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Alcohol use and the interpersonal theory of suicide in American Indian young adults

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ABSTRACT

Suicide is the second leading cause of death for American Indian (AI) young adults. Alcohol use is a well-established risk factor for suicide. On average, AIs ages 12 to 20 exhibit the second-highest rate of binge drinking compared to all other ethnic groups. The current study investigated the relation between alcohol use and suicide ideation in an AI sample and examined these relations in the context of the interpersonal theory of suicide (ITS). It was hypothesized that perceived burdensomeness and thwarted belongingness would each significantly moderate the relations between alcohol use and suicide ideation in an AI sample. College students who self-identified as American Indian ($N = 84$) completed measures of alcohol use and associated problems, perceived burdensomeness and thwarted belongingness, and suicidality. Results indicated that perceived burdensomeness significantly moderated the relation between alcohol use and suicide ideation, and this interaction was significant at high levels of perceived burdensomeness. However, thwarted belongingness was not a significant moderator of the relation between alcohol use and suicide ideation. Findings suggest that AI young adults who engage in increased alcohol use may be at increased risk for suicide, especially if they also experience stronger perceptions of being a burden on others. The current study provides support for continued examinations of the relationship between alcohol use and suicide to inform culturally appropriate interventions for AI young adults.

KEYWORDS

Alcohol use; suicide;
American Indians; perceived
burdensomeness; interper-
sonal theory of suicide

Alcohol use and suicide are urgent and interrelated public health concerns for American Indians (AIs). Alcohol use has been associated with suicidal behaviors in general college student populations (e.g., Dvorak, Lamis, & Malone, 2013; Lamis & Bagge, 2011), and among students who binge drink, drinking to cope has demonstrated stronger association with suicidal ideation than with depression, hopelessness, or impulsivity facets (Gonzalez &

Hewell, 2012). Research has yielded similar results in AI populations, with findings demonstrating high co-occurrences of substance use, including alcohol, with suicidal behavior in AI youth (Barlow et al., 2012) and across age groups of AIs (May, Serna, Hurt, & DeBruyn, 2005; Wexler, Hill, Bertone-Johnson, & Fenaughty, 2008). Alcohol abuse history has also been identified as a risk factor for fatal and nonfatal suicide attempts among AIs (Wexler et al., 2008). Therefore, the association between alcohol use and suicidal behaviors is well demonstrated, particularly among adolescents and young adults, in both the general population and in AI populations specifically.

After Caucasian young adults, AIs ages 12–20 exhibit the highest rate of binge drinking compared to all other ethnic groups (SAMHSA, 2014). AI young adults also experience elevated rates of suicide. Suicide is the second leading cause of death for AIs ages 10 to 34, and the suicide rate among AIs ages 15 to 34 is 50% higher than the national average for this same age group (CDC, 2016). Research has indicated that non-White suicide decedents are more likely to have a higher blood alcohol concentration (BAC) at the time of death compared to White individuals (Anestis, Joiner, Hanson, & Gutierrez, 2014). Further, the involvement of alcohol use in suicide deaths is higher among AIs compared to all other non-Native ethnic groups (Goodman, Istre, Jordan, Herndon, & Kelaghan, 1991; Hlady & Middaugh, 1988). Collectively, these findings illustrate that alcohol use is an important and particularly salient risk factor for suicide within some AI communities.

AIs have a distinct history with alcohol in the United States. Prior to colonization, fermented substances were generally absent from most AI communities (Abbott, 1996). Subsequent alcohol use by AIs was facilitated by dominant traders and colonists as a form of colonial violence and was used to coerce tribes into unfair trades and treaties. Binge drinking, modeled by European Americans, introduced a dangerous method of alcohol use to AIs (Coyhis & White, 2002). This resulted in problems related to alcohol misuse among some AIs and ultimately in the stereotype of the “drunken Indian” (Mail, 2002). Adding to the complexity of this relationship, U.S. Congress passed a law in 1832 that prohibited the sale of liquor to AIs, and this law was in effect until 1953, when Congress granted tribes control over alcohol policies (Kovas, McFarland, Landen, Lopez, & May, 2008). Subsequently, many tribes have adopted stricter alcohol control policies than those held by state laws (Kovas et al., 2008). It is also important to note that some AI tribes exhibit higher rates of abstinence from alcohol compared to other ethnic groups. There is evidence of ongoing negative attitudes toward any level of drinking in certain AI communities (Daisy, Thomas, & Worley, 1998; Mohatt et al., 2004; Yuan et al., 2010).

Empirical work has examined relations between alcohol use and suicide in AI adolescents and young adults. Barlow and colleagues (2012) examined comorbid substance use and intentional self-injury with White Mountain Apache youth ages 15 to 24. Differences in co-occurrence across types of self-injury (suicide death, attempt, ideation versus nonsuicidal self-injury [NSSI]) were also examined. Results indicated a high frequency of co-occurring substance use and self-injury, with findings indicating that 50%–60% of Apache males were intoxicated from alcohol/drugs when they engaged in self-injurious behaviors. Co-occurrence of substance use among Apache females increased over the course of the study, and by 2010, reached or exceeded the male rates across each self-injury category. The greatest co-occurrence between substance use and self-injury was found for those who died by suicide, followed by suicide attempt, suicide ideation, and NSSI. Findings from this study demonstrate that the greater the alcohol use, the more lethal the self-injurious behaviors for AIs (Barlow et al., 2012). Similarly, Cwik et al. (2015) examined the prevalence of well-known risk factors for suicide among White Mountain Apache youth with a history of multiple suicide attempts. Results indicated that of those who attempted suicide, alcohol was the most endorsed lifetime substance used compared to other substances. Further, alcohol/drug overdose was the most common (32%) suicide attempt method. Findings suggest that substance use broadly acts as a risk factor, possible facilitator, and method of suicide for this particular sample of AIs with a history of multiple suicide attempts.

The interpersonal theory of suicide (ITS; Joiner, 2005; Van Orden et al., 2010) is a well-validated framework for understanding suicide risk that posits suicidal desire is most likely to occur when the following two interpersonal constructs are simultaneously experienced and perceived as stable and unchanging (i.e., interpersonal hopelessness): perceived burdensomeness and thwarted belongingness. Perceived burdensomeness involves feelings that one is a burden on close others and cognitions of self-hatred, as well as the belief that close others would be better off if the individual were dead rather than alive. Thwarted belongingness involves feeling that one is socially inadequate, which often results in social isolation (Van Orden et al., 2010). Acquired capability is the third component of the ITS, which is defined as the ability to lethally harm oneself through habituation of painful experiences (Joiner, 2005; Van Orden et al., 2010). The current study focused specifically on perceived burdensomeness and thwarted belongingness, as these interpersonal risk factors from the ITS were of theoretical relevance and of interest.

Because medical models tend to depict Indigenous suicide as resulting from individualized pathology (e.g., Wexler & Gone, 2012), it has been theorized that the ITS may be particularly applicable to AI populations given the interpersonal focus and the collectivistic nature of Native communities

(e.g., Elliott-Groves, 2017). In fact, several studies (e.g., Chiurliza, Michaels, & Joiner, 2016; Cole et al., 2013; O’Keefe et al., 2014) have empirically tested the ITS with AI populations, and findings have generally provided support for use of the ITS constructs. Specifically, O’Keefe et al. (2014) found that perceived burdensomeness significantly predicted suicide ideation above and beyond demographic variables and depression symptoms in a sample of AI college students. In addition, the two-way interaction between perceived burdensomeness and thwarted belongingness significantly predicted increased suicide ideation (O’Keefe et al., 2014). Cole and colleagues (2013) found an indirect effect of depression symptoms on suicide ideation through perceived burdensomeness, but not through thwarted belongingness, in a sample of AI college students. In addition, Chiurliza and colleagues (2016) applied the acquired capability component of the ITS, as well as pain tolerance, to a sample of AI/AN military personnel. Findings indicated that compared to military personnel of all other ethnic/racial groups, AI/AN military personnel demonstrated the highest levels of both pain tolerance and acquired capability for suicide (Chiurliza et al., 2016). Collectively, these studies lend support to the application and continued exploration of the ITS constructs in AI populations.

The ITS has been studied in conjunction with alcohol use. Lamis and Malone (2011) found that alcohol use was positively associated with both perceived burdensomeness and current suicidal ideation and behaviors in a sample of predominantly Caucasian college students. Further, substantial research literature exists regarding the relationships between alcohol misuse and suicide, and between interpersonal constructs from the ITS (perceived burdensomeness and thwarted belongingness) and suicidal behaviors, including suicide ideation. However, no study to date has investigated the relationship between alcohol use and suicide in the context of the ITS within an exclusively American Indian sample. Therefore, the aim of the present study was to fill this important void in the literature and examine the relation among alcohol use, perceived burdensomeness and thwarted belongingness from the ITS, and suicide ideation. First, it was hypothesized that perceived burdensomeness would significantly moderate the relationship between alcohol use and suicide ideation. Second, It was hypothesized that thwarted belongingness would significantly moderate the relationship between alcohol use and suicide ideation.

Method

Participants and procedure

Eligible participants were undergraduate students who self-identified as AI and were at least 18 years old. Participants were recruited through an

online participant pool at a Midwestern university. Participants were also recruited using snowball sampling procedures, including informational flyers and electronic mailing lists targeted toward American Indian student interest groups and activities. This study was conducted online, and participants who completed the study selected between two forms of compensation: (1) receive points toward course credit or (2) be entered into a raffle for one of four gift cards valued at \$25. Participants included 84 self-identified AI college students. Fifty-six participants identified as female (66.7%) and 28 identified as male (33.3%), and ages ranged from 18 to 62 ($M = 21.84$, $SD = 7.52$). Participants' self-identified tribal affiliations represented 22 different federally recognized tribes, which will remain anonymous to protect tribal anonymity (Norton & Manson, 1996). The institutional review board at the university approved all study procedures, and participants provided informed consent prior to beginning the study. Following the completion of the study, participants were presented with local and national suicide prevention resources.

Measures

Demographics. Participants completed a demographics questionnaire that assessed age, sex, ethnicity, and tribal affiliation.

Alcohol Use Disorders Identification Test-10 (AUDIT; Saunders, Aasland, Babor, De la Fuente, & Grant, 1993). The AUDIT is a 10-item self-report measure that assesses past-year alcohol consumption, drinking behavior, and alcohol-related problems. Example items include "How often do you have six or more drinks on one occasion" and "Have you or someone else been injured because of your drinking?" Response options are rated on a 5-point Likert scale from 0 to 4, with 0 indicating no symptoms and 4 indicating experiencing symptoms at least four times per week. The AUDIT demonstrated acceptable reliability ($\alpha = .79$) in this study.

Hopelessness Depression Symptom Questionnaire-Suicidality Subscale (HDSQ-SS; Metalsky & Joiner, 1997). The HDSQ-SS, also referred to as the Depressive Symptom Inventory-Suicidality Subscale (DSI-SS), is a four-item self-report measure that assesses the frequency and intensity of suicide ideation and impulses in the past two weeks. Responses are rated on a 4-point Likert scale ranging from 0 to 3, with higher scores indicating a greater severity of suicide ideation. Response options vary for each item, and examples of response options include "I am not having thoughts about suicide" and "In some situations I have impulses to kill myself." In this sample, 7 out of 84 (8.33%) participants endorsed current suicidal ideation (i.e., suicidal ideation in the past two weeks). The HDSQ-SS was originally validated in a sample of college students and displayed good reliability ($\alpha =$

.86; Joiner & Rudd, 1995). It has previously demonstrated excellent reliability in samples of AIs (Cole et al., 2013; Tucker, Wingate, O'Keefe, Hollingsworth, & Cole, 2016). The HDSQ-SS also demonstrated excellent reliability ($\alpha = .93$) in this study.

Interpersonal Needs Questionnaire-15 (INQ-15; Van Orden, Cukrowicz, Witte, & Joiner, 2012). The INQ-15 is a 15-item self-report questionnaire that assesses perceived burdensomeness and thwarted belongingness. Of the 15 items, six items measure perceptions of burdensomeness (e.g., "These days, I think I am a burden on society"), and nine items measure feelings of thwarted belongingness (e.g., "These days, I feel like I don't belong"). Each item is rated on a 7-point Likert scale ranging from 1 (*not at all true for me*) to 7 (*very true for me*). Higher scores indicate higher levels of perceived burdensomeness or thwarted belongingness. The INQ-15 has previously demonstrated good to excellent reliability in AI samples (e.g., Cole et al., 2013). It demonstrated excellent reliability for perceived burdensomeness ($\alpha = .96$) and good reliability for thwarted belongingness ($\alpha = .87$) in this study.

Data analytic strategy

Bivariate correlation analyses were conducted to examine relations between study variables. Two moderation analyses were then conducted to test hypothesized interactions between alcohol use and perceived burdensomeness and whether the interaction of alcohol use and thwarted belongingness would be associated with suicide ideation. The independent variable (alcohol use) and both moderating variables (perceived burdensomeness; thwarted belongingness) were mean centered in the analyses (Aiken & West, 1991). Moderation analyses were completed using bootstrapping procedures with 5,000 bootstrapped resamples and 95% confidence intervals, as recommended by Hayes (2013). PROCESS version 2.13 (Hayes, 2013) for SPSS version 25 was used for all moderation analyses. Supplemental analyses (i.e., zero-inflated Poisson regressions) presented in Appendix A were conducted using the "STATS ZEROINFL" R extension in SPSS version 25.

Results

Descriptive statistics and bivariate correlations between study variables are displayed in Table 1. A moderation model using bootstrapping (PROCESS; Hayes, 2013) was conducted to examine whether perceived burdensomeness would significantly moderate the relationship between alcohol use and suicide ideation. Results indicated that there was a significant main effect for

Table 1. Correlation Coefficients, Means, and Standard Deviations of Study Variables.

Variable	1	2	3	4
1. Alcohol use	–			
2. Thwarted belongingness	-.043	–		
3. Perceived burdensomeness	.063	.562***	–	
4. Suicide ideation	.111	.059	.373***	–
<i>M</i>	12.73	20.79	8.48	0.32
<i>SD</i>	4.15	11.78	5.28	1.21
Possible Range	0–40	9–63	6–42	0–12
Skewness ¹	1.02	0.81	2.26	4.40
Kurtosis	0.80	–0.65	4.37	21.51

*** $p < .001$.

¹Because skewness and kurtosis values for the suicide ideation variable were large (Kline, 2011), two zero-inflated Poisson regression analyses were conducted, and these results are presented as supplementary material in Appendix A. Of note, bootstrapping does not assume a normal sample distribution (Preacher, Rucker, & Hayes, 2007) and can be used with large skewness and kurtosis.

perceived burdensomeness ($B = 0.08$, $t = 3.60$, $p = .0006$, 95% CI [.04, .13]), but not for alcohol use ($B = 0.01$, $t = 0.41$, $p = .68$, 95% CI [–0.05, 0.07]), associated with suicide ideation. These effects were qualified by a statistically significant interaction, $F(1, 80) = 5.86$, $R^2 = 5.82\%$, $p = .0178$, (95% CI [.002, .021]). Simple slope analyses revealed that at high levels of perceived burdensomeness, there was a significant relationship between alcohol use and suicide ideation ($B = 0.07$, $t = 2.09$, $p = .04$, 95% CI [.0034, .144]). However, simple slopes analyses indicated that at moderate and low levels of perceived burdensomeness, there was not a significant relationship between alcohol use and suicide ideation ($B = 0.0122$, $t = 0.4084$, $p = .6841$, 95% CI [–.0471, .0714]) and ($B = -.0167$, $t = -.4908$, $p = .6249$, 95% CI [–.0846, .0511]), respectively (see Table 2 and Figure 1). Collectively, these findings indicate that increased alcohol use and higher levels of perceived burdensomeness were associated with increased thoughts of suicide.

A second moderation analysis using the same bootstrapping approach (Hayes, 2013) was conducted to examine whether thwarted belongingness would significantly moderate the relationship between alcohol use and suicide ideation. Results demonstrated that main effects were nonsignificant for both alcohol use ($B = -0.06$, $t = -0.99$, $p = .33$, 95% CI [–.19, .06]) and thwarted belongingness ($B = -0.05$, $t = -1.46$, $p = .15$, 95% CI [–.12, .02]) in association with suicide ideation. Further, the interaction between thwarted belongingness and alcohol use associated with suicide ideation was also nonsignificant, $F(1, 80) = 3.0003$, $R^2 = 3.56\%$, $p = .08$, (95% CI [–.0007, .102], see Table 2).

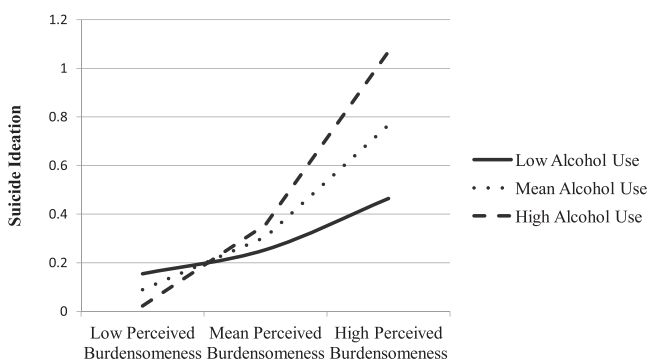
Discussion

Overall, study hypotheses were partially supported. The current study demonstrated that perceived burdensomeness, but not thwarted belongingness, significantly moderated the relationship between alcohol use and suicide

Table 2. Bootstrapped Moderation Analyses of Alcohol Use with Perceived Burdensomeness and Thwarted Belongingness on Suicide Ideation.

		Suicide ideation				
Predictors entered in set		<i>B</i>	<i>S.E.</i>	<i>LCI</i>	<i>UCI</i>	<i>R</i> ²
PB model						.2048
	Alc	.0122	.0298	-.0471	.0714	
	PB	.0827	.0230	.0370	.1285	
	AlcXPB	.0117	.0048	.0021	.0213	.0582
TB model						.2279
	Alc	-.0634	.0643	-.1913	.0645	
	TB	-.0512	.0352	-.1213	.0188	
	AlcXTB	.0047	.0027	-.0007	.0102	.0356

Note. PB = perceived burdensomeness; TB = thwarted belongingness; Alc = alcohol use; LCI = lower bound estimate of 95% bias-corrected confidence interval; UCI = upper bound estimate of 95% bias-corrected confidence interval; 5,000 bootstrap resamples.

**Figure 1.** Alcohol use as a moderator of the relationship of perceived burdensomeness to suicide ideation.

ideation in a sample of AI young adults. These results suggest that when AI young adults engage in alcohol use and experience perceptions of being a burden, they may be more likely to experience thoughts of suicide.

The interactive effect of alcohol use with perceived burdensomeness may have particular relevance for college students. College students consume greater amounts of alcohol to cope with stressors (Park & Levenson, 2002), which places them at an increased risk for experiencing negative alcohol-related consequences. Further, past research suggests that individuals who experience negative alcohol-related consequences are at an increased risk for suicide (e.g., Lamis, Malone, & Langhinrichsen-Rohling, 2010). For example, college students who experience legal or academic consequences as a result of alcohol use problems may need to solicit increased financial and/or emotional support from family, which in turn, may increase their perceptions of burdensomeness. These feelings of being a burden on others combined with alcohol use problems, in turn, may increase suicide risk among college students (Lamis & Malone, 2011). Depending on tribal identity and acculturation level, these implications could be greater for AI

college students, particularly for those whose parents abstain from, or hold negative views about, alcohol.

The second study hypothesis, that thwarted belongingness would significantly moderate the relationship between alcohol use and suicide ideation, was not supported. While this result is somewhat inconsistent with previous literature depicting social support as protective against suicide ideation in AI communities (e.g., Chong & Lopez, 2005; Hill, 2009; MacPhee, Fritz, & Miller-Heyl, 1996; Novins, Beals, Roberts, & Manson, 1999), it is in line with research demonstrating perceived burdensomeness as the more salient risk factor for suicide in AI populations (e.g., Cole et al., 2013; O'Keefe et al., 2014), as well as in other populations (Hawkins et al., 2014; Jahn, Cukrowicz, Linton, & Prabhu, 2011; Puzia, Kraines, Liu, & Kleiman, 2014). The lack of support for thwarted belongingness as a suicide risk factor within AI populations may be due to cultural inaccuracy. The INQ broadly assesses feelings of not belonging. For example, INQ item 14 states, "These days, I feel disconnected from other people." Many of the items on the INQ do not specify belongingness to whom, such as family, community, or larger systems (e.g., tribes). Another interpretation of this finding is that American Indian college students likely represent a group with a unique set of protective factors. For example, they may find a place of belonging through groups, organizations, or activities at their university and therefore be less likely to endorse feelings of not belonging. It is also possible that AI college students may have more tolerant attitudes about drinking if they are consuming alcohol with friends in these social settings, which is consistent with past research demonstrating social norms as a strong predictor of typical alcohol consumption among college students in general (e.g., Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). Future research should explore the cultural applicability of the ITS with AI populations by conducting qualitative focus groups with enculturated group members, which could elucidate important cultural differences on interpretation of the INQ, particularly for the thwarted belongingness items.

This study provides important contributions to the literature on alcohol and suicide within AI populations. It is the first study to empirically test the relationship between alcohol use and suicide ideation in the context of the interpersonal theory of suicide (Joiner, 2005) in an American Indian sample, a group at elevated risks for both alcohol misuse and suicide (e.g., Barlow et al., 2012). Previous research with AI populations has lacked the use of empirically supported frameworks (e.g., Allen, Mohatt, Beehler, & Rowe, 2014), and the current study adds to the empirical literature on alcohol and suicide among AI populations using a well-validated theoretical framework.

The current findings also highlight important clinical implications. Because perceived burdensomeness exacerbated the relationship between alcohol use and suicide ideation, it may be important for clinicians to assess for perceptions of burdensomeness and alcohol use when conducting suicide risk assessments with AI clients. Findings from the current study provide further support to the literature (Barlow et al., 2012; May et al., 2005; Wexler et al., 2008) that indicates heightened concerns regarding alcohol misuse and suicide risk in some AI populations. Therefore, broader implications include conducting educational seminars and prevention trainings on both alcohol misuse and suicide with AI communities to enhance knowledge on alcohol use and related consequences, suicide prevention, and means for increasing healthy behaviors and social support.

Although this study provides important contributions, there are several limitations that can be addressed with future research. Specific limitations exist for the study sample, including a small sample size. However, using bootstrapping procedures with 5,000 resamples (Hayes, 2013) helps to correct for smaller samples. The sample was also a convenience sample of AIs currently enrolled in college. Future research should replicate the current study with community and clinical samples of AI participants to elucidate possible differences in frequency and severity of alcohol use, perceptions of burdensomeness, feelings of thwarted belongingness, and suicide ideation. In addition, the current sample comprised members of only 22 out of 573 federally recognized tribes (Bureau of Indian Affairs (BIA), 2016), most of which were located in the Midwest region. Therefore, the current findings may not generalize to all U.S. AI tribes and communities. Future research should replicate this study with AIs of different ages, tribal affiliations, and genders and in different geographical locations, as well as in reservation-based (versus urban) settings.

There are also limitations regarding the study design. The AUDIT (Saunders et al., 1993) was used to assess alcohol use, and the HDSQ-SS (Metalsky & Joiner, 1997) was used to assess suicide ideation. Both measures are commonly used as screeners and are not meant to be used as comprehensive assessment instruments (Metalsky & Joiner, 1997; Reinert & Allen, 2002). However, the AUDIT has consistently yielded high internal consistency, good test-retest reliability, and established validity in a variety of populations (e.g., Kokotailo et al., 2004; Reinert & Allen, 2007; Selin, 2003). The HDSQ-SS has also established reliability and validity in young adult populations (Joiner, Pfaff, & Acres, 2002; Ribeiro, Braithwaite, Pfaff, & Joiner, 2012). Both the AUDIT and HDSQ-SS have been used in research and clinical settings (Almeida et al., 2012; Reinert & Allen, 2007). The current study also utilized a cross-sectional design, which limits temporal relationships of study variables. Results from the current study cannot

determine whether increased alcohol use leads to suicide ideation for AIs, or whether AIs who are already thinking of suicide turn to alcohol as a form of coping. It is also important to note that our effect sizes for each interaction were modest, and future work may detect stronger effects with larger sample sizes. The current study did not assess the behavioral component of the ITS, acquired capability. In particular, acquired capability for suicidal behavior has been theorized to occur through frequent engagement in reckless behaviors, including drug use (e.g., Anestis & Selby, 2015; Selby & Joiner, 2013). Therefore, future research should include acquired capability, in addition to the two interpersonal constructs and alcohol use, to examine risk for a near-lethal or lethal suicide attempt. It would be beneficial for future research to examine a potential three-way interaction between perceived burdensomeness, thwarted belongingness, and specific forms of risky behaviors (e.g., alcohol use). Last, the ITS and recent empirical examinations (e.g., Tucker et al., 2018) suggest that perceived burdensomeness and thwarted belongingness are salient risk factors when they are also perceived as stable and unchanging (i.e., interpersonal hopelessness). Future work may also benefit from directly measuring interpersonal hopelessness to examine the presence of a three-way interaction between perceived burdensomeness, thwarted belongingness, and interpersonal hopelessness in predicting suicide ideation and risk in AIs.

Future research should include additional risk and protective factors to help further explain relationships between alcohol use and suicide. One such risk factor specific to AIs may be historical loss. For example, a study by Whitbeck, Walls, Johnson, Morrisseau, and McDougall et al. (2009) found that AI adolescents were more likely to think about historical losses compared to their parents, and there is evidence that suggests younger generations of AIs use alcohol as a form of coping with this intergenerational trauma (e.g., Hartmann & Gone, 2014). Therefore, future research should implement longitudinal and experimental methodologies to better capture the complexity of the relationships between alcohol use and suicide among AI young adults.

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Appendix A. Zero-inflated Poisson regression analyses

		Suicide ideation		
Predictors entered in set		<i>B</i>	<i>S.E.</i>	<i>p</i>
PB Model	Alc	−0.117	0.169	0.487
	PB	−0.099	0.059	0.092
	AlcXPB	0.003	0.015	0.831
TB Model	Alc	−0.076	0.102	0.453
	TB	0.018	0.039	0.634
	AlcXTB	−0.003	0.009	0.708

Note. PB = perceived burdensomeness; TB = thwarted belongingness; Alc = alcohol use. Zero-inflated Poisson regression analyses were conducted using the “STATS ZEROINFL” R extension in SPSS version 25.