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**HISTORICAL TRAUMA THOUGHTS, DAILY NEGATIVE EMOTION,
AND RUMINATION AMONG URBAN-DWELLING AMERICAN
INDIAN/ALASKA NATIVE ADULTS**

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HISTORICAL TRAUMA THOUGHTS, DAILY NEGATIVE EMOTION, AND
RUMINATION AMONG URBAN-DWELLING AMERICAN INDIAN/ALASKA
NATIVE ADULTS

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ABSTRACT

HISTORICAL TRAUMA THOUGHTS, DAILY NEGATIVE EMOTION, AND RUMINATION AMONG URBAN-DWELLING AMERICAN INDIAN/ALASKA NATIVE ADULTS

Sheena Yoshioka

When compared to other marginalized racial/ethnic groups, American Indians/Alaskan Natives (AI/AN) individuals have the highest rates of experiencing psychological distress and are at a greater risk of suicide (Brown-Rice, 2013). Historical trauma thoughts, defined as thinking about trauma experienced over generations, may contribute to these high rates of distress (Mohatt et al., 2014). We examined the relations of historical trauma thoughts to measures of distress in a sample of 258 AI/AN adults. Analyses indicate significant positive relations between historical trauma thinking to depression and daily negative emotion in the full sample. But when looking at our smaller sample (rumination-only data) historical trauma was no longer significantly correlated with depression and negative emotion average. Although historical trauma thinking involves aspects of rumination, daily rumination does not mediate the relations of historical trauma thinking to depression or negative mood.

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INTRODUCTION

Disparities in Mental Health

Marginalized groups, including American Indian/Alaska Native (AI/AN) individuals, have struggled to obtain the proper care that is required to thrive. Research has shown that the delivery or accessibility of mental health services to minority groups has been unreliable and inconsistent (Sue et al., 1978). Many in need, fail to find mental health services due to fear of unfair treatment in mental health institutions, finding services strange, and concern about White Supremacy (Sue et al., 1978).

Mental health issues are common in the AI/AN community, in part because of trauma passed down through generations, known as historical trauma (Campbell & Evans-Campbell, 2011). The concept of historical trauma was developed in response to particular characteristics of multigenerational trauma (Campbell & Evans-Campbell, 2011). Historical trauma is defined as collective trauma inflicted upon a specific group of individuals who are affiliated with the same identity (Campbell & Evans-Campbell, 2011). Trauma exposure can be limited to a single generation with acts like wars or natural disasters or, more commonly, it can occur continuously over multiple generations (Campbell & Evans-Campbell, 2011). Some examples of this are genocide, the destruction of sacred environments, and communal suffering (Campbell & Evans-Campbell, 2011). The effects of these phenomena on subsequent generations have been recognized among Jewish Holocaust survivors, African Americans, Japanese internment survivors, and Native Americans (Campbell & Evans-Campbell, 2011).

Specific Stressors (AI/AN community)

Over the course of many generations, the American Indian/Alaskan Native community, specifically, has suffered but survived many traumatic events (Campbell & Evans-Campbell, 2011). These events include violent massacres, forced relocation, removal of children to Indian boarding schools, pandemics, prohibition of spiritual and cultural practices, etc. (Campbell & Evans-Campbell, 2011). This prohibition more specifically banned the use of languages, religions, educational practices, and daily routines (Campbell & Evans-Campbell, 2011). This first began with the arrival of Spanish explorers, who devastated this community with disease, starvation, colonization, poverty, racism, and cultural genocide (Campbell & Evans-Campbell, 2011). Campbell et al. (2011) noted that a healthy and robust indigenous society with populations can easily be struck down to a few hundred by epidemics of measles and smallpox (Campbell & Evans-Campbell, 2011). Adding to that, lifetime trauma like interpersonal violence, neglect, and child abuse is present and affects the development of young children in these indigenous communities (Campbell & Evans-Campbell, 2011).

Historical Trauma and Mental Health Outcomes/Distress

In a collective book about American Indian and Alaskan Native juvenile mental health, Christopher D. Campbell and Tessa Evans-Campbell explain the effects of historical trauma on a child's mental health and development (Campbell & Evans-Campbell, 2011). They have developed a three-level model that best describes this phenomenon. The first level focuses on the individual and how he/she responds to the effects of the historical trauma (Campbell & Evans-Campbell, 2011). These responses may be seen externally (behaviorally) or internally (psychologically) (Campbell &

Evans-Campbell, 2011). The second level is focused on how trauma affects a family's structure and dynamics (Campbell & Evans-Campbell, 2011). It is important to focus on the interrelationships of the family members as these connections are crucial to a healthy upbringing (Campbell & Evans-Campbell, 2011). Certain family dynamics can be passed down through generations which leads to the continuation of historical trauma effects (Campbell & Evans-Campbell, 2011). The third level is focused on a whole community and how trauma affects the function of an entire social group (Campbell & Evans-Campbell, 2011). This level emphasizes the long-term effects of historical trauma and how a society can be changed (Campbell & Evans-Campbell, 2011).

Additionally, this three-level model relates to mental health outcomes (Campbell & Evans-Campbell, 2011). Individually, AI/AN children experience a high level of mental health difficulties and the consequences of these challenges (Campbell & Evans-Campbell, 2011). American Indian/Alaskan Native children are three times more likely to commit suicide than White youth and have the highest rate of substance abuse among all ethnicities (Campbell & Evans-Campbell, 2011). Relating to this, a study was done on survivors of the Jewish Holocaust, and the data suggest that psychological symptoms such as agitation, denial, intrusive thoughts, guilt, depression, nightmares, and survivor syndrome were present in those who have experienced historical trauma (Campbell & Evans-Campbell, 2011). Although children and grandchildren of survivors were shown to have greater resiliency, they are prone to developing higher levels of anxiety, guilt, difficulty handling anger, and mistrust. (Campbell & Evans-Campbell, 2011). Additionally, they are also more inclined to

develop symptoms of PTSD (Campbell & Evans-Campbell, 2011). Familially speaking, mental health development can be hindered directly and indirectly (Campbell & Evans-Campbell, 2011). Direct impacts consist of a decline in traditional Indian parenting practices resulting from forced attendance at boarding schools (Campbell & Evans-Campbell, 2011). Indirect impacts are shown in children feeling obligated to take on parental roles to their siblings (Campbell & Evans-Campbell, 2011). They may also be seen as parent consolers by helping to fix past psychological wounds (Campbell & Evans-Campbell, 2011). Youth and adolescents also bear the responsibility of reliving their ancestor's traumas to keep their stories alive (Campbell & Evans-Campbell, 2011). In contrast, some families may choose not to disclose past traumas to their youth (Campbell & Evans-Campbell, 2011). This may occur due to the feelings that arise when discussing trauma or trying to protect their youth from these horrors (Campbell & Evans-Campbell, 2011). Avoidance and poor communication can lead to anxiety, paranoia, hypochondria, and low self-esteem among descendants of survivors (Campbell & Evans-Campbell, 2011). It was concluded that when parents were transparent about their experience it was more beneficial to their children's well-being (Matheson et al., 2017, Gone et al., 2019). At the community level, responses to historical trauma are the most impactful (Campbell & Evans-Campbell, 2011). The future of any community is reliant on the ability to transmit their practices and way of being to the next generation (Campbell & Evans-Campbell, 2011). This success starts with molding young children into healthy adults and the transference of traditions, knowledge, and practices (Campbell & Evans-Campbell, 2011). Having this knowledge, leaders of boarding schools worked extremely hard to disrupt this process by isolating children from their natural family

environment leading to various mental health issues (Campbell & Evans-Campbell, 2011).

This history of trauma can lead to a negative response, which is a reaction to these traumatic events (Wiechelt et al., 2019). According to Wiechelt et al. (2019), an array of problems can follow a negative historical trauma response such as substance abuse, depression, low self-esteem, anger, anxiety, etc. Along with this, historical unresolved grief is associated with a negative trauma response (Wiechelt et al., 2019). This unresolved grief is caused by a long history of personal, communal, and familial losses that were not mourned (Wiechelt et al., 2019). Native Americans were unable to mourn in their traditional ways because of the loss of their cultural ways (Wiechelt et al., 2019). This unresolved grief and inability to mourn was passed down through generations (Wiechelt et al., 2019).

An article by McKinley et al. (2020) examines the experiences of loss and grief in Southeastern tribes as well as the connection between the recent loss of a loved one and depressive symptoms. Their findings revealed that causes of death included suicide, alcohol and/or drug abuse, cardiovascular disease, etc. (McKinley et al., 2020). Suicide, specifically, is prevalent among the indigenous community due to the effects of historical trauma which in turn leads to heightened depressive symptoms in that person's loved ones (Gone & Treble, 2012; McKinley et al., 2020). Also, culturally relevant variables influenced the onset of depressive symptoms, specifically, seeking support through faith after losing a loved one (McKinley et al., 2020). As we've seen in previous literature, the AI/AN community was stripped of its traditional practice, which included spiritual and religious practices (Campbell & Evans-Campbell, 2011; McKinley et al., 2020). Often

when one loses a loved one, they will turn to their faith or spiritual background and belief to heal (McKinley et al., 2020).

A systematic review by Gone et al. (2019) looked at 32 different empirical reports that covered Intergenerational Historical Trauma (IHT) and asked the question: “*What do we know empirically about the health impacts of IHT among Indigenous populations in the USA and Canada?*” (Gone et al., 2019 page 5).” Gone et al. (2019) note there were only two articles focused on the relationship of historical loss thinking to depressive symptoms.

Brockie et al. (2015) examined the relationship between adverse childhood experiences to depression in rural-reservation Native American adolescents. Depression was measured on the Beck Depression Inventory, this scale consisted of 13 items that asked respondents to pick from 4 different statements describing how they feel (Brockie et al., 2015). Historical loss-associated symptoms were measured on the 12-item Historical Loss Associated Symptom Scale (HLASS) (Brockie et al., 2015). It was found higher rates of historical loss-associated symptoms were strongly correlated with depressive symptoms (Brockie et al., 2015).

Tucker et al. (2016) looked at the relationship of ethnic experience, historical loss thinking, and symptoms of depression in urban-dwelling American-Indian college students. They tested if the frequency of historical loss thinking acted as a mediator between ethnic experiences and symptoms of depression (Tucker et al., 2016). Examples of ethnic experiences are perceived discrimination, ethnic identification, affiliation with individuals of the same ethnic group, and assimilation into mainstream culture (Tucker et al., 2016). To measure depression, the Center for Epidemiologic Studies- Depression

Scale (CES-D) (Tucker et al., 2016). Historical loss thinking was measured on the Adolescent Historical Loss Scale (Tucker et al., 2016; Whitbeck et al., 2004). It was found that there was a significant relationship between ethnic identification and depressive symptoms through an increase in historical trauma thinking (Tucker et al., 2016). Although, there was no relationship between depression and the frequency of historical trauma thinking (Tucker et al., 2016).

A study by Whitbeck et al. (2004) also examined the Historical Loss Scale (HLS) and the HLASS in American Indian parents who have children aged 10-12. It was concluded that historical loss thoughts are associated with negative feelings and two of the factors on the HLASS specify one anxiety/depression component and one anger/avoidance component (Whitbeck et al., 2004). Anger and depression were two relevant themes that emerged when elders opened up about their feelings relating to their loss (Whitbeck et al., 2004). The elders described the urge to lash out or blame other people and how it was important to not teach their grandchildren this anger (Whitbeck et al., 2004). To measure historical loss two scales were developed (Whitbeck et al., 2004). The first scale questioned respondents on how frequently the thought of loss comes to mind (Whitbeck et al., 2004). The second scale concentrated on feelings related to historical loss, specifically “emotional responses that are triggered when reminders of historical losses or thoughts pertaining to historical loss come to mind, (Whitbeck et al., 2004 page 123).” Whitbeck et al. (2004) stated that there is more work that needs to be done to examine the contributions of historical loss to emotional distress.

A book published by Gone & Treble (2012) noted (by the Indian Health Services (IHS)) that during the years 2002-2004, AI/ANs committed suicide at a rate of 17.9 per

100,000. This statistic remained prevalent for 25 years (Gone & Treble, 2012). This statistic was higher than the national rate for all other races by 1.7 times. For youth in the AI/AN community from age 15-24 years old, suicide rates were 34.9 per 100,000 (the national average being 9.2) (Gone & Treble, 2012). The article states that “debilitating distress and dysfunction stemming from substance abuse, violence, and trauma are far too common among AI/ANs and warrant urgent attention and attenuation, (Gone & Treble, 2012 page 132).” This study suggests that the severity of the mental health issues among the AI/AN community and the lasting effects (Gone & Treble, 2012). These high rates of suicide are concerning especially when it affects adolescent populations (Gone & Treble, 2012).

Stress (Depression/Distress)

Stress and genetics are the most common contributors to the diagnosis of certain mental illnesses (Smoller, 2016). The etiologic model for psychiatric disorders has been led by the diathesis-stress hypothesis (Smoller, 2016). The diathesis-stress model is a concept that describes how psychological disorders are formed (Sussman, 2023). The diathesis-stress model speaks to the debate about “nature vs. nurture” and whether mental health disorders originate from biological or situational factors (Sussman, 2023).

Stress is defined as an “umbrella term” that encapsulates “any life event that disrupts an individual’s psychological equilibrium,” (Sussman, 2023 page 1). Adding to that, an individual who has a natural predisposition to developing a disorder may require less stress to trigger the onset of symptoms (Sussman, 2023). The function of stress response systems and the existence of stressful environments are intimately linked to anxiety, depression, and stress disorders (Smoller, 2016).

A study done by John-Henderson & Ginty (2020) found that historical trauma may heighten American Indian mental health troubles by increasing chances of psychological stress in individuals with low social support. The disbandment of communities and families, for example, can create a gap in support for AI/AN individuals causing them to suffer from various mental health disparities (John-Henderson & Ginty, 2020). The combination of an inadequate support system as well as thinking about past trauma can gravely put stress on an individual (John-Henderson & Ginty, 2020).

A study done by Du et al. (2018) examines the relationship between stress and negative emotion as well as the mediating effects of rumination. Participants recorded their data on a self-report questionnaire that asked about stress, rumination, and negative emotions (Du et al., 2018). The results showed that increased levels of stress at a particular time can predict an upcoming increase in negative emotions, which includes anger, anxiety, and depression (Du et al., 2018). Rumination also mediated the relationship between negative emotion and stress (Du et al., 2018). People who had higher levels of stress reported higher levels of rumination, which may bring upon an increase in negative emotions (Du et al., 2018).

Rumination is defined as “a form of perseverative cognition that focuses on negative content, generally past and present, and results in emotional distress,” (Sansone & Sansone, 2012 page 1). As the historical trauma thinking scale focuses on the frequency of thoughts, it is possible the association between historical trauma thinking and negative mental health outcomes could be a function of rumination.

The previous literature has made a clear connection between historical trauma to stress and stress to negative emotion with rumination as a mediator (John-Henderson &

Ginty, 2020; Du et al., 2018; Sansone & Sansone, 2012). Due to these findings, rumination should be further tested as a mediator specifically between historical trauma thinking to negative moods and depression.

Also contrary to this previous literature, our present study will extend our research to adults rather than a population of young individuals (children and college students). As well as focus on the Historical Loss Scale rather than the Historical Loss Associated Symptoms Scale. As our study will focus on the relationship between historical trauma and daily negative emotion, we cannot in an unbiased way use the HLASS because negative mood symptoms exist in the scale. The HLASS consists of 12 reactions (e.g., sadness or depression, anxiety or nervousness, etc.) and then questions respondents on “how you feel when you think about these losses, (Gone et al., 2019; Whitbeck et al., 2004).”

Although there were no significant findings between depression and the frequency of historical trauma thinking in the Tucker et al. (2016) study, it is important to note the difference between the frequency and effects of historical loss thinking. Frequency refers to how often one thinks about loss and effects refers to the consequences of historical loss thinking. There is very limited research on historical loss thinking and depressive symptoms.

Our study extends empirical studies on the effects of historical loss trauma on depression among urban AI/ANs. There are only 2 prior studies (Gone et al., 2019). We will also examine daily mood because historical loss trauma may affect relational schemas or expectations, interpretations of social interactions, and other events during the

day. Lastly, we will see if the effects of historical loss trauma are truly an effect of ruminating.

Aim

This study aims to further examine if there is an association between historical trauma thinking to negative emotion-related variables and depression in American Indian/Alaskan Native adults. A secondary aim was to test the hypothesis that rumination mediated these effects. Analyses were run that controlled for rumination due to the potential effect on both historical trauma and negative emotion variables and depression.

METHODS

Participants and Recruitment. AI/AN adults (N = 304) residing in Colorado were recruited for a multi-part study that asked about their experiences with historical trauma and negative emotions and moods. Data sets were subsets for participants with only diary data (N=256) and participants with only rumination data (N=189). For analyses of rumination, we limited data to those with complete rumination data, resulting in an n=189.

Measures. Historical trauma was assessed with the Historical Loss Scale (Whitbeck et al., 2004) which measured thinking about historical trauma. The historical trauma scale was scored from 0-4 (0= never, 1= rarely, 2= sometimes, 3= often, 4= very often) and has 5 items: “How often do you think about these losses to American Indians? 1. Loss of our land, 2. loss of our language, 3. loss of our culture, 4. loss of our rights from broken treaties, and 5. loss of our family members and close ties due to boarding schools and forced relocation. (Whitbeck et al., 2004, page 124)” The score is calculated by taking the average of items 1-5 (Whitbeck et al., 2004). Previous research has shown that the HLS has a high internal reliability (Cronbach's alpha = 0.93) (Whitbeck et al., 2009).

Negative mood-related variables included a composite score based on participants’ mean values across anger, sadness, and nervousness responses.

Depression was measured with the Centers for Epidemiological Studies Depression Scale-Revised (CESD-R). This scale is a 20-item self-reported measure of depressive symptoms (Shaffer, 2014). The scale was measured with the choice of: 0, 0 or < 1-day last week, 1, 1-2 days last week, 2, 3-4 days last week, 3, 5-7 days last week, 4,

and nearly every day for two weeks. Previous studies have shown it has good test-retest reliability (Cronbach's alpha = 0.85) with high internal consistency (Shaffer, 2014). This scale does not include two questions about suicidal ideation (Shaffer, 2014).

The diary data was electronic and people had to complete it every 30 minutes during the day. The scale for emotion variables and rumination items is a visual analog scale with values from 0-100.

Sadness, nervousness, and anger were measured by asking “How much do you feel... sad, nervous, or angry/irritated?” This scale was administered every 20 minutes during on an electronic diary which was an EMA protocol.

Daily negative mood was the daily average for each of the three diary measures of mood sadness, anger, and nervousness assessed every 30 minutes throughout the day administered via an electronic diary. A composite measure of daily negative mood was created by obtaining the average across the three mood states for each observation and then obtaining the daily average across all observations.

The daily rumination score reflected the average across the day of averaged responses to two items which inquired about how often the participant was thinking about “problems at work or in your personal life?” “times you were treated unfairly because of your race/ethnicity?” These questions were administered 4 times during the test day at random times in the afternoon in intervals of 2 hours. These are given a maximum of 5 times a day.

Demographic variables, including gender, age, and education were obtained through self-report. Gender was measured by answering the question “Are you...?” and then responding with 0= female, 1= male, 2= transgender, 3= prefer not the answer. Age

was measured by answering the question “How old are you today?” and then responding on a scale from 0-100 years old. Education was measured with the question “What is the highest grade in school you completed?” and answered with a scale of 0-6 (0= kindergarten and below, 1= 1st-8th grade, 2= 9th-11th grade, 3= high school graduate, 4= 1st-3rd year of college, 5= college graduate, and 6= graduate).

Analytic plan. Initial analyses provide descriptive information on the sample and address differences between those with and without missing data. Preliminary analyses examine sociodemographic variations in key variables and relations among key variables. Next, regression analyses examine the relations of the predictor (historical trauma thinking) to the outcomes (depression, daily negative mood), controlling for relevant covariates (age and gender). We conduct sensitivity analyses examining the relations of the predictor to daily anger, nervousness, and sadness to determine which negative mood variable, if any, is associated with historical loss thinking, controlling for relevant covariates.

We conducted all analyses twice, once with the full sample with complete data (n = 258) and then with the sample including only those who have daily rumination values (n= 190). Next, we examine the relations of daily rumination to sociodemographic variables as well as the predictor (historical loss thinking) and outcome variables (depression and negative mood).

All analyses were completed using SAS OnDemand.

RESULTS

Descriptive Statistics

For the 258-person sample, the average age was 43.23 years old (min=0, max=100, SD= 15.08). There were 116 females (61.7%) and 72 males (38.3%). Most people had at least a high school education (i.e., 0= kindergarten and below (0%), 1= 1st-8th grade (N=4, 2.12%), 2= 9th-11th grade (N=38, 20.11%), 3= high school graduate (N=55, 29.1%), 4= 1st-3rd year of college (N=78, 41.27%), 5= college graduate (N=12, 6.33%), and 6= graduate (N=2, 1.06%).

Historical trauma has a mean of 2.94 and a standard deviation (SD) of 1.09. For the emotional variables average scores averages, anger (m= 15.94, SD= 15.14, min= 0 max=100), sadness (m=14.23, SD= 13.80, min= 0 max=100), nervousness (m=17.89, SD= 15.54, min= 0 max=100), and depression (m= 0.94, SD= 0.85, min= 0 max=100) nearly everyday lasting two weeks.

Missing Group Data

To assess any possible differences among people with diary data and those who have missing diary data, a variable was created to represent those with missing vs. not missing data. Group 1 (missgrp1) represented the people missing the diary data or any of the key variables (n=52) and Group 0 (missgrp0) represented people with complete diary data (n=254) for these analyses. There were no significant differences in key variables for participants with missing data (negative emotion: $F(1,257)=2.62$, $p=0.106$, missgrp0 mean =16.38 SD= 13.22, missgrp1 mean= 27.33 SD= 24.54. Historical trauma: $F(1,301)= 0.07$, $p = 0.794$, missgrp0 mean= 2.95 SD= 1.06, missgrp 1 mean= 2.90 SD=

1.05. Depression: $F(1,301)= 1.88, p= 0.172$, missgrp0 mean= 1.94 SD= 0.83, missgrp1 mean= 1.72 SD= 0.72.

We also created a variable to compare those with missing rumination data (missgrp = 1 for those missing rumination data, missgrp = 0 for those with rumination data). Differences in variables of interest (e.g., historical trauma, depression, and negative emotion) were compared between those missing rumination data (n=117) and those not (n=189). There were no significant differences in key variables for participants with missing data (negative emotion: $F(1,257)=1.03, p=0.310$, missgrp0 mean =16.02 SD= 13.66, missgrp1 mean= 17.92 SD= 12.88. Historical trauma: $F(1,301)= 0.01, p = 0.942$, missgrp0 mean= 2.94 SD= 1.10, missgrp 1 mean= 2.95 SD=0.99. Daily rumination: $F(1,190): 1.88, p= 0.172$, missgrp0 mean= 30.2 SD= 23.16, missgrp1 mean= 44.65 SD= 27.98. Depression: $F(1,301)= 0.99, p= 0.319$, missgrp0 mean= 1.94 SD= 0.85, missgrp1 mean= 1.84 SD= 0.75).

Test of Assumptions. Skewness and kurtosis were tested to assess the distribution of our data.

The skewness of historical trauma was found to be -0.963, indicating that the distribution was left-skewed and the kurtosis was 0.249. The skewness of depression was found to be 1.232, indicating that the distribution was right-skewed and the kurtosis was found to be 1.285. The skewness of daily negative emotion average was found to be 1.049, indicating a right-skewed distribution, and the kurtosis was 0.958. The skewness of anger was found to be 1.497, indicating a right-skewed distribution and the kurtosis was 3.35, indicating a leptokurtic distribution. The skewness for sadness was found to be 1.139, indicating a right-skewed distribution and the kurtosis was 0.99. The skewness for

nervousness was 0.928, indicating a right-skewed distribution and the kurtosis was 0.359. The skewness for daily rumination was 0.684 which indicates a distribution that skewed towards the right and the kurtosis was 0.108.

The variables for each daily negative emotion (anger, sadness, and nervousness) were subject to a log transformation. Following transformation, skewness and kurtosis improved, logmnanger (skewness= -0.68, kurtosis= -0.28), logmnsad (skewness= -0.49, kurtosis= -0.74), and logmnnerousness (skewness= -0.66, kurtosis= -0.47).

Sociodemographic Differences

Age, gender, and education were tested as covariates due to theoretical assumptions that these variables might have relations with both historical trauma thinking, depression, and daily emotion.

Pearson correlations were estimated to examine the relationship of age to historical trauma negative emotion variables. There were significant findings between age and daily negative emotion average ($r=0.26$, $p=0.0003$), anger ($r=0.19$, $p=0.009$), sadness ($r=0.26$, $p=0.0004$), and nervousness ($r=0.28$, $p=0.0001$). Age was positively correlated with negative daily emotions. There were no significant findings for depression ($r=-0.039$, $p=0.59$) nor historical trauma ($r=0.08$, $p=0.26$).

An ANOVA test was conducted to determine if there was a relationship of gender to historical trauma and negative emotion variables. There were significant findings for daily negative emotion ($F(1,255)= 5.53$, $p=0.02$) (women: $N= 158$ mean= 18.06 SD= 13.66, men: $N= 98$ mean= 14.02 SD= 12.87), anger ($F(1,255)=5.53$, $p=0.02$)(women: $N=$

158 mean= 18.30 SD= 14.67, men: N=98 mean= 14.33 SD= 15.76), sadness ($F(1, 255)= 5.06, p=0.03$)(women: N= 158 mean= 15.79 SD= 13.95, men: N=98 mean: 11.98 SD= 11.84), nervousness ($F(1,255)= 4.64, p= 0.03$)(women: N= 158 mean= 20.10 SD= 16.02, men: N=98 mean= 15.75 SD= 15,12), and historical trauma ($F(1,255)= 3.87, p=0.05$)(women: N=118, mean= 3.03 SD= 1.02, men: N=111, mean= 2.78 SD= 1.12). There were no significant findings for relations between gender and depression ($F(1,255)= 0.10, p=0.75$)(women: N= 189 mean= 0.89 SD= 0.83, men: N= 110 mean= 0.92 SD= 0.79). Based on these findings, gender and age were included as covariates in adjusted analyses.

An ANOVA test was conducted to determine if there was a relationship of education to historical trauma and negative emotion variables. There were no significant findings: historical trauma ($F(1,297)= 2.38, p=0.12$), negative emotions ($F(1, 254)= 1.31, p= 0.25$), anger ($F(1, 254)= 0.99, p= 0.32$), sadness ($F(1, 254)= 0.37, p=0.54$), nervousness ($F(1, 254)= 2.14, p= 0.15$), and depression ($F(1, 297)= 0.05, p=0.83$). Therefore, education was not included as a covariate in the following analyses.

Intercorrelations among Outcome Variables (n=258)

A Pearson's correlation was run among all diary and survey mood variables (see Table A1). There were significant positive correlations of historical trauma to outcomes including depression, negative mood overall, daily average anger, and daily average nervousness but not daily average sadness.

Adjusted Analyses for Predictor (historical trauma thinking) and Depression and Negative Mood Variables (anger, sadness, and nervousness) (n=254)

Linear regression was used to test hypotheses about the relation of historical trauma thinking to depression and daily negative mood variables controlling for age and gender. (see Table B1). The relationship between depression and historical trauma was significant ($B=0.15$, $p=0.0012$). The relationship between the negative emotion average and historical trauma was significant ($B=1.7$, $p=0.02$).

A regression analysis was conducted to test the relationship of historical trauma to daily negative mood variables (anger, sadness, and nervousness). The relationship between anger and historical trauma was significant ($B=2.1$, $p=0.01$). The relationship between nervousness and historical trauma was significant ($B=2.4$, $p=0.005$). The relationship between sadness and historical trauma was not significant ($B=0.54$, $p=0.47$) but the overall model was significant ($F(3,253)=6.28$, $p=0.0004$).

Analyses of the Sample of Participants with Rumination Data

Sociodemographic Data for Rumination Sample

An ANOVA was conducted to examine gender differences in rumination and there was no significant finding ($F(1,181)=3.37$, $p=0.07$)(women: $N=116$ mean= 32.91 SD= 23.73, men: $N=72$ mean= 26.53 SD= 22.21). The correlation between age and rumination was tested and there was no significant finding ($r=0.068$, $p=0.35$).

Adjusted Regression Examining the Relations of Historical Trauma Thinking to Depression and Negative Mood Variables (anger, sadness, and nervousness) (n=190)

Adjusted regressions were conducted to examine if the relations of historical trauma to depression and daily negative emotion average were maintained in the smaller sample which had rumination data (n = 190).

A regression analysis was conducted to test the relationship of historical trauma to daily negative mood and depression controlling for age and gender among participants with rumination data (n=190) (see Table B2). Controlling for gender and age, the relationship between historical trauma and depression was significant (B=0.13, p=0.02) although **the overall model was not significant** (F(3,185)= 1.97, p= 0.12). Controlling for age and gender, the relationship between historical loss thinking and negative emotion average was **not significant** (B=1.43, p=0.10) although the overall model was significant (F(3,185)= 6.10, p= 0.0006) and age was a significant predictor (B= 0.21, p= 0.0013).

A regression analysis was conducted to test the relationship of historical trauma to each of the daily mood variables, controlling for age and gender (n= 190). The relationship between historical trauma and daily anger was significant (B=2.11, p=0.03). Controlling for age and gender, the relationship between nervousness and historical trauma was significant (B=2.2, p=0.02), and the overall model was significant. Controlling for age and gender, the relationship between sadness and historical trauma was not significant (B= -0.02, p= 0.9), but the overall model was significant (F(3,185)= 4.83, p= 0.0029) with age as a significant predictor (B=0.22, p= 0.0012).

Relations between historical loss thinking and rumination (A→ B path) were not significant, as a result, we did not proceed with tests of mediation.

Relations of Rumination to Negative Emotions and Depression

Daily rumination is positively correlation with depression ($r= 0.28, p<0.0001$), negative emotion average ($r= 0.55, p<0.001$), anger ($r= 0.53, p<0.0001$), sadness ($r= 0.48, p<0.0001$), and nervousness ($r= 0.48, p<0.0001$). Correlation with historical group trauma does not reach significance ($r= 0.13, p=0.05$).

Relations of historical trauma to outcome variables with Daily Rumination (n=190)

Once controlling for rumination, none of the relationships between historical trauma thinking and negative emotions or depression were significant. (see Table C1)

DISCUSSION

The present study examined the relationship between historical trauma thinking and daily negative emotion and depression within the American Indian/Alaskan Native community. Existing literature documented a direct link between historical trauma thinking and negative mood (Campbell & Evans-Campbell, 2011; Du et al., 2018; Whitbeck et al., 2004). To further this research, we tested if this association was mediated by rumination due to its conceptual similarity to historical trauma thinking. The purpose of our study was to specifically investigate whether individuals were affected by the unique effect of historical trauma or the general effect of ruminating.

Consistent with the literature, there was an association between depression and historical trauma but this was observed only in the larger sample (n=254). When we examined these relations in the sample of participants with rumination data (n=190) the association between the models of historical trauma thinking and depression and negative emotion was no longer significant. In terms of specific emotions, historical trauma thinking was associated with anger and nervousness but not sadness.

Our data did not support our hypothesis that rumination might explain the effects of historical loss thinking because of the A-B pathway (historical trauma thinking to rumination). Although the relationship was headed in the right direction, historical loss thinking was not correlated with rumination so it was not simply ruminating but thinking about the historical trauma itself. Due to this nonsignificant correlation between rumination and historical trauma, there was no justification for testing rumination as a mediator. Since our B-C pathway is significant, rumination may play a role in our

outcomes (daily negative emotion) but cannot act as a mediator due to the insignificant pathway with the predictor (historical trauma).

We thought that there was a theoretical reason that rumination would mediate historical trauma thinking and daily negative emotion from the Du et al., 2018 study which concluded that rumination was a mediator for stress and negative emotion. As well as the John-Henderson & Ginty, 2020 study that covered the connection between historical trauma and stress, it only seemed fitting that rumination would be considered a mediator for our study. But in the end, there was limited empirical support to back up our hypothesis.

Despite this null finding, there was an interesting result in our correlations between historical trauma and daily negative emotion variables. The findings from the correlation analysis noted that historical trauma was positively associated with depression, anger, and nervousness. But not sadness. There is some neurological evidence that anger interferes with sadness. The experience with anger affects the capacity to recognize sadness. In a study by Steenbergen et al., 2021, it was found that the effectiveness of the transcutaneous vagus nerve stimulation (tVNS) was crucial in one's ability to recognize emotion. Active stimulation decreased the recognition of sadness but increased the recognition of anger (Steenbergen et al., 2021). In addition, effective empathy is necessary to correctly identify sadness (Steenbergen et al., 2021). This inaccurate emotional recognition could lead AI/ANs to have increased levels of stress due to their anger. Due to these findings, further research should focus on how correcting the identification of anger and sadness may affect one's daily negative mood when thinking about historical loss.

LIMITATIONS

A limitation that was found while conducting this study was that the diary data was not released online immediately, so there was low data collection. The data established that there were participants who were missing diary entries. However, our analysis did not identify any significant differences between participants with complete data and those with missing data. This significantly affected the data because fewer respondents (n= 190) were able to answer these questions. Although we accounted for any differences methodologically, it is possible that the effects that we observed in this subset of participants may have generalized if we would have had a full sample (n=254).

With regards to this measure that is used to measure historical trauma thinking, this scale and its measures may be easily confused with rumination (Whitebeck et al., 2004). As the historical trauma thinking scale focuses on the frequency of thoughts, it is possible the association between historical trauma thinking and negative mental health outcomes could be a function of rumination.

Also, the measure of historical loss thinking only reflects the degree of what is in someone's consciousness but does not measure exposure to traumatic events. Future research should administer measures of traumatic exposure along with measures of historical trauma.

CONCLUSION

In conclusion, this study was conducted to bring awareness to the severity of mental health challenges that lie in marginalized communities such as the American Indian/Alaskan Native community. AI/AN's have experienced removal from their homes, their children put in boarding schools, execution of their traditions, etc. Building on previous findings (Brown-Rice, 2013, Campbell & Evans-Campbell, 2011, Sue et al., 1978), this study contributes to the idea that there are important links between historical trauma thinking and daily negative mood. We wanted to further test if historical trauma was the unique factor influencing one's daily negative mood or if it was general rumination. Although historical trauma thinking involves aspects of rumination, daily rumination does not mediate the relations of historical trauma thinking to depression or negative mood. Further research should seek to examine other mediators.

Appendix A: Correlation Matrix

Table A1
Descriptive Statistics and Correlations Among all Diary Data and Survey Mood Variables (n=258)

Variable	n	M	SD	1	2	3	4	5	6
1. Historical Trauma	302	2.94	1.05	—					
2. Depression	302	0.90	0.81	0.218 0.0001	—				
3. Anger	258	16.81	15.14	0.182 0.003	0.247 <0.0001	—			
4. Sadness	258	14.37	13.25	0.068 0.27	0.370 <0.0001	0.733 <0.0001	—		
5. Nervousness	258	18.47	15.77	0.198 0.0014	0.320 <0.0001	0.761 <0.0001	0.758 <0.0001	—	
6. Negative Emotion Average	258	16.55	13.45	0.168 0.0068	0.340 <0.0001	0.913 <0.0001	0.900 <0.0001	0.925 <0.0001	—

$p < 0.05 = *$, $p < 0.001 = **$, $p < 0.0001 = ***$

Appendix B: Adjusted Regressions

Table B1

Adjusted Regression for Depression controlling for Covariates of Age and Gender

Variable	DF	Parameter Estimate	Standard Error	T-value	Pr> t
Intercept	1	0.63334	0.22443	2.82	0.0052
Age	1	-0.00364	0.00351	-1.04	0.3012
Gender	1	-0.00314	0.10734	-0.03	0.9767
Historical Trauma	1	0.15935	0.04864	3.28	0.0012

Note: F(3,253)= 3.90, p=0.0095. R²=0.0447. R²_{adj}= 0.0332

Table B2

Adjusted Regression for Depression controlling for Covariates of Age and Gender in Participants with Rumination Data Only

Variable	DF	Parameter Estimate	Standard Error	T-value	Pr> t
Intercept	1	0.71333	0.25972	2.75	0.0066
Age	1	-0.00327	0.00420	-0.78	0.4376
Gender	1	-0.03684	0.13007	-0.28	0.7773
Historical Trauma	1	0.13186	0.05693	2.32	0.0217

Note: F(3,185)= 1.97, p=0.1204. R²=0.0314. R²_{adj}= 0.0155

Appendix C: Adjusted Correlations

Table C1
Correlations Among Depression and Negative Mood Variables
to Historical Trauma when Controlling for Rumination (n=188)

Variable	Historical Trauma
1. Depression	0.133 0.06
2. Anger	0.118 0.10
3. Sadness	-0.047 0.51
4. Nervousness	0.135 0.06
5. Negative Emotion Average	0.088 0.26

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