Reporting Historical Loss Events and Mental Health in American Indians

Kyla R. Molina (Chickasaw Nation), PsyD, Yi Shao, PhD, and Lori Holmquist-Day, PhD

Abstract: *The concept of historical trauma highlights how past events shape contemporary well-being through various pathways, including conscious awareness of historical losses. While previous research has established connections between thinking about historical losses and mental health outcomes, existing assessments primarily rely on retrospective self-reports regarding the frequency of such thoughts to derive historical loss scores. This study explored how American Indian participants (N = 104) reported negative past events experienced by American Indians during an online timed task. We examined the antecedents and consequences of such reporting and found that most of the negative collective past events reported were historical loss events, with a small portion related to residential school experiences. Self-reported historical loss scores, rather than enculturation or ethnic identity centrality, predicted the likelihood of reporting historical loss events. Women and individuals with family residential school experiences were more likely to report historical loss events. Furthermore, the reporting of historical loss events moderated the relationship between historical loss scores and anxiety symptoms. Specifically, the association between historical loss scores and anxiety symptoms was observed only among those who reported a higher number or proportion of historical loss events.*

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

INTRODUCTION

In October 2024, President Biden issued a formal apology for the federal government's role in managing residential schools, acknowledging the extensive harm inflicted on Indigenous communities. This apology marked the first presidential acknowledgment of these historical injustices and emphasized the need for continued efforts to support healing and education about this dark chapter in American history. Historical losses, particularly those associated with residential school experiences, continue to affect American Indian communities across generations (Whitbeck et al., 2004). While research has established links between thinking about historical losses and mental health outcomes (Gone et al., 2019; Gone & Trimble, 2012), existing assessments primarily rely on retrospective self-reports about the frequency of these thoughts. This study examined individuals' spontaneous reporting of historical loss events using a timed, open-ended task in which participants were asked to freely report negative events experienced by American Indians, contrasting with existing measures that rely on predefined lists of losses. We also explored the individual differences associated with such reporting and their relationships with mental health outcomes.

Research on historical trauma has been ongoing for several decades, particularly in relation to Indigenous populations in North America (Brave Heart et al., 2011; Brave Heart & DeBruyn, 1998; Gone et al., 2019). Indigenous historical trauma encapsulates the lingering effects of cultural suppression, genocide, and colonization of American Indians, including forced removal from ancestral lands, language eradication, and cultural loss through residential schools (Cromer et al., 2018). Historical trauma represents the collective psychological injuries resulting from past collective traumatic experiences shared by a group (Mohatt et al., 2014). Similar to other forms of trauma experienced directly by individuals, historical trauma can manifest through recurrent thoughts about these events and their subsequent losses. This phenomenon, known as historical loss thinking, involves the allocation of cognitive resources to reflect on the consequences and impact of the loss of land, language, beliefs, and culture (Whitbeck et al., 2004). The nature and frequency of these thoughts are often measured using self-report questionnaires such as the Historical Loss Scale (HLS). Historical loss thinking has been suggested to share similarities with

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

other negative thinking patterns commonly associated with psychopathology, such as rumination and negative attribution styles (Tucker et al., 2016).

Individual differences exist in how people think about historical loss. One factor related to these differences is ethnic identity, which encompasses both cultural engagement and identity centrality (Phinney, 1996). Cultural engagement reflects how frequently individuals participate in ethnic cultural activities, while identity centrality represents how central one's ethnic group identity is to one's broader personal identity. Research has shown that both higher levels of cultural engagement and stronger ethnic identity centrality are associated with reporting more frequent thoughts about historical losses (Cromer et al., 2018; Soto et al., 2015; Tucker et al., 2016; Walls et al., 2016).

Historical trauma has been linked to elevated rates of mental illness, including depression and anxiety, among American Indians, regardless of whether they reside on reservations (Gone et al., 2019; Gone & Trimble, 2012). Research involving Indigenous populations in Canada has consistently demonstrated that a family history of residential school experiences is associated with adverse mental health outcomes (Gray & Cote, 2019; Hahmann et al., 2023; Matheson et al., 2020). Individuals with a family history of residential school attendance report worse mental health outcomes than those without such a history. However, not everyone is affected in the same way, highlighting the need to explore the potential pathways through which historical loss thinking contributes to mental health challenges.

Gone et al. (2019) noted that current historical loss assessments depend on individuals' retrospective self-reports about how often they think about historical losses. These measures assume that historical loss scores accurately reflect people's thoughts about historical loss events. Despite calls for research that captures such responses in real time, rather than retrospectively, no study, to our knowledge, has directly tested whether historical loss scores correspond to the actual prominence of historical loss in individuals' broader cognitive representations of American Indian experiences. Furthermore, it is important to view trauma as narrative representations (Mohatt et al., 2014), where narrative salience is crucial. This perspective suggests that how individuals express historical loss events may provide deeper insight into their impact than frequency-based self-reports alone. While previous research has explored historical trauma through direct in-depth interviews with service providers (Hartmann & Gone, 2014, 2016), focus group discussion with urban American Indians (Guenzel & Struwe, 2020) and First Nation peoples (Weiss et al., 2023), and interviews and focus groups with American Indian elders (Grayshield et al., 2015), it remains

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

unclear whether historical loss naturally emerges in broader American Indian communities when trauma is not explicitly discussed.

Current Study

Together, these gaps highlight the need for a methodological approach that moves beyond self-report measures and explicit trauma discussions to capture how historical loss manifests organically within American Indian communities. If historical loss is truly salient, it should emerge unprompted when individuals are given the opportunity to freely express their thoughts and experiences. A fluency task offers a naturalistic, real-time window into cognitive salience, enabling researchers to assess whether historical loss themes surface spontaneously rather than as explicitly prompted reflection of perceived recollection frequency. Indeed, fluency tasks have been used in psychological research to examine collective memory across cultures (Abel et al., 2019). This study addressed these gaps by using a fluency task, including reporting negative collective past events, to examine the unprompted salience of historical loss. We conducted a content analysis to categorize participants' responses to historical loss versus non-historical loss.

Additionally, we aimed to explore factors influencing the reporting of historical loss events. In a well-regarded review of Indigenous historical trauma research, authors raised concerns that Indigenous cultural identity might lead to the adoption of "a narrow and overgeneralized form of historical consciousness" (Kirmayer et al., 2014, p. 307), suggesting a potential association between ethnic identity and the reporting of historical loss. Therefore, strength of ethnic identity was assessed by cultural engagement and ethnic identity centrality as potential factors in the current study.

Our research had two primary objectives: 1) to examine individual differences in the spontaneous reporting of historical loss during an open-ended fluency task centered on negative collective past events, and 2) to explore the relationship between participants' Historical Loss Scale scores, their reporting of historical loss events, and mental health outcomes, considering both positive and distinct negative aspects of mental health (i.e., depression and anxiety). Specifically, we proposed two potential mechanisms to explain these relationships. The first mechanism proposed that the spontaneous reporting of historical loss events may mediate the relationship between historical loss scores and mental health outcomes. In this framework, the frequency of perceived loss influences mental health through participants' tendency to spontaneously report historical loss as negative events in American Indian history. The second mechanism proposed that the spontaneous reporting of historical trauma might moderate the relationship between

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

historical loss and mental health outcomes. In this case, the frequency of perceived loss might not directly predict mental health outcomes. Rather, we hypothesized that the relationship between historical loss and mental health outcomes would be stronger among individuals who spontaneously reported more historical loss events.

METHODS

Participants

Participants were American Indian adults (at least 18 years old) currently enrolled in a federally or state-recognized tribe. Initial recruitment was carried out through the first author's personal connections, Facebook, and the Society of Indian Psychologists listserv (n = 34), with subsequent recruitment via Prolific (n = 75), an online crowdsourcing platform widely used in psychology research for online participant recruitment. The target sample size of 92 participants was determined based on power calculations for a separate analysis focused on mental time travel (Shao et al., 2026), which examined a 2×2×2 design crossing direction of mental time travel (past vs. future), valence (positive vs. negative), and domain (personal vs. collective). The current study was nested within that broader project, focusing specifically on negative collective past recollections as a subset of the mental time travel tasks (see below). Prior to data collection, the study was preregistered on the Open Science Framework (OSF; https://osf.io/ht2mu/), specifying the hypotheses, target sample size and stopping rule, inclusion and exclusion criteria, and the analysis plan. The project was approved by the IRB of the institute (HD042123).

Procedure

Participants completed the study on Qualtrics, an online survey platform commonly used in psychological research. Participants were recruited to participate in a study on mental time travel, with tribal enrollment status specified as an eligibility requirement. Participants were informed that the study would involve reporting past life events and possible future events and responding to questions related to their mental health. Participants were reminded that their involvement was voluntary, that they could withdraw from the study at any time, and that all responses would remain anonymous and confidential. After consenting to participate, participants first completed the mental time travel fluency tasks (described in detail in the Measures section). The order of the different task types was randomized via Qualtrics.

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Next, they completed the two mental health measures (depression and anxiety; life satisfaction), with the order counterbalanced across participants. They then completed assessments of enculturation, historical loss, and demographic information, which included the question on ethnic identity centrality. Feedback was collected from participants prior to the debriefing screen using the question "Any feedback, comments?". The debriefing screen informed participants of the purpose of the research, provided researcher contact information, and directed participants to online mental health resources. On average, participants took approximately 20 minutes to complete the survey measures.

Measures

Demographics

The questionnaire included questions about age, gender identity, education level, tribal affiliation, residential school experience for themselves and their direct ancestors, and state of residence.

Mental Time Travel Fluency Task

In the mental time travel fluency task, participants reported events from their personal past, collective past ("Please list as many positive/negative things that happened to Native Americans and Indigenous populations as possible."), personal future, and collective future, with the order of prompts randomized across participants. The instructions were modeled after previous studies on personal and collective mental time travel (Shrikanth & Szpunar, 2021; Shrikanth et al., 2018). Participants were informed that they had 1 minute to complete each prompt. Each of the eight prompts was displayed on the screen for 1 minute before moving on to the next prompt. Participants were instructed to provide their responses in separate text boxes, one per event. Each prompt was defined by a specific combination of three dimensions — domain (self vs. Indigenous populations), time frame (past vs. future), and valence (negative vs. positive)—which were presented to participants in bold and underlined text. Following each prompt, participants completed an instruction check requiring them to identify which dimension they had been asked to report on. They were randomly presented with one of three instruction check questions, with answer options of "Myself/Indigenous populations," "Past/Future," or "Negative/Positive." Failure to correctly identify the targeted dimension would suggest the participants had not fully processed the prompt's instructions, rendering their responses unreliable. One participant who failed the instruction check

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

was excluded from data collection, as their responses could not be assumed to reflect the intended prompt conditions, which would compromise the validity of the data.

Historical Loss Scale

The Historical Loss Scale was developed and validated with Indigenous adults (Whitbeck et al., 2004). The scale consists of 12 items that measure perceived losses (e.g., loss of land, loss of culture, and loss of language) and the frequency of thoughts associated with historical loss. Participants answer a series of questions addressing cultural loss, loss of people, and cultural mistreatment with responses ranging from "several times a day" (1) to "never" (6). The Cronbach α coefficient for this study was .93. A reversed average raw score is yielded and serves as the indicator of the level of historical loss thinking. Higher scores indicate more frequent thoughts about historical losses.

Enculturation

The American Indian Enculturation Scale (AIES; Winderowd et al., 2008) is a measure of enculturation designed for use with American Indian populations. The AIES contains 17 items that measure the frequency with which American Indians participate in their culture, such as attending Indigenous churches, ceremonies, and powwows, with responses ranging from "not at all" (1) to "a great deal" (7). In the current study, the word "Indian" in the original scale was changed to "Indigenous" for clarity and term preference. Cronbach α coefficient for this study was .94. Responses were averaged, with higher scores indicating greater enculturation.

Ethnic Identity Centrality

Participants rated one statement ("Being Native American is important to my personal identity") on a 5-point scale from "strongly disagree (1)" to "strongly agree (5)." Sahdra and Ross (2007) used a single statement to measure the strength of ingroup identification. The current statement was adapted from their centrality measurement example, originally designed to assess the importance of group membership to self-identity in the context of Canadian identity, to reflect American Indian identity.

Depression and Anxiety

The Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995) is a 21-item set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. Participants were asked to complete only the depression (e.g., "I couldn't seem

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

to experience any positive feeling at all") and anxiety (e.g., "I was worried about situations in which I might panic and make a fool of myself") subscales, which consist of 7 questions each on 4-point scales (0–3). Higher average scores indicate higher levels of anxiety (α = .85) and depression (α = .91), respectively.

Life Satisfaction

The Satisfaction With Life Scale (SWLS, Diener et.al, 1985) is a self-report measure of satisfaction with life. It consists of five questions (e.g., "I am satisfied with life.") on 7-point scales, α = .90. The average score represents overall life satisfaction with higher scores indicating greater life satisfaction.

Analysis

The study focused only on negative collective past events among the eight event types reported in the mental time travel fluency task. We first identified participants' mentions of events associated with historical loss. Then, we categorized historical loss events into two categories: residential school experiences and other historical losses. The coding scheme was primarily based on the Historical Loss Scale (Whitbeck et al., 2004). Responses that aligned with items from the Historical Loss Scale were coded as historical losses (e.g., "Taking of land"), while mentions of residential school were specifically coded as residential school-related historical losses ("e.g., "Trauma of boarding schools"). Responses that did not reflect historical losses were coded accordingly (e.g., "Discrimination").

The first author, an American Indian, elaborated on the coding scheme by providing examples. Two non-American Indian coders, who were trained on the coding scheme, independently coded 20% of the responses. The coders were provided only the responses for negative collective past events and were blind to the hypotheses of the study. The intercoder reliability was κ = .96. One coder then coded the remaining responses.

We counted both the total number of historical loss events reported and the subset related to residential school experiences. We also calculated the proportion of historical loss events and residential historical loss events relative to all negative collective past events. Analyses were conducted using IBM SPSS Statistics (Version 31).

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

RESULTS

Following the preregistration, data from participants who completed the mental time travel fluency task were included in data analysis (N = 109). Among them, 104 (65 women, 32 men, 7 did not identify within the gender binary; age range: 20–78 years, M = 38.93, SD = 12.89) completed all measures, including demographic information. The participants had diverse educational backgrounds, including high school graduates (n = 12), some college education (n = 32), college degree holders (n = 28), and individuals with graduate or professional degrees (n = 32). Participants were from 32 states.

Descriptive Statistics and Preliminary Analyses

Table 1 presents descriptive statistics for all study variables, including negative collective past events, historical loss events, and residential historical loss events. On average, 65% (SD = 0.25) of the negative collective past events were categorized as historical loss events, while 8% (SD = 0.14) were further categorized as residential school historical loss events; the remaining negative collective past events were non-historical loss events. Participants' mean scores on the Historical Loss Scale indicated they experienced thoughts about historical losses approximately once per month (Table 1). When norms were unavailable, scores were compared to the midpoint of their respective scale. Participants reported high levels of enculturation, t (104) = 5.16, p < .001, d = 0.50, and high ethnic identity centrality, t (104) = 15.57, p < .001, d = 1.53. Based on norms provided by the original scale developers, participants reported average life satisfaction (Diener et.al, 1985) and mild levels of depression and anxiety (Lovibond & Lovibond, 1995).

Gender differences across all outcome variables were examined (Table 2). Significant differences were observed only in the reporting of historical loss events, with women being more likely than men to report historical loss events, including residential school historical loss events (both in counts and proportions).

The association between education levels and all outcome variables were also examined. Higher levels of education were associated with greater engagement in cultural events, r (102) = .23, p = .02, higher levels of life satisfaction, r (102) = .35, p < .001, and lower levels of depression, r (102) = -.37, p < .001, and anxiety, r (102) = -.27, p = .006. All other variables failed to reach statistical significance in their association with education level. Age was not significantly associated with historical loss event reporting.

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Correlational Analyses

We first present the correlations for the primary variables of interest: historical loss events and residential school historical loss events. Subsequently, we will report on the correlations with other variables.

The number and proportion of historical loss events among negative collective past events were not statistically correlated with the strength of ethnic identity, whether measured by enculturation or ethnic identity centrality (Table 1). The number of historical loss events reported was positively associated with higher Historical Loss Scale scores, r (103) = .23, p = .02. However, it was not correlated with any of the mental health outcome variables, rs < .13, ps > .10.

The proportion of historical loss reported for negative collective past events was negatively associated with life satisfaction, r (106) = - .22, p = .02, but not with other outcome variables, rs < .16, ps > .11. This means that participants who reported a greater proportion of historical loss from negative collective past events tended to have lower life satisfaction.

The number and proportion of residential school historical loss events among negative collective past events showed no significant correlations with any outcome variables, rs < .10, ps > .32. Given both its low frequency and lack of correlation with outcome variables, we did not conduct additional analyses examining the role of reporting residential school historical loss events.

Historical Loss Scale scores showed positive associations with both ethnic identity indicators, enculturation and ethnic identity centrality (Table 1). That is, Historical Loss Scale scores were higher among individuals with stronger ethnic identity, specifically, those with greater enculturation and ethnic identity centrality. Interestingly, higher Historical Loss Scale scores were associated with greater anxiety but showed no significant association with depression or life satisfaction. Additionally, enculturation exhibited a positive association with anxiety. The higher participants scored on enculturation, the higher their anxiety scores.

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Table 1.
Descriptive Statistics and Correlations for Study Variables

Variables	*M*	*SD*	Min	Max	1	2	3	4	5	6	7	8	9
1. Negative collective past events (0–10)	5.67	2.47	1	10	–								
2. Historical loss events (0–10)	3.75	2.19	0	9	.76***	–							
3. Residential school historical loss (0–10)	0.41	0.57	0	2	.36***	.27**	–						
4. Historical loss scores (1–6)	3.18	0.99	1.08	5.92	.16	.23*	.05	–					
5. Enculturation (1–7)	3.32	1.35	1.06	6.94	- .12	.14	.06	.65***	–				
6. Ethnic identity centrality (1–5)	4.40	0.92	1	5	- .06	.03	-.04	.19*	.29**	–			
7. Life satisfaction (1–7)	4.33	1.50	1	7	- .06	-.14	-.07	.001	.11	- .08	–		
8. Depression (0–3)	0.94	0.87	0	3	.03	.08	.001	.13	- .02	.10	- .66 ***	–	
9. Anxiety (0–3)	0.67	0.65	0	2.86	.14	.10	.09	.34***	.20*	.07	- .37 ***	.63***	–

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

Table 2.
Outcome Variables by Gender

Variables	Women (*n* = 65)		Men (*n* = 32)				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Historical Loss Scale scores	3.29	1.02	2.88	0.84	1.97	.05	0.43
Negative collective past events	6.06	2.53	5.16	2.42	1.68	.10	0.36
Historical loss events	**4.29**	**2.24**	**2.94**	**1.95**	**2.92**	**.004**	**0.63**
Proportion of historical loss events	.69	.21	.59	.30	1.74	.09	0.43
Residential school historical loss events	**0.54**	**0.56**	**0.19**	**0.47**	**3.23**	**.002**	**0.66**
Proportion of residential school historical loss events	**.10**	**.15**	**.04**	**.09**	**2.24**	**.03**	**0.48**
Enculturation	3.50	1.41	3.02	1.24	1.66	.10	0.36
Ethnic identity centrality	4.49	0.92	4.25	0.95	1.21	.23	0.26
Life satisfaction	4.21	1.35	4.75	1.71	1.71	.09	0.37
Depression	0.94	0.83	0.78	0.89	0.87	.39	0.19
Anxiety	0.69	0.65	0.52	0.56	1.23	.22	0.27

Note. Proportions are calculated based on negative collective past events.

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Role of Reporting Historical Loss Events

The results did not support the proposed mediation model, as we found no significant associations between historical loss events reporting and mental health outcomes. Consequently, we did not pursue additional mediation analyses.

We then tested whether spontaneous reporting of historical loss events moderate the relationship between Historical Loss Scale scores and mental health outcomes. The moderation models for life satisfaction and depression were not statistically significant (Table 3). The moderation model for anxiety was statistically significant, with either the number or the proportion of historical loss events serving as the moderator. While Historical Loss Scale scores themselves did not significantly predict anxiety, both the counts and proportion of reporting historical loss events did (Table 4). Supporting the proposed model of moderation, reporting historical loss events moderated the relationship between Historical Loss Scale scores and anxiety. The effects of historical loss scores were not significant at low levels of reporting historical loss events but became significant at high levels of reporting historical loss events (Figures 1 and 2). That is, among participants who reported few historical loss events, Historical Loss Scale scores showed no significant association with anxiety. However, among participants who reported a greater number of historical loss events, higher Historical Loss Scale scores were associated with significantly greater levels of anxiety. The moderation effect accounted for 5% of the variance in anxiety symptoms for both historical loss events reporting counts, F (1, 101) = 6.57, p = .02, and proportions, F (1, 101) = 6.58, p = .01.

Family Residential School Experience

The analyses in this section were exploratory and not preregistered. Ninety participants (83%) provided a definite answer to the question about family residential school experiences, with 36 (33%) indicating no family experience and 54 (50%) indicating they had such an experience. The remaining 18 (17%) selected “do not know.” Compared to participants without family residential school experience, those reporting such experience had significantly higher Historical Loss Scale scores, a greater number and proportion of reporting historical loss events (including residential historical loss events), higher levels of enculturation (though not ethnic centrality), and worse mental health outcomes across all three indicators (Table 5).

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

We performed exploratory analyses to examine potential interaction between gender and family residential school experiences across all outcome variables among those who responded to the family residential school experience question. The only significant interaction effect found was on Historical Loss Scale scores, F (1, 79) = 5.71, p = .02, η_p^2 = .07, alongside a significant main effect of family residential experience, F (1, 79) = 4.09, p = .05, η_p^2 = .05. The elevated Historical Loss Scale scores for those with family residential experience were specific to women, M_D = 1.00, p < .001, 95% *CI* [0.47, 1.53], whereas men showed no significant difference, M_D = 0.08, p = .82, 95% *CI* [-0.82, 0.65].

Table 3.
Moderation Analyses for the Relationship Between Historical Loss and Outcome Variables

Variables	*F*	R^2	*p*
Life Satisfaction			
Historical loss events	0.94	.03	.43
Proportion of historical loss events	2.37	.07	.08
Depression			
Historical loss events	0.74	.02	.53
Proportion of historical loss events	1.39	.04	.25
Anxiety			
Historical loss events	**6.74**	**.17**	**< .001**
Proportion of historical loss events	**6.85**	**.34**	**< .001**

Note. *df*: (3, 101)

Table 4
Moderation Analyses for the Relationship Between Historical Loss and Anxiety

Variables	*B*	*SE*	*t*	*p*	95% *CI*
Historical Loss Events					
Historical Loss Scale scores	0.01	0.10	0.09	.93	[-0.19, 0.21]
Historical loss events	**- 0.20**	**0.08**	**-2.45**	**.02**	**[-0.37, -0.04]**
Historical Loss Scale scores × Historical loss events	**0.06**	**0.02**	**2.56**	**.01**	**[0.01, 0.10]**
Proportion of Historical Loss Events					
Historical Loss Scale scores	-0.10	0.14	-0.76	.44	[-0.38, 0.17]
Historical loss events	**-1.76**	**0.68**	**-2.59**	**.01**	**[-3.11, -0.41]**
Historical Loss Scale scores × Historical loss events	**0.51**	**0.20**	**2.57**	**.01**	**[0.12, 0.91]**

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

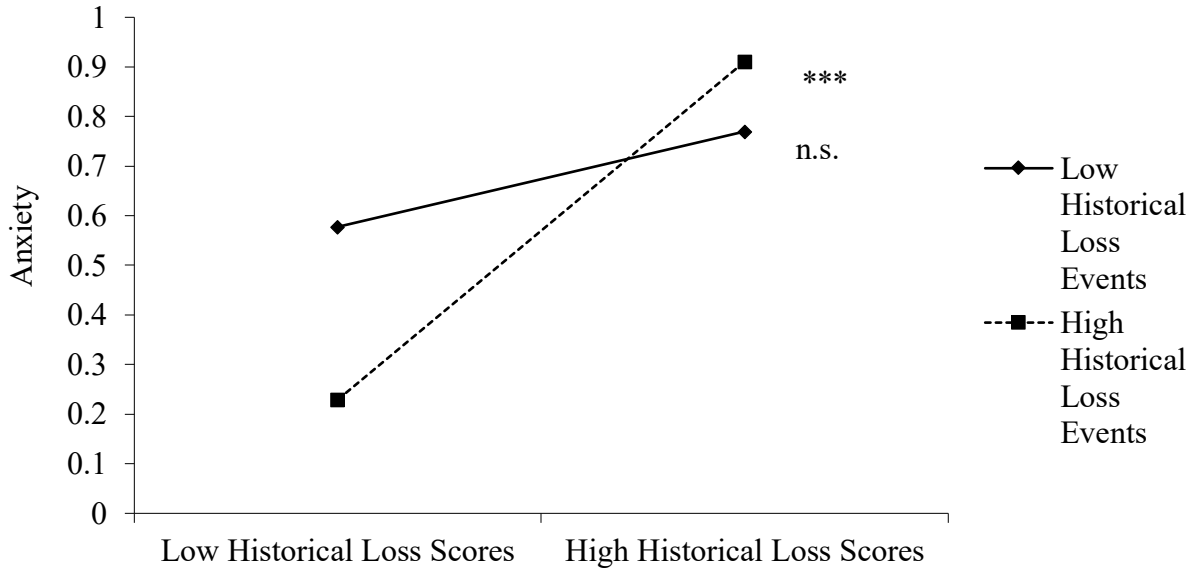
Table 5
Outcome Variables by Family Residential School Experience

Variables	With family residential school experience (*n* = 54)		Without family residential school experience (*n* = 36)				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Historical Loss Scale scores	**3.51**	**1.00**	**2.92**	**0.85**	**2.95**	**.004**	**0.63**
Negative collective past events	6.20	2.59	5.47	2.46	1.34	.18	0.29
Historical loss events	**4.33**	**2.23**	**3.33**	**2.19**	**2.10**	**.04**	**0.45**
Proportion of historical loss events	.69	.22	.61	.27	1.45	.15	0.31
Residential historical loss events	**0.57**	**0.60**	**0.19**	**0.40**	**3.59**	**< .001**	**0.72**
Proportion of residential historical loss events	**.11**	**.16**	**.03**	**.08**	**2.96**	**.004**	**0.56**
Enculturation	**3.91**	**1.37**	**2.82**	**1.06**	**4.00**	**< .001**	**0.86**
Ethnic identity centrality	4.59	0.74	4.33	0.96	1.45	.15	0.31
Life satisfaction	**3.78**	**1.38**	**4.98**	**1.50**	**3.89**	**< .001**	**0.84**
Depression	**1.20**	**0.80**	**0.59**	**0.81**	**3.51**	**< .001**	**0.76**
Anxiety	**0.86**	**0.68**	**0.50**	**0.56**	**2.52**	**.01**	**0.54**

Note. Proportions are calculated based on negative collective past events.

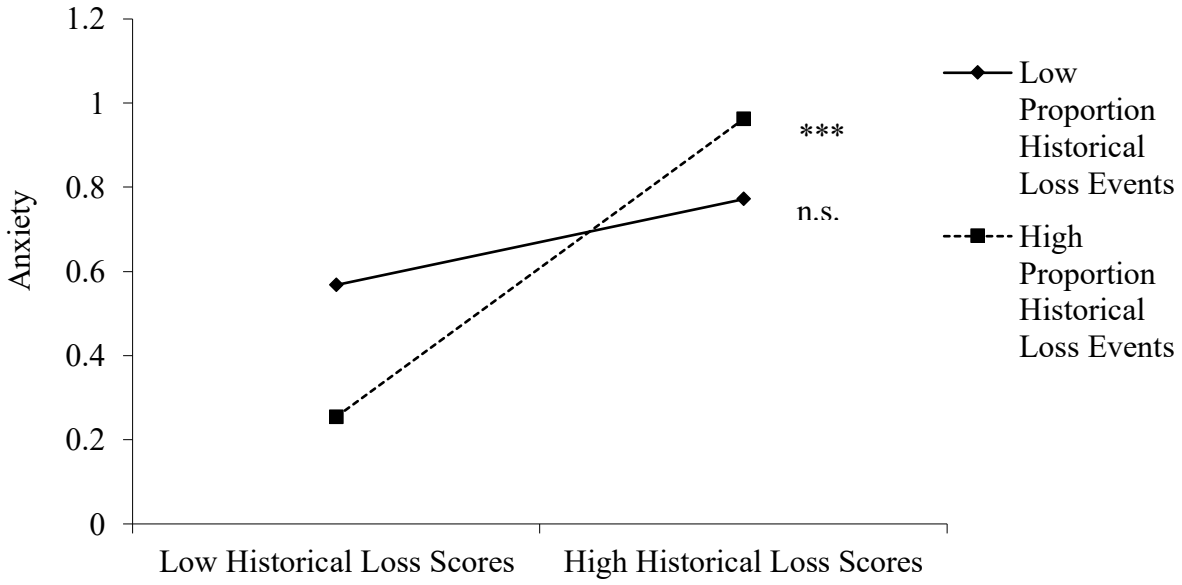
Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Figure 1.
Moderation Effect of Reporting Historical Loss Events on the Relationship Between Historical Loss Scores and Anxiety



Note. n.s. demotes slope that is not significant. *** denotes slope that is significant at $p < .001$.

Figure 2
Moderation Effect of Proportion of Reporting Historical Loss Events on the Relationship Between Historical Loss Scores and Anxiety



Note. n.s. demotes slope that is not significant. *** denotes slope that is significant at $p < .001$.

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

DISCUSSION

The present study used a fluency task in which a non-clinical sample of American Indian participants reported negative collective past events. We then conducted a qualitative study of their reporting of historical loss events, including a subset of residential school-related historical loss events. We examined individual differences in the nature and extent of historical loss event reporting (e.g., the number of events related to family residential school experiences versus those that were not). We explored how this reporting influenced the relationship between Historical Loss Scale scores and mental health. Our findings suggest that gender and family residential school experience play an important role in individuals' likelihood of reporting historical loss events, particularly those related to residential schools. We found no evidence supporting historical loss event reporting as a mediator between Historical Loss Scale scores and mental health. Our results indicated that such reporting served as a moderator in this relationship. Specifically, Historical Loss Scale scores predicted anxiety only among individuals who reported a high number or proportion of historical loss events.

Factors Influencing the Reporting of Historical Loss Events

The main contribution of this research lies in examining individual differences in the reporting of historical loss events when recounting negative collective past events among American Indians. While historical loss scores predicted the reporting of historical loss events, ethnic identity indicators, despite their correlation with historical loss scores, did not. This suggests that the frequency of thinking about historical losses, rather than strength of ethnic identity, drives spontaneous reporting of historical loss events. Consistent with previous research (Soto et al., 2015; Tucker et al., 2016; Walls et al., 2016), stronger American Indian identity centrality and cultural engagement predict how often individuals think about historical losses; however, these factors do not directly translate into reporting historical loss events. The lack of association between ethnic identity and reporting negative collective past events replicates previous findings at the religious group level, where stronger group identity did not necessarily predict the spontaneous recall of collective victimization events (Sahdra & Ross, 2007). This study provides empirical evidence addressing the concern that cultural identity can foster a narrow and overgeneralized historical consciousness (Kirmayer et al., 2014). Overall, these findings indicate

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

that self-reported cognitive engagement with historical losses operates somewhat differently from individuals' communication about historical trauma.

In our study, family residential school experiences influenced participants' outcomes, including varying levels of historical loss scores, reporting historical loss events (particularly those related to residential school experiences), and all mental health outcome indicators. Gender emerged as another significant predictor of reporting historical loss events, though no gender differences were observed in ethnic identity indicators or mental health outcomes. Women traditionally serve as cultural knowledge keepers in many Indigenous communities, playing vital roles in preserving and transmitting historical narratives across generations (Miller, 2020). Beyond American Indian contexts, research has documented consistent gender differences in emotional processing and expression (Chaplin, 2015; Kring & Gordon, 1998). These cultural roles and emotional processing tendencies may contribute to women's increased likelihood of sharing historical loss events in both family and research contexts.

Theoretical and Clinical Implications

Our method allows us to capture the immediacy and salience of historical loss events in participants' minds, offering a novel way to explore how historical trauma is cognitively represented and expressed in the moment. Our research contributes to the discussion on the construct of Indigenous historical trauma. Gone et al. (2019) argued that this construct may function as a metaphoric term, which is challenging to differentiate between being an antecedent to mental health issues or as a result of mental health issues due to the meaning-making process. In this study, participants were recruited for a mental time travel study and completed an open-ended fluency task. Their responses were coded based on items from the Historical Loss Scale. Critically, this fluency task was administered at the start of the study, long before participants were introduced to the Historical Loss Scale, minimizing the likelihood that their responses were shaped by prior exposure to the scale's content. We believe that the historical loss events reported during this task, when prompted to report negative collective past experiences, carry genuine psychological implications for these participants.

We found that about two-thirds of the reported negative collective past events were related to historical loss. While this figure is substantial, it is not so high as to indicate homogeneity or a lack of diversity in the data. The observed relationship between historical loss scores and reporting historical loss events provides evidence supporting the validity of the Historical Loss Scale as a

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

measurement tool, even though it relies on retrospective self-reporting. Our moderation findings indicate that the relationship between historical trauma and mental health is not a simple cause-and-effect dichotomy. The moderation effect of reporting historical loss events suggests that historical trauma operates through cognitive awareness rather than being merely an antecedent or a result of mental health issues.

Additionally, our findings on reported family residential school experiences provide evidence for the intergenerational nature of historical trauma. In the context of historical loss specifically, most studies on the impact of family residential school history have focused on Indigenous populations in Canada (Bombay et al., 2014). The only study we are aware of in the United States, however, did not find that family history contributed uniquely to historical loss scores beyond the effects of cultural engagement (Cromer et al., 2018); notably, this study involved participants who had an American Indian grandparent but did not necessarily self-identify as American Indian. Our study extends these findings to American Indian populations in the United States. Historical trauma is not solely a product of contemporary meaning-making process but is deeply rooted in concrete family histories that continue to impact descendants.

This study also has important clinical implications. While prior research has explored the relationship between passively receiving parental communication about historical loss and individuals' depression (Matheson et al., 2020), there is a lack of studies examining the relationship between individuals' active narration of historical loss and their mental well-being. We found that mentioning historical loss events showed no direct associations with mental health outcomes. However, it moderated the relationship between cognitive availability of historical loss and anxiety, aligning with theories on how intrusive memories contribute to trauma-related symptoms (Iyadurai et al., 2019). This pattern suggests that individuals who both frequently think about and readily recall historical losses may be particularly vulnerable to anxiety symptoms, consistent with cognitive models of trauma that emphasize how accessibility of trauma-related memories can amplify psychological distress. While heightened cognitive accessibility of historical loss may exacerbate anxiety for those who readily recall historical losses, it also signals that such individuals may already be engaged in the process of confronting these memories—a necessary precursor to healing through structured narrative interventions (Pennebaker, 1997).

This moderating effect was not observed for depression or life satisfaction, the other mental health indicators examined. This indicates that the effects of historical loss can manifest selectively

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

rather than uniformly across symptom domains. It underscores the need to examine mental health indicators in a differentiated manner, rather than treating them as a broad category.

Previous research has identified associations between family residential school experiences and depressive symptoms (Matheson et al., 2020) and single-item self-reported mental health (Gray & Cote, 2019). This study found such associations across specific dimensions of mental health, including positive indicators such as life satisfaction. The impact of family residential school experiences is not uni-dimensional, but two-dimensional on positive mental health outcomes as well. These findings call for clinical interventions for individuals with family residential school experience.

Limitations and Future Directions

A primary limitation of this study is its cross-sectional correlational design. Future longitudinal or experimental research could offer deeper insights into the causal mechanisms at play. Second, while our sample spans diverse ages, education levels, and locations, it relied on self-selected Internet users and was conducted only in English. Since language can mediate cultural values (Wang et al., 2010), the combination of our sampling approach and research method may bias the findings in multiple ways. For instance, findings may be skewed toward those familiar with mainstream mental health practices, given that our recruitment method and study design (e.g., including a consent form that explicitly disclosed the mental health focus of the questions) likely discouraged participation from those less acculturated to such frameworks. Future research should be conducted in person with tribal members using their tribal language.

While we documented participants' reporting of historical loss events, we did not assess at least two important elements: the level of distress associated with each event and participants' perceived causal connections between past events and present circumstances. These unmeasured aspects of historical loss narratives may explain why we found no associations with depression and life satisfaction. Future research could build on our narrative approach by prompting the content of participants' responses more deeply and examining how their understanding of historical losses' ongoing impact relates to mental health outcomes (Brave Heart & DeBruyn, 1998; Gone & Trimble, 2012; Matheson et al., 2020). This expanded analysis could reveal how individuals make meaning of historical losses and how these interpretations influence psychological well-being. Alternatively, fundamental structural causes of distress, rather than historical losses, may contribute to American Indians' mental well-being (Kirmayer et al., 2014).

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

CONCLUSION

This study advances historical trauma research among American Indians by using a fluency task to examine the spontaneous reporting of historical loss events. Through this qualitative approach, we found that mentioning historical loss events aligned with both Historical Loss Scale scores and family residential school experience. While reporting historical loss events did not directly relate to mental health outcomes, it moderated the relationship between self-reported frequency of historical loss thinking and anxiety.

REFERENCES

Abel, M., Umanath, S., Fairfield, B., Takahashi, M., Roediger, H. L. III, & Wertsch, J. V. (2019). Collective memories across 11 nations for World War II: Similarities and differences regarding the most important events. *Journal of Applied Research in Memory and Cognition, 8*(2), 178–188. https://doi.org/10.1037/h0101836

Bombay, A., Matheson, K., & Anisman, H. (2014). The intergenerational effects of Indian residential schools: Implications for the concept of historical trauma. *Transcultural Psychiatry, 51*(3), 320–338. https://doi.org/10.1177/1363461513503380

Brave Heart, M. Y. H., Chase, J., Elkins, J., & Altschul, D. B. (2011). Historical trauma among Indigenous peoples of the Americas: Concepts, research, and clinical considerations. *Journal of Psychoactive Drugs, 43*(4), 282–290. https://doi.org/10.1080/02791072.2011.628913

Brave Heart, M. Y. H., & DeBruyn, L. M. (1998). The American Indian holocaust: Healing historical unresolved grief. *American Indian and Alaska Native Mental Health Research, 8*(2), 56–78. https://doi.org/10.5820/aian.0802.1998.60

Chaplin, T. M. (2015). Gender and emotion expression: A developmental contextual perspective. *Emotion Review, 7*(1), 14–21. https://doi.org/10.1177/1754073914544408

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Cromer, L. D., Gray, M. E., Vasquez, L., & Freyd, J. J. (2018). The relationship of acculturation to historical loss awareness, institutional betrayal, and the intergenerational transmission of trauma in the American Indian experience. *Journal of Cross-Cultural Psychology, 49*(1), 99–114. https://doi.org/10.1177/0022022117738749

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*, 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175–191. https://doi.org/10.3758/BF03193146

Gone, J. P., Hartmann, W. E., Pomerville, A., Wendt, D. C., Klem, S. H., & Burrage, R. L. (2019). The impact of historical trauma on health outcomes for Indigenous populations in the USA and Canada: A systematic review. *American Psychologist, 74*(1), 20–35. https://doi.org/10.1037/amp0000338

Gone, J. P., & Trimble, J. E. (2012). American Indian and Alaska Native mental health: Diverse perspectives on enduring disparities. *Annual Review of Clinical Psychology,8*(1), 131–160. https://doi.org/10.1146/annurev-clinpsy-032511-143127

Gray, A., & Cote, W. (2019). Cultural connectedness protects mental health against the effect of historical trauma among Anishinabe young adults. *Public Health, 176,* 77–81. https://doi.org/10.1016/j.puhe.2018.12.003

Grayshield, L., Rutherford, J. J., Salazar, S. B., Mihecoby, A. L., & Luna, L. L. (2015). Understanding and healing historical trauma: The perspectives of Native American elders. *Journal of Mental Health Counseling, 37*(4), 295–307. https://doi.org/10.17744/mehc.37.4.02

Guenzel, N., & Struwe, L. (2020). Historical trauma, ethnic experience, and mental health in a sample of urban American Indians. *Journal of the American Psychiatric Nurses Association, 26*(2), 145–156. https://doi.org/10.1177/1078390319888266

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Hahmann, T., Perri, A., Masoud, H., & Bombay, A. (2023). Parent and/or grandparent attendance at residential school and dimensions of cultural identity and engagement: Associations with mental health and substance use among First Nations adults living off reserve. *Society and Mental Health, 13*(1), 1–22. https://doi.org/10.1177/21568693221108766

Hartmann, W. E., & Gone, J. P. (2014). American Indian historical trauma: Community perspectives from two Great Plains medicine men. *American Journal of Community Psychology, 54*(3-4), 274–288. https://doi.org/10.1007/s10464-014-9671-1

Hartmann, W. E., & Gone, J. P. (2016). Psychological-mindedness and American Indian historical trauma: Interviews with service providers from a Great Plains reservation. *American Journal of Community Psychology, 57*(1-2), 229–242. https://doi.org/10.1002/ajcp.12036

Iyadurai, L., Visser, R. M., Lau-Zhu, A., Porcheret, K., Horsch, A., Holmes, E. A., & James, E. L. (2019). Intrusive memories of trauma: A target for research bridging cognitive science and its clinical application. *Clinical Psychology Review, 69*, 67–82. https://doi.org/10.1016/j.cpr.2018.08.005

Kirmayer, L. J., Gone, J. P., & Moses, J. (2014). Rethinking historical trauma. *Transcultural Psychiatry, 51*(3), 299–319. https://doi.org/10.1177/1363461514536358

Kring, A. M., & Gordon, A. H. (1998). Sex differences in emotion: Expression, experience, and physiology. *Journal of Personality and Social Psychology, 74*(3), 686–703. https://doi.org/10.1037/0022-3514.74.3.686

Lovibond, P., & Lovibond, S. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy, 33*(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-U

Matheson, K., Bombay, A., Dixon, K., & Anisman, H. (2020). Intergenerational communication regarding Indian Residential Schools: Implications for cultural identity, perceived discrimination, and depressive symptoms. *Transcultural Psychiatry, 57*(2), 304–320. https://doi.org/10.1177/1363461519832240

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Mohatt, N. V., Thompson, A. B., Thai, N. D., & Tebes, J. K. (2014). Historical trauma as public narrative: A conceptual review of how history impacts present-day health. *Social Science & Medicine, 106,* 128–136. https://doi.org/10.1016/j.socscimed.2014.01.043

Miller, C. (2020). Reclaiming Indigenous women's roles in the 21st century. *IdeaFest: Interdisciplinary Journal of Creative Works and Research from Cal Poly Humboldt, 4*(1), 8. https://digitalcommons.humboldt.edu/ideafest/vol4/iss1/8

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science, 8*(3), 162–166. https://doi.org/10.1111/j.1467-9280.1997.tb00403.x

Phinney, J. S. (1996). When we talk about American ethnic groups, what do we mean? *American Psychologist, 51*(9), 918–927. https://doi.org/10.1037/0003-066X.51.9.918

Sahdra, B., & Ross, M. (2007). Group identification and historical memory. *Personality and Social Psychology Bulletin, 33*(3), 384–395. https://doi.org/10.1177/0146167206296103

Shao, Y., Molina, K. R., & Holmquist-Day, L. (2026). Mental time travel and mental health in Native Americans. *Psychology of Consciousness: Theory, Research, and Practice*. Advance online publication. https://doi.org/10.1037/cns0000457

Shrikanth, S., & Szpunar, K. K. (2021). The good old days and the bad old days: Evidence for a valence-based dissociation between personal and public memory. *Memory, 29*(2), 180–192. https://doi.org/10.1080/09658211.2020.1871024

Shrikanth, S., Szpunar, P. M., & Szpunar, K. K. (2018). Staying positive in a dystopian future: A novel dissociation between personal and collective cognition. *Journal of Experimental Psychology: General, 147*(8), 1200–1210. https://doi.org/10.1037/xge0000421

Soto, C., Baezconde-Garbanati, L., Schwartz, S. J., & Unger, J. B. (2015). Stressful life events, ethnic identity, historical trauma, and participation in cultural activities: Associations with smoking behaviors among American Indian adolescents in California. *Addictive Behaviors, 50,* 64–69. https://doi.org/10.1016/j.addbeh.2015.06.005

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

Tucker, R. P., Wingate, L. R., & O'Keefe, V. M. (2016). Historical loss thinking and symptoms of depression are influenced by ethnic experience in American Indian college students. *Cultural Diversity & Ethnic Minority Psychology, 22*(3), 350–358. https://doi.org/10.1037/cdp0000055

Walls, M. L., Whitbeck, L., & Armenta, B. (2016). A cautionary tale: Examining the interplay of culturally specific risk and resilience factors in Indigenous communities. *Clinical Psychological Science, 4*(4), 732–743. https://doi.org/10.1177/2167702616645795

Wang, Q., Shao, Y., & Li, Y. J. (2010). "My way or mom's way?" The bilingual and bicultural self in Hong Kong Chinese children and adolescents. *Child Development, 81*(2), 555–567. https://doi.org/10.1111/j.1467-8624.2009.01415.x

Weiss, N. H., Spillane, N. S., Goldstein, S. C., Kiefer, R., Raudales, A. M., Nalven, T., Egan, A., Trinh, C. D., Moore, R. S., & Gone, J. P. (2023). Ground-up approach to understanding the impacts of historical trauma in one reserve-dwelling first nations community. *Journal of Consulting and Clinical Psychology, 91*(12), 717–730. https://doi.org/10.1037/ccp0000840

Whitbeck, L. B., Adams, G. W., Hoyt, D. R., & Chen, X. (2004). Conceptualizing and measuring historical trauma among American Indian people. *American Journal of Community Psychology, 33*(3-4), 119–130. https://doi.org/10.1023/B:AJCP.0000027000.77357.31

Winderowd, C., Montgomery, D., Stumblingbear, G., Harless, D., & Hicks, K. (2008). Development of the American Indian Enculturation Scale to assist counseling practice. *American Indian and Alaska Native Mental Health Research, 15*(2), 1–14. https://doi.org/10.5820/aian.1502.2008.1

ACKNOWLEDGEMENTS

Partial data were collected as part of Kyla Molina's doctoral dissertation project at Oklahoma City University. We thank Melissa Hakman and Cody Weaver for commenting on the research project. We thank Jennifer Johnson and Sarah Wright for their help with data coding. We thank the Indigenous community for participating in this study. The data of this study are openly available at: https://osf.io/r74mg/

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest.

FUNDING

This work was funded by Oklahoma City University Faculty Scholarship Fund 2023–2024 to Yi Shao.

AUTHOR INFORMATION

Kyla R. Molina (Chickasaw Nation), PsyD, is a Clinical Psychologist at the Oklahoma City Indian Clinic.

Yi Shao, PhD, is a Professor in the Department of Psychology at Oklahoma City University in Oklahoma City, OK.

Lori Holmquist-Day, PhD, is a Clinical Associate Professor in the Department of Psychology at Oklahoma City University in Oklahoma City, OK.

Correspondence concerning this article should be addressed to Yi Shao, Department of Psychology, Oklahoma City University, 2501 N Blackwelder, Oklahoma City, OK 73106, United States. Email: yshao@okcu.edu

Copyright: Centers for American Indian and Alaska Native Health, Colorado School of Public Health
University of Colorado Anschutz Medical Campus (www.coloradosph.cuanschutz.edu/caianh)