact a designated school administrator or the second author within two weeks if they had additional questions or wished to see the actual survey. No parent refused their child's participation.

The Native American school guidance counselor referenced above oversaw administration of surveys included in this study along with the second author. Students were invited to come to the school cafeteria or to the teachers' lounge to respond to the survey in small groups. Prior to responding, students received instructions from the survey administrators including a brief description of the study. Survey administrators answered questions, collected assent forms, monitored the room, and collected the surveys. Only two students declined to participate based on their English proficiency. The assent procedure and survey administration took approximately 25 minutes to complete. Each respondent received \$5 as compensation for their participation. The procedures for this research were approved by the local tribal research review board and the Institutional Review Board at Stanford University.

## **Measures**

### ***Self Esteem***

The 10-item Rosenberg Self Esteem Scale (RSES; Rosenberg, 1962) is a widely used measure of global self-esteem that has previously been used to capture this construct with Native adolescents (Whitesell et al., 2009; Hoffman et al., 2021). Response options range on a 5-point scale between *Strongly Disagree* (1) to *Strongly Agree* (5). Items are summed for a total score (after reverse coding). Respondents' overall score is computed based on the mean value of

responses. Sample items include “On the whole, I am satisfied with myself” and “I feel I do not have much to be proud of.” Internal consistency in the current study was high at  $\alpha = .86$ .

### ***Ethnic Racial Identity***

In this study, the Multigroup Ethnic Identity Measure-Revised (MEIM-R; Phinney & Ong, 2007), which assesses ethnic identity development across diverse groups, was combined with racial centrality items of the Multidimensional Inventory of Black Identity-Teen (MIBI-Teen; Scottham et al., 2008) to create a measure of the meta-construct of ERI. The reliability of this meta-construct was .87. The 6-item MEIM-R consists of two factors, identity exploration (3-items,  $\alpha = .77$ ) and identity commitment (3-items,  $\alpha = .77$ ). This scale has previously been used with Navajo high school students (Galliher et al., 2011). A sample item includes: “I have a strong sense of belonging to my own ethnic group.” Response options range from *Strongly Disagree* (1) to *Strongly Agree* (5). The 3-item MIBI-Teen racial centrality dimension was modified for relevance to Native adolescents and included items such as “Being Native American is an important part of who I am.” Response options range from *Strongly Disagree* (1) to *Strongly Agree* (5) and internal consistency was adequate at  $\alpha = .67$ . This scale has previously been adapted for use with Native adolescents and found to be quite reliable (Hoffman et al., 2021).

### ***Peer Belonging***

We created a 4-item index of peer belonging using two items from the Psychological Sense of School Membership scale (PSSM; Goodenow, 1993) that pertain to the role of peers when thinking about school belonging. These items include “Other students in this school take my opinion seriously” and “Other students here like me the way I am.” These items were measured on a 5-point scale ranging from *Not at All True* (1) to *Completely True* (5). Two previous studies exploring use of the PSSM with Native adolescents reported high reliability (Hussain et al., 2018; Ruedas-Gracia et al., 2020). Additionally, two items were added to this index that captured students’ experiences with bullying taken from the High School Survey of Student Engagement (HSSSE; Center for Evaluation and Education Policy, 2012). The items “During the school year how often have you been picked on or bullied by other students?” and “Witnessed an act of bullying” were measured on a 4-point scale ranging from *1 or less days* to *8 or more days*. The bullying items were reverse-coded such that higher scores indicated lower levels of experiences with harassment by peers. The HSSSE has been used with a participant population that has included Native American students (Stevenson et al., 2021). The internal consistency was

acceptable at ( $\alpha = .60$ ). Given that this was an exploration into the concept of peer belonging in our population of interest, we believe that this is sufficient as a first step in moving this area of research forward. However, future studies must aim for more rigorous measurements of this construct.

## RESULTS

In each path model, results were controlled for gender and age. Table 1 presents basic descriptive statistics.

**Table 1**  
***Demographics of study participants and descriptive statistics for ethnic identity development, self-esteem, and peer belonging***

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Min	Max
Ethnic Racial Identity	315	3.5	0.74	1	5
Self Esteem	308	3.63	0.73	1	5
Peer Belonging	311	3.3	0.77	1	5

*Note.* Missing data was not included in calculating individual mean scores.

### Confirmatory Factor Analysis

ERI, peer belonging, and self-esteem were treated as latent variables to explore the fit of the items used to measure them. In the initial model where all original items for the three measures were included, we found room for improvement in our fit indices:  $\chi^2 = 601.924$ ,  $p = .000$ ; RMSEA = .08; CFI = .84; TLI = .82; SRMR = .08. Informed by previous scholarly work on the limits of the RSES scale in capturing self-esteem as a unidimensional construct (Salerno et al., 2017), we reanalyzed our data by considering a bifactor approach to the scale. In this model, and directly guided by Salerno et al.'s findings, self-esteem was considered as one general latent construct that included two method factors: negatively and positively worded items (See Table 2 for self-esteem item correlations). Enabling this bifactor model significantly improved our fit indices:  $\chi^2 = 302.671$ ,  $p = .000$ ; RMSEA = .05; CFI = .96; TLI = .95; SRMR = .04. In order to further explore the robustness of the RSES as a measure of self-esteem for this current study population, we assessed residual correlations, which did not improve the model.

**Table 2**  
**Correlations of items on Self Esteem Scale**

Variable	1	2 <sup>+</sup>	3	4	5 <sup>+</sup>	6 <sup>+</sup>	7	8 <sup>+</sup>	9 <sup>+</sup>	10
1. SE1	—									
2. SE2 <sup>+</sup>	0.34***	—								
3. SE3	0.60***	0.31***	—							
4. SE4	0.43***	0.20***	0.55***	—						
5. SE5 <sup>+</sup>	0.34***	0.50***	0.34***	0.30***	—					
6. SE6 <sup>+</sup>	0.28***	0.61***	0.33***	0.26***	0.61***	—				
7. SE7	0.40***	0.24***	0.49***	0.40***	0.24***	0.17*	—			
8. SE8 <sup>+</sup>	0.30***	0.40***	0.25***	0.24***	0.46***	0.50***	0.04	—		
9. SE9 <sup>+</sup>	0.41***	0.49***	0.44***	0.43***	0.54***	0.59***	0.25***	0.48***	—	
10. SE10	0.58***	0.45***	0.55***	0.47***	0.42***	0.37***	0.43***	0.42***	0.50***	—

Note. <sup>+</sup>Negatively worded items.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## Path Analyses

Through structural equation modeling (SEM), we explored the role of peer belonging as one mechanism through which ERI development impacts self-esteem. Fitting a model through which peer belonging served as a mediator between ERI and self-esteem (see Figure 1 for path models and Table 3 for coefficients) demonstrated good fit indices:  $\chi^2 = 349.291$ ,  $p < .001$ ; RMSEA = .05; CFI = .93; TLI = .92; SRMR = .05. The direct effect between ERI and self-esteem suggested a positive association such that a higher score on the measure of ERI predicted a higher score on the RSES ( $\beta = .31$ ,  $p = .07$ ), although this did not reach statistical significance. Further, the direct effects between ERI and peer belonging ( $\beta = .45$ ,  $p < .001$ ) and peer belonging and self-esteem ( $\beta = .49$ ,  $p < .001$ ) both indicated positive associations such that ERI predicted peer belonging and peer belonging predicted self-esteem. The significant indirect effect of peer belonging elucidated its role in mediating the total effect of ERI on self-esteem (total effect = .54,  $p = .002$ ; indirect effect = .2=2,  $p < .001$ ). These paths were all controlling for the effects of gender and age. Of note, gender was a significant predictor of peer belonging ( $\beta = -.53$ ,  $p < .001$ ) suggesting an inverse association such that being a boy (1) predicted higher levels of reported peer belonging than girls (2). In fact, an independent sample  $t$ -test suggests that boys reported higher levels of peer belonging ( $M = 3.29$ ) in comparison to girls ( $M = 1.5$ ),  $t(532.4) = 35.1$ ,  $p < .001$ .



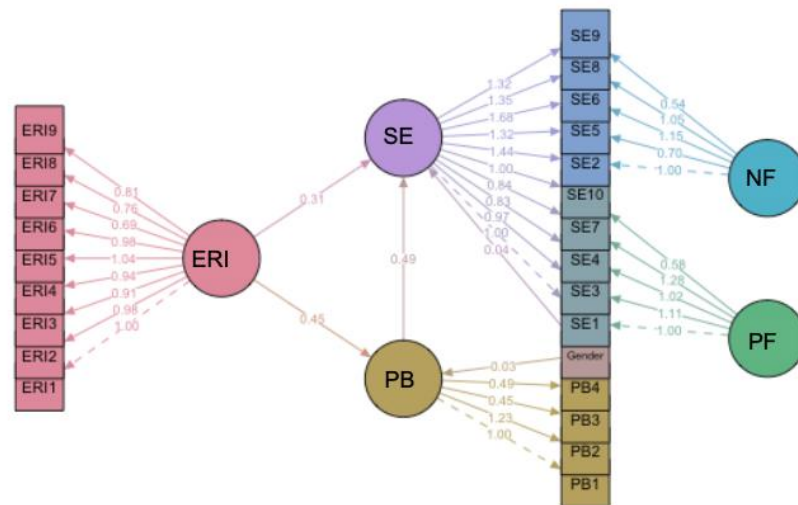
**Table 3**  
**Standardized direct, total, and indirect effects for structural model predicting self-esteem**

Pathway	Direct Effect	Total Effect	Indirect Effect
ERI → peer belonging	0.45**	—	—
Peer belonging → self-esteem	0.49**	—	—
ERI → peer belonging → self-esteem	0.31	0.54**	0.22**

Note. ERI = ethnic racial identity

\* $p < .05$ . \*\* $p < .01$ .

**Figure 1. Structural Equation Model of Ethnic Identity Development Predicting Self-esteem, and the Mediatlional Role of Peer Belonging**



Note. ERI = Ethnic Racial Identity; PB = Peer Belonging; SE = Self-Esteem; NF = Negative Factor; PF = Positive Factor. ERI1-6 from the MEIM and ER7-9 from the Racial Centrality Dimension of MIBM. PB 1-2 from PSSM; PB3 and PB4 from HSSSE. Self Esteem items correspond to item numbers on the RSES.

## DISCUSSION

Driven by the developmental salience of peer relationships, Native students' perceptions about the relevant role of their peers in navigating their ERI, and appreciation for the central role of relational constructs within Indigenous groups (Tachine et al., 2017), peer belonging was chosen as a potential mediator between ERI and self-esteem.

First, a CFA model substantiated the use of two items capturing the role of peers in school belonging as well as two items measuring bullying exposure to assess the overall sense of peer belonging as a latent construct. As discussed previously, measuring the concept of self-esteem with Native Americans requires a critical consideration of whether the items can actually capture how individuals perceive their sense of self. While the RSES is often noted as the most commonly utilized measure of self-esteem (Gómez-Lugo et al., 2016) and a good number of studies focusing on Native American adolescents' mental health and psychological well-being have indeed employed this scale (Newman, 2005; Scott & Langhorne, 2012; Tuitt et al., 2019), our results join forces with the body of literature pointing to the scale's potential measurement limitations (Huang & Dong, 2012; Salerno, et al., 2017). Specifically, our results are in line with scholars who recommend against the use of total mean scores on the RSES as an indication of global self-esteem. Instead, we find support for the idea that positively and negatively worded items must be taken as two distinct factors to robustly measure this construct. This, however, raises questions regarding the psychological processes underpinning the disparate interpretations of positively and negatively worded items, specifically among Native American students (Hussain et al., 2018). While previous works establish the need to make this distinction when measuring self-esteem in many groups, we contend that self-related measurement tools, such as the RSES, must be especially astute and nuanced due to the potential distinctions of how the concept of self is socialized among Native Americans.

As discussed in the opening comments of this study, previous scholarship has urged researchers to avoid canonizing a single framework for how individuals understand their sense of self and instead encouraged recognizing the socially interdependent ways through which Native American people may understand their individuality (Holm et al., 2003). This scholarship extends to the measurement of psychological self among Native American communities. The framework proposed by Walls and colleagues (2019) provides a structure through which the debate between using "tailored vs. common" (p.3) social behavioral measurement tools can be organized. The

authors argue that in the outermost layer of their model lies the common processes involved in the design of measurement tools within social behavioral sciences (the Measurement Development Cycle), spanning conceptualization, operationalization, implementation, and interpretation. The center of this model locates the potential levels of adaptations depending on the specific recipient group (e.g., all Native American people vs. members of a specific tribe). These two layers are connected through the bridging process of community-research partnerships. Overall, researchers must explore whether the tasks involved in each measurement development stage, such as conceptualization of measures, are in harmony with the specific population of interest. When not, they must be tailored.

Informed by this framework, measurements of self-related constructs first have to determine whether a specific construct, such as self-esteem, is relevant to the specific population of interest, such as a diverse group of Native American students attending a tribal high school. The CFA of the RSES in this study suggests that measuring the idea of self-esteem may be developmentally salient for this community, and therefore no tailoring is needed at the conceptualization level. However, the operationalization stage requires changes that can reflect the pertinent domains involved in self-esteem processes for Native American students. Our results suggest that the core processes through which participants may have constructed their sense of self could be fundamentally centered on an overall sense of connectedness to their peer collectives, rather than rely on individual introspection or social comparisons. While the use of the RSES in this study provided valuable insight into the mechanisms that impact self-esteem, we acknowledge the need for employing more comprehensive tools in the future; ones that perhaps include measures of self-esteem in relation to others.

Second, and in line with previous literature, path analyses supported the association between ERI and self-esteem among our participants. Moreover, our analyses demonstrated that one reason adolescents with a more solidly developed ERI might experience greater self-esteem is that they are able to perceive higher levels of affiliation and belonging with their peers in school. This can be gleaned from our significant indirect effects between ERI and self-esteem through peer belonging. Higher levels of ethnic exploration, belonging, and racial centrality may be particularly relevant to experiences with peer belonging and self-esteem among our participants in light of their unique sociohistorical contexts. Indigenous scholarship explicating psychological functioning among Native American populations situates individual development between two levels: the macrosystem capturing ethnocultural values such as relationality, and the microsystem

capturing the reciprocal patterns between individuals and their environment (Fish et al., 2022). Our findings are in line with these models as we find that Native American students' well-being in this study, measured through self-esteem, is a function of the extent to which they espouse their ethnocultural beliefs and practices (ERI), as well as their relationships with their peers (peer belonging).

It is common for adolescents in the current study to be socialized to respect and value individuals who are committed to their cultural beliefs (Doery et al., 2023; Stumblingbear-Riddle & Romans, 2012; Wexler, 2009). Students who report high levels of cultural and ERI exploration, belonging, and centrality are likely students who engage in cultural activities at community gatherings such as honor ceremonies, drumming, or dancing. They may hold specific social privileges due to their participation in these activities, which is noticed by their peer groups. As such, the individuals with higher levels of ERI perceive their peers as more welcoming and accepting of who they are, which in turn impacts their self-esteem. Importantly, the way students interact with high ERI students is independent of their own ERI levels because adolescents are generally socialized within family and community structures to respect individuals who are connected to their traditions.

The perception of belonging to peer groups may also be important for members of this community due to potential social isolation associated with high rates of adverse childhood experiences (Brockie et al., 2015; Walls et al., 2022). Peer groups may be providing a safety net wherein adolescents feel the sense of safety and support that is vital for their development. In the words of the young man quoted at the beginning of the study by Hosseini et al. (2018), relationship dynamics between peers can enable adolescents to remain "sane" in the midst of challenges at school and beyond. This points to the powerful potential of peers in fostering well-being at both academic and non-academic levels.

### **Peer Belonging and Gender**

Importantly, our results provide preliminary support for the idea that among our participant population, males feel a stronger sense of belonging to their peer networks. Empirical explorations into the gendered experiences of Native American students' peer belonging in schools is scarce. However, among ethnically diverse students, meta-analyses and longitudinal studies of general school belonging suggest that girls typically report higher levels of belongingness (Allen et al.



2018; Neel & Fulgini, 2013). Furthermore, girls either tend to report higher levels of peer belonging (Newman et al., 2007) or both girls and boys report that peer belonging matters (Uslu & Gizir, 2017). Given these trends, our findings suggest that among our participants gender may play a different role in shaping their peer experiences. The body of literature on gendered experiences within educational peer groups is inconclusive. Some studies suggest that girls' emotional well-being may be especially prone to experiences with peer adversity such as peer rejection (Skymba et al., 2022). On the other hand, girls also report higher resistance to general peer influence when engaging in neutral and delinquent behaviors (Sumter et al., 2009). These disparate affective and behavioral findings may be explained by the specific impact of sociocultural contexts. In our study context, for example, girls' lives may be more intertwined with and influenced by interpersonal peer relationships than boys. As such, the day-to-day challenges that girls experience within their friend groups, such as romantic triangles or bullying, may play a role in hindering their sense of peer belonging. Alternatively, boys' higher levels of peer belonging may be explained by greater opportunities for involvement in athletic programs which could guide them towards their peer groups in school. Future studies must explore these patterns further to determine whether girls experience low levels of peer belonging or boys experience a particularly robust connection with their friends at school. It can be especially imperative to explore the specific experiences of Native American girls in this particular setting to understand the impediments to building close ties within peer networks.

### **Study Strengths**

A primary strength of this project is that it was uniquely situated to explore the concept of peer belonging among Native adolescents. The rich data obtained in this study facilitated learning about mechanisms of adolescent development in an acutely understudied group, namely Native adolescents living on reservations (Hawkins et al., 2022). We place our findings within a larger body of scholarship that actively seeks to address the gaps in knowledge regarding the sociocultural, historical, and political diversity among diverse Native American communities (O'Keefe et al., 2021). By focusing on the experiences of Native adolescents attending a reservation high school, we seek to encourage further explorations into the well-being of youth in similar understudied contexts nationwide.

Even though there have been a number of insightful scholarly contributions about the role of extended families in Native adolescent development (e.g., Christensen & Manson, 2001; Gobert

& Le, 2015; Joe, 1994), scant attention has been directed to the role of peer relationships within the field of Native American child and adolescent mental health. The current study expands this area by exploring a different and often-overlooked concept, namely peer relationships and belonging.

Another strength of our study was that we chose the concept of peer belonging as informed by qualitative data from the same study population, thus exploring mechanisms that are motivated by the lived experiences of those it seeks to study. In other words, instead of assuming mechanisms that can explain psychological outcomes, we used the insights provided by this participant population to identify potential mediators. This approach is in line with other scholarship that emphasizes the integral role of community-based participatory approaches with Indigenous communities to center their voices in guiding the direction of research questions and hypotheses (O’Keefe et al., 2021; Levac et al., 2019). This strength is especially important for the study of Native adolescents considering recommendations by Indigenous scholars to challenge Western hegemonic ideas around psychological functioning.

### **Implications**

An implication of our results, which stress the significance of Native adolescents experiencing peer belonging, is the need for increased opportunities for social interaction. Due to the challenges many families endure in order to meet their adolescents’ needs, the power of peer groups as a valuable source for fostering resilience must be recognized. Further, the remoteness and considerable geographic dispersion between homes on many reservations situates schools as some of the few public spaces within which Native American adolescents are able to socialize with their peers. As such, schools must recognize their affordances in facilitating opportunities through which students can organize and support one another.

### **LIMITATIONS AND FUTURE DIRECTIONS**

Our results were able to provide rich information regarding the experiences of Native adolescents from one reservation school who navigate relatively homogeneous peer groups embedded within the larger off-reservation social context that actively discriminates against them. We were able to provide support for the potential benefits of ethnically similar peer groups for adolescents living in similar circumstances. This study can be augmented through future

explorations of these patterns in different sociocultural contexts with diverse Native American urban, rural, and reservation groups.

Future research on this topic must explore three areas. First, researchers must explore how the diverse sociocultural contexts that Native adolescents navigate, such as other reservation settings or border town and urban communities, can impact the rates of peer belongingness and its role as a mediator between ERI and self-esteem. A robust body of evidence suggests that increased ethnic and racial diversity in peer groups is correlated with improved social competencies (Douglass et al., 2016; Williams & Hamm, 2018) for adolescents in more diverse communities than in our sample. One future area of exploration is therefore whether increased diversity in the peer networks that Native American youth experience can impact how peer belonging mediates their ERI development and self-esteem. We postulate that specific contextual factors in our sample, such as limited opportunities for engaging in person with peers outside of school, increase the power of the link between peer belonging and self-esteem when compared with individuals in other social contexts.

Second, informed by Phinney and Chavira's (1992) arguments regarding the reciprocal directionality of ERI and self-esteem, future studies must consider whether students with higher self-esteem are better able to function within their peer groups and are thus more likely to strengthen their ERI. Testing the directions of our hypothesized direct and indirect effects in this study was limited by the cross-sectional nature of our data, and future studies must explore other potential directions of effects using longitudinal data to further explore the role of peer belonging as a mediator. We also recognize that the subpar internal consistency of our peer belonging index limits the extent to which we can confidently assess this construct among this population. Our results provide preliminary support for the developmental and sociocultural relevance of this factor for Native American adolescents, and future scholarship must create rigorous measurement tools that can capture the nuances of how Native adolescents interact with their peers in school settings.

Third, future studies must critically consider measurement tools for capturing psychological outcomes—specifically those related to self-constructs—among diverse groups of Native Americans. Considering the group's beliefs and values centered on interdependence, self-esteem must be measured in light of the emphasis placed upon understanding the self in relation to others. Future works must explore how a shift in framing and capturing constructs such as self-esteem in more holistic ways can impact the significance of ERI and peer belonging as predictors of psychological well-being.

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### **CONFLICT OF INTEREST**

The authors declare that they have no conflicts of interest.

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# Cultural Connection and Well-being for American Indian Adolescents

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**Abstract:** *American Indian and Alaska Native (AI/AN) adolescents face health disparities resulting from historical traumas. There is a paucity of research focusing on mental health in AI/AN adolescents or the relationship between cultural connection and health. This project assesses the relationship between cultural identity and markers of mental health and well-being for AI/AN adolescents. Adolescents 12 to 18 years old from the Lumbee Tribe of North Carolina participated in this mixed-methods study. Phase 1, discussed in this manuscript, involved surveys using validated instruments to assess cultural connection and markers of mental health and well-being. Characteristics of the 122 AI/AN youth who completed the survey included: mean age 14.9 years ( $SD = 2.0$ ); 61% ( $n = 75$ ) assigned female at birth; 56% ( $n = 70$ ) identified as female; and 4.1% ( $n = 5$ ) identified as non-binary. Mean tribal affiliation (TA) and ethnic identity (EI) scores suggest strong cultural connection (TA:  $M = 3.1/5$ ,  $SD = 0.6$ ; EI:  $M = 3.4/5$ ,  $SD = 0.9$ ). Sleep quality ( $M = 2.63/5$ ) and positive stress management ( $M = 2.06/5$ ) were low. Bivariate and logistic regression demonstrated moderate positive correlations between EI and friendship, EI and emotional support, TA and friendship, and TA and emotional support. AI/AN adolescents in this sample have a moderate-strong connection with Native culture, marked by ethnic identity and tribal affiliation, and positive markers of mental health and well-being. Data from this study may be used for policy formulation to promote increased funding and programming addressing mental health for AI/AN youth.*

## INTRODUCTION

American Indian and Alaska Native (AI/AN) children and adolescents across the United States face significant physical and mental health disparities secondary to historical and intergenerational traumas; these are the permeating effects of systematic traumas that target individuals and communities who share a specific group identity (Wolfe, 2006). Because these traumas impact individuals and communities across generations, their effects become cumulative, ultimately increasing vulnerability to traumas, stress, and health inequity among affected populations (Elm et al., 2016; Olson & Wahab, 2006; Whitbeck et al., 2004). For AI/AN communities specifically, historical trauma has taken the form of forced removal from traditional homelands, elimination of land, removal of children from families into boarding schools, and decimation of populations (Elm et al., 2016). Contemporary physical and mental health disparities are a result of historical and intergenerational trauma by means of embodiment and epigenetic changes (Walters et al., 2011). Further, present day systemic racism and inequity compound upon historical traumas and contribute to disparate well-being among AI/AN adolescents (Gone et al., 2019). Prior to the COVID-19 pandemic, suicide rates for AI/AN youth were 3.5 times higher than the non-AI/AN youth population, with rates up to 7-12 times higher depending on tribal location (CDC, 2021). CDC data obtained during the pandemic demonstrated that 23% of AI/AN adolescents reported poor mental health, 49.5% had persistent feelings of sadness or hopelessness, 23% had seriously considered attempting suicide, and 20% had attempted suicide (Jones, 2022). These rates are significantly higher among AI/AN adolescents compared to other racial and ethnic groups; most strikingly for questions on suicide, the next highest rates were among Black adolescents at 16.2% (vs. 23% AI/AN) for consideration of suicide and 10% (vs. 20% AI/AN) for suicide attempt, respectively (Jones, 2022). Similarly, suicide remains the second most common cause of death for AI/AN youth 10-24 years old (SAMHSA, 2017).

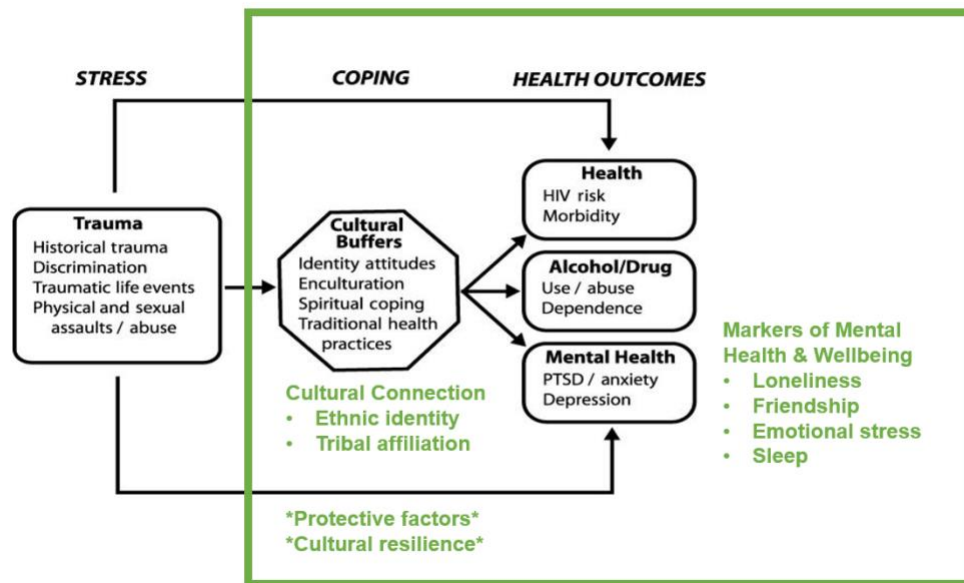
These mental health issues extend to adolescent members of the Lumbee Tribe of North Carolina. While data in this specific population are limited, prior research by Dr. Ronny Bell and colleagues provides insight into the mental health perceptions and needs of Lumbee youth. Among Lumbee adolescents, there are high rates of non-suicidal self-harm, bullying, and stigmatization of mental illness (Bell et al., 2014). Prevalence of self-harm, bullying, and stigmatization have been linked to increased risk of depression symptoms and suicide, a correlation mirrored by the

Lumbee population (Bell et al., 2014). Additionally, studies evaluating sleep among Lumbee adolescents demonstrate that high levels of sleepiness and decreased self-esteem are associated with depression and suicidality (Arnold et al., 2013). As a result of this, screening for sleep quantity and quality, and interventions that focus on improving sleep, have implications for improving mental health and well-being (Arnold et al., 2013). These studies also demonstrated that Lumbee adolescents frequently experience historical trauma and stressors via exposure to substance use by caregivers, poverty, and barriers to accessing healthcare, impacting overall health and well-being.

Despite these disparities and stressors, research among AI/AN adolescents and Lumbee adolescents in particular has demonstrated that ethnic identity, future optimism, and self-esteem are key protective factors that promote improved mental health outcomes (Bell et al., 2014; Kelley et al., 2022). While child and adolescent-focused data are limited, data from AI/AN adults demonstrate a positive correlation between a stronger cultural connection and improved resilience. Indigenous-led, community-driven research has also demonstrated that culturally based interventions positively influence holistic health and well-being (Walls et al., 2022; Allen et al., 2018). They also suggest that these factors help overcome historical traumas (Brave Heart et al., 2012; Brave Heart et al., 2011). Thus, research and programming dedicated towards reconnecting youth with their Native culture and fostering resilience can build upon strengths inherent in Native communities and contribute to healing from past traumas.

This project utilized a community-driven, strengths-focused approach to further assess the relationship between cultural connection (measured by ethnic identity and tribal affiliation indicators) and mental health and well-being outcomes (measured by loneliness, friendships, emotional support, and sleep) among Lumbee adolescents. Another aim of the project was to understand the role of the COVID-19 pandemic on stress management and sleep for Lumbee adolescents. Our project framework (Figure 1) was informed by the Indigenist Stress-Coping Model of Walters and Simoni (Appendix A) which highlights the impacts of historical traumas and oppression on health and well-being, as well as the importance of culture as a strength and protective factor (Walters & Simoni, 2002). This study specifically focused on the coping and health outcomes sections of the framework (captured by the green box), assessed by our variables of interest listed in green (i.e., independent variables: markers of cultural connection, dependent variables: markers of mental health and well-being). In congruence with the existing literature, we hypothesized that higher levels of cultural connection would be positively correlated with indicators of mental health and well-being.

Figure 1. Project Framework, Adapted from Walters and Simoni (2002) Indigenist Stress-Coping Model



## METHODS

This is a convergent mixed-methods study involving two phases of implementation. Phase 1, discussed in this paper, involved distribution of surveys using validated instruments to assess cultural connection (measured by ethnic identity and tribal affiliation questionnaires) and markers of mental health and well-being, including loneliness, friendship, emotional stress, and stress management among participants. Phase 2 of the study further assesses the relationship between cultural connection and well-being through semi-structured interviews. This project was conceptualized following iterative meetings with tribal members (including adolescents and their parents), medical providers and staff at the participating clinic, and researchers who have previously completed similar projects with youth. There was a desire among community partners to explore the relationship between cultural connection and well-being outcomes among Lumbee adolescents, especially in the wake of the COVID-19 pandemic. These individuals reviewed study methodologies, surveys, and data as they became available and were involved in decisions about data storage and dissemination as well. This project was approved by the Lumbee Health and Human Services Committee and Lumbee Tribal Council as well as the University of North Carolina-Chapel Hill Institutional Review Board (Lumbee Tribe of North Carolina, 2023). We received permission from the Lumbee Tribal Council to name the Lumbee tribe and share results in the form of this manuscript.

**Participants**

This study enrolled adolescents 12-18 years old who are members of the Lumbee tribe and received care at a selected community-based pediatric clinic located in the homeland of the Lumbee tribe in Robeson County, North Carolina (Lumbee Tribe of North Carolina, 2023.). Ninety percent of clinic patients identify as American Indian, and 80% are enrolled in Medicaid (North Carolina Institute of Medicine [NCIOM], 2022). The Lumbee tribe is state-recognized and is comprised of approximately 62,000 members. Robeson County is the poorest of North Carolina's 100 counties, with an approximate 31% poverty rate and 22% food insecurity rate (NCIOM, 2022). Furthermore, Robeson County ranks at the bottom of the 100 counties in North Carolina for health outcomes and health factors, including life span, physical and mental health, and social determinants of health (County Health Rankings & Roadmap, 2023).

The Medical Director of this clinic is a tribal member and co-investigator on this project. Participants were recruited during well-child or sick visits at the clinics and completed assent and/or consent based on age. Any participants who did not identify as Lumbee were excluded from the study. Adolescents in the foster care system were also excluded given the complexities of the assent and consent process.

**Data Collection**

The Principal Investigator (PI) was on-site at the pediatric clinic and reviewed well-child or sick visit clinic schedules to identify eligible participants. The PI discussed study participation with potential participants and their parents prior to enrollment. For interested participants, the PI provided verbal information about the study along with a copy of the assent/consent forms. Once informed assent/consent was completed, surveys were administered via Qualtrics software on iPads. Surveys took approximately 5-7 minutes to complete. Parents did not assist with completion of survey. All participants received a \$10 cash incentive following completion of the survey.

**Measurement**

The validated instruments utilized as part of the 18-question survey are described below.

***Demographics***

The survey collected demographic information including age, sex assigned at birth, and gender identity.

### ***Cultural Connection***

Cultural connection was assessed using a subset of 23 questions regarding ‘ethnic identity’ and ‘tribal affiliation.’ Ethnic identity was measured using the revised version of Phinney’s Multigroup Ethnic Identity Measure (MEIM-R,  $\alpha=0.81$ ) (Phinney, 1992), previously validated in studies focusing on AI/AN adolescents (Kulis et al., 2017; Unger et al., 2020). Sample ethnic identity questions included, “I have a strong sense of belonging to my background” and “I feel a strong attachment towards my American Indian heritage,” with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Tribal affiliation questions were obtained from validated surveys used in projects assessing spirituality, culture, and tradition in nationally representative studies (Bryant & LaFromboise, 2005; *Living in 2 Worlds*, 2016; Tropp & Wright, 2001; Whitesell et al., 2009). These questions were broken into four main categories: sense of community, sense of belonging, participation in community events, and participation in Tribal activities. Sample questions included, “How often do you participate in activities such as community gatherings, cultural classes, etc.?” and “How often do you participate in traditional ceremonies?”, with answers ranging from 1 (daily) to 6 (less than once a year). Because there are limited survey measures assessing cultural connection that are validated among AI/AN adolescents, we used the ethnic identity and tribal affiliation questions as markers of cultural connection given the topical relevance of questions.

### ***Mental Health***

Instruments measuring loneliness, friendship, and emotional support were drawn from the NIH Toolbox, a set of validated questionnaires created specifically for 8- to 17-year-olds. Low scores (less than 2) for loneliness indicated a reported lack of loneliness, whereas low friendship or emotional support scores demonstrated low levels of friendship and support. Sleep was measured with the Epworth Sleepiness Scale (ESS) for Children and Adolescents, a validated measure of self-reported sleepiness (Janssen et al., 2017) and with two additional questions previously used in studies among adolescents in the Lumbee community (Arnold et al., 2013; Froese et al., 2008). The ESS score ranges from a total of 0 (no sleepiness) to 24 (significant daytime sleepiness). Scores greater than 10 are considered to be abnormal. Appendix B details the scoring process and validation for these questions.



### ***COVID-19 and Stress***

Stress related to COVID-19 and stress responses were measured by a series of questions based off the “Responses to Stress, COVID-19” questionnaire (Vanderbilt University, 2022). These were modified to meet the developmental level of participants, as well as cultural perspective, and provided insight into stress levels, coping, and resilience.

### **Data Analysis**

Based on the literature and hypothesized relationships between cultural connection and markers of mental health and well-being, we examined the distribution with descriptive statistics of key variables, including cultural connectedness indicators (ethnic identity and tribal affiliation responses) and well-being indicators (loneliness, friendship, emotional support, and sleepiness), along with potential covariates. The Spearman correlation coefficient and its 95% confidence interval (CI) were used to examine the relationship between cultural connection (ethnic identity and tribal affiliation) and markers of mental health and well-being (loneliness, friendship, and emotional support). The Kruskal-Wallis test was used to test for a significant difference in cultural connection and well-being outcomes by sex and gender identity. Logistic regression was used further to explore the relationship between cultural connection and markers of well-being and mental health, adjusting for covariates including COVID-related stress, sex assigned at birth, gender identity, and sleep. We reported odds ratios (OR) with 95% CI and their corresponding *p*-values. A *p*-value of <0.05 was considered statistically significant. All analyses were conducted using R software (Appelhans et al., 2015).

## **RESULTS**

### **Sample Characteristics**

A total of 130 Lumbee adolescents were recruited and completed surveys. Eight surveys were excluded from the final analysis given participants did not complete questions involving our independent and dependent variables of interest. As such, 122 responses were included in the final data analysis, with a mean age of 14.9 (+2.2) years. As noted in Table 1, there was a predominance of female sex assigned at birth (60.7%) and female gender identity (56.6%). It is important to note that five (4%) respondents identified as non-binary or Two Spirit regarding gender identity.

**Table 1**  
**Demographic characteristics of participants (N = 122)**

	<i>n</i> (%)
<b>Age (years)</b>	
Mean (SD)	14.9 (2.02)
Median [Min, Max]	15.0 [12.0, 18.0]
<b>Sex Assigned at Birth</b>	
Male	48 (39.3%)
Female	74 (60.7%)
<b>Gender Identity</b>	
Male	48 (39.3%)
Female	69 (56.6%)
Other (2S, non-binary)	5 (4.1%)

## Descriptive Results

Tables 2 and 3 show descriptive results for both cultural connection and mental health responses for Lumbee adolescents.

### *Cultural Connection*

Participants had a mean score of 3.39/5.0 for ethnic identity, in line with “neutral” and “agree” responses. Tribal affiliation scores were consistent with moderate to strong connection to community and culture.

**Table 2**  
**Cultural connection among Lumbee adolescents, measured by ethnic identity and tribal affiliation survey questions (N = 122)**

	Mean (SD)	Median [Min, Max]
<b>Ethnic Identity<sup>a</sup></b>	3.39 (0.918)	3.50 [1.00, 5.00]
<b>Tribal Affiliation</b>		
Sense of community <sup>a</sup>	3.39 (0.734)	3.30 [1.00, 5.00]
Participation in events <sup>b</sup>	2.21 (1.22)	2.00 [1.00, 6.00]
Sense of belonging <sup>a</sup>	4.43 (1.59)	5.00 [1.00, 6.00]
Participation in Tribal activities <sup>b</sup>	2.95 (0.729)	3.00 [1.00, 4.00]

<sup>a</sup> Scale for ethnic identity: 1 (strongly disagree) to 5 (strongly agree)

<sup>b</sup> Scale for tribal affiliation: 1 (daily) to 6 (less than once a year or on an as needed basis)

**Table 3**  
*Well-being, sleep, and COVID-19 related stress outcomes among Lumbee adolescents*

	Mean (SD)	Median [Min, Max]
<b>Loneliness<sup>a</sup></b>	1.94 (1.09)	1.60 [1.00, 5.00]
<b>Friendship<sup>a</sup></b>	3.68 (1.14)	4.00 [1.00, 5.00]
<b>Emotional Support<sup>a</sup></b>	3.94 (1.06)	4.30 [1.00, 5.00]
<b>Sleep Quality<sup>b</sup></b>	2.63 (0.919)	2.50 [1.00, 4.00]
<b>COVID Stress<sup>c</sup></b>	2.04 (0.774)	1.95 [1.00, 4.40]
<b>Positive Stress Management<sup>c</sup></b>	2.06 (0.636)	2.00 [1.00, 4.00]

<sup>a</sup> Scales for loneliness, friendship, and emotional support: 0 (Never) to 5 (Always)

<sup>b</sup> Scale for sleep quality: 0 (Would never fall asleep) to 3 (High chance of falling asleep)

<sup>c</sup> Scale for COVID stress and stress management: 0 (Not stressful at all) to 5 (Always stressful)

### Bivariate Analyses

At the bivariate level, the Spearman Correlation analyses yielded correlations between cultural connection scales (ethnic identity and tribal affiliation) and well-being and mental health markers (loneliness, friendship, and emotional support). Individuals with lower loneliness scores (i.e., indicating individuals were less lonely) had higher friendship and emotional support scores. Friendship was positively correlated with ethnic identity, tribal affiliation, and emotional support. Emotional support was also positively correlated with ethnic identity and tribal affiliation. See Appendix C for Spearman Correlation data.

From the Kruskal-Wallis analyses, participants assigned female at birth and those who identified as female were less likely to be lonely ( $p = 0.021$  by sex,  $p = 0.01$  by gender). Emotional support and friendship were also impacted by sex assigned at birth and gender identity, although non-significant; we thus failed to reject the null hypothesis that there was no difference in friendship or emotional support by sex and gender identities.

### Logistic Regression Analysis

Logistic regression results demonstrated the correlation between high levels of ethnic identity and tribal affiliation and improved well-being outcomes (Table 4). Individuals with higher emotional support were less likely to be lonely. Participants who self-identified as female assigned sex at birth and female gender were less likely to be lonely than those assigned male sex at birth and those with male gender identity. The same trend was evident, although not statistically significant, for participants who identified as Two Spirit.

From a friendship standpoint, individuals with higher emotional support had higher friendship scores. Similarly, individuals with higher tribal affiliation and ethnic identity scores were more likely to have higher friendship scores (approaching significance). These results were echoed for emotional support, where individuals with higher tribal affiliation and ethnic identity scores were more likely to have higher emotional support scores (approaching significance).

**Table 4**  
**Logistic regression results, adjusted for gender identity**

	<b>OR</b>	<b>95% CI</b>
<b>Adjusted Odds of Loneliness</b>		
Tribal affiliation	0.76	(0.3, 1.9)
Ethnic identity	1.01	(0.4, 2.6)
COVID stress	1.6	(0.73, 3.8)
Sex assigned at birth - Female	3.1	(1.4, 7.3)
Emotional support	0.23	(0.1, 0.5)
Sleep	1.4	(0.9, 1.4)
<b>Adjusted Odds of Friendship</b>		
Tribal affiliation	1.2	(0.48, 3.1)
Ethnic identity	1.3	(0.51, 3.4)
COVID stress	0.62	(0.27, 1.4)
Sex assigned at birth – Female	0.95	(0.42, 2.2)
Emotional support	5.2	(2.4, 12)
Sleep	1.2	(0.55, 2.8)
<b>Adjusted Odds of Emotional Support</b>		
Tribal affiliation	1.7	(0.72, 4.1)
Ethnic identity	1.4	(0.61, 3.4)
COVID stress	1.1	(0.51, 2.3)
Sex assigned at birth - Female	1.1	(0.5, 2.2)
Sleep	0.68	(0.31, 1.4)

## DISCUSSION

Indicators of mental health and well-being assessed via survey questions completed by adolescents in the Lumbee community demonstrate moderate to strong ethnic identity and tribal affiliation. Results suggest that cultural connection remained robust despite these adolescents residing in a community severely impacted by the COVID-19 pandemic, limiting cultural

gathering and connection. Furthermore, adolescents had overall average to strong responses with regard to mental health and well-being indicators: loneliness, friendship, emotional support, sleep, and COVID-19 stressors. We also assessed the impact of sex assigned at birth and gender identity on cultural connection and markers of mental health and well-being outcomes, but we did not find any statistical significance in this sample apart from the positive correlation to loneliness. Two Spirit and lesbian, gay, bisexual, transgender, queer, and gender-diverse AI/AN adolescents have unique experiences, and we wanted to be cognizant of that in this analysis.

Survey and free response questions suggest that Lumbee adolescents experience strong community connection marked by language, relationship to the land, tribal sovereignty, and participation in tribal ceremony and healing practices. While these results can inform work with AI/AN adolescents in other communities, it is important to acknowledge the heterogeneous nature of Tribes and cultures that influence strengths, coping strategies, cultural connectedness, and resilience (Ungar, 2015). Such strong levels of community connection are critical as they serve as protective factors (Walls et al., 2022), allowing youth to overcome structural and systemic barriers and health disparities (see Figure 1, framework diagram).

These data suggest opportunities to build upon strengths inherent to Indigenous adolescents and communities to support positive mental health and well-being outcomes, both in the Lumbee community and Indigenous communities across the United States. Data also emphasize that community-based research and adolescent-driven solutions are critical in informing and carrying out programming. We plan to use results to advocate for and/or promote policy work aimed at increasing mental health resources for AI/AN adolescents and encouraging the inclusion of AI/AN adolescents in community-based research. Moreover, data can be utilized to support existing community programs and to inform future grant applications. An example of an existing program within the Lumbee community is a monthly culture class for youth run by the Lumbee Tribe. The impact of these classes were previously assessed through a National Institute of Mental Health-funded project called the Lumbee Rite of Passage project (Langdon et al., 2016).

More broadly, this project allows for representation of AI/AN adolescents in the existing body of literature, giving them a voice and combating AI/AN erasure in research (Angelino et al., 2023). Use of tribal affiliation and ethnic identity surveys in this study also adds to content validity for those measures. Currently, when AI/AN individuals are included in research, they are often misclassified or combined into the “other” category (James et al., 2018; Jim et al., 2014). This not only makes it difficult for AI/AN individuals to be accurately represented, but also impedes

participation in future research. Instead, research approaches and partnerships that recognize the connection between culture, tradition, and well-being are critical in achieving health equity for Indigenous individuals and communities (Small-Rodriguez & Akee, 2021). Using data and research practices that are grounded in partnership, resilience, and Indigenous ways of knowing can also help promote health equity and data sovereignty.

While the contributions of this study are important, there are a few limitations to be noted. Data are self-reported which can result in social desirability and recall biases. Additionally, results were collected from a single center which may have limited generalizability of this sample to the general Lumbee adolescent population. However, we believe our participants are reflective of Lumbee adolescents given the limited number of pediatric clinics in the geographic region where a majority of Lumbee adolescents live, and our recruitment of participants from both well and sick clinic visits. Given paucity of data on this topic, both in the Lumbee community and greater AI/AN community, we lack a comparison group. Our goal for this project is to contribute to the literature and serve as both a reminder and challenge for the inclusion of AI/AN children and adolescents in community-driven research.

Lastly, there are several results that approached statistical significance, in particular regressions incorporating tribal affiliation and ethnic identity. We suspect that the strength of correlation and significance of regressions would increase with an increase in sample size, thus, presenting an opportunity for future work.

We will further explore the relationship between cultural connection and mental health and well-being among Lumbee adolescents in Phase 2 of this project. Semi-structured interviews will center adolescent voices and inform strategies to increase community connection and ways to improve access to culturally informed mental health support.

## CONCLUSION

Indigenous adolescents are uniquely resilient. Results from this study demonstrate that connection to culture through tribal affiliation, ethnic identity, and historical context are correlated with positive mental health indicators. Larger scale studies can better understand the strength of this association and inform policies more clearly based on the voices of AI/AN youth and adolescents. Further, data can be used to both raise awareness and increase representation for this community and inform culturally safe and informed solutions.



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### **CONFLICT OF INTEREST**

The authors declare that they have no conflicts of interest.

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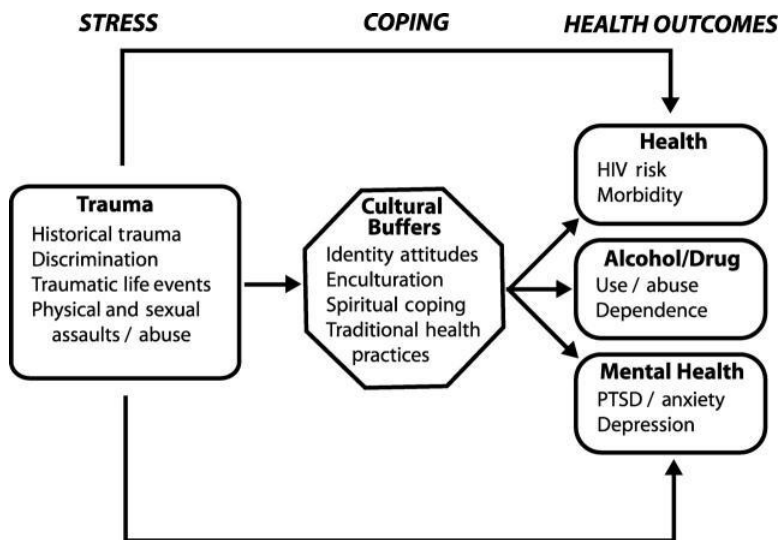
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APPENDIX A

Original Indigenist Stress-Coping Model (Walters & Simoni, 2002)



APPENDIX B

Scoring Information

NIH Toolbox Survey	Form Type, ages 8-17 yrs	Scale	Scoring	Cronback $\alpha$ , Convergent validity
Loneliness	7-item fixed length form	5 point scale with options ranging from "never" to "always"	Higher scores are indicative of more loneliness	0.94, 0.83
Friendship	5-item fixed-length form	5-point scale with options ranging from "never" to "always."	higher scores are indicative of a greater perceived availability of companions with whom to interact/ affiliate	0.95, -0.80
Emotional Support	7-item fixed-length form	5-point scale with options ranging from "never" to "always."	higher scores indicate higher perceived emotional support	0.97, 0.78



APPENDIX C

Spearman Correlation Results

	Ethnic Identity (95% CI)	Tribal Affiliation: Connection to Lumbee Tribe & Community	Tribal Affiliation: Community Participation	Tribal Affiliation: Feelings of Belonging	Tribal Affiliation: Indigenous Identity	Friendship	Emotional Support
<b>Loneliness</b>	-0.06 (-0.23, 0.12)	-0.1 (-0.28, 0.08)	-0.03 (-0.21, 0.14)	-0.17 (-0.34, 0.003)	-0.12 (-0.29, 0.06)	<b>-0.42</b> <b>(-0.55, -0.26)</b>	<b>-0.43</b> <b>(-0.57, -0.28)</b>
<b>Friendship</b>	<b>0.24</b> <b>(0.06, 0.4)</b>	<b>0.28</b> <b>(0.11, 0.43)</b>	0.03 (-0.15, 0.21)	<b>0.094</b> <b>(-0.085, 0.27)</b>	0.25 (0.074, 0.41)		<b>0.57</b> <b>(0.44, 0.68)</b>
<b>Emotional Support</b>	<b>0.26</b> <b>(0.087, 0.42)</b>	<b>0.27</b> <b>(0.093, 0.42)</b>	0.084 (-0.094, 0.26)	<b>0.16</b> <b>(-0.018, 0.32)</b>	0.33 (0.16, 0.48)		

\*Bolted results are statistically significant

# **Recommendations for Modernizing a Culturally Grounded Substance Use Prevention Program for American Indian and Alaska Native Youth**

Amanda M. Hunter, PhD, MPH (*Yaqui*), Sheena Greenstone, MA (*Navajo*),  
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**Abstract:** *American Indian and Alaska Native (AI/AN) youth use alcohol and drugs at a higher rate with earlier onset than the overall youth population in the United States. Youth interventions are needed to support the prevention and reduction of substance misuse-related issues. Connecting AI/AN children to their heritage through culturally grounded prevention programs has been shown to be more effective than programs designed for the general population. The objective of this formative evaluation was to provide community-informed updates for an existing culturally grounded substance use prevention program, The Beauty Way. This study was conducted in partnership with an AI/AN-serving community organization using key informant interviews and talking circles with community members and parents. Participants revealed the challenges and obstacles AI/AN youth face, the impact of cultural values, and activities which engage youth to prevent problematic substance use. Recommendations include the importance of 1) incorporating current challenges to behavioral health such as social media and vaping, 2) including cultural values and activities including land-based learning, and 3) creating a robust facilitator guide and hiring culturally sensitive program staff. These results generated recommendations to strengthen the cultural focus and application of The Beauty Way for AI/AN youth.*

## INTRODUCTION

Hundreds of years of historical trauma, including the inhumane process of colonization, forced assimilation, and genocide, have resulted in numerous health disparities among American Indians and Alaska Natives (AI/ANs; Gone et al., 2019). These health disparities include higher mortality rates for numerous diseases and afflictions, including substance use disorder, heart disease, and suicide, resulting in an overall life expectancy of 5.5 years less than the average of the U.S. population (Indian Health Service, 2019). Substance use is a growing issue among AI/ANs as drug and alcohol use increased among adults between 2018-2019, with alcohol-use disorders rising from 1.3% in 2018 to 3.2% in 2019 and marijuana use disorder rising from 3.4% to 6.5% (Substance Abuse and Mental Health Services Administration, 2020). Alarming, the mortality rate for chronic liver disease and cirrhosis was 4.6 times higher in the AI/AN population than the U.S. population (Walls et al., 2020).

According to the National Institute of Drug Abuse survey from 2009-2012, lifetime prevalence for disordered use of alcohol is 39%, marijuana is 43%, and cigarettes is 29% for AI/AN adults (U.S. Department of Health and Human Services [USDHHS], 2021). Early onset of substance use increases the chances of chronic use in adult years (USDHHS, 2021), and biological, psychological, social, and environmental factors influence or become risk factors as early as birth (USDHHS, 2021), indicating that early intervention is critical. Research suggests AI/AN youth use alcohol and drugs at a higher rate with an earlier onset than the overall youth population in the U.S. (Walls et al., 2020). Further, AI/AN youth who live near or on reservations have higher rates of substance use than a national sample (Swaim & Stanley, 2018). These statistics represent the need for alcohol and substance use prevention programs for AI/AN youth to decrease the likelihood of substance misuse-related issues across the lifespan.

Youth and early childhood interventions can increase protective factors and can change overall life trajectory beyond substance use prevention (USDHHS, 2021). While evidence-based prevention practices and programs exist for substance use, they may not be effective for AI/AN youth as they must be adapted, delivered, and sustained in an effective service delivery setting (de Heer et al., 2020). That is to say, there are many factors at play when choosing a prevention program that will be effective for a specific youth population, including culturally relevant content, and consistent, reliable delivery within a service delivery setting. Connecting AI/AN youth to their

heritage through culturally grounded prevention programs are suggested to be more effective than those designed for the general population (Okamoto et al., 2014). For example, *Parenting in 2 Worlds* is a culturally adapted program that, when compared to its non-culturally-based counterpart, showed improved outcomes for AI/AN parenting practices and youth behavioral problems (Kulis et al., 2016). A culturally grounded program is built from core components informed by culturally specific values, practices, beliefs, and socio-historical perspectives (Okamoto et al., 2014). Developing a culturally grounded program is an extensive process requiring heavy community involvement; however, it is likely to result in a program compatible with the community (Okamoto et al., 2014). An example of a culturally grounded program is the *Journeys of the Circle* program, an 8-session life skills program which uses AI/AN cultural values to educate AI/AN youth on substance use, communication, decision making, and goal setting skills (Marlatt et al., 2003).

A culturally adapted program is a program that has been altered from existing evidence-based practices (EBPs) and designed for a specific population to be culturally relevant (Okamoto et al., 2014). Creating a culturally adapted program can consist of surface-structure modifications, such as language, or deep-structure adaptations, which incorporate key cultural components into the core of the program (Okamoto et al., 2014). Weaving Healthy Families is an example of a culturally adapted program. Modifications for adaptation included reducing session numbers, removing some content but retaining main themes, and adding a talking circle and AI/AN food to family dinners (McKinley & Theall, 2021). There are few culturally grounded substance use prevention programs available to AI/AN youth as these programs require extensive time and collaborative effort with the AI/AN community. Moran and Reaman (2002) identified strong community involvement as a determining factor in the effectiveness of a substance use prevention program, indicating specific tailoring to participants is a key factor. Further, the program must also be relevant and acceptable to the program recipients. The Beauty Way program is referred to as a culturally grounded program throughout this article because it is based on Indigenous values and cultural lessons. However, the curriculum is also being adapted to be more inclusive of local Indigenous cultures in modern times, so it would also be correct to call the new version a culturally adapted program. To ensure a substance use prevention program is culturally appropriate and effective, extensive community involvement and participation in its development is required and recommended.

### **The Beauty Way Substance Use Prevention Program**

*The Beauty Way* curriculum was developed in 1989 by the Alcohol and Substance Abuse Prevention Curriculum Project under the Navajo Division of Education in Window Rock, AZ. It was intended to be implemented in all the Bureau of Indian Affairs schools on the Navajo Reservation and is now used in after school settings (Alcohol & Substance Abuse Prevention Curriculum Project, 1989). According to the curriculum's introduction, it was a collaboration between a team of AI/AN and non-AI/AN working professionals in education, health, social welfare, and law, to develop a culturally relevant program encouraging AI/AN youth to remain drug and alcohol-free (Alcohol & Substance Abuse Prevention Curriculum Project, 1989).

*The Beauty Way* is a curriculum for grades K-8 with 5-6 age-appropriate lessons in each unit which can be taught in the classroom with the teacher as the facilitator. Each lesson plan has a title with learning objectives and a section outlining the cultural background information for the facilitator to review and use as they see fit. Lessons and activities are age-appropriate with modifications made for communication and length of lesson. Cultural lessons are a core component of the program along with five prevention skills that encourage youth to develop 1) a positive self-image, 2) a positive self-identity, 3) social skills, 4) positive coping strategies, and 5) decision making skills. Each lesson can be adapted, shortened, or lengthened as needed to assist the facilitator in applying the concepts in a manner that the students can learn and internalize. Each lesson comes with supplemental materials such as activity sheets, posters, videos, and some reading materials to implement the lessons effectively. Additionally, there is a section for the parents that can be used to encourage parental involvement in their child's education through drug and alcohol education and prevention (Alcohol & Substance Abuse Prevention Curriculum Project, 1989).

In 1991, this program was evaluated in elementary schools across the Navajo Nation by Northern Arizona University's (NAU) affiliated program in the Institute for Human Development department. This process evaluation included 367 teachers and 1,793 students and utilized training feedback, curriculum feedback, classroom observation of teacher facilitators, and student perceptions regarding substance use (Schacht, 1991). This evaluation did not include an evaluation of intervention effectiveness. Overall, there was support from teachers for the prevention lessons (67%) and learning objectives offered (59%) by the curriculum (Schacht, 1991).

While this process evaluation was comprehensive, it occurred over 30 years ago, and current facilitators at a local AI/AN Community Service Agency (AI/ANCSA) voiced concern the

curriculum is outdated and may no longer be relevant or applicable to AI/AN youth in 2022 (Schacht, 1991). Specifically, information on drugs including marijuana is outdated, and the curriculum does not include new drug use behaviors that are popular with youth, like vaping. Substance use prevention has continued to develop new strategies since the curriculum's development in the 1980's. The AI/ANCSA staff wanted to include modern communication regarding youth substance use prevention. Additionally, wording in the original curriculum can be deficit-based, adheres to stereotypes about substance use in AI/AN communities, and does not include gender-inclusive language. The AI/ANCSA that implements the curriculum serves AI/AN youth from various cultural backgrounds that are not reflected in the original curriculum. Staff expressed the need for a new curriculum to address multiple cultural backgrounds and histories that exist in the state to make a more inclusive program for the AI/AN youth.

The purpose of this formative evaluation is to modernize *The Beauty Way* for AI/AN youth by engaging community members, parents, and leadership organizations. The evaluation questions are:

1. What aspects of *The Beauty Way* curriculum should be modified to be more culturally relevant, inclusive, and sensitive to AI/AN youth in urban settings according to the AI/AN community?
2. What risk and protective factors for AI/AN youth should be considered to promote well-being and cultural identity when implementing a culturally grounded substance use prevention program?

## **METHODS**

This work provided insight into strategies and approaches to engage youth, identify current risk factors, determine cultural considerations, and foster a strong cultural identity among AI/AN youth in a city densely populated with AI/ANs. This work was supported by an existing partnership between an AI/ANCSA organization and the Institute for Translational Research Education (ITRE). Three scholars (SG, KM, and AMH) are referred to throughout this article as the "evaluation team" and engaged in this project while working toward a certificate in Adolescent Behavioral Health through ITRE. Two of these scholars identify as AI members of the community where this evaluation study occurred. The evaluation team worked with the AI/ANCSA to explore possible avenues of work that would benefit both organizations and illustrate the evaluation team's



commitment to the AI/AN community. The AI/ANCSA expressed the need to update *The Beauty Way* curriculum to be a more interactive, engaging program with modern information that is applicable to the AI/AN youth of today. As part of this project, the AI/ANCSA received a full report with specific programmatic recommendations for implementing *The Beauty Way*.

### **Setting: AI/AN Community Service Agency (AI/ANCSA)**

To protect the identities of the AI/AN communities and identities in the area, the term AI/AN will be used throughout this paper and does not specify a specific group. Further, to protect the community and location, all identifying markers have been removed; however, this community lies in the Southwest region of the United States. This community is located on the traditional homelands of several AI/AN tribes. As of 2018, AI/AN peoples comprise 7.8% of the community population (U.S. Census Bureau, 2022), which is a notable density of AI/AN peoples when compared to the U.S. overall (1.3%) (U.S. Census Bureau, 2021). Additionally, these numbers only include individuals who described themselves as AI/AN alone, not in combination with any other races (U.S. Census Bureau, 2022). The 2021 County Community Needs Assessment reported AI/AN adolescents have lower high school graduation rates than any other racial/ethnic group, and more than one in three AI/ANs live in poverty in the county (NACA, 2021). These statistics demonstrate a crucial need for the services the AI/ANCSA provides to the AI/AN community. The AI/ANCSA provides youth services such as a youth program that offers after-school and occasional weekend activities that promote self-esteem, educational enrichment, physical fitness, traditional activities and practices, substance use prevention, and cultural values to children in 1st through 6th grades (NACA, 2021). The organization utilizes *The Beauty Way* curriculum as part of the substance use prevention efforts which is delivered as an after-school program.

### **Design and Participants**

The evaluation team recognized AI/AN values and experiences vary among geographical regions, neighborhoods, and individuals. Community involvement and input are necessary and ideal when developing programs for AI/AN populations, so their feedback on *The Beauty Way* curriculum was imperative to program enhancements. Due to the unique experiences of the evaluation team and the need for community participation, interviews and talking circles were identified as the best approach to explore culturally sensitive updates for *The Beauty Way* curriculum. Talking circles allowed individuals to share thoughts, feelings, and ideas in a safe

space with an equal balance of power (Di Lallo et al., 2021). As part of AI/AN history and culture, talking circles are known to AI/AN community members rather than focus groups which created a culturally sensitive approach to increase participation, engagement, and safety among the members. This approach ensured that the community recommendations for updates are culturally sensitive and community specific.

### ***Recruitment***

In November 2021, the participants were recruited via flyer at the AI/ANCSA location, on social media groups through Facebook, by phone, and from face-to-face interaction with community partners. The evaluation team also reached out to personal and professional networks to recruit for the talking circles. The team aimed to recruit 5-10 participants for each talking circle to ensure there would be enough participants to elicit in-depth conversation but not so many participants that some would not get to speak regularly (Guest, Namey, & Mitchell, 2013). Participants' contact information was collected and then they were assigned to one of two talking circles. AI/ANCSA employees were asked to participate in interviews. The evaluation team also scheduled two youth talking circles; however, there was a COVID-19 outbreak where the youth reside. The youth talking circles were canceled, and the youth were placed on quarantine. For safety purposes and timing of this project, youth talking circles could not be rescheduled.

### ***Inclusion Criteria***

Interviews were conducted with four AI/ANCSA employees who had direct knowledge and/or experience with the youth programs and the AI/AN population. The first talking circle was conducted with community members (ages 18+) who identify as AI/AN and reside in the community. The second talking circle included parents (ages 18+) who identify as AI/AN and reside in the community. No participants were turned away.

### ***Procedures***

The evaluation team submitted the proposed methods and recruitment strategies to Northern Arizona University's Human Research Protection Program. The formative evaluation was deemed to be evaluation and not research, so written informed consent was not collected. However, the evaluation team described the purpose of the interviews and talking circles and allowed participants to ask any questions before, during, and after the discussions.

### *Interviews*

Interviews were conducted and recorded virtually through an online video conferencing service (Zoom) and lasted an average of 1 hour. Four interviews were conducted with individuals who had experience working with youth, behavioral health, or implementing the program. AI/ANCSA employees were presented with a copy of the third-grade unit of *The Beauty Way* curriculum to review for five minutes prior to the interview, then another copy was presented on screen during the session. The AI/ANCSA only had copies of curriculum for grades 3-6. The team chose to present the third-grade curriculum because it is first in the sequential order of curriculum that was accessible to the team. They were asked ten semi-structured questions regarding feasibility and sustainability of *The Beauty Way* program, which included questions on the challenges, barriers, and benefits of improvement. At the end of the sessions, participants were mailed a \$5 gift card in exchange for their participation and input to the group.

### *Talking Circles*

Two talking circles were conducted and recorded virtually through an online video conferencing service (Zoom) by two members of the evaluation team and lasted an average of 90 minutes. Additionally, both members of the evaluation team took notes during the talking circles to ensure key details were recorded. At the beginning of each talking circle, participants and the evaluation team engaged in introductions, provided a brief background on the project goals to build rapport among members, and presented a copy of the third-grade unit from *The Beauty Way* curriculum to review for 5-10 minutes prior to the talking circle. Another copy of *The Beauty Way* curriculum was also presented on screen during the session. Participants in the “Community Member Talking Circle” were asked eight semi-structured questions on *The Beauty Way* program, including their vision and ideas on how to make it more inclusive, while staying true to cultural values. Participants in the “Parent Talking Circle” were asked eight semi-structured questions on what keeps their children entertained and engaged and what challenges they face as AI/AN children living in an urban location. At the end of each talking circle, participants were mailed a \$5 gift card in exchange for their participation and input to the group. Table 1 includes questions used to guide discussions with each stakeholder group.

**Table 1**  
**Interview and talking circle guiding questions**

<b>Data Collection Method</b>	<b>Questions</b>
<b>AI/ANCSA Staff Interviews</b>	<ol style="list-style-type: none"> <li>1. Can you describe your experience implementing/ facilitating youth programs at the AI/ANCSA?</li> <li>2. What challenges did you face implementing the program?</li> <li>3. What suggestions do you have to improve program implementation?</li> <li>4. How did you perceive participant engagement?</li> <li>5. What lessons or components, if any, of The Beauty Way do you think need to be improved/ updated?</li> <li>6. In your opinion what are the core elements/values/ skills of The Beauty Way to help prevent substance abuse in Native youth in the Community?</li> <li>7. How do you think The Beauty Way impacts, or will impact the participants?</li> <li>8. What types of activities do the youth at the AI/ANCSA enjoy?</li> <li>9. What kind of mental health issues do you see impacting Native American youth?</li> <li>10. Is there anything else you would like to add?</li> </ol>
<b>Parent Talking Circle</b>	<ol style="list-style-type: none"> <li>1. What are your thoughts on the lesson?</li> <li>2. Do you think the lesson is appropriate for your children (6–9-year-olds)?</li> <li>3. Did you find the lesson relatable in terms of values/ culture?</li> <li>4. What types of issues do your children struggle with in school?</li> <li>5. What concerns, if any, do you have about your children regarding substance use?</li> <li>6. How could this program help to address these issues?</li> <li>7. What types of things are your 6–9-year-old interested in?</li> <li>8. What kind of substance use issues do you see impacting Native American youth?</li> </ol>
<b>Community Member Talking Circle</b>	<ol style="list-style-type: none"> <li>1. What are your thoughts on the lesson?</li> <li>2. Did you find the lesson relatable in terms of values/ culture?</li> <li>3. What cultural components are important for youth in the Community to connect with?</li> <li>4. Is there anything you would change to make this lesson more culturally relatable, if so what changes would you make?</li> <li>5. What risk factors or concerns do you have for Native urban youth that should be addressed through this program?</li> <li>6. What concerns regarding substance use do you have about youth in the Community?</li> <li>7. What ideas do you have to make this lesson more engaging for 6–9-year-olds in the Community?</li> <li>8. What kind of substance use issues do you see impacting Native American youth?</li> </ol>

## **Qualitative Data Analysis**

The evaluation team transcribed audio recordings and merged them with handwritten notes taken during the sessions. Qualitative analysis occurred in two phases. In phase one, the evaluation team created a codebook that corresponded with questions asked during interviews and talking circles. In phase two, the evaluation team used deductive thematic analysis to code the transcribed interviews and talking circles (Clarke et al., 2015). As part of a community-engaged approach, the evaluation team invited employees from AI/ANCSA to assist with coding data and developing ideas from program updates based on the analysis. All members of the evaluation team received training on deductive qualitative analysis before coding through the ITRE certificate program. Data from each team member was then compiled using Google Sheets. Through consensus, the team compared and discussed their individual data and identified major patterns encountered within each question and by overall thematic category.

## **RESULTS**

This project aimed to determine culturally appropriate updates for the substance use prevention program called *The Beauty Way* for the AI/ANCSA organization. To meet this objective, the project focused on providing specific recommendations based on feedback from AI/AN-identifying members of the community. Talking circles with parents (n = 7) and community members (n = 5) were conducted to gain insight on which elements of *The Beauty Way* curriculum were essential to retain and which needed to be updated. Interviews with AI/ANCSA members who have implemented *The Beauty Way* as an after-school program or have experience with the population they serve provided some insight into the challenges and strengths of the program. All groups provided some understanding of the most important factors related to improving and tailoring a culturally grounded substance use prevention program for children in an urban setting, while engaging and fostering a connection to their cultural background, knowledge, and practices. The evaluation team identified three key themes from the qualitative analysis including local behavioral health concerns, the importance of culture, and facilitator considerations.

**Table 2**  
**Interview and talking circle participants**

	<b>N</b>	<b>Gender</b>	<b>AI/AN</b>
<b>Staff Interviews:</b> AI/ANCSA staff who work with youth programs	4	Female (N=1) Male (N=3)	Yes (N=3) No (N=1)
<b>Parent Talking Circle:</b> Parents or guardians (ages 18+) of youth who identify as AI/AN and reside in the community	7	Female (N=5) Male (N=2)	Yes (N=7) No (N=0)
<b>Community Talking Circle:</b> Adults (ages 18+) who identify as AI/AN and reside in the community	5	Female (N=4) Male (N=1)	Yes (N=7) No (N=0)

### Local Behavioral Health Concerns

Participants identified low self-esteem, bullying, and historical trauma as risk factors that impact AI/AN youth mental health. For example, one community parent noted, “And then bullying of course, and I think one, one of the lessons talked a little bit about bullying, but back then, I think it wasn't such a commonly used phrase as it is now.” An AI/ANCSA employee identified historical trauma as another behavioral health concern: “One of the things that's fairly consistent across tribes is a concept called historical trauma, and so, based on how each particular family copes with historical trauma either in a healthy or unhealthy manner is going to affect the mental health of the kid.” Participants also noted the importance of addressing behavioral health risk factors through protective factors in *The Beauty Way* curriculum. For example, one AI/ANCSA employee described the importance of cultural identity and youth having an understanding of their ancestral history to build resilience. This employee said, “Having that knowledge of who they are, what their ancestors have experienced, and all the resilience that it took to get to them specifically to the place that they're standing, I think is important.” A community parent stated, “I think we've all said it before those protective factors really are the relationship to those cultural identity markers around language and practice...”. These participant statements speak to the mental and behavioral health of AI/AN youth in this community and common substances used in the community. A community parent stated, “...Just some updating on some of the programming, like thinking about social media and how that plays in. Cause there, I think there has to be something with social media...And then with the tobacco



use one, I know vaping wasn't kind of popular back then, but I know it certainly is now...". Interviews conducted with AI/ANCSA employees revealed that the most accessible and commonly abused substances among children were vaping, alcohol, tobacco, cannabis, and prescription drugs.

### **The Importance of Culture**

Participants voiced how separation from their cultural practices, activities, and connection can be destructive for children especially when they are faced with stereotypes, racism, discrimination, and cultural appropriation in the schools and community. A community member stated, "...losing sight of your culture and your teachings, and just putting emphasis on that and encouraging to return home and ask questions, and participate in ceremonies. However, to make that connection a bit stronger...". A community parent echoed this need for connection and said, "...Every human has a connection to land or territory, every human has a connection to, or knowledge of history, right. And it's how you bring those together to understand that there's a relationship between all of us...". An AI/ANCSA employee described the protective nature of cultural identity as "...establishing a strong sense of identity with...with the children so that way, you know, when things start to change in their life and they start to experience adversity, they have a strong sense of who they are...".

Participants also voiced how some children may feel excluded or denied their cultural membership because of their appearance or knowledge; therefore, cultural inclusivity should be cultivated. A community parent stated, "...It does pit our students against one another sometimes when you're saying, 'Well, you're not [tribe name] enough or you're not [tribe name] enough.' It creates a circumstance where we point the finger at each other for not knowing enough or knowing too much, right." Another community parent expanded on the issue of exclusion:

...I just want to say that it is a definitely something to consider because we have some Native American students who don't feel comfortable going to one of our Native American advisors because they don't feel Native enough. They feel maybe that they don't have an accent or they're a little bit more urban and they don't feel like because the advisor has that real strong presence of culture that they don't feel Native enough to seek out those resources and vice versa. - Community Parent

## Facilitator Considerations

Participants described the importance of preparing facilitators with a guide to ensure they understand generational trauma so that they will be able to connect, communicate, and understand the challenges and struggles AI/AN children face. Several quotes (below) describe suggestions made by community parents regarding facilitators of culturally grounded curriculum.

And I mean, maybe that is for the guide for the moderator or presenter of generational trauma and how that plays in because that's obviously, we look at boarding schools, colonization, assimilation, and it's all the definitely interconnected, and just back to the point about kind of the identity continuum of our Native youth. - Community Parent

And I think that goes a long way with thinking about how you present the material that will facilitate the awareness that although we're working with students at an individual level, thinking about ways that we engaged them to consider the ways they're connected to a larger community. - Community Parent

...it's talking about relationality and being intentional with language use in terms of thinking about developing community and speaking to one another as auntie, uncle, grandfather, a niece, nephew and using that kind of terminology. I think might be something to consider as well, the facilitator and students together and how they're creating that dynamic and I think it goes back to that notion that was discussed several times. - Community Parent

Facilitators also need to be observant, know how to engage the children, and ask for feedback at the end of each lesson to ensure fidelity of the program. Facilitators should strive to be creative, build group cohesion, and accept others regardless of their cultural differences and variances. One community parent demonstrated by stating, "And then if we're implementing the language, asking questions like how is the teacher facilitating or using language to encourage self-determination? I think those are things that can be somehow integrated into the curriculum here." Another community parent said, "...So it's just acceptance that we're all in different areas and we can all learn from one another, but again, for one... in one area for the students and then the other for the Proctor to understand that there's these two different feelings going on between students."

Participants requested the incorporation of hands-on activities, cultural arts and crafts, interactive lessons, and games with an online presence on social media to engage the children of today in this substance use prevention curriculum. Some hands-on activities suggested to foster engagement include journaling, creating posters, making collages, constructing projects, and physical activities. Cultural arts and crafts identified were sheep butchering, rug weaving, fishing, and participation in traditional practices and ceremonies. Lastly, technological advancements since the creation of this program need to be incorporated, such as interactive lessons accessible through the internet or social media, to increase participation. Although interactive lessons can be incorporated into the curriculum, it is up to the facilitator to ensure they are used with enthusiasm to promote youth engagement.

### DISCUSSION

This project focused on providing recommendations for updates to an AI/AN substance use prevention program called *The Beauty Way* for an AI/AN community service organization to utilize as an after-school program. Since its creation in 1989, some content in the curriculum has become irrelevant today, which has impacted participant engagement. This prompted the AI/AN organization to request modifying the program's curriculum. Using a community-engaged approach, the evaluation team and the organization set out to answer which aspects of *The Beauty Way* curriculum are essential to the program's goals, objectives, and what the current needs, interests, and best practices are when servicing the AI/AN community.

*The Beauty Way* curriculum content was sufficient for the times it was created; however, we identified a need for improved culturally sensitive language, inclusivity of diverse cultures and tribes, and delivery systems in the lessons. A recurring theme throughout the categories and groups was the conception that a strong cultural identity and connection was a protective factor against many mental health issues such as substance use, suicide, and depression. Second was an awareness of the differences within and among the AI/AN children in their knowledge of traditional beliefs or practices, use and understanding of cultural language, and connection with their elders or ancestral homeland. This aligns with the findings of a systematic mixed methods review which identified a connection with an adult role model who instills positive aspirations and cultural identity as one of the strongest protective factors for AI/AN youth against substance use (Woods, et al., 2022).

Another area was the acknowledgment of historical/intergenerational trauma and its impact on mental health, loss of language, and a continual separation from culture. Participants described the need for inclusion, tolerance, and acceptance among AI/AN children from their peers, parents, and community. These findings are related to cultural identity or connection at a higher level and the lack of this relationship can result in mental health issues, substance use/abuse, and the continuation of a vicious cycle, a fact that has been confirmed by Indigenous scholars and recent studies (Ullrich, 2019). *The Beauty Way* curriculum serves a vital purpose in substance use prevention, perhaps more so now than when it was first developed given the high rates of substance use and continued attempts of cultural erasure.

Participants were clear on the importance of utilizing a facilitator's guide to understand the values, demographics, beliefs, and experiences of the AI/AN community to grasp a better understanding of this population. This guide can provide some assistance in creating a safe, secure, and accepting environment for the children and aid in building group cohesion. Further, a structured environment for the children can serve as a support system, similar to an extended clanship of family system for them as their families may be struggling with cultural disconnection. With this support system in place, AI/AN children can learn healthy coping skills and build resiliency, self-sufficiency, and self-confidence that will help them as they grow into young adults. This is consistent with Indigenous knowledge and worldviews that emphasize the importance of community and intergenerational connection as a form of health (O'Keefe et al., 2022).

*The Beauty Way* curriculum has the potential to build an alliance with peers, families, community, and ancestral homelands to increase resiliency, self-esteem, cultural identity, and awareness because they can serve as protective factors against children's substance use. This program can encourage AI/AN children to have stronger cultural identities and foster healthier attitudes toward substance use by ultimately decreasing substance abuse among children. By sharing traditional AI/AN teachings and wisdom with children through this program, it may not only increase cultural identification, but help to preserve AI/AN traditions and values.

## **Implications**

Since this project was guided by the AI/ANCSA's needs, it is expected to benefit the organization through improved delivery services and implementation of a substance use prevention program to the AI/AN community, specifically among children. The youth program's coordinator indicated that while these programs are available only to AI/AN youth it can impact their families

by sparking meaningful conversations around culture with their immediate and extended family members. It is anticipated the updated *The Beauty Way* curriculum continues to foster this cultural connection and/or identity to enhance cultural knowledge among children and their families. This project provides a deepened understanding of the challenges for the AI/AN community in this southwestern town which can then guide future research and implementation decisions within the AI/ANCSA organization.

On a macro-level, this project may also inform the process of making community-specific adaptations and updating outdated culturally grounded youth prevention programs in other regions. Published findings can assist other organizations in improving their programs, practices, or policies in AI/AN communities in other locations (Brownson et al., 2018). It will also add to the existing body of literature on adaptations of culturally grounded prevention programs among AI/AN communities.

### **Strengths and Limitations**

This work had many strengths, including the community-engaged approach. All interviewees and talking circle participants are members of the community and all but one are AI. This project included an evaluation team that includes 2 AI scholars who are also from the community. The team worked closely with the AI/ANCSA staff throughout the duration of the project, and this partnership will continue for years to come. As with any evaluation study, there are limitations to this service-learning project. First, there was changing input from the AI/ANCSA organization due to staff turnover after the longtime coordinator resigned from the position, leaving a vacancy. In addition, the talking circle and AI/ANCSA interview participants may not be representative of the AI/AN community as most of them have advanced degrees and work in professional fields. This limitation, perhaps caused by sampling bias, may impact results because Indigenous children of parents and community members with advanced degrees may not experience the same challenges as their Indigenous counterparts who do not hold advanced degrees or work in professional fields. However, that does not necessarily mean that our participants are out of touch with the Indigenous community challenges and strengths therein.

Lastly, the impact of the COVID pandemic presented some challenges to meet the participants in person. AI/ANs had 3.5 times more positive COVID cases than non-Hispanic Whites and were one of the groups with a higher risk from the disease (CDC, 2020). For this reason, the AI/ANCSA and the evaluation team decided to conduct the talking circles and

interviews remotely through an online video conferencing service. Even with the relatively low number of total respondents, the evaluation team obtained a rich description of the program, its value to the community, and potential ways to improve it. Additionally, participants were engaged, and the evaluation team was able to obtain perspectives from several respondents including staff, parents, and community members. Unfortunately, COVID prevented the team from scheduling a youth talking circle. Future work with the AI/ANCSA will include youth input and pilot program feedback.

### Future Directions and Recommendations

Future steps should include incorporating these recommendations into *The Beauty Way* curriculum and then evaluating the program's effectiveness and implementation. The authors provided the AI/ANCSA partners with a report including all findings and recommendations. Recommendations can be found in Table 3. It is also recommended that subsequent work continue to evaluate the acceptability, feasibility, fidelity, and the shift of attitudes towards substance use among participants of the updated curriculum. Continued partnership with the ITRE program and scholars could provide continued in-depth evaluation of the program development process and implementation. Based on the results of those evaluations, further modifications may need to be completed to continually improve the curriculum using similar methods and strategies.

**Table 3**  
**Recommendations**

<b>Recommendations for Curriculum</b>	<b>Recommendations for Staff</b>
<ul style="list-style-type: none"> <li>• Adopt culturally sensitive and gender inclusive language</li> <li>• Include the use of technology and interactive activities in curriculum</li> <li>• Consider the wide spectrum of cultural background and connectedness</li> <li>• Promote intergenerational engagement by including Indigenous guest speakers of all ages and cultural backgrounds</li> <li>• Promote family connectedness by encouraging at-home cultural conversations</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on inclusivity and measures to promote cultural awareness and prevent bullying</li> <li>• Acknowledge historical and inter-generational trauma and its impact on values, loss of language, and separation from culture</li> <li>• Develop community between peers and staff through language and kinship</li> <li>• Develop a comprehensive facilitator's guide for future program coordinators</li> <li>• Ask for youth feedback on a regular basis</li> </ul>



## CONCLUSION

In conclusion, a culturally grounded substance use prevention program such as *The Beauty Way* curriculum appears vital to reducing substance abuse among AI/AN children. The AI/ANCSA partners viewed a timely updating of the curriculum as important for the continued relevance and effectiveness of the program. These programs can provide an understanding of cultural teachings and knowledge, create a sense of connection to immediate family and extended family, and foster a strong AI/AN identity, which may be protective factors against future substance abuse. With a high rate of substance use that contributes to mental health issues among AI/AN communities, it is essential for these programs to be implemented and sustained with fidelity by agencies like AI/ANCSA. Local agencies such as AI/ANCSA are motivated by their mission and vision statements to provide the best services to AI/AN communities which ensures the continual support and development of strong, independent, and culturally knowledgeable children. Further, this substance use prevention program can be a sustainable and effective program for many generations to come which could improve behavioral health among AI/AN children in this southwestern town.

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The authors declare that they have no conflicts of interest.

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# **Factors Associated with Breastfeeding Initiation and Continuation at Two Months Postpartum in American Indian Women: An Exploratory Analysis**

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*Abstract: This study aimed to determine the prevalence of breastfeeding initiation and continuation at two months postpartum in American Indian (AI) mothers in South Dakota and to identify factors associated with breastfeeding. Using logistic regression, data from the South Dakota Pregnancy Risk Assessment Monitoring System were used to investigate the relationship between binary breastfeeding initiation and continuation outcomes and maternal behaviors and experiences including access to health care, safe sleep practices, ability to handle life events, depression, and sources of breastfeeding information. Higher odds of initiation were seen for factors including access to health care services, ability to handle life events, and sources of breastfeeding information, while lower odds were seen for factors including safe sleep. Higher odds of continuation were seen among mothers who reported not taking long to get over setbacks and among mothers who reported no postpartum depression, while lower odds of continuation were seen among mothers practicing safe sleep. Several modifiable factors were identified as reasons for stopping breastfeeding. This information about factors associated with higher odds of breastfeeding initiation and continuation at two months postpartum can be used to inform interventions, programs, and policies designed to support breastfeeding among AI women and to guide future research in this area.*

## INTRODUCTION

Breastfeeding and providing human milk are the accepted best practice feeding methods for infants when available (Meek & Noble, 2022). The American Academy of Pediatrics (AAP) recommends exclusive breastfeeding through six months and continuation of breastfeeding for two years (and beyond, if desired) (Meek & Noble, 2022). Healthy People 2020, which aims to improve national health and well-being by setting data-driven objectives around public health priorities as part of the federal government's prevention agenda, set a target for 2020 of increasing the proportion of infants ever breastfed to 81.9% and the proportion of infants breastfed at six months to 60.9% (Office of Disease Prevention and Health Promotion, 2020). Breastfeeding rates across all races and ethnicities are below these goals, with American Indian (AI) breastfeeding rates being among the lowest (CDC, 2022a; Rhodes et al., 2008).

Underrepresented communities, such as AI communities, experience disproportionately higher disease burdens due to health disparities. AI populations are at a significantly increased risk for developing obesity, type 2 diabetes, and other chronic diseases (CDC, 2022b; US DHHS, 2020; Zamora-Kapoor et al., 2017). Breastfeeding has been shown to decrease risk for developing chronic diseases for both mothers and infants throughout their lives (Binns et al., 2016; Ip et al., 2007; Murphy & Wilson, 2008). Due to the historical oppression of AI individuals and communities, it is important to consider how public policies and availability of resources may affect breastfeeding. Additionally, acknowledging the oppression of Indigenous people is vital to creating lasting change within these communities (Danielson et al., 2018).

Existing research has primarily focused on factors associated with *decreased* breastfeeding rather than practices that facilitate breastfeeding. For example, research focuses on high reported rates of alcohol and tobacco use in AI women and the implications on breastfeeding (Louis-Jacques et al., 2017; Rhodes et al., 2008). Focusing on factors associated with *decreased* breastfeeding highlights behaviors that mothers are encouraged to minimize to achieve change. The approach of minimizing individual-level 'negative' behaviors can lead to negative experiences for community members (Hammond & Zimmerman, 2012; McCaskey, 2008). A strengths-based approach allows for the acknowledgment of problems while highlighting resources and community strengths to target for continued behavior change (Hammond & Zimmerman, 2012). Emphasizing

the importance of breastfeeding facilitators at the individual and system-level, while continuing to address barriers, could improve breastfeeding rates within the AI community.

Additionally, breastfeeding should be approached through a psychosocial lens. In addition to being a modifiable health behavior, breastfeeding is influenced by cultural ties and passing of generational knowledge of infant feeding (Houghtaling et al., 2018; Rhodes et al., 2008). Breastfeeding promotion methods must be culturally relevant to the intended audience (Rhodes et al., 2008). For example, it has been found that factors associated with breastfeeding in AI women such as external support from family members, smoking, education, and use of traditional AI medicines have differing influences on breastfeeding initiation and continuation (Rhodes et al., 2008). An inverse relationship has been identified between co-sleeping and breastfeeding initiation, highlighting a need for additional research into how to best promote both safe sleep and breastfeeding simultaneously (Ball, 2003).

By identifying factors associated with breastfeeding initiation and continuation at two months postpartum among AI mothers, more appropriate, culturally tailored interventions can be identified. In addition to understanding the barriers to breastfeeding, highlighting facilitators to breastfeeding will be crucial in creating behavior change. The purpose of the following analysis is to determine the prevalence of breastfeeding initiation and continuation at two months postpartum in AI mothers who gave birth between 2017-2019 in South Dakota, along with associated factors. This serves as an exploratory analysis working to identify and determine factors associated with breastfeeding including various health behaviors, access to health services, and maternal beliefs. This study aims to fill the current gaps in research focusing on breastfeeding in AI women and provide directions for future research in this area.

## **METHODS**

### **Study Sample**

The authors of this paper recognize that not all lactating individuals identify as women and that gender-inclusive language must be utilized to end violence and discrimination against transgender and intersex people. Since all participants in this study identified as cis-gender women, the authors utilize the terms “maternal” and “breastfeeding” rather than gender-inclusive terms such as “parental” or “human milk feeding.”



Data from the 2017-2019 South Dakota Pregnancy Risk Assessment Monitoring System (SD PRAMS) surveys were used in this analysis. PRAMS is a state-based surveillance system that originated from the Centers for Disease Control and Prevention (CDC) and has since been implemented in the state of South Dakota. The methodology of PRAMS is described elsewhere (Shulman et al., 2018). Briefly, each year birth certificate data are used to identify a random sample of women who have recently given birth. A self-administered questionnaire, which is completed between two and six months postpartum, asks mothers over 100 questions about their behaviors and experiences before, during, and after pregnancy to learn about the health of women and infants in South Dakota. Implementation of the SD PRAMS Project by the South Dakota Department of Health occurred with assistance from staff and students at South Dakota State University.

The AI survey response rate was 44% in 2017, 47% in 2018, and 48% in 2019 (Ahrendt et al., 2017, 2018, 2019). The weighted response rates of all races in 2017, 2018, and 2019 were 67%, 64%, and 68%, respectively. SD PRAMS data are weighted using sampling, non-response, and non-coverage values that ultimately result in the ability to generalize responses to a population. As such, the 996 AI mothers who completed the PRAMS survey in 2017-2019 are representative of 5,759 AI mothers in South Dakota.

## **Measures**

As part of the PRAMS questionnaire, mothers responded to a series of questions around breastfeeding, including the following:

- 1) Did you ever breastfeed or pump breastmilk to feed your new baby, even for a short period of time (no/yes)?
- 2) Are you currently breastfeeding or feeding pumped milk to your new baby (no/yes)?
- 3) How many weeks or months did you breastfeed or feed pumped milk to your baby (less than 1 week/number of weeks or months?)

For the purposes of this study, ‘breastfeeding initiation’ was defined as ever having breastfed or fed pumped breastmilk to the infant for any amount of time, and ‘breastfeeding continuation’ was defined as breastfeeding or feeding pumped breastmilk to the infant at two months postpartum. Two months postpartum was chosen as the timeframe of breastfeeding continuation, as two months postpartum was the earliest that mothers could complete the survey, allowing for a consistent timeframe for analysis of all survey respondents. For ease, throughout this manuscript, any method of providing human milk to infants is referred to as ‘breastfeeding.’

From the over 100 questions asked as part of SD PRAMS, several overarching ‘health factors’ were selected for exploration based on existing breastfeeding literature and plausible relationship with breastfeeding outcomes, as well as for the ability to create interventions for the factor on an individual and system level. These overarching ‘health factors’ included: access to health care services, safe sleep practices, ability to handle life events, depression, and sources of breastfeeding information. Given the exploratory nature of the analysis and the desire to identify areas for continued research, all questions falling under a particular ‘health factor’ were included in analyses to see if certain elements were more important than others for determining an association between breastfeeding initiation and continuation. For example, access to healthcare services included three elements including 1) visiting with a healthcare provider 12 months before pregnancy, 2) receiving prenatal care as early as desired, and 3) participating in the Supplemental Nutrition Assistance Program for Women, Infants and Children (WIC). Reasons for stopping breastfeeding were also explored.

Demographic characteristics including self-reported age, education, and income came from the PRAMS survey. Maternal race (AI) and ethnicity (Hispanic or non-Hispanic) were determined through information provided on the infant’s birth certificate which was accessed in partnership with the SD Department of Health. Specific wording for all of the individual PRAMS questions can be found elsewhere (CDC, n.d.).

### **Data Analysis**

Data were analyzed using procedures for complex survey analyses within the StataCorp<sup>®</sup> software (StataCorp<sup>®</sup> Software, College Station, TX), which incorporates the sampling design and non-response weights. This weighting allows for the calculation of statewide population-based and race-specific rates, representing live births of eligible South Dakota mothers in 2017, 2018, and 2019. A further description of weighting can be found elsewhere (Shulman et al., 2018).

Differences in demographic factors between breastfeeding groups were analyzed using Rao-Scott chi-square tests for both breastfeeding initiation and breastfeeding continuation at two months postpartum. Those demographic characteristics that differed significantly between groups (marital status, maternal education, and income) were adjusted for in subsequent logistic regression analyses which were used to explore associations between breastfeeding outcomes of interest (initiation and continuation) and individual health factors (in the domains of access to health care services, safe sleep, ability to handle life events, depression, and sources of breastfeeding information). Prevalence

of breastfeeding outcomes of interest, as well as adjusted odds ratios (adjOR) and *p*-values, are presented for each model. Institutional Review Board approval was obtained through the South Dakota State University Institutional Review Board, and participation in the survey was voluntary.

## RESULTS

### Breastfeeding Initiation

In the present study, 78.1% of AI women reported initiating breastfeeding (Table 1). There were no significant ( $p < 0.05$ ) differences in breastfeeding initiation among AI women based on Hispanic ethnicity, age category, or marital status; however, differences were seen by education and income groups (both  $p < 0.001$ ), with prevalence of higher breastfeeding initiation among AI women who had more years of education and women with higher incomes (Table 1).

Overarching health factors and all SD PRAMS questions that fall under those health factors are provided in Table 2. In terms of health care access (Table 2), adjusted odds of breastfeeding initiation were significantly higher among mothers who reported visiting with a health care provider in the 12 months before pregnancy (adjOR = 1.49, CI [1.04, 2.11];  $p = 0.028$ ) and receiving prenatal care as early as desired (adjOR = 1.51, CI [1.02, 2.25];  $p = 0.041$ ). Adjusted odds of breastfeeding initiation did not differ between those who participated in WIC and those who did not participate in WIC ( $p = 0.213$ ). Regarding safe sleep practices (Table 2), in general, mothers who reported the following had lower adjusted odds of breastfeeding initiation: room sharing without bed sharing, baby placed to sleep on back, and baby sleeping on approved sleeping surface (all  $p < 0.05$ ). Breastfeeding initiation did not differ by factors related to a mother's ability to handle life events (Table 2), except for higher adjusted odds of initiation among mothers who reported not taking long to recover from a stressful event (adjOR = 1.51, CI [1.07, 2.13];  $p = 0.018$ ). Adjusted odds of breastfeeding initiation did not differ by depression status before, during, or after pregnancy (Table 2). Higher adjusted odds of breastfeeding initiation were seen among mothers reporting having received information from the following sources: family friend; support group; nurse, midwife or doula; lactation specialist (all  $p \leq 0.01$ ).

**Table 1**  
**Demographic Characteristics of American Indian Mothers in South Dakota by Breastfeeding Initiation Status**

Demographic Characteristics	No Initiation of Breastfeeding <sup>1</sup>	Initiation of Breastfeeding <sup>1</sup>	<i>p</i> value <sup>2</sup>
Overall	21.9 (19.4-24.7)	78.1 (75.3-80.6)	
<b>Ethnicity</b>			0.1757
Non-Hispanic	96.8 (93.8-98.4)	94.7 (92.9-96.2)	
Hispanic	3.2 (1.6-6.2)	5.3 (3.9-7.1)	
<b>Age</b>			0.4425
Less than 20 years	9.6 (6.2-14.6)	13.7 (11.3-16.5)	
20-24	27.3 (21.6-33.8)	30.0 (26.9-33.3)	
25-29	31.6 (25.4-38.6)	28.1 (25.0-31.3)	
30-34	19.8 (14.8-25.9)	17.9 (15.5-20.7)	
Greater than 35	11.7 (8.1-16.6)	10.4 (8.5-12.7)	
<b>Education</b>			<0.001
Less than high school	45.8 (38.8-52.8)	33.8 (30.4-37.4)	
High school	31.7 (25.5-38.5)	30.2 (27.1-33.6)	
Greater than high school	22.6 (17.7-28.4)	36.0 (32.8-39.3)	
<b>Income</b>			<0.001
<100% federal poverty line	90.2 (85.1-93.7)	70.8 (67.4-74.0)	
<150% federal poverty line	5.3 (3.0-9.2)	13.6 (11.3-16.3)	
>150% federal poverty line	4.5 (2.2-9.0)	15.6 (13.2-18.4)	
<b>Marital Status</b>			0.0604
Married	15.6 (11.1-21.4)	21.6 (19.0-24.5)	
Not married	84.4 (78.6-88.9)	78.4 (75.5-81.0)	

<sup>1</sup> Data presented are weighted prevalence and (95 percent confidence intervals)

<sup>2</sup> *p* value based on Rao-Scott chi-square test

**Table 2**  
**Prevalence of Breastfeeding (BF) Initiation of American Indian Mothers in South Dakota, Grouped by Response to Specified Health Factor**

Health Factors	Prevalence of BF initiation among those who said 'No' to health factor	Prevalence of BF initiation among those who said 'Yes' to health factor	adjOR <sup>1</sup> for BF initiation	<i>p</i> value
<b>Access to Health Care Services</b>				
Visited with health care provider 12 months before pregnancy	75.8 (71.6-80.1)	82.1 (78.5-85.7)	1.49 (1.04-2.11)	0.028
Received prenatal care as early as desired	73.6 (67.3-79.9)	80.6 (77.5-83.6)	1.51 (1.02-2.25)	0.041
Participated in WIC	75.6 (69.7-81.6)	79.8 (76.8-82.8)	1.29 (0.87-1.91)	0.213

*continued on next page*

**Table 2 Continued**  
**Prevalence of Breastfeeding (BF) Initiation of American Indian Mothers in South Dakota,**  
**Grouped by Response to Specified Health Factor**

<b>Health Factors</b>	<b>Prevalence of BF initiation among those who said 'No' to health factor</b>	<b>Prevalence of BF initiation among those who said 'Yes' to health factor</b>	<b>adjOR<sup>1</sup> for BF initiation</b>	<b>p value</b>
<b>Safe sleep</b>				
Room sharing without bed sharing	83.2 (79.8-86.7)	73.0 (68.5-77.5)	0.53 (0.37-0.75)	<0.001
Baby placed to sleep on back	87.8 (81.2-94.3)	77.5 (74.5-80.4)	0.47 (0.24-0.89)	0.021
HRSA approved sleeping surface	80.7 (77.4-84.1)	73.0 (67.6-78.3)	0.63 (0.43-0.91)	0.014
AAP approved sleeping surface	80.6 (77.5-83.7)	72.0 (66.0-78.0)	0.60 (0.41-0.88)	0.009
No soft objects in bed	77.4 (73.7-81.2)	80.0 (75.7-84.3)	1.17 (0.82-1.68)	0.389
<b>Ability to Handle Life Events</b>				
Bounces back quickly after hard times	77.5 (72.9-82.2)	79.3 (76.0-82.8)	1.12 (0.79-1.60)	0.531
Does not have a hard time making it through stressful events	75.5 (69.4-81.6)	79.6 (76.5-82.6)	1.28 (0.86-1.91)	0.229
Does not take long to recover from a stressful event	75.1 (70.8-79.4)	81.7 (78.2-85.3)	1.51 (1.07-2.13)	0.018
Is not hard to snap back when something bad happens	75.4 (68.5-82.3)	79.5 (76.5-82.5)	1.28 (0.83-1.98)	0.268
Usually comes through a difficult time with little trouble	76.9 (73.1-80.8)	80.7 (76.8-84.6)	1.26 (0.89-1.79)	0.191
Does not take a long time to get over setbacks in her life	78.1 (70.5-85.6)	78.8 (75.8-81.7)	1.05 (0.64-1.72)	0.857
<b>Depression</b>				
No depression before pregnancy	81.3 (76.4-86.2)	77.7 (74.3-81.0)	0.79 (0.53-1.18)	0.247
No depression during pregnancy	78.6 (73.1-84.0)	79.0 (75.8-82.3)	1.03 (0.69-1.53)	0.889
No postpartum depression	78.3 (72.7-83.9)	79.0 (75.8-82.1)	1.04 (0.70-1.55)	0.835
<b>Sources of Breastfeeding Information</b>				
Info from baby's doctor	76.7 (70.4-83.1)	79.0 (76.0-82.1)	1.15 (0.76-1.76)	0.510
Info from mom's doctor	79.4 (72.8-86.0)	78.6 (75.5-81.6)	0.95 (0.60-1.50)	0.816
Info from family friend	70.0 (64.8-75.2)	83.1 (79.9-86.3)	2.19 (1.54-3.12)	<0.001
Info from support group	76.6 (73.3-79.9)	86.6 (81.9-91.4)	2.04 (1.29-3.23)	0.002
Info from breastfeeding (BF) hotline	77.4 (74.3-80.5)	85.2 (78.7-91.6)	1.71 (0.98-3.00)	0.059
Info from nurse, midwife, or doula	70.2 (62.7-77.7)	80.2 (77.2-83.1)	1.76 (1.15-2.71)	0.010
Info from lactation specialist	64.0 (58.5-69.6)	86.1 (83.2-89.0)	3.69 (2.57-5.30)	<0.001

<sup>1</sup> Adjusted odds ratio of breastfeeding initiation and p value based on logistic regression controlling for maternal education, income, and marital status

### **Breastfeeding Continuation**

In the present study, 53.7% of AI women reported continuation of breastfeeding at two months postpartum (Table 3). There were no significant ( $p < 0.05$ ) differences in breastfeeding continuation among AI women based on Hispanic ethnicity or age; however, differences were seen by education, income group, and marital status (all  $p < 0.01$ ), with prevalence of higher breastfeeding continuation among AI women who had more years of education, higher incomes, or were married (Table 3).

Overarching health factors and all SD PRAMS questions that fall under those health factors are provided in Table 4. No differences in adjusted odds of breastfeeding continuation were seen in terms of access to health care services (Table 4). Regarding safe sleep practices (Table 4), lower adjusted odds of breastfeeding continuation were seen among mothers who reported placing baby to sleep on back (adjOR = 0.41, CI [0.22, 0.74];  $p = 0.003$ ). Breastfeeding continuation did not differ by factors related to a mother's ability to handle life events (Table 4), except for higher adjusted odds of continuation among mothers who reported not taking a long time to get over setbacks in life (adjOR = 1.95, CI [1.23, 3.10];  $p = 0.005$ ). Adjusted odds of breastfeeding continuation were higher among mothers who reported no postpartum depression (adjOR = 1.63, CI [1.11, 2.40];  $p = 0.013$ ). Breastfeeding continuation did not differ by any of the sources of breastfeeding information that were examined (Table 4).

### **Reasons for Stopping Breastfeeding**

Mothers who had initiated breastfeeding but stopped by the time of survey completion were surveyed about reasons for stopping breastfeeding, and the relationship with breastfeeding continuation for at least two months postpartum was examined (Table 5). A lower prevalence of breastfeeding continuation at two months postpartum was seen among mothers who reported difficulty latching (28.1% vs. 46.7%,  $p = 0.003$ ), baby jaundiced (22.6% vs. 43.1%,  $p = 0.023$ ), sore nipples (29.9% vs. 44.1%,  $p = 0.032$ ), or concerns about infant weight gain (19.8% vs. 44.6%,  $p = 0.002$ ) (Table 5) compared to those who did not indicate these as reasons for stopping breastfeeding. Mothers who reported stopping breastfeeding because the time felt right (62.7% vs. 37.9%,  $p = 0.005$ ) or they went back to work (61.4% vs. 32.5%,  $p < 0.001$ ) had a higher prevalence of breastfeeding continuation at two months postpartum compared to those who did not indicate these as reasons for stopping breastfeeding.

**Table 3**  
**Demographic Characteristics of American Indian Mothers in South Dakota by Status of Continuation of Breastfeeding at Two Months Postpartum**

Demographic Characteristics	No continuation of breastfeeding at two months postpartum <sup>1</sup>	Continuation of breastfeeding at two months postpartum <sup>1</sup>	<i>p</i> value <sup>2</sup>
Overall	46.3 (43.2-49.5) %	53.7 (50.5-56.8) %	
<b>Ethnicity</b>			0.0650
Non-Hispanic	96.5 (94.4-97.8) %	94.0 (91.6-95.7) %	
Hispanic	3.5 (2.2-5.6) %	6.0 (4.3-8.4) %	
<b>Age</b>			0.0517
Less than 20 years	15.3 (12.1-19.2) %	10.5 (8.0-13.7) %	
20-24	25.1 (21.3-29.3) %	32.5 (28.6-36.6) %	
25-29	30.6 (26.4-35.2) %	27.8 (24.3-31.7) %	
30-34	18.5 (15.1-22.4) %	18.2 (15.2-21.7) %	
Greater than 35	10.5 (8.1-13.6) %	11.0 (8.6-13.8) %	
<b>Education</b>			<0.001
Less than high school	41.4 (36.7-46.2) %	31.2 (27.2-35.4) %	
High school	33.2 (28.8-37.8) %	28.7 (24.9-32.8) %	
Greater than high school	25.4 (21.8-29.5) %	40.2 (36.2-44.3) %	
<b>Income</b>			<0.001
<100% federal poverty line	85.5 (81.7-88.6) %	66.0 (61.8-70.0) %	
<150% federal poverty line	7.8 (5.6-10.8) %	15.3 (12.4-18.7) %	
>150% federal poverty line	6.7 (4.6-9.6) %	18.7 (15.6-22.3) %	
<b>Marital Status</b>			0.0032
Married	16.4 (13.2-20.1) %	23.9 (20.5-27.5) %	
Not married	83.6 (79.9-86.8) %	76.1 (72.5-79.5) %	

<sup>1</sup> Data presented are weighted prevalence and (95 percent confidence intervals)

<sup>2</sup> *p* value based on Rao-Scott chi-square test



**Table 4**  
**Prevalence of Breastfeeding (BF) Continuation at 2 Months Postpartum among American Indian Mothers in South Dakota who Initiated Breastfeeding, Grouped by Specified Health Factor**

<b>Health Factors</b>	<b>Prevalence of BF initiation among those who said 'No' to health factor</b>	<b>Prevalence of BF initiation among those who said 'Yes' to health factor</b>	<b>adjOR<sup>1</sup> for continued BF</b>	<b><i>p</i> value<sup>1</sup></b>
<b>Access to Health Care Services</b>				
Visited with health care provider 12 months before pregnancy	72.3 (67.2-77.4)	68.3 (63.5-73.1)	0.82 (0.58-1.17)	0.272
Received prenatal care as early as desired	69.2 (61.1-77.3)	70.6 (66.7-74.5)	1.07 (0.69-1.65)	0.770
Participated in WIC	72.7 (65.7-79.7)	68.8 (64.8-72.8)	0.83 (0.55-1.24)	0.357
<b>Safe Sleep</b>				
Room sharing without bed sharing	72.4 (68.0-76.7)	67.6 (61.9-73.2)	0.79 (0.56-1.11)	0.179
Baby placed to sleep on back	83.9 (76.3-91.4)	68.4 (64.6-72.2)	0.41 (0.22-0.74)	0.003
HRSA approved sleeping surface	71.0 (66.9-75.1)	67.6 (60.8-74.4)	0.85 (0.58-1.24)	0.392
AAP approved sleeping surface	71.6 (67.8-75.4)	65.9 (58.2-73.6)	0.76 (0.51-1.14)	0.184
No soft objects in bed	69.8 (65.3-74.3)	71.7 (66.1-77.2)	1.10 (0.77-1.56)	0.612
<b>Ability to Handle Life Events</b>				
Bounces back quickly after hard times	0.68 (61.8-73.6)	71.2 (67.0-75.3)	1.18 (0.84-1.67)	0.344
Does not have a hard time making it through stressful events	64.4 (56.6-72.1)	71.4 (67.5-75.2)	1.39 (0.94-2.06)	0.101
Does not take long to recover from a stressful event	68.4 (63.1-73.6)	71.5 (67.0-76.0)	1.16 (0.83-1.63)	0.376
Is not hard to snap back when something bad happens	69.4 (60.9-78.0)	70.1 (66.3-73.9)	1.03 (0.66-1.62)	0.887
Usually comes through a difficult time with little trouble	69.4 (64.6-74.2)	70.5 (65.5-75.4)	1.05 (0.75-1.47)	0.758
Does not take a long time to get over setbacks in her life	57.1 (47.0-67.2)	71.9 (68.2-75.5)	1.95 (1.23-3.10)	0.005
<b>Depression</b>				
No depression before pregnancy	66.1 (59.3-72.8)	71.6 (67.5-75.7)	1.30 (0.90-1.89)	0.167
No depression during pregnancy	65.4 (58.2-72.5)	71.3 (67.3-75.3)	1.33 (0.91-1.94)	0.145
No postpartum depression	62.1 (54.5-69.8)	72.6 (69.8-76.4)	1.63 (1.11-2.40)	0.013
<b>Sources of Breastfeeding Information</b>				
Info from baby's doctor	73.4 (66.0-80.9)	68.9 (65.0-72.8)	0.798 (0.52-1.23)	0.302
Info from mom's doctor	76.7 (69.1-84.3)	68.7 (64.9-72.5)	0.66 (0.42-1.05)	0.080
Info from family friend	69.2 (63.1-75.3)	70.2 (66.0-74.5)	1.05 (0.73-1.50)	0.784
Info from support group	69.1 (65.0-73.2)	73.0 (66.2-79.7)	1.21 (0.81-1.81)	0.348
Info from BF hotline	69.9 (66.1-73.8)	67.3 (57.9-76.7)	0.88 (0.55-1.42)	0.600
Info from nurse, midwife, or doula	74.1 (65.5-82.8)	69.4 (65.6-73.2)	0.79 (0.48-1.29)	0.345
Info from lactation specialist	68.4 (61.6-75.3)	70.6 (66.5-74.6)	1.11 (0.76-1.62)	0.592

<sup>1</sup> Adjusted odds ratio of breastfeeding continuation at two months postpartum and *p* value based on logistic regression controlling for maternal education, income, and marital status

**Table 5**  
**Prevalence of Breastfeeding at 2 Months Postpartum among American Indian Mothers in South Dakota who had Stopped by the Time of Survey Completion, Grouped by Specified Reason for Stopping**

Reasons for Stopping BF	Prevalence of BF at 2 months postpartum among those who say 'No' to reason for stopping	Prevalence of BF at 2 months postpartum among those who say 'Yes' to reason for stopping	adjOR <sup>1</sup> for BF ≥ 2 months	p value
Difficulty latching	46.7 (40.1-53.3)	28.1 (18.9-37.3)	0.44 (0.26-0.75)	0.003
Too many household duties	39.2 (33.3-45.1)	48.0 (35.0-60.9)	1.44 (0.80-2.58)	0.224
Mom sick/Stopped for medical reasons	41.5 (35.8-47.1)	33.6 (17.3-50.0)	0.71 (0.33-1.55)	0.390
Baby jaundiced	43.1 (37.3-48.8)	22.6 (8.8-36.3)	0.38 (0.16-0.88)	0.023
Mother thought not producing enough milk	36.1 (28.4-43.7)	44.9 (37.5-52.4)	1.45 (0.92-2.30)	0.108
Breastmilk did not satisfy baby	38.0 (31.6-44.4)	47.9 (38.1-57.6)	1.51 (0.93-2.46)	0.098
Sore nipples	44.1 (37.9-50.3)	29.9 (19.4-40.4)	0.54 (0.30-0.95)	0.032
Felt like the right time to stop	37.9 (32.2-43.6)	62.7 (47.4-78.0)	2.78 (1.37-5.67)	0.005
Weight gain problems	44.6 (38.7-50.5)	19.8 (8.5-31.1)	0.30 (0.14-0.65)	0.002
Support problems	40.4 (35.0-45.8)	44.6 (6.8-82.4)	1.19 (0.25-5.74)	0.828
Went back to school	41.1 (35.6-46.6)	35.2 (12.2-58.3)	0.78 (0.27-2.23)	0.639
Went back to work	32.5 (26.5-38.4)	61.4 (51.3-71.4)	3.36 (2.01-5.62)	<0.001

<sup>1</sup> Adjusted odds ratio of breastfeeding at 2 months postpartum and p value based on logistic regression controlling for maternal education, income, and marital status

## DISCUSSION

The examination of factors associated with breastfeeding initiation and continuation among AI mothers is an understudied area. Identifying and understanding these factors is the first step in implementing interventions, programs, and policies designed to support and increase breastfeeding in AI women, with the ultimate goal of reducing health disparities. Previous studies have highlighted factors associated with *decreased* breastfeeding, with the aim of minimizing these ‘negative’ behaviors (Ball, 2003; Danielson et al., 2018; Louis-Jacques et al., 2017; Rhodes et al., 2008). However, the approach of minimizing ‘negative’ individual-level behaviors places the focus on the mother without considering the broader environment in which the mother lives and works. Instead, interventions, programs, and policies (i.e., systems) should be designed to shift the burden of responsibility away from the individual to focus on changes that lead to a supportive

environment that encourages and supports breastfeeding. This exploratory study, which aimed to identify factors associated with breastfeeding initiation and continuation among AI mothers in South Dakota, can help elucidate factors to be further explored in future observational and intervention research.

The prevalence of breastfeeding initiation among AI women in the present study was 78.1%, which is lower than the Healthy People 2020 goal of 81.9% of women initiating breastfeeding (Office of Disease Prevention and Health Promotion, 2020). The prevalence of breastfeeding continuation at two months postpartum was determined to be 53.7% of AI women, which is also below the Healthy People 2020 goal of 60.9% breastfeeding continuation at six months postpartum (Office of Disease Prevention and Health Promotion, 2020). The results of this study establish a baseline which can be used as a starting point for understanding and addressing the relationships between health factors and breastfeeding outcomes on an individual and system level.

Odds of breastfeeding initiation were higher among AI women who visited with a health care provider 12 months before pregnancy and among those who reported receiving prenatal care as early as desired. Danielson et al. (2018) found that AI women were 8.3 times more likely to have inadequate access to prenatal care and were 2.7 times less likely to breastfeed than their white counterparts. While research indicates that AI women generally have lower access to health care services, there remains limited research identifying the relationship between health care services access and breastfeeding in AI women specifically (Danielson et al., 2018; Johnson et al., 2010; Jones, 2006). Focusing on increasing access to prenatal services and health care services in general, perhaps through telehealth or policies supporting paid time off for medical appointments, or through supporting baby-friendly hospital initiatives, offers opportunities on a system-level to encourage and support breastfeeding initiation and ensure that women have the tools for continued breastfeeding success available to them.

Participation in WIC was included under the access to health care services factor because of the role the program plays in providing nutrition education and breastfeeding support for pregnant and postpartum people. Historically, WIC has struggled to successfully encourage breastfeeding among participants, but this trend is shifting (Jackowitz et al., 2007; Joyce & Reeder, 2015; Li et al., 2019). In the present analysis, WIC was not found to be a significant factor associated with breastfeeding. However, due to the high enrollment rates of AI women in WIC, it remains a primary vehicle to implement changes. AI enrollment in WIC in 2018 was 8.9% of total

enrollment, despite AIs being only 1.7% of the overall U.S. population (U.S. Department of Agriculture, 2018; National Congress of American Indians, 2020). This high enrollment in WIC is related to the high levels of poverty experienced by AI communities (Warne & Wescott, 2019). Participation in WIC among AI mothers presents an opportunity to target culturally appropriate breastfeeding promotion efforts.

Odds of breastfeeding initiation were lower among AI mothers who reported following safe sleep practices, including room sharing without bed sharing, placing the infant to sleep on their back, and placing the infant to sleep on sleeping surfaces approved by the AAP (Moon et al., 2022). It is important to consider whether this definition of safe sleep is appropriate for this population. While the AAP definition of safe sleep was determined based on an abundance of peer-reviewed research, the definition took little account of differing cultural factors (Bartick et al., 2018; Moon et al., 2022). The AAP recommends that an infant sleeps in the same room as their parent on a separate surface designed specifically for infant sleeping (Moon et al., 2016). Research reports that mothers who co-sleep attribute this in part to deep rooted cultural and religious beliefs, as well as citing breastfeeding as reasons for bed-sharing, despite contrary recommendations from these professional health organizations (Marinelli et al., 2019; Ward, 2015). The findings in this study confirm previous research that breastfeeding initiation and room sharing without bed-sharing are inversely associated (Ball, 2003). Ball (2003) found that co-sleeping was associated with increased breastfeeding continuation; however, this association was not significant in this analysis. Both breastfeeding and safe sleep are associated with decreased risk of sudden infant death syndrome (SIDS), yet are inversely associated with each other (Ip et al., 2007; Moon et al., 2016). A possible solution to this dilemma could be to adjust what is universally promoted as safe sleep practices through the AAP and health care providers.

While there has been a concerted effort to promote and encourage safe sleep practices both in South Dakota and throughout the country, these practices may inadvertently be decreasing breastfeeding continuation (Ip et al., 2007; Moon et al., 2016). Shifting public health discussions to acknowledge that co-sleeping does occur and offering education on ways to safely co-sleep has the potential to encourage breastfeeding while prioritizing the mental and physical health of both mother and infant. The United Kingdom acknowledges that co-sleeping occurs while discussing conditions in which this may be dangerous for the infant, rather than advising against bed sharing for all mothers (Ball, 2003, 2017). This approach acknowledges the intersection of breastfeeding and safe sleep practices, empowering women to make the most appropriate decisions for

themselves while considering cultural and religious diversity (Ball, 2003, 2017). This transition could minimize preventable infant deaths and increase breastfeeding across all racial and ethnic groups in the United States.

Questions included in the PRAMS questionnaires identifying women's abilities to handle life events are used as indicators for stress and maternal resiliency (Ahrendt et al., 2019). Odds of breastfeeding initiation were higher among mothers who report that it does not take long to recover from a stressful event. Research supports that resiliency can impact an individual's ability to bounce back from stressful life events (Leitch, 2017; Young-Wolff et al., 2019). These findings highlight areas to continue investigations around the role of protective resiliency factors specifically in AI women.

Odds of breastfeeding initiation did not differ between those who reported perinatal depression and those who did not. A systematic review of the research into breastfeeding and depression found that both pregnancy and postpartum depression was not significantly associated with breastfeeding initiation, a finding that is consistent in this analysis (Dias & Figueiredo, 2015). However, another systematic review found significant associations between maternal depression during pregnancy and decreased breastfeeding initiation (Grigoriadis et al., 2013). Odds of breastfeeding continuation at two months postpartum was higher among those who reported no postpartum depression. The present study findings align with previous research, indicating that higher postpartum depression is associated with interruption in breastfeeding, decreased maternal confidence, and increased breastfeeding complications (Dennis & McQueen, 2009; Dias & Figueiredo, 2015; Vieira et al., 2018).

Odds of initiating breastfeeding were higher among mothers who reported receiving information from a lactation consultant compared to those who did not. This finding aligns with previous research that interactions with lactation consultants increase breastfeeding initiation and highlights a key area for breastfeeding promotion to occur (Cohen et al., 2018; Patel & Patel, 2015). Public health experts could close the gap in health care access, minimize health disparities, and increase prevalence of breastfeeding initiation by ensuring that all AI mothers have access to culturally educated lactation consultants or other breastfeeding specialists. Indigenous breastfeeding counselors, WIC Indigenous peer counselors, and support from maternal family members have been found to support breastfeeding in AI women (Houghtaling et al., 2018; Long et al., 1995). Increasing access to culturally informed breastfeeding specialists is a key step in achieving health equity for AI women. This would not only act as a promoter of breastfeeding but

would also work to eliminate stigma surrounding breastfeeding. Multiple sources of breastfeeding information were associated with increased breastfeeding initiation, including a family friend, a support group, or a nurse, midwife or doula, and the highest odds of breastfeeding initiation were seen among mothers who reported receiving breastfeeding information from lactation consultants. From a public health perspective, increasing access to lactation specialists, nurses, midwives, and doulas could have an impact on breastfeeding initiation within the AI community. Emphasizing the importance of strong breastfeeding support systems is critical to improving breastfeeding initiation. Although certain sources of breastfeeding information were associated with higher odds of breastfeeding initiation, similar relationships were not seen for breastfeeding continuation. This finding conflicts with a previous meta-analysis conducted by Cohen et al. (2018) which found that women who received breastfeeding education were significantly more likely to continue breastfeeding their infant. It could be that knowledge and education is important for initiation, but broader system supports are needed for continuation. Expanding the availability of breastfeeding information from qualified breastfeeding specialists beyond initiation and throughout the postpartum period could potentially address this, if paired with other social supports.

To understand factors associated with breastfeeding among AI mothers, it is important to identify barriers to determine ways to minimize them. The present study allowed for the examination of factors associated with breastfeeding cessation before two months postpartum, indicating that prevalence of breastfeeding at two months postpartum was lower among those who reported difficulty latching, that baby was jaundiced, that they had sore nipples, or that there were infant weight gain concerns. Lactation specialists and breastfeeding support groups can provide support to overcome barriers to continuation such as difficulty latching, sore nipples, and concerns about infant weight gain (Cohen et al., 2018; Long et al., 1995; Patel & Patel, 2015). Although they had stopped breastfeeding at the time of survey completion, a higher prevalence of breastfeeding at two months postpartum was seen among mothers whose reasons for stopping were that that they felt it was the right time to stop breastfeeding or that they were going back to work compared to mothers who did not indicate these as reasons for stopping. Kim et al. (2019) identified that workplace lactation interventions were significantly associated with breastfeeding initiation and continuation, highlighting areas for system-level changes. The primary reasons indicated in this analysis as reasons to stop breastfeeding after two months included maternal beliefs and external barriers. These results indicate that AI women who breastfeed for less than two months are encountering barriers with the act of breastfeeding at a greater proportion than

women who continue to breastfeed. Addressing these barriers by providing AI mothers with greater support and education from trained breastfeeding specialists on ways to overcome these barriers could improve mothers' ability to continue breastfeeding (Cohen et al., 2018; Long et al., 1995; Patel & Patel, 2015).

Investigations into the influence of tradition and cultural relations on breastfeeding is a key area for future AI breastfeeding research. Traditionally, breastfeeding was an encouraged practice within AI communities (Houghtaling et al., 2018; Rhodes et al., 2008). However, prevalence is still below the national average and recommendations as evidenced in this analysis (Chiang et al., 2021). Evidence suggests that strengthening cultural and family relations could significantly increase breastfeeding in AI populations (Rhodes et al., 2008). Acknowledging and combating the oppression of Indigenous people is vital to creating change within these communities as oppression acts as a continual stressor. The mistrust and historical trauma experienced by AI communities have inhibited the social acceptability and passing of breastfeeding knowledge to future generations (Houghtaling et al., 2018). These factors are unique to AI individuals and additional research will be key to creating lasting changes.

This study has several limitations. Although the overall weighted response rates for all three years analyzed were higher than the CDC PRAMS cut-off for inclusion of 50 percent, the AI response rates used in this analysis were below this 50 percent cut-off point. While these data were weighted for non-response to minimize potential bias, the race-specific response rates should still be noted as a limitation as this process is not error-proof. Data collected in the PRAMS survey is self-reported, making it prone to self-reporting bias and recall bias. The PRAMS surveys are sent to mothers at two months postpartum and can be completed up to six months postpartum, limiting the length of continued breastfeeding that could be examined. Further, mothers may have difficulty recalling health behaviors and topics discussed before and during pregnancy. Participants of this study were AI women who gave birth in South Dakota; generalizations to the greater AI population should be made cautiously.

## **CONCLUSIONS**

This study highlights specific factors that can be used to inform interventions, programs, or policies that aim to support and increase breastfeeding among AI women while laying the groundwork for continued research in this area. National goals and data do not typically have a



representative breakdown for underrepresented groups within the population, and once a goal is met, there is movement towards meeting the next goal instead of identifying disparities within these areas and working to eliminate them to create health equity. Since AI women make up a smaller portion of the population, there is less research conducted specifically into this community, highlighting the need to use data like PRAMS to investigate potential associations between health outcomes and individual behaviors and experiences. Understanding behaviors and the factors outside of individuals that shape those behaviors can lead to making systems-level changes to better support AI women, particularly with breastfeeding, including through access to health care services, adequate social/familial support, and breastfeeding information and support. More research is needed to better understand which factors play the largest role and how they can be changed through different interventions and public health approaches within this community.

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### **CONFLICT OF INTEREST**

The authors declare that they have no conflicts of interest.

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# **The Relationships of Historical Loss, Acculturation, and Alcohol Expectancies with Alcohol Use Among American Indian and Alaska Native People**

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*Abstract: The primary purpose of this study was to 1) explore the relationship among the following variables: thoughts and feelings associated with historical loss, levels of acculturation, alcohol expectancies, and alcohol use among American Indian and Alaska Native (AI/AN) people, as well as to 2) explore predictive relationships among historical loss thoughts and feelings, alcohol expectancies, and alcohol use for AI/AN people within this sample. A convenience (community, non-clinical) sample of 188 AI/AN people completed an online survey, including questions related to alcohol use, alcohol expectancies, thoughts and feelings of historical loss, and acculturation experiences. Results indicated that gender and feelings of historical loss were the significant individual predictors of alcohol use and alcohol expectancies in a sample of AI/AN people. In addition, specific types of alcohol expectancies, when considered together, explained 24% of the variance in alcohol use experiences. Gender differences were noted in that AI/AN men were more likely than AI/AN women to engage in hazardous drinking and expected more feelings of social and physical pleasure as well as power and aggression as a result of drinking alcohol. Areas for further research were highlighted, with an emphasis on further research exploring the correlates and predictors of alcohol use and alcohol expectancies for community, non-clinical samples of AI/AN people, to further understand alcohol use motivation among AI/AN people.*

## INTRODUCTION

### **Alcohol Use Among American Indian and Alaska Native People**

Alcohol use is prevalent in the United States, with 213.2 million adults within the U.S. population reporting drinking alcohol at one point in time during their lives, while 1.4 million American Indians and Alaska Natives (AI/AN) reported drinking alcohol at some point in their lives (Substance Abuse and Mental Health Services Administration, 2021). Although alcohol use is viewed widely as an acceptable social behavior to relax or socialize, norms for social drinking among AI/AN people were not established until after European settlers introduced the practice to Native peoples. During trade agreements, alcohol was often used as a tool for unfair negotiating practices or traded as a valued resource (Beauvais, 1998a). This intentional distribution of alcohol for early settler gain has been described as an early form of chemical warfare, particularly as most Native peoples had very little prior experience with the substance (Mail & Johnson, 1993).

Rates and patterns of alcohol use vary amongst tribes, regions, and age groups. AI/AN people have the highest rates of alcohol abuse and dependence in comparison to other racial groups in the U.S. wherein 7.2% of AI/AN people aged 26 and older report an alcohol use disorder compared to 5.1% of the overall U.S. population (McCance-Katz, 2019). Skewes and Lewis (2016) point out data from the Alaska Native Tribal Health Consortium indicates the rate of alcohol-related deaths among AN people is 16.1 times higher than it is for Whites in the U.S. population. Furthermore, 14.1% of untimely deaths among AN people are due to alcohol (Skewes & Lewis, 2016).

These heavy drinking patterns have devastating consequences, as AI/AN people are seven times more likely to die from accidents and alcohol-related deaths, including deaths involving heart and liver conditions (Indian Health Service, 2019; Mail, 2002). When exploring causes of death in New Mexico, AI/AN people were more likely to have higher alcohol-related deaths than other racial groups (New Mexico Department of Health, 2022).

There are varied patterns and reasons for use among AI/AN people, for example, using alcohol in recreational ways or to cope with anxiety (Beauvais, 1998b; Ferguson, 1968; May, 1995), and AI/AN people under the age of 30 are the most likely to report problems with alcohol use (Beals et al., 2005; May & Gossage, 2001). Whitesell et al. (2012) point out that the AI/ANs who do drink alcohol tend to drink more during alcohol use episodes, which may imply binge use. Some AI/AN people experience a bi-modal drinking pattern of either alcohol abstinence or alcohol



abuse (Gray & Nye, 2001; May, 1995). In two recent studies, AI/AN men reported consuming more alcohol than women (McKinley et al., 2019; McKinley et al., 2021).

Reasons for alcohol use among AI/ANs include self-medicating for untreated mental illness (Ehlers et al., 2020); the influence of peers and perceptions of others' use, especially among adolescents (Larimer et al., 2020); or lower levels of family cohesion (Schick et al., 2022). Ehlers et al. (2019) discovered two distinct phenotypes of alcohol use, diagnosis, clinical trajectory of alcohol use, and associated symptoms among Mexican American and American Indian (MA/AI) participants, which were 1) feeling anxiety or depressive symptoms when attempting to decrease alcohol use, which 23% of the MA/AI acknowledged, and 2) experiencing incapacitating feelings of depression for 24 hours or more during alcohol use, which 24% of MA/AI acknowledged. Larimer et al. (2020) studied the rates of alcohol use among tribally enrolled students within tribal colleges and found students expected more alcohol use amongst their peers, which influenced their own increased alcohol use and lower chances for abstaining. Schick et al. (2022) explored rates of depression, parenting style, and level of alcohol use among AI/AN adolescents and found that a relationship between depression and alcohol use (more specifically an increase in depressive symptoms) was associated with less family warmth and more alcohol use. Although this study explored adolescent usage, it is important to note that, without intervention, adolescents may carry this pattern of use into adulthood.

There is evidence that AI/AN people tend to stop drinking alcohol later in life once familial or tribal responsibilities take precedence, otherwise known as “aging out” of alcohol use (Mail & Johnson, 1993). The goals of serving as an elder, carrying wisdom, and passing cultural knowledge down to younger generations are inconsistent with alcohol use (Lewis, 2021). Among rural AN elders, there were high rates of abstinence and sobriety in one community-based participatory research study (Skewes & Lewis, 2016). It should also be noted that AI/AN people have the highest rates of abstinence (Cunningham, 2016). The variation in use amongst age groups and region warrants further research and understanding regarding patterns and motivation of alcohol use and abstinence for AI/AN individuals and their communities.

### **Alcohol Expectancies Among AI/AN People**

Alcohol expectancies refer to the beliefs people hold about alcohol's expected influence on thoughts, feelings, and behaviors (Brown et al., 1980; Brown et al., 1987; Leigh & Stacy, 1991). Alcohol expectancies generally precede early alcohol use and are further strengthened

with the continued use of alcohol. The development of positive alcohol expectancies in adolescence can lead to continued and increased alcohol use as one progresses into adulthood (Patrick et al., 2010). This may explain the relationship between early alcohol use and continued use in adulthood for AI/AN people. Alcohol expectancies are divided into both positive and negative expectancies. Positive expectancies refer to the general positive feelings people expect from alcohol use, which includes feelings of sociability, decreased tension, increased sexual feelings, and feelings of power and aggression. Negative alcohol expectancies refer to the negative effects people expect to receive from alcohol use, such as impairment and lack of concern for self and others.

Several researchers have explored the relationship between alcohol expectancies and alcohol use among AI/AN people (Gonzalez & Skewes, 2016; Looby et al., 2017; Lysne, 2003; Mitchell & Beals, 2006; Spillane et al., 2012). Alcohol expectancies have been associated with heavy alcohol use for AI/AN people due to the negative consequences associated with use (Lysne, 2003) as well as the “firewater myth” that AI/AN people are more biologically susceptible to alcohol use (Gonzalez & Skewes, 2016). In a study of AI/AN youth, alcohol outcome expectancies were more likely to result in changes for alcohol use, including increased or decreased usage (depending on the type of expectancy; Mitchell & Beals, 2006). Dieterich et al. (2013) found that perceptions of drinking benefits to oneself were positively related to alcohol use, getting drunk, and binge drinking among adolescent AI and White students. In another study, alcohol beliefs of AI/AN people were significantly and positively related to alcohol use and alcohol expectancies in their sample of AI/AN people (Fish et al., 2017).

Looby et al. (2017) examined differences in alcohol use between AI/AN and Caucasian college students as a function of positive and negative expectancies. The AI/AN participants in their study reported drinking significantly less alcohol over the prior six months, and they held significantly weaker positive expectancies regarding drinking compared to their counterparts; thus, identifying that positive alcohol expectancies can differ based on race and that expectancies can differentially influence drinking. This finding is notable given that, in one study, AI/AN people endorsed more positive alcohol expectancies (i.e., global positive change, social and physical pleasure, and social assertiveness) than other racial groups (Daisy, 1990). In another study, the expectancy for overall positive feelings from alcohol use was a significant predictor of alcohol use among AI men (Garcia-Andrade et al., 1996).

**Historical Loss Experiences of AI/AN People**

Alcohol use may be a learned coping style and the relationship between alcohol use and psychological distress (e.g., depression and anxiety) is apparent for AI/AN people (Beals et al., 2005; Gilder et al., 2004; McKinley et al., 2019; Whitbeck et al., 2006). Among AI/AN peoples, alcohol use and alcohol expectancies may be related to and/or the result of one's thoughts and feelings associated with historical losses of culture and traumatic experiences resulting from colonization. It is natural for AI/AN people and communities to have thoughts, feelings, reactions, and responses to the rippling effects of the history of colonization across the generations; prejudice; discrimination; violation of one's civil rights; removal from one's tribe, home, family, and land; being segregated into boarding schools involving significant personal and cultural trauma; and other detrimental effects such as loss of language, identity, traditional ways and practices, and so forth.

Understandably, many AI/AN people are still trying to make meaning of what has happened to them, their people, their tribal communities, and their cultural traditions and ways over the centuries (Brave Heart, 2003; Brave Heart & LeBruyn, 1998; Whitbeck, Chen, et al., 2004). Furthermore, researchers are defining ways to understand how historical trauma manifests within institutions as a means for identifying appropriate interventions (Hartmann et al., 2019). AI/AN people are theorized to have suffered from intergenerational unresolved grief known as "the soul wound" (Duran & Duran, 1995), which is cumulative over time and continues to be transmitted across generations today (Brave Heart, 2003; Brave Heart & DeBruyn, 1998; Duran & Duran, 1995; Duran et al., 1998; Walker, 2005).

In summary, the losses associated with traditional cultural ways of living has created grief and post-colonial trauma for AI/AN people, which may be related to and/or contribute to their alcohol use. There is some evidence of the relationship between historical loss experiences (i.e., thoughts and emotions) related to AI/AN culture and communities (e.g., one's identification with AI/AN culture; Cromer et al., 2018) and alcohol use issues among AI/AN people (Ehlers et al., 2013; Henry, 2019; Weichelt et al., 2012; Whitbeck & Chen, et al., 2004). In one qualitative study involving 25 participants, Skewes and Blume (2019) discussed how historical trauma and racial discrimination were identified as risk factors for alcohol use and substance use disorders. However, in one study, thoughts associated with historical loss were not significantly related to alcohol use in AI/AN people (Aloma, 2016).

In summary, given the scant research in this area as well as the mixed findings to date, more research is needed to better understand how thoughts and feelings associated with historical losses and trauma might be related to alcohol use and alcohol expectancies of AI/AN people, which is one of the purposes of the present study. Of interest, no researchers have explored historical loss experiences in relation to alcohol expectancies for AI/AN people, which we believe is a unique contribution of our manuscript and to AI/AN research on this topic.

### **Acculturation Issues for AI/AN People**

Another cultural factor which may be related to alcohol use among AI/AN people is acculturation, which refers to “the degree to which the individual accepts and adheres to both majority and tribal cultural values” (Choney et al., 1995, p. 76). Higher levels of acculturation represent one’s adoption of more mainstream Western world views, values, and behaviors, whereas lower levels of acculturation represent one’s adoption of more traditional AI/AN world views, values, and behaviors. There is some research evidence that acculturation is related to historical loss experiences of AI/AN people. In a sample of 59 participants, Cromer et al (2018) found that the more one identified with AI/AN culture, the more he/she/they thought about historical losses, and the more one was identified with White culture, the less he/she/they thought about historical losses.

Acculturation has been associated with several variables including preference for mainstream or culturally adapted Alcohol Anonymous meetings (Tonigan et al., 2020), alcohol beliefs and alcohol use (Fish et al., 2017), identity development and wellness (Garrett, 2009), alcohol consumption, smoking, and increased risk-taking behaviors (Abraido-Lanza et al., 2005; Hawkins et al., 2004; Herring, 1994; Lysne, 2003). Research findings regarding the relationship between acculturation and substance use have been mixed. Some researchers have found that acculturation itself is not related to alcohol use among AI/AN people (Bates et al., 1997; Martell, 2022; Oetting & Beauvais, 1990-1991; Weisner et al., 1984), whereas other researchers have found that, among AI/AN people, being more acculturated into mainstream society (i.e., less traditional) puts them more at risk for alcohol problems than those who are more traditional. While some researchers found that identification and involvement with White culture serves as a protective factor against substance abuse, primarily among AI/AN adolescents (Hawkins et al., 2004; Mail, 1995), emerging research supports more traditional AI/AN identity and involvement as a protective factor against alcohol use problems for AI/AN people (e.g., Spillane et al., 2015). Enculturation, otherwise known as traditional cultural involvement, has been viewed as a strengths-based approach to alcohol cessation

(Wardman & Quantz, 2005; Whitbeck et al., 2006). Brown et al. (2016) interviewed youth, parents, providers, and community members in 10 focus groups to learn about the relationship of cultural identity and alcohol and drug use. The themes that emerged related to alcohol and drug use included acculturative stress, historical trauma, intergenerational stressors, and disconnection from culture. In addition, cultural ways and cultural identity were protective factors related to alcohol and drug use. Wolsko et al, (2007) found that among 480 Yup'ik participants, those living more of a Kass'aq (White) way of life (greater acculturation) reported experiencing greater psychosocial stress, less happiness, and greater use of drugs and alcohol to cope with stress. Participants who reported identifying more with a traditional Yup'ik way of life reported greater happiness, more frequent use of religion and spirituality to cope with stress, and less frequent use of drugs and alcohol to cope with stress. Stress and negative health outcomes are associated with the process of acculturation, and health and healing with the process of enculturation.

### **The Current Study**

The primary purpose of this study was to explore the relationships of historical loss and acculturation in relation to alcohol expectancies and alcohol use as well as the relationship of alcohol expectancies and alcohol use among AI/AN people. The research questions for this study were: 1) What is the linear relationship of historical loss and acculturation with alcohol use among AI/AN people, 2) What is the linear relationship of alcohol expectancies with alcohol use among AI/AN people, and 3) What is the linear relationship of historical loss and acculturation with alcohol expectancies among AI/AN people? It was hypothesized that thoughts and feelings of historical loss and acculturation (i.e., being more assimilated) would be significant predictors of alcohol use and alcohol expectancies among AI/AN people and that alcohol expectancies would be significant predictors of alcohol use among AI/AN people.

## **METHOD**

### **Procedures**

Institutional Review Board (IRB) approval from the university was obtained prior to conducting this on-line study. Self-identified AI/AN participants were recruited via e-mail, using snowball methods. Snowball methods have been used in other AI/AN studies (e.g., Martin et al.,

2017), which have been effective with hard-to-reach AI/AN people, especially those in geographically isolated areas or among those AI/AN communities not typically involved in research studies (Sadler et al., 2010).

Participants read an on-line informed consent page outlining purposes of the study and potential risk and benefits of the study, the voluntary nature of their participation, and the opportunity to enter in an on-line drawing to win a Pendleton blanket upon completion of the on-line survey.

### **Participants**

The final sample for this study were 188 self-identified AI/AN people, most of whom were women (69%); one participant identified as two-spirit. The ages of the participants ranged from 18 to 72 years of age, with an average age of 40.7 years of age ( $SD = 12.18$ ). Participants were asked to choose all residences applicable throughout their lives: 77% lived in a predominantly urban area, 63% lived on a reservation or tribal area, and 57% lived in a rural area. The education level among participants varied greatly. The majority were college-educated with approximately 37% of this sample having a minimum of a bachelor's degree or attended some type of vocational training, and 28% having attended or completed graduate school. Approximately 8% of the participants served in the Armed Forces at some time in their lives; a small percentage served in a combat zone.

The participants in this study were members of a variety of different tribes and nations within the United States. In most cases, participants identified with more than one nation or tribal affiliation. Participants reported their tribal/nation affiliations (representing a total of 99 tribes/nations); however, specific tribal/nation affiliations were not reported in this manuscript out of respect for the confidentiality and anonymity of the AI/AN participants and their communities in this study.

### **Measures**

Participants completed an on-line survey, including a demographic page, the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993), the Alcohol Effects Questionnaire (AEQ; Brown et al., 1987), the Historical Loss Scale and Historical Loss Associated Symptoms Questionnaire (Whitbeck, Adams, et al., 2004), and the Native American Acculturation Scale (NAAS; Garrett & Pichette, 2000).

### ***Alcohol Use Disorders Identification Test (AUDIT)***

The AUDIT is a 10-item questionnaire. The three sections of this measure assess alcohol consumption, drinking behaviors, adverse reactions to alcohol use, and alcohol-related problems. Participants responded to each item using a 5-point Likert scale (0 = never, 1 = monthly or less than monthly, 2 = 2-4 times a month, 3 = 2-3 times a week, and 4 = 4 or more times a week). The total score of the AUDIT has a possible score range of 0 to 40, with higher scores indicating more alcohol use and alcohol-related difficulties. Scores from 8-14 suggest hazardous or harmful alcohol use; a score of 15 or more suggests alcohol dependence (Saunders et al., 1993). The total score was used in the main analyses of this study. In this sample, the internal consistency reliability estimate for the AUDIT total score was .83.

During scale development, the validity of the AUDIT was obtained with external reference groups of self-identified alcoholics and non-drinkers (Saunders et al., 1993). The AUDIT is a valid measure of alcohol use with AI/AN samples (e.g., Leonardson et al., 2005; Schermer et al., 2003; Westermeyer, 2001) and is recommended as a tool for social workers to use when implementing the National Institute of Alcohol Abuse and Alcoholism (NIAAA) brief intervention and screening with AI/AN people (Patterson Silver Wolf et al., 2014).

### ***Alcohol Effects Questionnaire (AEQ)***

The AEQ is a 40-item questionnaire designed to assess personal beliefs about both positive expectations (i.e., reinforcing effects of alcohol) and negative expectations (i.e., undesirable effects of alcohol including impairment and irresponsibility) from alcohol use, using a true/false format. The eight subscales (5 items each) of the AEQ are: *Global Positive* (POS; expectation for alcohol use to provide positive global changes in a variety of experiences), *Social and Physical Pleasure* (SPP; expectation for alcohol use to provide enhanced social and physical pleasures), *Sexual Enhancement* (SEX; expectation for alcohol use to provide improved sexual experiences and enhanced sexual arousal), *Power and Aggression* (AGG; expectation for alcohol use to provide feelings of arousal and aggression), *Social Expressiveness* (SOC; expectation for alcohol use to provide positive and social assertive personality changes), *Relaxation and Tension Reduction* (REL; expectation for alcohol to provide a sense of relaxation and tension reduction), *Cognitive and Physical Impairment* (IMP; expectation for alcohol to affect thought and motor difficulties), and *Careless Unconcern* (CU; expectancy for alcohol to decrease inhibitions, which may place individuals in risky settings). Higher scores for each subscale indicate higher expectations regarding that specific anticipated outcome



(benefit or risk) of alcohol use; lower scores for each subscale indicate fewer expectations regarding that specific anticipated outcome (benefit or risk) of alcohol use.

The AEQ has been developed and normed with both college students and those seeking treatment in an alcohol rehabilitation center. Internal consistency reliability coefficients for the AEQ for this sample were as follows: .58 for POS, .74 for SPP, .79 for SEX, .77 for AGG, .77 for SOC, .65 for REL, .73 for IMP, and .77 for CU. All AEQ subscales except POS and REL (given Cronbach alphas below .70) were used for the analyses of this study.

### ***Historical Loss Scale (HLS) and Historical Loss Associated Symptoms Scale (HLASS)***

Thoughts and feelings related to historical loss were measured by the HLS and HLASS, respectively. Both scales consist of 12 items each. For the HLS, participants respond to each item regarding how often they thought about specific AI/AN historical losses, using a 6-point Likert scale (1 = several times a day, 2 = daily, 3 = weekly, 4 = monthly, 5 = yearly or at special times, and 6 = never). Examples of historical loss thoughts includes thinking about the loss of land, language, and spiritual practices. Higher scores indicate less frequent thoughts associated with AI/AN historical losses; lower scores indicate more frequent thoughts about AI/AN historical losses.

For the HLASS, participants respond to each item in terms of how often they felt specific emotions when thinking about AI/AN historical losses, using 5-point Likert scale (1 = never, 2 = seldom, 3 = sometimes, 4 = often, and 5 = always). Examples of historical loss feelings include sadness/depression, anxiety, anger, discomfort, and distrust. Higher scores indicate more emotional experiences associated with AI/AN historical losses.

Internal consistency reliability coefficients for the HLS and the HLASS were .95 and .93 for the HLS and the HLASS, respectively, for this sample of AI/AN people. The total scores for HLS and HLASS were used in the analyses for this study.

### ***Native American Acculturation Scale (NAAS)***

The NAAS is a 20-item measure of acculturation which assesses cognitive, behavioral, and attitudinal bicultural development along a continuum, ranging from traditional AI/AN to assimilated mainstream cultural orientations. Items addressed include tribal/nation language (5 items), identity (2 items), friendships (3 items), behaviors (4 items), generational/geographical background (5 items), and attitudes (1 item). An acculturation score (average) is calculated by dividing the total score by 20. Average acculturation scores can range from 1, indicating a low

level of acculturation into the White culture (conversely enculturation into AI/AN culture), to a maximum score of 5, indicating a high level of acculturation into the mainstream U.S. culture (less enculturation into AI/AN culture), with a score of 3 indicating a bicultural orientation. The NAAS was a reliable measure of acculturation for this AI/AN sample (Cronbach alpha = .84).

### **Procedures for Missing Data**

The researchers received a total of 196 on-line survey responses (196 original participants). It should be noted that eight participants were excluded from the analyses of the study due to significant missing data, resulting in the final sample of 188 participants. It should be noted that if a participant's survey data was missing less than 10% of the items on a particular measure, the mean score of that item for the total sample was entered for that missing data point.

## **RESULTS**

### **Descriptive Statistics**

The means, standard deviations, and actual score ranges for the main study variables are reported in Table 1. On average, the participants in this study reported mild levels of alcohol use issues (otherwise known as low-risk alcohol consumption), yet they also reported some mild to moderate alcohol expectancies. These participants did, on average, report moderate levels of emotional experiences related to the historical losses of AI/AN people and culture, and a mild level of frequency with regard to thoughts about those historical losses. Acculturation levels were, on average, in the bicultural orientation range, indicating some identification with traditional AI/AN ways as well as some identification with mainstream ways.

### **Correlates of Alcohol Use and Alcohol Expectancies Among AI/AN Participants**

Alcohol use among AI/AN participants was significantly and positively related to alcohol expectancies of social and physical pleasure ( $r = .37, p < .05$ ), power and aggression ( $r = .36, p < .05$ ), careless unconcern ( $r = .28, p < .05$ ), social expressiveness ( $r = .24, p < .05$ ), and sexual enhancement ( $r = .23, p < .05$ ), as well as feelings of historical loss in AI/AN culture and communities ( $r = .28, p < .05$ ). See Appendix Table A1. Thus, AI/AN people who reported more

alcohol use and its effects tended to experience more feelings associated with the historical loss of AI/AN people and expected alcohol use to have certain physical and emotional benefits.

Alcohol expectancies among the AI/AN people in this study were significantly and positively related to thoughts and feelings associated with the historical loss of AI/AN culture and communities. In particular, feelings of historical loss were significantly and positively correlated with alcohol expectancies of social expressiveness ( $r = .33, p < .05$ ), sexual enhancement ( $r = .33, p < .05$ ), power and aggression ( $r = .32, p < .05$ ), careless unconcern ( $r = .25, p < .05$ ), and cognitive impairment ( $r = .15, p < .05$ ). The more AI/AN people experienced feelings of historical loss, the more likely they were to expect positive and negative aspects of using alcohol; AI/AN people with fewer feelings of historical loss were less likely to expect positive and negative aspects of using alcohol.

The only significant relationship between thoughts associated with the historical loss of AI/AN culture and communities and alcohol expectancies was for sexual enhancement ( $r = -.21, p < .005$ ). Thus, the more AI/AN people thought about the historical losses of AI/AN people, the less likely they were to expect positive benefits of sexual enhancement from alcohol use.

**Table 1**  
**Descriptive Statistics for Main Study Variables**

<b>Variables</b>	<b>Mean</b>	<b>SD</b>	<b>Range</b>
<b>Alcohol Use Disorders Identification Test</b>			
Total Score	6.18	5.59	0-27
<b>Alcohol Effects Questionnaire Subscales</b>			
Social and Physical Pleasure	2.79	1.65	0 – 5
Sexual Enhancement	1.73	1.70	0 – 5
Power and Aggression	2.52	1.97	0 – 5
Social Expressiveness	2.91	1.72	0 – 5
Cognitive and Physical Impairment	3.27	1.64	0 – 5
Careless Unconcern	2.57	1.46	0 – 4
<b>Historical Loss Scales</b>			
Historical Loss Thoughts	36.59	12.95	17 – 84
Historical Loss Feelings	42.96	14.30	12 – 72
<b>Native American Acculturation Scale</b>			
Average Score	3.00	.52	1.70 – 4.40

It should be noted that participants' thoughts and feelings of historical loss for AI/AN culture and communities were significantly and inversely related to one another ( $r = -.44, p < .01$ ). More frequently, thoughts about historical losses of AI/AN people were associated with experiencing less affective symptoms related to those historical losses; conversely, less frequency thoughts about historical loss were associated with more affective symptoms related to historical losses of AI/AN culture and communities.

Acculturation levels were significantly and positively related to thoughts regarding historical loss ( $r = .24, p < .05$ ), but not with feelings of historical loss. AI/AN people who were more acculturated into the dominant culture reported more thoughts about the historical losses of AI/AN people; conversely, being more traditional as an AI/AN person was associated with fewer thoughts about the historical losses of AI/AN culture and communities.

### **Significant Predictors of Alcohol Use and Alcohol Expectancies for AI/AN Participants**

Gender differences were noted regarding alcohol use,  $t(180) = -4.33, p < .01$ , and alcohol expectancies, including social and physical pleasure,  $t(181) = -2.47, p < .05$ ; power and aggression,  $t(182) = -2.98, p < .05$ ; and careless unconcern,  $t(181) = -2.12, p < .05$ . However, there were no gender differences in thoughts or feelings related to the historical loss of AI/AN culture and communities,  $t(186) = 1.34, p > .05$  and  $t(186) = -1.34, p > .05$ , respectively, nor acculturation,  $t(186) = -1.15, p > .05$ .

Given the gender differences in alcohol use and alcohol expectancies, in the multiple regression analyses to follow, gender was entered into the regression first (block 1), followed by the predictor variables of interest (block 2).

A multiple regression analysis was conducted with gender, feelings and thoughts of historical loss, and acculturation as predictor variables and alcohol use as the criterion variable. Gender significantly accounted for 9.1% of the variance in alcohol use; thoughts and feelings related to historical loss and acculturation significantly accounted for an additional 7.7% of the variance in alcohol use levels for the AI/AN participants in this sample. Examination of the beta weights revealed that gender ( $\beta = .284, t = 4.09, p < .001$ ) and feelings of historical loss ( $\beta = .308, t = 4.04, p < .001$ ) were the significant individual predictors of alcohol use in this sample.

Another multiple regression analysis was conducted with gender and the alcohol expectancies subscale scores as predictor variables and alcohol use as the criterion variable. Gender significantly accounted for 8.4% of the variance in alcohol use; alcohol expectancies were

significant predictors of alcohol use, explaining an additional 18.1% of the variance. Examination of the beta weights revealed that gender ( $\beta = .210$ ,  $t = 2.914$ ,  $p < .01$ ) and the alcohol expectancies of social and physical pleasure ( $\beta = .264$ ,  $t = 3.44$ ,  $p < .001$ ) and power and aggression ( $\beta = .220$ ,  $t = 2.50$ ,  $p < .05$ ) were the significant individual predictors of alcohol use.

Last, a multiple regression was conducted with gender, thoughts and feelings of historical loss, and acculturation as predictor variables and the global positive alcohol expectancy subscale score as the criterion variables. Gender significantly accounted for 3.2% of the variance and thoughts and feelings of historical loss and acculturation significantly accounted for an additional 12.9% of the variance in global positive alcohol expectancies. Examination of the beta weights revealed that feelings of historical loss was the only significant individual predictor of global positive expectancies. Results indicated that participants' feelings of historical loss were the only significant predictor of participants' global positive expectancies related to alcohol use ( $\beta = .373$ ,  $t = 4.94$ ,  $p < .001$ ).

After the primary analyses were conducted, a follow-up interest of exploration was the impact of hazardous versus non-hazardous drinking on alcohol expectancies as well as historical loss thoughts and feelings among AI/AN women and men. One post-hoc MANOVA analysis was conducted to explore gender differences, types of alcohol use differences (hazardous versus non-hazardous drinking), and any interaction effects between gender and type of alcohol use on alcohol expectancies. Hazardous drinking was defined as having a total AUDIT score of 8 or more for men and 7 or more for women, in accordance with possible alcohol dependence (see Babor et al., 2001) or putting oneself at risk for adverse health consequences (Reid et al., 1999). In the current sample, approximately 50% of men and 25% of the women reported hazardous drinking.

A 2 X 2 MANOVA (Gender: Men and Women) X (Drinking Group: Hazardous and Non-Hazardous Drinking) was conducted for the alcohol expectancies subscales (6 subscales). There was no significant interaction effect,  $F(6, 166) = 1.33$ ,  $p > .05$ . However, there were significant main effects for gender,  $F(6, 166) = 3.65$ ,  $p < .05$ , and alcohol drinking group,  $F(6, 166) = 5.41$ ,  $p < .05$ . Follow-up univariate analyses revealed significant gender differences for all of the alcohol expectancy subscales including: social/physical pleasure,  $F(1, 171) = .97$ ,  $p < .01$ ; sexual enhancement,  $F(1, 171) = .87$ ,  $p < .01$ ; power and aggression,  $F(1, 171) = .99$ ,  $p < .01$ ; social expressiveness,  $F(1, 171) = .70$ ,  $p < .05$ ; cognitive and physical impairment,  $F(1, 171) = .55$ ,  $p < .05$ , and careless unconcern,  $F(1, 171) = .90$ ,  $p < .01$ . AI/AN men were more likely to report more alcohol expectancies in those areas than AI/AN women. In addition, follow-up univariate analyses

revealed significant drinking group differences for the alcohol expectancies of social and physical pleasure,  $F(1, 171) = .62, p < .05$ , and power and aggression,  $F(1, 171) = .60, p < .05$ . Hazardous drinkers were more likely to expect alcohol to positively influence their social and physical pleasure as well as their feelings of power and aggression.

## **DISCUSSION**

AI/AN participants who used alcohol more often tended to report more positive benefits from alcohol use, but also expected negative effects from their alcohol use as well. These negative effects include impairment and lack of concern for others. In addition, those who reported more feelings of historical loss were more likely to report more alcohol use issues (e.g., drinking more and having health consequences). However, alcohol use issues were not related to thoughts about historical loss or level of acculturation. Other researchers (Aloma, 2016; Gameon & Skewes, 2021) similarly found that historical loss thoughts did not predict alcohol use in an AI/AN sample. Wiechelt et al. (2012) found historical loss thoughts to be related to closer family relationships but not predictive of alcohol use. Gameon and Skewes (2021) found historical loss thoughts to be related to more days of abstinence from alcohol, fewer days of hazardous alcohol use, and fewer days of drug use; historical loss associated feelings were negatively associated with the number of days of abstinence per month. However, Whitbeck, Chen, et al. (2004) found historical loss to be associated with alcohol abuse in women. This variation in research results speaks to the need for further research in this area.

Feelings of historical loss was the most significant predictor of alcohol expectancies among the AI/AN participants in this study. In previous research with AI men, alcohol use levels were related to alcohol expectancies for social and physical pleasure and power and arousal (Garcia-Andrade et al., 1996). In another study, negative alcohol expectancies were predictive of alcohol use among AI/AN people (Lysne, 2003). However, in this present study, both positive and negative alcohol expectancies were predictive of alcohol use among AI/AN people. Negative expectancies refer to negative effects associated with alcohol use and are developed over time, based on problematic use (Spillane, 2012).

In addition to differences in alcohol expectancies, there were gender differences in hazardous alcohol usage. AI/AN men (50%) reported engaging in more hazardous drinking compared to AI/AN women (25%). AI/AN men also expected to achieve more feelings of social

and physical pleasure and feelings of power and aggression from alcohol than did the AI/AN women in this sample, highlighting that AI/AN men and women use alcohol for different reasons. Our findings are similar to those by Garcia-Andrade et al. (1996), in that men were found to expect feelings of power and aggression and social and physical pleasure from alcohol use. Spillane et al. (2012) also found among reservation-dwelling Native people in Canada that men who had a tendency to deal with difficult emotions impulsively were more likely to develop negative expectancies of alcohol use due to impaired functioning.

Overall, regardless of gender, both hazardous and non-hazardous drinkers differed on all six alcohol expectancies. Hazardous alcohol users expected more positive and negative alcohol expectancies than non-hazardous drinkers. Also, feelings of historical loss were associated with more alcohol use issues. These results suggest AI/AN people may drink alcohol to cope with unresolved grief or other emotional distress related to the historical loss of AI/AN people. While it is possible that feelings of historical loss may influence a person's decision to drink alcohol more, it is also possible that when a person drinks alcohol more, they may become more aware of their feelings in general, including depression, anxiety, and/or anger, which may result in focusing on the origin of these feelings and their association with the historical losses of AI/AN people. Further research is needed to explore the nature of this relationship between historical loss feelings and alcohol use among AI/AN people. The findings of this study are preliminary in nature and further research is needed in this area, especially regarding the comorbidity of affective disorders with alcohol use disorders. It is unclear whether those who drink more alcohol are self-medicating for depressive or mood disorders. The use of alcohol to cope with the traumas associated with historical loss support findings of Brave Heart's (1998; 2003) point regarding alcohol use as an ineffective coping strategy for AI/AN people. Ehlers et al. (2013) found among 306 American Indians, 66% of the participants met criteria for a substance dependence disorder and had higher scores on Historical Loss Thoughts and Historical Loss Associated Symptoms, highlighting the comorbidity of substance use.

The avoidance of historical loss thoughts may be one way to cope with the anxiety of how these losses affect AI/AN people today, especially on an individual level. Those who avoid thinking about these losses are more likely to experience a stronger emotional reaction in comparison to those who spend more time purposefully thinking about the personal, tribal/nation, and societal effects of these historical losses. While feelings of historical loss predicted alcohol use and alcohol expectancies among the AI/AN participants of this study, those who thought more



about these losses were less likely to be heavy drinkers based on the findings of this study. This cognitive awareness may serve as a motivating factor to live differently and not contribute to the cycle of alcohol use that has negatively affected some AI/AN people. Ehlers et al. (2013) reports AI/AN people who lived more traditionally Native ways of life experienced higher levels of historical loss thoughts and lower levels of historical loss feelings. Thus, those who may practice their culture are cognizant of historical trauma, yet able to manage emotional distress by engaging in traditional practices.

Even more fascinating, feelings related to historical loss was a significant predictor of all alcohol expectancies, both positive and negative, for this sample of AI/AN people. In particular, those experiencing more emotions related to the historical losses of AI/AN culture and communities was predictive of expecting alcohol to provide relief, including physiological, emotional, and/or social change. In a previous study, feelings of historical loss were related to alcohol abuse problems among AI/AN women, but not for AI/AN men (Whitbeck, Chen, et al., 2004). Future research is needed to explore in more depth how AI/AN people think and feel about the historical losses for AI/AN culture and, in particular, how experiences of historical loss are relevant to alcohol use and other mental health issues of AI/AN people today. Problems with alcohol have been described as a “spiritual” problem of loss and emptiness, which in turn creates the desire to drink alcohol or “spirited” beverages to fill an emotional void (Duran, 2006; Duran & Duran, 1995; Lowery, 1998).

Of interest, acculturation did not play much of a role in understanding the alcohol use or alcohol expectancies of the AI/AN people in this study. This finding is contrary to some previous research findings indicating that acculturation is significantly related to alcohol and alcohol-related concerns among AI/AN people (e.g., beliefs and alcohol use, Fish et al., 2017) and their preferences for recovery groups (e.g., AA meetings; Tonigan et al., 2020). Further research is needed to explore the impact of acculturation and enculturation (e.g., Whitbeck et al., 2004) on alcohol use behaviors and expectancies among AI/AN people.

### **Implications for Counseling and Healing Practices within AI/AN People**

The results of this study suggest the AI/AN people who used alcohol, including those who reported engaging in hazardous drinking, were experiencing some feelings of historical loss, including feelings of unresolved grief, depression, or anxiety. These demonstrated relationships between feelings of historical loss and alcohol use and expectancies provide evidence to support

the acknowledgment and inclusion of interventions addressing the historical losses of AI/AN culture and community, including an awareness of these connections when providing substance abuse and mental health services with AI/AN clients. More attention needs to be given to the memories, thoughts, and feelings of historical loss for AI/AN people given that it has been identified as a correlate and protective factor related to alcohol use and dependence (e.g., Whitbeck et al, 2004; Ehlers et al, 2013), particularly exploring feelings of historical loss.

Brown et al. (2016) found that participating in cultural activities can facilitate wellness and health among AI youth in urban settings. The use of cultural activities, traditional healers, and encouraging tribal connections have been identified preferences among Native focus group participants receiving mental health care in urban mental health settings (Dickerson & Johnson, 2011). Therapists should attempt to understand the role of culture and acculturation in AI/AN clients' lives (Thomason, 2012), including thoughts and feelings of historical loss. To not acknowledge these intergenerational losses experienced by AI/AN people, historically and currently, would be detrimental to the substance abuse and mental health services for and with AI/AN people.

Furthermore, the inverse relationship between thoughts and feelings of historical loss has implications for therapy with AI/AN clients. For example, if AI/AN clients address thoughts about these losses, they may be more likely to explore and process their emotions related to these losses in therapy. This may provide a healthy level of exposure, which reinforces qualities of emotional, cognitive, and cultural resilience. More research is needed in this area, however, to determine if historical loss thoughts and feelings compel one to drink alcohol at hazardous levels or if alcohol use and/or hazardous alcohol use compels one to engage in depressive thinking, such as focusing on thoughts of historical loss, resulting in increased feelings of depression and anxiety.

While it is important not to stereotype and assume all AI/AN clients are dealing with distress over the unique history of AI/AN people, it is important to assess a client's level of alcohol use and expectations of alcohol use within the context of historical and unresolved grief or "soul wound" It would be beneficial to explore a drinker's personal history of alcohol use, reasons for using alcohol or reasons for abstinence, and cultural/tribal beliefs about the use of alcohol. To avoid cultural stereotypes from the colonized world, do not assume that AI/AN people use alcohol problematically. When people use alcohol, it is important to explore what they expect alcohol to do for them (e.g., social engagement, emotional relief, etc.) and how much alcohol use coincides with expectations.

At some point, exploring the cultural meaning of alcohol with an AI/AN person may help to uncover thoughts and feelings about historical loss that they may not be aware of. Exploring

cultural influences on alcohol use, alcohol expectancies, and emotional/mental health is essential to the creation of comprehensive interventions. Other useful interventions include motivational interviewing, which is one model for alcohol use treatment which has been adapted for use within AI/AN communities (Miller & Rollnick, 2002; Venner, Feldstein, & Tafoya, 2006). White Bison Wellbriety, founded by Don Coyhis in 1988, is another Native-based program, which provides guidance on sobriety and addictions prevention (Coyhis & Samonelli, 2008). The Wellbriety movement provides a cultural perspective on healing from substance abuse, which incorporates traditional teachings at the individual, tribal, and community level and is applicable to all age levels (Coyhis & Samonelli, 2008). In addition, Drum Assisted Recovery Therapy for Native Americans (DARTNA) is an evidence-based treatment, utilizing the culturally based practice of drumming, the 12 steps, Wellbriety, and the Medicine Wheel teachings, and is a culturally relevant intervention among AI/AN people residing in urban areas who have reported both mood and spiritual benefits (Dickerson et al, 2014).

Interventions for alcohol misuse are an area for further exploration, especially in relation to level of acculturation and tribal identity. The integration and balance of both Native and Western interventions in substance use treatment is discussed in more depth by Moghaddam and Momper (2011). Moghaddam and Momper (2011) highlight, through interviews, how substance abuse providers in an inpatient treatment center acknowledge patients' level of acculturation among treatment residents when providing mental health care, and some AI/AN people prefer culturally informed, traditional modes of intervention, while others may prefer evidence-based practices. The clinical and support providers described traditional practices and ways influence outcomes of treatment by enhancing coping skills, providing routine, and providing a way for residents to reconnect with their Native identity/ies (Moghaddam & Momper, 2011). This study demonstrates the importance of individualizing treatment and taking the time to establish trust and understand what counseling and recovery interventions work best with AI/AN people.

### **Strengths and Limitations of the Study**

One of the limitations of this study is that the analyses were correlational in nature, thus precluding any causal inferences regarding the nature of the relationships among the main study variables. Second, some AI/AN people who might have been interested in participating in this study could not because they either did not learn about this study due to the convenience sampling method (snowballing) or they did not have access to the Internet. Since the snowball method

involves research participants contacting other participants, this method may not be an accurate assessment of the AI/AN population because the researcher is unable to determine the probability of each population member being selected (Jhangiani et al., 2019). Third, since this study included individuals from approximately 99 tribal/nation affiliations, it may be difficult to generalize these findings to one particular tribe/nation. Fourth, it is unclear if the sample lived predominantly in an urban or reservation/tribal area at the time of research participation. However, the variation in tribal/nation affiliation ( $n = 99$ ) does represent the diversity that exists between and among AI/AN people across the United States. Furthermore, the majority of this participant sample was college educated, and this participant sample may be more aware of healthier coping alternatives, in comparison to a participant sample who was not primarily college educated. However, this research data provides a perspective of AI/AN men and women who are primarily college educated regarding factors related to their alcohol use and expectancies, and this was a relevant community non-clinical sample.

This study illustrated what AI/AN people in communities expect to achieve from drinking alcohol and identified gender differences in alcohol use. It would be beneficial to add a qualitative component to further research, which may allow participants to explain in more depth the contextual factors related to alcohol use and expectancies, personal reasons for alcohol use, and shared thoughts and feelings on historical loss. As Ehlers et al. (2013) indicate, it is unclear if survey respondents reported on the feelings associated with particular historical losses or endorsed feelings which they may already experience, as those listed are of a depressive and anxiety symptom structure. Further analyses of mood or anxiety disorders, current rate of alcohol use, historical loss thoughts and associated symptoms, as well as identification or participation in culturally relevant ways of living may provide more clarity on the particular experience of AI/AN people who use may abuse alcohol. This study provided a foundation for understanding how alcohol expectancies are related to historical loss thoughts and feelings, which is currently not an area of frequent study. While acculturation was not related to alcohol use nor alcohol expectancies, more studies are needed regarding the concept of acculturation and how this may or may not play a role in hazardous alcohol use and/or alcohol expectancies.

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### **CONFLICT OF INTEREST**

The authors declare that they have no conflicts of interest.

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APPENDIX

**Table A1**  
**Correlation Matrix of the Main Study Variables Including Alcohol Use, Alcohol Expectancies, Thoughts Related to Historical Loss, Feelings Related to Historical Loss, and Acculturation Levels**

	Alcohol Use	Social & Physical Pleasure	Sexual	Aggression	Social	Impairment	Careless Unconcern	Historical Loss Thoughts	Historical Loss Feelings	Acculturation
AUDIT	-									
SPP	.37**	-								
SEX	.23**	.31**	-							
AGG	.36**	.23**	.36**	-						
SOC	.24**	.42**	.50**	.51**	-					
IMP	.15*	.21**	.23**	.42**	.34**	-				
CU	.28**	.16*	.32**	.60**	.46**	.60**	-			
HL-T	-.03	-.09	-.21**	-.19*	-.11	-.02	-.10	-		
HL-F	.28**	.19*	.33**	.32**	.33**	.15*	.25**	-.44**	-	
NAAS	-.02	.03	.14*	-.12	.08*	.02	.03	.24**	-.13	-

Alcohol Use (*Alcohol Use Disorders Identification Test [AUDIT]; Saunders et al., 1993*)

Alcohol Expectancies (SPP = Social and Physical Pleasure, SEX = Sexual, AGG = Aggression, SOC = Social, IMP = Impairment, CU = Careless Unconcern; *Alcohol Effects Questionnaire [AEQ]; Rohsenow, 1980*)

Historical Loss Thoughts = HL-T, Historical Loss Feelings = HL-F (*Historical Loss Scale [HLS] and Historical Loss Associated Symptoms Scale [HLASS]; Whitbeck, Adams, et al., 2004*)

Acculturation (NAAS = *Native American Acculturation Scale; Garrett & Pichette, 2000*)

\*  $p < .05$

\*\*  $p < .01$