



An Examination of Historical Loss Thinking Frequency and Rumination on Suicide Ideation in American Indian Young Adults

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No research has empirically investigated whether frequency of historical loss thinking is a potential risk factor for suicide ideation in American Indians. Results of this study demonstrated that the frequency of historical loss thinking was positively associated with brooding and reflection at a small magnitude, but was not directly related to suicide ideation. Bootstrapping analyses indicated small indirect effects of historical loss thinking frequency on suicide ideation through brooding and reflection individually, but only through brooding when analyzed in a parallel mediation model. These findings suggest that American Indians who more frequently engage in historical loss thinking may be susceptible to suicide ideation via an increase in ruminative tendencies, specifically brooding.

Recent research has indicated that American Indian/Alaska Natives (AI/AN) have suicide rates surpassing all other ethnic groups in the United States (Drapeau & McIntosh, 2015). The greatest increases in suicide rates by racial/ethnic groups from 1999 to 2010 were observed for AI/ANs, with a 65.2% increase from 11.2 to 18.5/100,000 (Centers for Disease Control and Prevention [CDC], 2013). Moreover, the suicide rate among AI/AN young adults age 15–34 is 2.5 times higher than the national average for this same age group (CDC, 2010). These alarming statistics highlight the increasing importance for developing a greater understanding of the causes and correlates of suicide-related outcomes in AI/AN peoples, especially young adults.

Efforts aimed at decreasing suicide rates begin with a fundamental knowledge of factors that place people at a heightened risk for suicide. One potential reason why AI/AN people experience inflated rates of suicide may be the shared experience of culture-related trauma. Research has sought to understand how hundreds of years of genocide, forced acculturation and relocation, and ethnic cleansing may have influenced psychological distress and psychological disturbances in AI/AN people (Brave Heart, 1998; Brave Heart, Chase, Elkins, & Altschul, 2011). Investigators most often use the terms, “historical loss, historical trauma, and historical grief” in referring to the transgenerational transmission of culture-related trauma within AI/AN people.

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Historical loss may be experienced differentially across all Native peoples (Brave Heart et al., 2011). One way that historical loss may impact mental health outcomes is through constant cognitive focus and reflection on the consequences of ancestral trauma. The frequency of thinking about historical loss (commonly referred to as *historical loss thinking*) has been linked to prominent predictors of suicide ideation in AI/AN people (e.g., substance use and symptoms of depression). Whitbeck, Chen, Hoyt, and Adams (2004) demonstrated that frequency of historical loss thinking mediated the relationship between discrimination and 12-month prevalence of meeting criteria for alcohol abuse in American Indian adults. Similarly, frequency of historical loss thinking has been shown to predict alcohol use within the last 30 days and lifetime history of illicit drug use in American Indian adults (Wiechelt, Gryczynski, Johnson, & Caldwell, 2012). Research has linked frequency of historical loss thinking to specific symptoms of depression; namely, feelings of sadness, isolation, and a decreased ability to sleep and concentrate in a study of American Indian adults (Whitbeck, Adams, Hoyt, & Chen, 2004). Additionally, increased frequency of historical loss thinking has been shown to be positively associated with symptoms of depression in American Indian adolescents and college students (Tucker, Wingate, & O'Keefe, in press; Whitbeck, Walls, Johnson, Morrisseau, & McDougall, 2009).

Given that the frequency of historical loss thinking predicts symptoms of depression and other impairing mental health outcomes, it is of the utmost importance to extend the historical loss literature to the study of suicide. It stands to reason that frequency of historical loss thinking may be related to suicide ideation not only because it is commonly associated with predictors of suicide such as substance use and depression, but more specifically because the construct shares conceptual similarities to the cognitive style of rumination. Rumination is a well-established predictor of suicide

ideation in the general population (see Morrison & O'Connor, 2008, for a review of this literature). *Rumination* is the tendency to dwell on and analyze the causes and consequences of problems and past events as well as the negative mood that can result from them (Nolen-Hoeksema, 1991). Nolen-Hoeksema (1991) argued that this cognitive style may be employed by an individual with the intention to better understand current distress, but paradoxically results in the prevention of active coping strategies. Although rumination can be conceptualized as a broad negative repetitive thinking style, research has indicated that this construct includes two specific aspects: (1) brooding and (2) reflection (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). *Brooding* is the tendency to dwell and focus on the negative consequences of distress, while *reflection* is the devotion of cognitive resources toward understanding one's distress and negative emotions (Treyner et al., 2003). Brooding is considered to be a more maladaptive cognitive style than reflection as those who employ it consistently focus on the negative attributes of current distress without the development of strategies to remedy this distress. Reflection is considered less pernicious. These thoughts are still negative and repetitive in focus, but are employed to better understand the causes of one's distress in order to problem solve a solution to these concerns (Watkins, 2008).

Increased rumination and the cognitive style of brooding have been linked to suicide ideation in both cross-sectional and prospective research studies (e.g., Fairweather, Anstey, Rodgers, Jorm, & Christensen, 2007; Smith, Alloy, & Abramson, 2006). A systematic review of the relationship between rumination and suicide ideation demonstrated that the vast majority of cross-sectional and prospective studies found that increased brooding is related to an increased incidence of suicide ideation (Morrison & O'Connor, 2008). The relationship between reflection and suicide ideation is less clear. Research has demonstrated a negative or null relationship

between reflection and suicide-related outcomes, supporting the notion that reflection may be an adaptive thinking style (Crane, Barnhofer, & Williams, 2007; O'Connor & Noyce, 2008). However, other studies have found only a small positive association between the constructs (Tucker et al., 2013) or found that reflection positively prospectively predicted suicide ideation in a 1-year follow-up of community participants (Miranda & Nolen-Hoeksema, 2007).

In this study, we investigated the relationship between frequency of historical loss thinking, suicide ideation, and the cognitive styles of brooding and reflection in a sample of American Indian young adults. As discussed in Watkins (2008), various factors (e.g., content, valence, construal, and situational contexts) can dictate whether a repetitive thought, such as brooding or reflection, is constructive or unconstructive. Brooding about historical losses and related negative thoughts about these losses can most likely be observed as unconstructive, given the number of negative mental health outcomes associated with historical loss thinking. Thus, it was predicted that frequency of historical loss thinking would be positively related to brooding and have an indirect effect on suicide ideation through a brooding cognitive style. Specifically, more frequent historical loss thinking encourages brooding more generally, and thus increases suicide ideation.

As historical loss thinking likely entails elements of reflecting on historical losses, it was also hypothesized that reflection would be positively related to the frequency of historical loss thinking. However, as research has demonstrated an inconsistent relationship between reflection and suicide ideation, no hypotheses were formulated regarding the relationship between reflection and suicide ideation. It may be that more frequent historical loss thinking encourages continued reflection on these traumatic events, likely influencing susceptibility to suicide ideation due to the negative repetitive content of these thoughts. However, this increased reflection may also

facilitate the use of strategies for coping with the consequences of historical losses, potentially making the reflection cognitive style a protective factor against suicide ideation.

METHOD

Participants

Participants included 140 self-identified American Indian students (43 male, 97 female) from a large Midwestern university. The age range of participants was from 18 to 62, with a mean age of 21.09. The American Indian participants in this sample represented 25 different tribes. To protect anonymity of participants and tribal communities, the 25 tribes represented in this sample are not reported as recommended for conducting culturally sound research in AI/AN peoples (Norton & Manson, 1996).

Participants were recruited through an online participant pool and received course credit for their participation. Additionally, participants were recruited through a snowball sampling technique, which requested participation through informational flyers and e-mail listservs targeted toward American Indian student groups and activities. Participants were provided with a hyperlink to access a data collection website that hosted the study survey. Participants who completed the survey, and were ineligible to receive course credit, were entered into a raffle for one of four gift cards valued at \$25.00. This study complied with the university institutional review board.

Measures

Participants completed the following measures online:

Demographics Questionnaire. Demographic information was obtained from participants including age, gender, ethnicity, and tribal affiliation.

Ruminative Responses Scale. The Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al.,

2003) is a 22-item self-report measure that assesses an individual's tendency to ruminate on feelings of distress. Responses range from 1 (*never*) to 4 (*always*). The measure includes two subscales consisting of five items each. One subscale assesses for the tendency to focus on the consequences of distress (*brooding*) and the other assesses the tendency to attempt to understand why one is distressed (*reflection*). These RRS subscales demonstrated good internal consistencies in the current sample (reflection, $\alpha = .83$; brooding, $\alpha = .87$).

Adolescent Historical Loss Scale. The Adolescent Historical Loss Scale (AHLS; Whitbeck et al., 2009) is a 10-item self-report measure that assesses the frequency of thoughts regarding specific aspects of historical trauma (e.g., "how often do you think about the losing of our traditional spiritual ways" and "how often do you think about the loss of our language"). Items from the AHLS were taken from the Historical Loss Scale (HLS), a historical loss measure developed from data collected via focus groups and informal conversations with tribal elders from two upper Midwest reservations and American Indian scholars (Whitbeck, Adams, et al., 2004). The AHLS contains all items from the HLS except for two items reflecting historical loss thinking about parenting practices that likely do not apply to many adolescents and young adults enrolled at the university where the data were being collected. Responses range from 1 (*Never*) to 6 (*several times a day*). Research supports a one-factor solution for the AHLS, and the scale demonstrates excellent reliability in American Indian adolescents and college students (Tucker et al., 2013; Whitbeck et al., 2009). The AHLS demonstrated excellent internal consistency in this sample ($\alpha = .95$).

Hopelessness Depression Symptom Questionnaire-Suicidality Subscale. The Hopelessness Depression Symptom Questionnaire-Suicidality Subscale (HDSQ-SS; Metalsky & Joiner, 1997) is a 4-item self-report measure that assesses suicidal thoughts

and the formulation of plans for suicide experienced in the past two weeks. The HDSQ-SS was composed to measure suicidality in the context of hopelessness depression symptoms. Each item is rated from 0 to 3, with response values differing for each item. Higher scores on the HDSQ-SS indicate higher levels of suicide ideation and plans for suicide in the past 2 weeks. The HDSQ-SS has demonstrated excellent reliability in previous research investigating risk and protective factors of suicide in American Indian college students (O'Keefe & Wingate, 2013; O'Keefe et al., 2014). The HDSQ-SS demonstrated excellent internal consistency in this sample ($\alpha = .92$).

Analytical Strategy

Zero order correlation analyses were utilized to determine the simple relationships between frequency of historical loss thinking, rumination, and suicide ideation. To test the potential indirect effect of frequency of historical loss thinking on suicide ideation through increased rumination, indirect effects were estimated using the nonparametric bootstrapping procedure outlined by Hayes (2013) with 1,000 bootstrapping samples. The BC 95% confidence interval of each indirect effect is presented as it is the most widely recommended method for indirect method inference (Hayes, 2013). In these two analyses, frequency of historical loss thinking served as the predictor variable (X), either brooding or reflection served as the mediating variable (M), and suicide ideation served as the outcome variable (Y). To test potential reverse direction models, these analyses were repeated with the predictor and mediating variables switched (i.e., brooding or reflection predicting suicide ideation through more frequent historical loss thinking).

RESULTS

Means, standard deviations, and correlation coefficients of the study are

TABLE 1*Means, Standard Deviations, and Correlation Coefficients of Study Variables*

Variable	Reflection	Brooding	Historical Loss	Suicide Ideation
Reflection	–			
Brooding	.75**	–		
Historical loss	.25**	.21*	–	
Suicide ideation	.24**	.31**	.04	–
<i>M</i>	8.56	9.42	19.81	4.24
<i>SD</i>	3.43	3.65	9.15	1.04

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

presented in Table 1. Positive associations of a small effect size, according to Cohen (1988), were found between frequency of historical loss thinking and both brooding and reflection.¹ Frequency of historical loss thinking was unrelated to suicide ideation. Brooding and suicide ideation demonstrated a positive correlation of medium size, and reflection and suicide ideation were positively correlated with a small effect size.

Indirect Effect Analyses

The first indirect effect analysis demonstrated that frequency of historical loss thinking was indirectly related to suicide ideation through increased brooding (see Table 2). The point estimate of .0080 with a BC 95% CI of .0012 and .0222 does not contain a zero, suggesting that the indirect effect was statistically different from zero. The Kappa-squared (k^2) coefficient of .0723, 95% BC CI [.0090, .1801] demonstrated a relatively small indirect effect as the effect accounted for 7.2% of the maximum possible variance that it could have accounted for. A reverse direction model (e.g., testing whether brooding had an indirect effect on suicide ideation through frequency of historical loss thinking)

demonstrated a nonsignificant indirect effect (point estimate = $-.0021$, 95% BC CI [$-.0166$, $.0051$]).

The second indirect effect analysis demonstrated that frequency of historical loss thinking was indirectly related to suicide ideation through increased reflection (point estimate = $.0072$, 95% BC CI [.0015, $.0195$]; see Table 2). This effect was relatively small, $k^2 = .0635$, 95% BC CI [.0088, $.1557$]. A reverse direction model demonstrated a nonsignificant indirect effect (point estimate = $-.0019$, 95% BC CI [$-.0140$, $.0098$]).

Post hoc Analysis

To demonstrate the relative mediating effects of brooding and reflection on the relationship between frequency of historical loss thinking and suicide ideation, a parallel mediation model was conducted per the recommendations of Hayes (2013). Frequency of historical loss thinking served as the predictor variable (X), brooding and reflection served as parallel, simultaneous mediating variables ($M1$ and $M2$), and suicide ideation served as the outcome variable. This analysis indicated that frequency of historical loss thinking only had an indirect effect on suicide ideation through increased brooding in the context of simultaneous evaluation (see Table 2 for results). The parallel mediation model accounted for 10% of the total variance of suicidal ideation, $F(136) = 5.03$, $p < .01$, $R^2 = .1000$.

¹A principal axis factor (PAF) analysis with oblimin rotation and parallel analysis demonstrated that historical loss thinking, brooding, and reflection are three distinct but related constructs.

TABLE 2
Indirect Effects of Historical Loss Thinking, Brooding, and Reflection on Suicide Ideation

Predictor Variable	Mediating Variable	Effect Estimate	SE	95% BC CI	Kappa Squared (k^2)	95% BC CI For k^2
Historical Loss	Brooding	.0080	.0053	L = .0012 U = .0222	.0723	L = .0090 U = .1801
Historical Loss	Reflection	.0072	.0043	L = .0015 U = .0195	.0635	L = .0088 U = .1557
Historical Loss*	Brooding*	.0076	.0053	L = .0010 U = .0223		
	Reflection*	.0007	.0038	L = -.0056 U = .0102		
Brooding	Historical Loss	-.0021	.0049	L = -.0166 U = .0051	.0081	L = -.0001 U = .0374
Reflection	Historical Loss	-.0019	.0060	L = -.0140 U = .0098	.0071	L = -.0003 U = .0253

BC, bias corrected; 1,000 bootstrap samples; L, lower estimate of confidence interval; U, upper level of confidence interval.

*Parallel multiple mediation model.

DISCUSSION

In the current study we investigated the relationship between frequency of historical loss thinking, brooding, reflection, and suicide ideation in American Indian young adults. The current study is the first to empirically associate frequency of historical loss thinking to the key aspects of rumination and suicide ideation. In line with the Brave Heart et al. (2011) call for more research into the impact of historical loss, this study contributes to the growing body of literature that demonstrates the perniciousness of frequent thoughts of historical loss.

Study hypotheses were largely supported. Frequency of historical loss thinking was positively correlated with brooding and reflection. These results imply that the more frequently American Indians think about historical losses, the more likely they are to brood and reflect on current distress. This was expected as both historical loss thinking and rumination entail focusing on distressing events and feelings, and are predictive of symptoms of mental health disorders such as major depressive disorder (Whitbeck et al., 2009; Wiechelt et al., 2012).

However, increased frequency of historical loss thinking may not directly influence susceptibility to suicide ideation as frequency of historical loss thoughts were not correlated to suicide ideation. It may be that brooding is directly related to suicide ideation as this cognitive style entails a maladaptive repetitive focus on distressing events and feelings. Historical loss thinking, on the other hand, entails focusing on the consequences of traumatic historic maltreatment specifically. Although frequent thoughts of historical loss are distressing and entail negative reactions (i.e., feelings of sadness and anger), it may be that the specific focus on historical loss on its own does not encourage suicide ideation. Similarly, brooding entails a negative self-focus (i.e., the consequences of the individual's distress), whereas historical loss thinking may encompass less of an internal focus. The AHLS does not contain items that assess the firsthand influence of historical losses on the participants. For instance, there are no questions that ask whether the participant thinks about how their individual life has been impacted by the loss of land. Instead, the questions are asked more broadly (e.g., "how often do you think

about the loss of our land"). This discrepancy in self-focus between rumination and historical loss thinking may possibly account for both the factor analytic results that frequency of historical loss thinking, brooding, and reflection are three related but distinct constructs, as well as the inconsistency in the direct relationships to suicide ideation. Frequency of historical loss thinking may be directly related to suicide ideation, but only when these thoughts are more specific to how historical loss has affected one's day-to-day life or one's future. The adaptation of the AHLS to include items reflecting content related to the firsthand ramifications of historical loss may help determine whether self-focus of historical loss thinking is a more pernicious thinking pattern.²

Results of indirect effect analyses support our hypotheses. Results demonstrated that frequency of historical loss thinking had an indirect effect on suicide ideation through brooding and reflection individually. These findings suggest that American Indians who more often think about historical losses may be more likely to engage in brooding and reflection, which in turn leads to elevated levels of suicide ideation. When analyzed as simultaneous mediators, however, frequency of historical loss thinking only had an indirect effect on suicide ideation through brooding. This result suggests that in the context of co-occurring brooding and reflection, frequency of historical loss thinking may only have an effect on suicide ideation when it leads to increases in brooding, not reflection. This is in line with the notion that brooding is a more maladaptive repetitive negative thinking

style than reflection (Treyner et al., 2003; Watkins, 2008). It may be that increased reflection due to frequency of historical loss thinking does not promote suicide ideation as this cognitive style is less likely to inhibit behaviors that help an individual cope with thoughts of historical loss. Future research would benefit in examining other factors related to American Indian identification (e.g., engagement in important cultural and spiritual practices) to better understand how frequency of historical loss thinking influences suicide ideation through brooding but not reflection. The effect size of the individual indirect effect analyses as well as the simultaneous mediation model was fairly small. It may be that frequent historical loss thoughts are related to suicide ideation through other constructs, such as other forms of negative repetitive thinking (e.g., worry or anger rumination) or more cultural-specific constructs (e.g., ethnic identification and spiritual beliefs and practices). Future research should continue to expand on the impact that frequency of historical loss thinking has on suicide ideation through other aspects psychological well-being and cultural beliefs and practices.

This study provides an important contribution to the American Indian historical loss literature; however, it is not without limitations. Specific limitations exist for the study sample. The current sample was a convenience sample including only American Indian participants currently attending college. This characteristic alone is assumed to make this group more protected against suicide-related outcomes. Future studies should investigate community and treatment-seeking samples of American Indian people to elucidate any possible differences in frequency of historical loss thinking, rumination, and suicide ideation in more at-risk samples. Replication with American Indian samples residing on reservations may also be important as both the frequency of historical losses and suicide-related behaviors may differ between reservation versus urban residency (Freedenthal & Stiffman, 2004; Wiechelt et al., 2012). An additional

²It is important to note that self-focus may be culturally influenced and may differ depending on levels of individualism/collectivism. It is possible that the meaning and importance of self-focus may differ between unique tribal cultures and mainstream western cultures. This important matter should be considered in future research regarding the firsthand or self-focused consequences of historical loss thinking.

limitation regarding the study sample is that it largely includes members of tribes that are generally located in the Midwest region. According to Evans-Campbell (2008), there are historical traumas that may be common to many tribal communities (e.g., land loss and relocation) and others that are differentially culture specific (e.g., outlawing Whaling in Northwest Indian communities). Thus, the current study should be replicated with American Indian communities in other geographic locations.

Along with limitations regarding the study sample, limitations regarding study methodology should be considered. The use of the HDSQ-SS may not be an ideal measure of suicide ideation as the scale was composed to measure suicidality in the context of hopelessness depression. Other validated self-report measures of suicide ideation or interview measures of suicidal behavior might provide a more accurate measurement of suicide ideation. Similarly, it would be ideal for future studies to include a qualitative component that aims to better understand how the participants explain and conceptualize frequency of historical loss thinking, rumination, and suicide ideation. Longitudinal or experimental methodologies should also be implemented to more accurately determine the temporal nature of the study variables. Finally, the current study is somewhat limited in regards to inferences about the relative importance of frequency of historical loss thinking on brooding, reflection, and sui-

cide ideation as other important clinical predictors of suicide were not included as covariates in the current study. Future research would benefit from determining how frequency of historical loss thinking influences these cognitive styles and the frequency/intensity of suicide ideation above and beyond related constructs (e.g., post-traumatic stress disorder symptoms) and other important clinical predictors of suicide risk (e.g., symptoms of depression).

Continued research that investigates the relationship between rumination, frequency of historical loss thinking, and suicide ideation will help inform suicide prevention and intervention programs for American Indian people. Previous research has shown positive results for a historical trauma intervention that incorporated psychoeducation and collective grieving with one Northern Plains tribe (Brave Heart, 1998). Similarly, Gone (2009) provided insight into how clinicians can begin to incorporate evidence-based treatments with culturally sensitive treatments. This article provides a foundation of knowledge for clinicians who may be working with indigenous clients who are experiencing distressing thoughts about historical loss and any resultant psychopathology. Culturally, sensitive treatments for historical loss in combination with evidence-based techniques for managing rumination, brooding specifically, may possibly provide the most effective, culturally competent treatment for the negative effects of historical loss thinking.

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