American Indian and Alaska Native Mental Health Research

Volume 28, Issue 1, 2021

Centers for American Indian & Alaska Native Health
colorado school of public health

American Indian and Alaska Native Mental Health Research

Volume 28, Number 1, 2021

ISSN 1533-7731

TRENDS IN NON-MEDICAL PRESCRIPTION OPIOID USE AMONG URBAN AND RURAL AMERICAN INDIAN AND ALASKA NATIVE YOUTH RESIDING IN NEW MEXICO: 2013-2017

Katherine Hirchak, PhD, Solmaz Amiri, PhD, Judith Espinoza, MS, Jalene Herron, MS, Alexandra Hernandez-Vallant, MS, Violette Cloud, MS, JD, and Kamilla Venner, PhD

Abstract: Increasing rates of opioid-related deaths over the last twenty years have created a national public health crisis. However, minimal research investigates opioid use among American Indian and Alaska Native (AI/AN) youth. This study examined non-medical prescription opioid prevalence rates and resiliency of urban and rural AI/AN and non-AI/AN students. The sample included eighth, tenth, and twelfth grade students who participated in the New Mexico Youth Risk and Resilience Survey in 2013, 2015, and 2017 (n = 42,098). Logistic regression models showed no significant differences in non-medical prescription opioid use among rural and urban students in 2013, 2015, and 2017. No significant differences in use between AI/AN and non-AI/AN students occurred in 2013, 2015, or 2017. Family and community support were protective of misuse consistent across time points, and included caring adults, community involvement, and clear rules at school. These findings may help to inform the development of strengths-based prevention activities for AI/AN youth.

INTRODUCTION

The rate of opioid-related deaths has accelerated over the last twenty years, creating a major national public health crisis. Alarmingly, American Indian and Alaska Native (AI/AN) adults overdose at similar rates as non-Hispanic Whites, yet there are few studies examining both the epidemiological data on misuse as well as opioid-related treatment for AI/AN communities (Venner et al., 2018; Momper et al., 2013). Some research has demonstrated higher prevalence use rates of all substances among AI/AN youth, with an increase in lifetime use in higher grade levels. By twelfth grade, AI/AN youth were more likely to have used illicit drugs and opioids recreationally when compared with their non-AI/AN counterparts (9.1% vs. 5.0%; Stanley et al., 2014; Swaim & Stanely,

2018). In addition, AI/AN twelfth-grade students had 4.5 times the risk of lifetime heroin use compared with other students who were surveyed in the Monitoring the Future survey (Swaim & Stanley, 2018). This is concerning both in the potential increased risk related to overdose, but also when considering that in the general young adult population, younger initiation of illicit opioid use increases the likelihood of transitioning to heroin (Cerda et al., 2015). Research among a general household sample of adolescents revealed that the overall rate of current non-medical prescription opioid use was 7.0%, with 1.0% of youth meeting criteria for abuse or dependence (Wu et al., 2008).

There are distinct regional disparities in opioid-related overdose frequency among urban and rural AI/AN adults, with higher prevalence rates in the Midwest and the Pacific Northwest (Oluwoye et al., 2020) and much lower overdose rates in the rural Plains (Tipps et al., 2018). Similarly, non-medical prescription use of opioids appears to vary regionally for rural and urban AI/AN youth. AI/AN youth residing in the Great Lakes area, for example, reported a high rate of intentional misuse of opioids (31%; SAMHSA, 2016). For AI/AN adolescents residing in New Mexico, 14.3% reported having used non-medical prescription drugs to get high at least once in their lifetime (Healy et al., 2018). Greater health inequities caused by the misuse of substances among AI/AN people are related to many factors including colonization, historical trauma, and environmental contextual factors (Gone & Trimble, 2012; Duran, 2006; Duran & Duran, 1995). These complexities underscore the need for a multifaceted approach to address the opioid crisis in many tribal communities (Venner et al., 2018).

In the present study, we examined: a) lifetime non-medical prescription opioid use prevalence rates in 2013, 2015, and 2017 among urban and rural AI/AN and non-AI/AN middle and high school students (eighth, tenth, twelfth grade) residing in New Mexico, and b) urban-rural differences in patterns of non-medical prescription opioid use or in factors that may be protective. This study provides insight into potential differences between urban and rural AI/AN youth in opioid use and helps identify factors associated with resiliency that researchers and practitioners may consider when implementing developmentally and culturally appropriate opioid misuse prevention and intervention programs for AI/AN youth.

METHODS

Study Design

This is a secondary data analysis of the New Mexico Youth Risk and Resiliency Survey (NM-YRRS), a part of the Center for Disease Control and Prevention's Youth Risk and Behavior

Surveillance System. The survey is cross-sectional, conducted biennially, and assesses youth risk behaviors and resiliency for grades 6-12 (NM-YRRS-High School, 2017; NM-YRRS-Middle School, 2017). Youth included in the sample self-identified as AI/AN only or AI/AN in combination with another ethnicity. Non-AI/AN students were the combined total of all other races/ethnicities at the schools across years. AI/AN youth were oversampled, and schools were stratified by school district. Of the 42,098 participants over the five-year period, 7,307 (17.3%) self-identified as an AI/AN middle or high school student. The Southwest Tribal Institutional Review Board (IRB) approved the study.

Measures

We assessed lifetime use of non-medical prescription opioids with one question: "Have you ever taken prescription pain medication without a doctor's prescription or differently than how a doctor told you to use it? (Count drugs such as codeine, Vicodin, OxyContin, Hydrocodone, and Percocet)" (coded as 0/1). Questions vary between middle and high school; past 30-day non-medical opioid use was not assessed in middle school.

New Mexico is one of two states that continue to include items associated with resilience in their Youth Risk and Behavior Surveillance. Examples of items measuring resiliency include, "In my home, there is a parent or some other adult who believes that I will be a success"; "At my school, there is a teacher or some other adult who listens to me when I have something to say"; and "I have a friend about my own age who really cares about me". For a complete list of the resilience questions, see New Mexico Youth Risk and Resilience Survey: http://www.youthrisk.org/. All questions are on a 4-point Likert scale (*not at all, a little true, pretty much true, very much true*) and were dichotomized based upon the bimodal distribution of higher and lower responses found in the data (coded as 0/1).

Data integrity is maintained in accordance with tribal communities in New Mexico. Therefore, the definition for rural and urban was modified by this partnership. Urban was defined as a city or town with a population greater than 50,000, school district designation, as well as proximity to a large metropolitan area (coded as 0/1).

Analytic Plan

A complex design was employed, and weights were applied to each student record to adjust for nonresponse and the distribution of students by grade, sex, and race/ethnicity as outlined by previous epidemiological research (e.g., CDC, 2013). We calculated the estimates of the prevalence of non-medical prescription opioid use for each year independently for the entire

sample. We also calculated estimates of the prevalence of non-medical prescription opioid use for urban and rural areas and for AI/AN versus non-AI/AN students for each year independently. We assessed the differences in non-medical prescription opioid use prevalence rates by grade. Missing data were low overall (< 4%); however, protective factor variables had a higher percentage of missing data (~9%). Further analysis indicated that data were not missing at random (MCAR; Roderick, 1988). Questions related to resilience are placed at the end of the survey, so it is possible that some students did not have time to complete their response, potentially explaining the pattern of missing data. Given the low rate of missingness overall, further statistical adjustments were not made (Bennett, 2001; Osborne, 2013).

Logistic regressions were conducted to examine non-medical prescription opioid use in 2013, 2015, and 2017. Non-medical prescription opioid use was regressed on all correlates and repeated for each period. We controlled for gender and grade, and additional covariates were included based upon the conceptual domains of social location, academics, and community and social resilience (Hawkins et al., 2004; Kim et al., 2015). Consistent with previous research, we assessed resiliency for each period staying consistent with our a priori domains, regardless of significance or the short time between each assessment period (Bush & Qeadan, 2019). In addition, there are almost twice as many resilience questions in the high school version of the survey compared to the middle school survey (15 questions versus 8). We therefore identified the questions that were asked across grades. These variables included: “I have a friend about my own age who really cares about me”; “In my home, there is a parent or some other adult who is interested in my schoolwork”; “In my school, there are clear rules about what students can and cannot do”; and “Outside of my home and school, I am a part of clubs, sports teams, church or temple, or other group activities.” We also conducted a Mantel-Haenszel Test to examine trends. Each year is modeled, and the odds ratios are pooled to assess whether they are equal across time points (Agresti & Franklin, 2013). Analyses were performed using Stata 14.2. The alpha threshold used to determine statistical significance was 0.05 (two-tailed).

RESULTS

Demographic information is shown in Table 1. There was an even proportion of female and male youth participation across time. Approximately three-fourths of survey participants were from urban areas. Lifetime non-medical prescription opioid use was higher in urban areas in 2013 and 2017 compared to rural areas. AI/AN students tend to have lower rates of non-medical

prescription opioid use compared to non-AI/AN students across all years. Lifetime non-medical prescription opioid use increased with age across all grade levels, with twelfth-grade students reporting the highest percentage of non-medical prescription opioid use. Figures 1 and 2 describe lifetime non-medical prescription opioid use by location, grade, and ethnicity in 2013, 2015, and 2017.

Table 1

Demographic Characteristics of Students Participating in the New Mexico Youth Risk and Resiliency Survey, 2013, 2015, and 2017

	2013				2015				2017			
	AI/AN		Non-AI/AN		AI/AN		Non-AI/AN		AI/AN		Non-AI/AN	
Variables	Total *n*	%	Total *n*	%	Total *n*	%	Total *n*	%	Total *n*	%	Total *n*	%
Gender												
Female	1,222	49.9%	6,134	50.7%	990	50.3%	4,312	50.8%	1,393	48.3%	7,110	50.2%
Male	1,223	50.1%	5,954	49.3%	979	49.7%	4,168	49.2%	1,491	51.7%	7,063	49.8%
Grade												
8th	917	37.5%	4,907	40.6%	703	35.7%	2,257	26.6%	1,413	48.9%	7,053	49.7%
10th	891	36.4%	4,149	34.3%	756	38.4%	3,562	41.9%	828	28.6%	4,023	28.3%
12th	637	26.1%	3,043	25.2%	512	26.0%	2,677	31.5%	650	22.5%	3,120	22.0%
Location												
Rural	1,906	78.0%	8,059	66.6%	1,460	74.1%	5,913	69.6%	2,179	75.4%	7,709	54.3%
Urban	539	22.0%	4,040	33.4%	511	25.9%	2,583	30.4%	712	24.6%	6,487	45.7%
Non-medical Prescription Use												
Used	357	14.8%	1,725	14.5%	242	12.4%	1,096	13.1%	345	12.1%	1,793	12.8%
Resiliency Items (Response: Pretty much/Very much true)												
Adult/ Community Cares	1,722	74.0%	9,102	78.6%	1,334	70.7	6,214	76.6%	1,513	70.3%	10,132	75.6%
Friend Cares	1,752	75.6%	9,247	80.0%	1,444	77.0%	6,728	83.3%	1,665	77.7%	10,975	82.3%
Clear Rules at School	1,905	82.3%	9,526	82.6%	1,573	83.9%	6,722	83.3%	1,730	80.8%	11,003	82.6%
Community Activities	1,134	49.0%	6,615	57.5%	899	48.0%	4,577	56.9%	1,165	54.3%	8,171	61.3%

Figure 1. Lifetime Non-Medical Prescription Opioid Use stratified by Urban and Rural Location and Grade

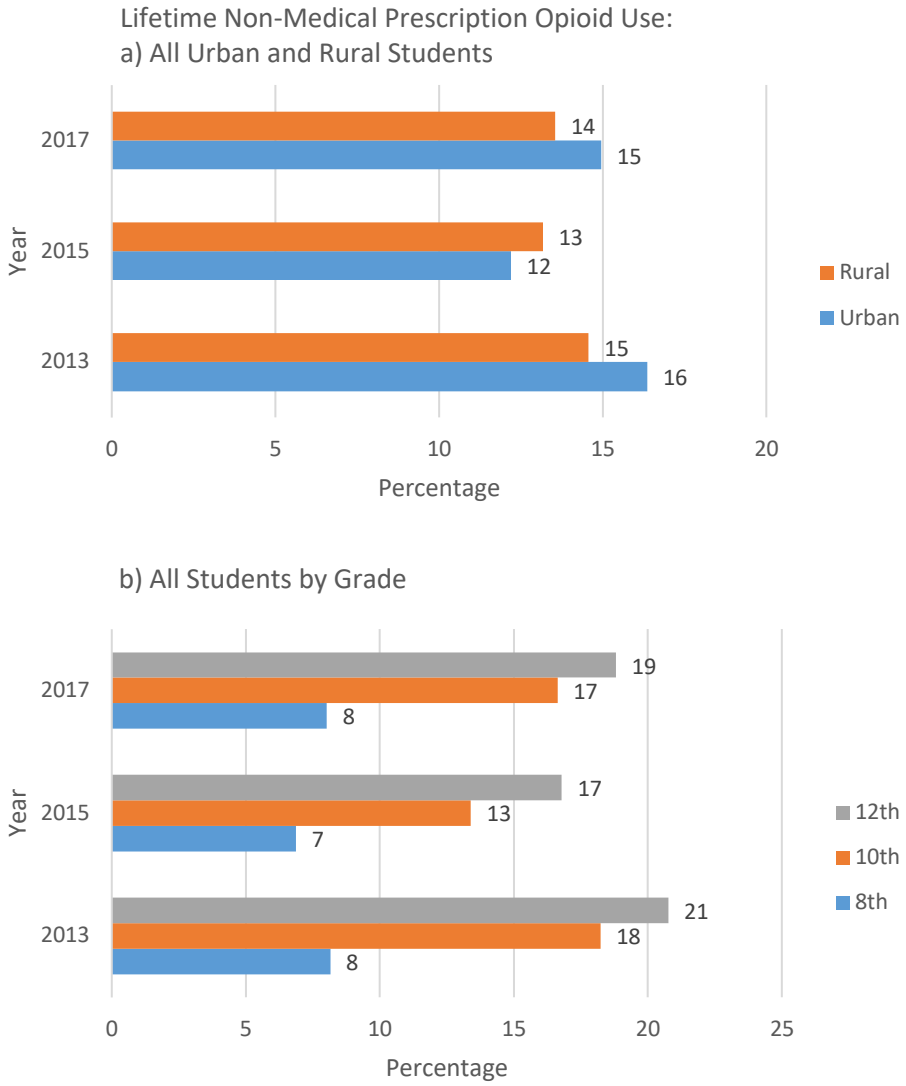
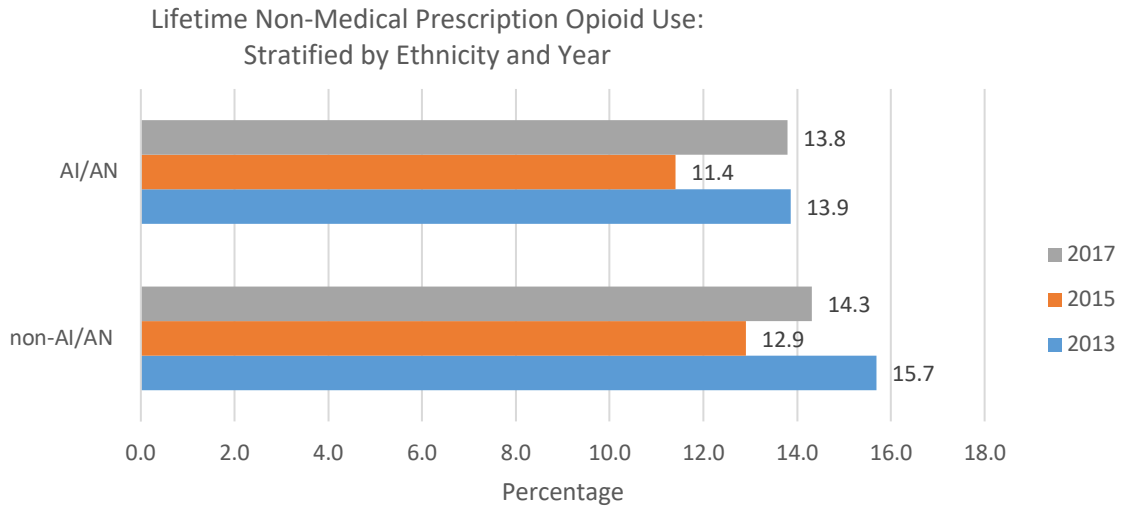


Figure 2. Lifetime Non-Medical Prescription Opioid Use by Ethnicity and Year



2013 Resilience and Lifetime Non-Medical Prescription Use

There were 2,445 AI/AN students and 12,099 non-AI/AN students in 2013. Logistic regression analysis was conducted to predict the relationship between non-medical prescription opioid use among rural and urban (OR = 0.86; 95% CI: [0.69, 1.07], $p = 0.19$) and AI/AN and non-AI/AN students (OR = 0.80; 95% CI :[0.55, 1.16], $p = 0.24$), controlling for grade (OR = 2.73; 95% CI: = 2.07, 3.59, $p < 0.001$), and sex (OR = 1.01; 95% CI: [0.85, 1.21], $p = 0.84$). Being in a higher grade increased the odds of non-medical prescription opioid use among students. Resilience related to a parent or some other adult who is interested in school work (OR = 0.54; 95% CI: [0.43, 0.67], $p < 0.001$), clear rules at school (OR = 0.57; 95% CI: [0.44, 0.73], $p < 0.001$), and engaging in clubs, sports teams, church or temple, or other group activity outside of home and school (OR = 0.55; 95% CI: [0.43, 0.69], $p < 0.001$) decreased odds of non-medical prescription opioid use. Having a friend that really cares was not significantly associated with non-medical prescription opioid use (OR = 0.97; 95% CI: [0.76, 1.22], $p = 0.81$). Table 2 summarizes the binary logistic regression models for each year.

2015 Resilience and Lifetime Non-Medical Prescription Use

There were 1,971 AI/AN students and 8,496 non-AI/AN students in 2015. Logistic regression analysis was conducted for 2015. Again, there was no relationship between non-medical prescription opioid use among rural and urban (OR = 0.98; 95% CI: [0.80, 1.22], $p = 0.91$) or among AI/AN and non-AI/AN students (OR = 0.88; 95% CI: [0.67, 1.15], $p = 0.36$), controlling for grade (OR = 2.59; 95% CI: [1.94, 3.46], $p < 0.001$), and sex (OR = 0.89; 95% CI: [0.76, 1.06], $p = 0.20$). As was the case in 2013, only a progression in grade increased the odds of lifetime non-medical prescription opioid use. Factors such as having a parent or some other adult who is interested in school work (OR = 0.67; 95% CI: [0.55, 0.82], $p < 0.001$), clear rules at school (OR = 0.61; 95% CI: [0.49, 0.78], $p < 0.001$), engaging in sports teams, church or temple, or other group activity outside of home and school (OR = 0.81; 95% CI: [0.67, 0.98], $p < 0.05$), and having a friend that really cares all significantly decreased the odds of non-medical prescription opioid use (OR = 0.69; 95% CI: [0.56, 0.84], $p < 0.001$).

2017 Resilience and Lifetime Non-Medical Prescription Use

There were 2,891 AI/AN students and 14,196 non-AI/AN students in 2017. In 2017, the pattern remained the same with no difference between non-medical prescription opioid use among

rural and urban (OR = 0.90; 95% CI: [0.77, 1.06], $p = 0.23$) or AI/AN and non-AI/AN students (OR = 0.97; 95% CI: [0.77, 1.21], $p = 0.79$), controlling for grade (OR = 2.54; 95% CI: [2.07, 3.13], $p < 0.001$), and sex (OR = 1.04; 95% CI: [0.89, 1.20], $p = 0.59$). Grade remained the only significant predictor for increased lifetime use across the three time points. Resilience related to parent or some other adult who is interested in schoolwork (OR = 0.62; 95% CI: [0.53, 0.73], $p < 0.001$), clear rules at school (OR = 0.58; 95% CI: [0.48, 0.70], $p < 0.001$), and having a friend that really cares decreased the odds of non-medical prescription opioid use among youth (OR = 0.73; 95% CI: [0.62, 0.85], $p < 0.001$). Engaging in clubs, sports teams, church or temple, or other group activity outside of home and school was not significantly associated with non-medical prescription opioid use in 2017 (OR = 0.87; 95% CI: [0.76, 1.01], $p = 0.07$).

Table 2

Logistic Regression Models for Non-Medical Prescription Opioid Use 2013, 2015 and 2017

	2013		2015		2017	
Covariates	**Odds Ratio**	**(95% CI)**	**Odds Ratio**	**(95% CI)**	**Odds Ratio**	**(95% CI)**
Gender (Female) →	1.01	0.85-1.21	0.89	0.76-1.06	1.04	0.89-1.02
Ethnicity (AI/AN Youth) →	0.80	0.55-1.16	0.88	0.67-1.15	0.97	0.77-1.21
Grade (10th) →	2.21	1.71-2.85***	2.01	1.49-3.46***	2.13	1.74-2.61***
Grade (12th) →	2.73	2.07-3.59***	2.59	1.94-3.46***	2.54	2.07-3.13***
Location (Rural) →	0.86	0.69-1.07	0.98	0.80-1.22	0.90	0.77-1.06
Adult/Community Cares about Schoolwork →	0.54	0.43-0.67***	0.67	0.55-0.82***	0.62	0.53-0.73***
Friend Cares →	0.97	0.76-1.22	0.69	0.56-0.84***	0.73	0.62-0.85***
Clear Rules at School →`	0.57	0.44-0.73***	0.61	0.49-0.78***	0.58	0.48-0.70***
Community Activities →	0.55	0.43-0.69***	0.81	0.67-98*	0.87	0.76-1.01

*p<0.05
**p<0.01
***p<0.001

Patterns Across the Three Time Points

Controlling for year, the log of the pooled odds ratios between ethnicity and non-medical prescription opioid use was not significant, indicating no difference between AI/AN and non-

AI/AN students across years ($\chi^2_{MH} = 1.22$, $\alpha\hat{}_{MH} = 0.97$, 95% CI: [0.90, 1.04], $p = 0.44$). There is evidence that the association of rurality and non-medical prescription opioid is different, depending on year ($\chi^2_{MH} = 9.03$, $\alpha\hat{}_{MH} = 1.08$, 95% CI: [1.02, 1.15], $p < 0.05$). There were also significant differences between years for grade, stratified by year, with highest use in 2013 ($\chi^2_{MH} = 3.68$, $\alpha\hat{}_{MH} = 2.42$, 95% CI: [2.26, 2.58], $p < 0.05$).

DISCUSSION

This study contributes to the literature on the trends in prevalence of non-medical prescription opioid use among rural and urban AI/AN and non-AI/AN youth in eighth, tenth, and twelfth grade. We did not observe a significant difference in the prevalence among AI/AN youth residing in rural and urban locations nor between AI/AN students compared with their non-AI/AN counterparts. As is commonly found, the likelihood of non-medical prescription opioid use increased as students progressed in school (National Institute on Drug Abuse, 2018). The importance of resilience was highlighted by the fact that the more social and community support youths have, the greater the protective effect in not using non-medical prescription opioids. These findings may offer preparatory evidence for clinicians and prevention scientists in determining ideal times for intervention and how resiliency may buffer the initiation or progression of non-medical prescription opioid use for all youth. This information may also offer evidence for considering the conception and implementation of developmentally appropriate interventions.

Counter to our findings, previous research has indicated that the risk of any illicit drug use among AI/AN youth residing on or near reservations is higher compared with their non-AI/AN counterparts (Swaim & Stanely, 2018; Whitesell et al., 2012). Frequency of substance use in the Southwest has shown to be lower among AI/AN adults compared to AI/AN adults in the Northern Plains and in the general U.S. population (Beals et al., 2003), pointing to potential regional differences in buffering effects of misuse among youth as well. In alignment with previous research, our findings indicated that with non-medical prescription opioid use, there was increasing risk as youth aged, with highest lifetime use at twelfth grade (Johnston et al., 2018; Swaim & Stanely, 2018). Our preliminary findings also support the trend that non-medical prescription opioid use has been diminishing overtime, with evidence suggesting that it may be due in part to the decrease in youth perception of opioid availability since 2010 (from 54.2% to 32.5%; National Institute on Drug Abuse, 2018).

Although preliminary, the most crucial areas of resilience in our study in reducing likelihood of non-medical prescription opioid use were social connection and school environment. School-related factors have been found to contribute to opioid use for AI/AN adolescents in other studies as well. Among AI/AN youth across 11 states, performance in school was associated with lifetime opioid misuse (OR=.90, 95% CI: [0.82, 0.98] $p < 0.01$; Nalven et al., 2020). Our findings also support the factors associated with resiliency identified across ethnicity found to protect against substance use among youth (Catalano et al., 2012; Hawkins et al., 1992; Viner et al., 2012). Furthermore, the differences in resiliency between the grades within certain protective domains may indicate the developmental role of resiliency, with one study indicating that the strength of protective effects diminishes in middle school and begins to increase again in high school, supporting the need for early and consistent initiatives to enhance community and social support for youth through high school (Kim et al., 2015).

In addition, AI/AN young adults in the Southwest have been shown to have lower rates of tobacco and alcohol use compared to the general population, with cultural ties a potential contributor. More than half the sample in one study indicated they spoke their Native language and participated in their traditional ceremonies (Greenfield et al., 2018). Another recent descriptive study showed similar substance use prevalence rates among urban AI/AN youth compared with non-AI/AN students, with up to 85% of AI/AN students participating in cultural activities. These results point to the possible protective effect of cultural engagement for youth (D'Amico et al., 2019). Our findings also add to the previous literature that noted school attachment and bonding as decreasing risk of substance use among AI/AN youth (Dickens, et al., 2012; HeavyRunner-Rioux & Hollist, 2010). Future research should continue to investigate the intervening, moderating, and mediating effects of resilience among urban and rural AI/AN youth and how this contributes to reduced substance use (Greenfield et al., 2018; Manson, 2018; Whitesell et al., 2012).

There are limitations of this study that may be important to consider when interpreting the findings. The results of this study may not generalize to youth residing in other states, especially since AI/AN communities in the Southwest have historically had lower prevalence rates of substance use (Beals et al., 2003). In addition, this study was limited in terms of questions asked about non-medical prescription opioid use and resilience. For example, in eighth grade, non-medical prescription opioid use in the last 30-days was not assessed. Further, we were unable to account for school dropout rates so the full extent of non-medical prescription opioid use may be

higher than reported here. Due to a basic violation of the assumption of independence of observation required in regression analysis, a more nuanced examination of trends is not possible in this sample using advanced statistical analyses. Future research should also address patterns of other substance use that may be associated with non-medical prescription opioid use among AI/AN youth. Lastly, the study was cross sectional, and the findings are therefore preliminary in nature.

Strengths of this research include the large sample of AI/AN students across three time points and the ability to assess non-medical prescription opioid use among rural and urban youth. Including resiliency in an epidemiological study is also beneficial. Reporting resiliency may be important in reducing stigma within AI/AN communities by identifying strengths that may be important to reinforce. Finally, findings may be used to assist in the development of prevention activities for AI/AN and non-AI/AN youth to thwart or delay the initiation of non-medical prescription opioid use.

REFERENCES

Agresti, A., & Franklin, C. 2013. *Statistics: Pearson New International Edition: The art and science of learning from data.* Upper Saddle River, NJ: Pearson Prentice Hall.

Beals, J., Spicer, P., Mitchell, C. M., Novins, D. K., Manson, S. M., Big Crow, C. K., Buchwald, D., Chambers, B., Christensen, M. L., Dillard, D. A., DuBray, K., Espinoza, P. A., Fleming, C. M., Frederick, A. W., Gurley, D., Jervis, L. L., Jim, S. M., Kaufman, C. E., Keane, E. M., Klein, S. A., … AI-SUPERPFP Team. (2003). Racial disparities in alcohol use: comparison of 2 American Indian reservation populations with national data. *American Journal of Public Health*, *93*(10), 1683–1685. https://doi.org/10.2105/ajph.93.10.1683

Bennett, D. A. (2001). How can I deal with missing data in my study? *Australian and New Zealand Journal of Public Health, 25*(5), 464–469. https://doi.org/10.1111/j.1467-842X.2001.tb00294.x

Bush, A., & Qaedan, F. (2019). Social support and its effects on attempted suicide among American Indian/Alaska Native youth in New Mexico. *Archives of Suicide Research, 24*(Suppl 1), 337-359. https://doi.org/10.1080/13811118.2019.1577779

Catalano, R. F., Fagan, A. A., Gavin, L. E., Greenberg, M. T., Irwin, C. E., Jr, Ross, D. A., & Shek, D. T. (2012). Worldwide application of prevention science in adolescent health. *Lancet*, *379*(9826), 1653–1664. https://doi.org/10.1016/S0140-6736(12)60238-4

Centers for Disease Control and Prevention. (2013). Methodology of the Youth Risk Behavior Surveillance System-2013. *MMWR, 62*(No. RR-#1), 11-13. https://www.cdc.gov/mmwr/pdf/rr/rr6201.pdf

Cerda, M., Santaella, J., Marshall, B.D.L., Kim, J.H., & Martins, S.S. (2015). Nonmedical prescription opioid use in childhood and early adolescence predicts transitions to heroin use in young adulthood: A national study. *The Journal of Pediatrics, 167*(3), 605-612.e2. https://doi.org/10.1016/j.jpeds.2015.04.071

D'Amico, E. J., Dickerson, D. L., Brown, R. A., Klein, D. J., Agniel, D., & Johnson, C. (2019). Unveiling an 'invisible population': Health, substance use, sexual behavior, culture, and discrimination among urban American Indian/ Alaska Native adolescents in California. *Ethnicity & Health*, 1–18. https://doi.org/10.1080/13557858.2018.1562054

Dickens, D. D., Dieterich, S. E., Henry, K. L., & Beauvais, F. (2012). School bonding as a moderator of the effect of peer influences on alcohol use among American Indian adolescents. *Journal of Studies on Alcohol and Drugs, 73*(4), 597–603. https://doi.org/10.15288/jsad.2012.73.597

Duran, E. (2006). *Healing the Soul Wound: Counseling with American Indian and other Native Peoples* (pp. 13-20; 60-64). Teachers College Press.

Duran, E., & Duran, B. 1995. *Native American Postcolonial Psychology*. State University of New York Press.

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

Greenfield, B. L., Venner, K. L., Tonigan, J. S., Honeyestewa, M., Hubbell, H., & Bluehorse, D. (2018). Low rates of alcohol and tobacco use, strong cultural ties for Native American college students in the Southwest. *Addictive Behaviors*, *82*, 122–128. https://doi.org/10.1016/j.addbeh.2018.02.032

Hawkins, J., Catalano, R., & Miller, J. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, *112*(1), 64-105. https://doi.org/10.1037/0033-2909.112.1.64

Hawkins, E. H., Cummins, L. H., & Marlatt, G. (2004). Preventing substance abuse in American Indian and Alaska Native youth: Promising strategies for healthier communities. *Psychological Bulletin*, *130*(2), 304–323. https://doi.org/10.1037/0033-2909.130.2.304

Healy, R., FitzGerald, C., Green, D., & Penaloza, L. (2018). New Mexico Youth Risk & Resiliency 2015 Survey Results Report: Drug use and related behaviors. https://digitalrepository.unm.edu/prc-reports-documents/4

HeavyRunner-Rioux, A. R., &Hollist, D. R. (2010). Community, family, and peer influences on alcohol, marijuana, and illicit drug use among a sample of Native American youth: An analysis of predictive factors. *Journal of Ethnicity in Substance Abuse,* 9(4), 260-283. https://doi.org/10.1080/15332640.2010.522893

Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2018). Demographic subgroup trends among adolescents in the use of various licit and illicit drugs, 1975–2017. (Monitoring the Future Occasional Paper No. 90). Institute for Social Research, The University of Michigan.

Kim, B. K. E., Oesterle, S., Catalano, R. F., & Hawkins, D. (2015). Change in protective factors across adolescent development. *Journal of Applied Developmental Psychology, 40*, 26-37. https://doi.org/10.1016/j.appdev.2015.04.006

Manson, S. (2018). Substance use among American Indian youths today: A threat to our future. *JAMA Network Open, 1*(1), e180381. https://doi.org/10.1001/jamanetworkopen.2018.0381

Momper, S. L., Delva, J., Tauiliili, D., Mueller-Williams, A. C., & Goral, P. (2013). OxyContin use on a rural Midwest American Indian reservation: Demographic correlates and reasons for using. *American Journal of Public Health*, *103*(11), 1997–1999. https://doi.org/10.2105/AJPH.2013.301372

Nalven, T., Spillane, NS., & Schick, MR. (2020). Risk and protective factors for opioid misuse in American Indian adolescents. *Drug and Alcohol Dependence*, *206*(107736), 1-6. https://doi.org/10.1016/j.drugalcdep.2019.107736

National Institute on Drug Abuse. (2018). Monitoring the Future Survey: High School and Youth Trends, Drug Facts. National Institutes of Health; U.S. Department of Health and Human Services.

New Mexico Youth Risk and Resilience Survey (NM-YRRS)-High School. (2017). 2017 High School Questionnaire. http://youthrisk.org/pdf/surveybooklets/YRRS-2017-survey-booklet-HS-E-Std.pdf

New Mexico Youth Risk and Resilience Survey (NM-YRRS)-Middle School. (2017). 2017 Middle School Questionnaire. http://youthrisk.org/pdf/surveybooklets/YRRS-2017-survey-booklet-MS-E-Std.pdf

Oluwoye, O., Kriegel, L. S., Alcover, K. C., Hirchak, K., & Amiri, S. (2020). Racial and ethnic differences in alcohol-, opioid-, and co-use-related deaths in Washington State from 2011 to 2017. *Addictive Behaviors Reports*, *12*, 100316. https://doi.org/10.1016/j.abrep.2020.100316

Osborne, W. J. (2013). Dealing with missing or incomplete data: Debunking the myth of emptiness. In *Best Practices in Data Cleaning: A Complete Guide to Everything You Need to Do Before and After Collecting Your Data.* Sage Research Methods.

Roderick, R. J. L. (1988). A test of missing completely at random for multi variety data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198–1202. https://doi.org/10.1080/01621459.1988.10478722

Stanley, L. R., Harness, S. D., Swaim, R. C., & Beauvais, F. (2014). Rates of substance use of American Indian students in 8th, 10th, and 12th grades living on or near reservations: Update, 2009-2012. *Public Health Reports*, *129*(2), 156–163. https://doi.org/10.1177/003335491412900209

Substance Abuse and Mental Health Services (SAMHSA). (2016). *The National Tribal Behavioral Health Agenda*. Rockville, MD: U.S. Department of Health and Human Services. https://store.samhsa.gov/product/The-National-Tribal-Behavioral-Health-Agenda/PEP16-NTBH-AGENDA

Swaim, R. C., & Stanley, L. R. (2018). Substance use among American Indian youths on reservations compared with a national sample of US adolescents. *JAMA Network Open*, *1*(1), e180382. https://doi.org/10.1001/jamanetworkopen.2018.0382

Tipps, R. T., Buzzard, G. T., &McDougall, J. A. (2018). The opioid epidemic in Indian Country. *Journal of Law, Medicine & Ethics, 46*(2), 422-436. https://doi.org/10.1177/1073110518782950

Venner, K. L., Donovan, D. M., Campbell, A., Wendt, D. C., Rieckmann, T., Radin, S. M., Momper, S. L., & Rosa, C. L. (2018). Future directions for medication assisted treatment for opioid use disorder with American Indian/Alaska Natives. *Addictive Behaviors*, *86*, 111–117. https://doi.org/10.1016/j.addbeh.2018.05.017

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet, 379*(9826), 1641-1652. https://doi.org/10.1016/S0140-6736(12)60149-4

Whitesell, N. R., Beals, J., Crow, C. B., Mitchell, C. M., & Novins, D. K. (2012). Epidemiology and etiology of substance use among American Indians and Alaska Natives: Risk, protection, and implications for prevention. *The American Journal of Drug and Alcohol Abuse*, *38*(5), 376–382. https://doi.org/10.3109/00952990.2012.694527

Wu, L. T., Ringwalt, C. L., Mannelli, P., & Patkar, A. A. (2008). Prescription pain reliever abuse and dependence among adolescents: A nationally representative study. *Journal of the American Academy of Child and Adolescent Psychiatry, 47*(9), 1020–1029. https://doi.org/10.1097/CHI.0b013e31817eed4d

ACKNOWLEDGEMENTS

We would like to thank the Albuquerque Area Southwest Tribal Epidemiology Center and the Albuquerque Area Health Board, Inc. for all their assistance during this project.

FUNDING INFORMATION

Funding was provided by grants from the National Institute on Alcohol Abuse and Alcoholism (T32 AA018108, PI: McCrady; K01 AA028831-01, PI: Hirchak).

AUTHOR INFORMATION

Dr. Katherine Hirchak is an assistant research professor at the Elson S. Floyd College of Medicine at Washington State University in Spokane, WA. Dr. Solmaz Amiri is an assistant research professor at the Elson S. Floyd College of Medicine at Washington State University in Spokane, WA. Ms. Judith Espinoza is an epidemiologist at the Albuquerque Area Southwest Tribal Epidemiology Center in Albuquerque, NM. Ms. Jalene Herron is a doctoral student in the Department of Psychology and a Fellow at the Center on Alcohol, Substance use And Addictions at the University of New Mexico in Albuquerque, NM. Ms. Alexandra Hernandez-Vallant is a doctoral student in the Department of Psychology and a Fellow at the Center on Alcohol, Substance use And Addictions at the University of New Mexico in Albuquerque, NM. Ms. Violette Cloud is a doctoral student in the Department of Psychology at the University of New Mexico in Albuquerque, NM. Dr. Kamilla

Venner is an assistant professor in the Department of Psychology and the Center on Alcohol, Substance use And Addictions at the University of New Mexico in Albuquerque, NM.

CONFLICT OF INTEREST DISCLOSURE

Dr. Kamilla Venner has a conflict of management plan at the University of New Mexico due to providing consultation and training of evidence-based treatments such as CRAFT for remuneration. All authors have no other conflicts to declare.

EXPLORING CHANGES IN GANG INVOLVEMENT AND ASSOCIATED RISK FACTORS FOR AMERICAN INDIAN ADOLESCENTS IN RESERVATION COMMUNITIES

Lauren P. Fox, MA, MPS, and Todd M. Moore, PhD

Abstract: Reservation communities are among emerging communities for gang activity, in which reports of a rise in youth and/or criminal gangs began occurring after the 1980s. Gang membership has been found to pose a public health risk, strain community resources, and risk a number of individual negative life outcomes. Perceived increases in reservation gang activity have been observed by law-enforcement and community stakeholders, but comparatively little empirical research has focused specifically on these communities. Utilizing data from an existing public dataset, analysis of variance and regression analysis were utilized to examine cross sectional trends in gang involvement among 14,457 American Indian adolescents in reservation communities between 1993-2013. Results of this study failed to establish a consistent pattern of either growth or decline in gang membership across time when examining all reservations communities, with data suggesting that consistent trends may exist only within specific communities. Gang members were found to endorse significantly more alcohol and marijuana use, anger, depressed mood, and victimization as a whole. Only alcohol and marijuana use, violent behavior, and depressed mood demonstrated a significant interaction with time and gang membership. Finally, self-reported substance use, criminal behavior/delinquency, and violence perpetration significantly increased as gang affiliation increased.

INTRODUCTION

Gang activity has been an increasingly persistent and pervasive issue in the United States over the last century, and gang membership has continued to grow significantly since the turn of the 21st century (Federal Bureau of Investigations [FBI], 2012; Simon et al., 2013). While the full scope of gang activity can be difficult to capture, the number of youth gangs in the United States is estimated to have grown between the years 2002-2010 from 21,800 to 29,400—nearly 35%

(Simon et al., 2013). Similarly, the 2011 National Gang Threat Assessment found an almost 40% increase in adult gang members from 2009-2011, from approximately 1 million to 1.4 million active members (FBI, 2012). As of 2011, the National Gang Intelligence Center estimates that gang members account for approximately 48% of violent crime in many jurisdictions in the United States, with that estimate increasing to as high as 90% of all violent crime in specific jurisdictions (FBI, 2012). Additionally, while the popular image of gang members in the United States may elicit a mental image of adult men, research has shown that most youth who join gangs do so between that ages of 11-15 (Simon et al., 2013).

Gang dynamics and theoretical frameworks have been studied in multiple different settings, but gang research often focuses on major urban centers, and these dynamics remain unexamined outside of the expected areas (Howell & Egley, 2005), particularly in contexts like American Indian (AI) reservations. Journalists, researchers, and community stakeholders have started to draw attention to what is perceived as increased gang activity on AI reservations over the last two decades (Hailer & Hart, 1999). In 2009 the new and growing nature of these reservation gangs were described by *The New York Times* journalists as "[lacking] the reach of the larger gangs after which they style themselves, the Indian gangs have emerged as one more destructive force in some of the country's poorest and most neglected places," suggesting a perception of reservation communities as having a particular vulnerability to the effects of gang activity (Eckholm, 2009). Of the limited research that exists, police awareness of gangs operating on or near reservation communities seems to place the beginning of a gang presence in the 1990s, growing to an estimated 370+ gangs operating by the turn of the 21st century (Freng et al., 2012). This could potentially put most reservation communities under the umbrella of *emergent* gang cities, or smaller cities with a gang culture developing after the 1980s (Tita & Ridgeway, 2007). Yet, it has not been clearly established if this perceived belief in growing gang involvement is a measurable and observable phenomenon, if it holds true across reservation communities throughout the United States, and how the characteristics of such gangs would differ from youth gangs found in other communities.

One distinct characteristic of reservation communities which may contribute to gang perceptions is the combination of over- and under-policing which currently and historically impacts the AI community in the United States (Perry, 2006). Over-policing can include more frequent contact with police, increased likelihood of being arrested and charged, increased likelihood of receiving jail time, or disproportionately harsh sentencing (Freiburger & Burke,

2011; Martin, 2013; Perry, 2006). Under-policing can include a limited or non-existent response to experiences of victimization and criminal activity perpetrated against AI individuals (Perry, 2006), even though AI individuals are victims of crime at a per capita rate double that of the general population (Perry, 2006). These disparities are cause for concern because they would suggest that even relatively small-scale vandalism or truancy exhibited by some reservation gangs could yield disproportionately negative repercussions for AI gang members.

In addition to contact with the criminal justice system, gang culture can be expected to develop when there is a confluence of such factors as discrimination, enculturation, and disparities and disruptions to the family, community, and culture (Donnermeyer et al., 2000). Legacies of colonialism and historical mandates forcing assimilation have created a scenario where many individuals, particularly urban AI individuals, may struggle to maintain a sense of ethnic identity (Napoli et al., 2003). Many reservation communities could serve as illustrative examples of Vigil's (2003) Multiple Marginality Framework in which risk continuously accumulates by occurring at multiple ecological levels (Hautala et al., 2016). A confluence of exposure to discrimination, economic disenfranchisement, and disconnect from both the majority culture and one's own ethnic identity may make gang membership more desirable to young people (Donnermeyer et al., 2000).

However, gang involvement is often tied to experiences of both perpetrated and experienced victimization. Young adults participating in gangs are more likely than their peers to have experienced some form of victimization in their lifetime and are more likely to be victimized by their gang-affiliated peers after joining (Fox, 2017; Taylor et al., 2007). Gang members are also more likely to be revictimized by other gang members, but are likely to report lower feelings of risk of revictimization (Fox, 2017). Violence and victimization in gangs have been studied in multiple different settings, but have generally been left unexamined in communities such as AI reservations (Howell & Egley, 2005). Gang membership is also associated with behaviors which increase substance abuse, including both substance use (Bjerregaard, 2010; Decker et al., 2013) and sale/distribution of substances (Bjerregaard, 2010; Decker et al., 2013; Gordon et al., 2004). AI youth living on reservations appear to engage in higher rates of substance use than those who do not (Beauvais, 1992), and increases in substance use risk with gang membership should then be particularly concerning in communities where multiple risks may compound and create a confluence of factors for youth who may already be at increased risk of substance use, as well as the potential capacity for these risk factors to exacerbate each other.

Gang members pose an unaddressed public health risk, in that they experience higher levels of psychiatric morbidity than their peers (Coid et al., 2013). This not only includes a higher likelihood to endorse alcohol dependence or characteristics of antisocial personality disorder, but a higher likelihood to endorse anxiety disorders, victimization, suicidality, and some features of psychosis as well (Coid et al., 2013). This would suggest the possibility that gang involvement may be indicative of considerable risk to an individual's overall mental health and pose a public health concern in addressing these individual's needs appropriately. When considering the average age of those joining a gang (ranging between 11-15 years), this inordinate mental strain at such a developmentally vulnerable stage is cause for alarm.

Despite the negative perception that can be associated with gang membership, there are a number of adaptive reasons that would make it a compelling option, particularly for an adolescent. While gang membership is often characterized as a result of maintaining a delinquent social circle, youth gang members demonstrate greater network stability, creating and maintaining a larger number of friendships than those who leave gangs (Weerman et al., 2015). Gang units can also provide a social structure and sense of belonging, which may be particularly appealing to adolescents unable to find these elements elsewhere (Sharkey et al., 2011). Lack of connectedness in home and school environments has already been found to associate with low educational attainment and increased risk-taking behaviors in AI adolescents (Machamer & Gruber, 1998). Therefore, the camaraderie and support offered through gang membership may be understandably appealing in such circumstances. Among non-AI youth, factors such as low socioeconomic status, inconsistent adult supervision or family organization, subsequent delinquency, and ethnic minority status are all associated with gang involvement (Whitbeck et al., 2002).

The compelling benefits and alarming risks of gang involvement for AI adolescents means that understanding the trends and perceived growth in gang activity in recent years is of critical importance. While concern is generally characterized as an issue of growth, it is currently unclear if there is an actual, measurable growth in the number of AI gang members, changes in the severity or character of their activities, or fluctuations in the configurations of gang networks such that the number of individuals with informal affiliations may change over time. Additionally, it remains unclear how generalizable perceived growth in AI gang membership is to the larger indigenous populations of the United States, which accounts for a large and diverse number of distinct communities and individuals.

The current study examined multiple aspects of potential gang presence in the reservation

communities across the United States over a ten-year span. Based on prior literature, hypothesis 1 posited that self-reported gang involvement would increase from 1993-2013 among AI teenagers. Additionally, hypothesis 2 examined whether there were significant differences in between AI adolescents who were not involved with gangs, associated but not participating in gangs, and members in gangs. It was hypothesized that self-reported substance use, delinquency, and victimization would increase as level of gang involvement increased. Finally, hypothesis 3 tested whether increases in self-reported gang involvement over the early period of this 20-year span would be associated with later increases in substance use, mood disturbances, and experiences of victimization and violence community-wide.

METHODS

Participants

Data for this study was compiled from the public dataset "Drug Use Among Young Indians: Epidemiology and Prediction 1993-2006 and 2009-2013" (ICPSR35062), available through Inter-university Consortium for Political and Social Research (Beauvais, 2014). The primary focus of the original project was the examination of the epidemiology of substance use as well as environmental and developmental factors, such as peer relationships, family dynamics, school resources, and cultural identity for adolescents who attend school on or near AI reservations. Surveys were completed annually in the classroom setting in grades 7-12. Sampling consisted of schools with ≥ 20% AI population on, or in close proximity to, reservation communities. Overall, the full dataset includes 534 variables and data from 26,451 students. Only those students who identified at least one of their ethnic identities as AI were included in the subsequent analyses (n = 14,457).

During original data collection, surveys were completed in-school with optional participation, and schools were given $500 and a comprehensive report of their survey findings for participating in the survey. Fewer than 1% of students refused participation or opted out. Some schools were re-surveyed repeatedly on a 4-year cycle; in these instances, data from students who were already surveyed were not included. See publicly available data materials (Beauvais, 2014) or subsequent studies (e.g., Stanley et al., 2014) for additional details on original data collection methodology.

Measures

Demographics

Sample demographics were assessed using participant responses to questions identifying age, grade in school (7-12), gender (male/female), and geographic region. Participants endorsed one or more racial/ethnic identities, and those who did not identify as AI were excluded from subsequent analyses.

Gang Involvement

Participants were asked "Have you ever been in a gang?" Possible response options included: *I will never join a gang*; *Used to be in a gang, but not now*; *I will join a gang later; Not a member of a gang, but hang out with a gang;* or *In a gang now*. In order to be utilized in multiple different analyses, this variable was also transformed into a dichotomous variable of lifetime gang membership, in which *I will never join a gang, I will join a gang later,* and *Not a member of a gang* were combined into a single variable: "Has never been in a gang." The options *Used to be in a gang, but not now* and *In a gang now* were combined into a single option: "Has ever been in a gang."

Crime and Delinquency, Substance Use, and Victimization

In order to assess hypothesis 2 cumulative indices of three constructs were created from 69 identified substance use variables, 5 victimization variables, and 11 criminal behavior or delinquency variables. For substance use, this included self-reported user level (Non-user, Very light, Light, Moderate, Heavy, Very Heavy), lifetime use, and past year use (None, 1-2, 3-9, 10-19, 20-49, 50+) of a number of controlled substances (e.g., heroin, marijuana, methamphetamines, etc.). Additionally, this index included questions assessing substance use-related behaviors, including ever using a needle to take cocaine, methamphetamines, heroin, or other drugs (Yes/No); mixing two different drugs and/or mixing drugs with alcohol; and drinking alcohol or using marijuana when alone. This past substance use index yielded an individual total score ranging from 0-202. Perpetration of victimization consisted of five items, including "Have you ever…" questions, including *beaten someone up*, *hurt someone with a weapon*, *used force to get money or things*, *robbed someone of money or property*, and *robbed someone*. When added together, this created a perpetration index with a possible individual score ranging from 0-5. Criminal and delinquent behavior included the variables from the aforementioned perpetration index, while also including ever scaring someone with a weapon, defacing or marking property, stealing a car, being arrested, slashing tires, or committing another serious crime. The total criminal and delinquent

behavior index had a possible individual score ranging from 0-11.

Risk Factors

Hypothesis 3 utilized a number of derived scales which combined both suggested variable combinations utilized in past analyses of the dataset, as well as additional variables unique to this study. Of the 534 variables available in the dataset, 31 face-valid items of anger, depression, self-esteem, marijuana use, alcohol use, violent behavior, and victimization were identified and then analyzed utilizing principal component factor analysis. All variables were mean centered prior to conducting principal component factor analysis, iterated principal factor extraction, and promax oblique rotation for each construct. Anger, depression, violent behavior, alcohol use, and marijuana use all resulted in single factors, whereas victimization and self-esteem analyses resulted in two separate factors.

Alcohol and Marijuana Use. Factor analysis was conducted on 4 face-valid indicators of general alcohol use, including frequency of use of the past month and year, frequency of getting drunk over the past month and year, and self-reported user level. Factor loading for all four variables ranged from 0.87-0.91. Factor analysis of 3 similar indicators of general marijuana use resulted in one interpretable factor (eigenvalue > 1), with factor loadings ranging from 0.90-0.96. *Self-esteem*: Factor analysis of 11 self-esteem variables (e.g., "Peers like me," "I am proud of myself") yielded two factors which allowed for self-esteem to be separated out into two separate constructs. These two constructs were labelled: 1) "How I view myself" and 2) "How others view me," while four other variables with factor loadings < 0.50 were dropped from analyses.

Anger. Factor analysis of 6 variables which appeared to be face-valid indicators of anger (e.g., *I am quick tempered, I feel like hitting someone)* found one interpretable factor (eigenvalue > 1), with all variable factor loadings ranging between 0.54-0.88.

Depressed Mood. Factor analysis of the 7 variables associated with low or depressed mood (e.g., "I am depressed," "I am lonely") yielded one interpretable factor (eigenvalue > 1), and all variables were retained as all were found to show factor loadings exceeding 0.68-0.86.

Violent Behavior. Factor analysis was conducted on 4 items that appeared to be face-valid indicators of violent behavior (e.g., "Have you ever beaten someone up?', "Have you ever hurt someone with a weapon?"), and revealed one interpretable factor (eigenvalues > 1). All four of these items appeared to load cleanly onto this individual factor, with factor loadings ranging from 0.990-0.997.

RESULTS

Descriptive Statistics

See Table 1 for complete descriptive statistics. The final sample resulted in a slight female majority (50.82%), with a mean age of 14.83 years and mean grade of approximately 9th (M = 9.08). The Southwest and Northern Plains represented the largest geographic regions, at 33.19% and 32.16%, respectively. The majority (87.37%) of participants do not report having ever been in a gang.

Table 1
Descriptive Statistics (n = 14,457)

Grouping Label	Frequency (%)
Gender	
Female	7,251 (50.82)
Male	7,017 (49.18)
Geographic Regions	
Northwest	386 (2.69)
Northern Plains	4,650 (32.16)
Upper Great Lakes	1,099 (7.60)
Northeast	147 (1.02)
Southeast+Texas	618 (4.27)
Southwest	4,799 (33.19)
Oklahoma	2,755 (19.06)
Has ever been in a gang	1,576 (12.63)
Never has been in a gang	10,906 (87.37)
	***n* (%)**
Race/Ethnicity	
American Indian only	13,017 (90.04)
Two or more races	1,440 (9.97)
	Mean (SD)
Age	14.83(1.73)
Grade	9.08(1.62)

Hypothesis 1: Self-reported Gang Involvement Would Increase Over Time Period

We hypothesized that self-reported gang involvement would have increased from 1993-

2013 among AI adolescents. This is represented in the dataset by the dichotomous variable "Have you ever been in a gang?", with responses being grouped into the two categories: *Has ever been in a gang* or *Has never been in a gang.* Frequencies for each of these new response options were calculated and converted into percentages of the proportion each frequency represented based on the total number of observations for that time point (see Table 2). To assess the relationship between time and self-reported lifetime gang membership, point-biserial correlation was utilized and showed a small positive correlation between time and gang membership. However, this correlation was not significant, $r(12{,}482) = .003$, $p = .714$. Logistic regression was then utilized to corroborate the correlational analyses and further examine the relationship between time and gang membership. Results of the logistic regression found a small positive relationship between time and gang membership, with a non-significant odds ratio of 1.002 ($p > .05$).

Table 2
Frequency of Lifetime Self-reported Gang Membership (dichotomous) by Year

Year/Cohort	Has never been/is not in a gang	Has been/is in a gang	Total
	Frequency (%)	Frequency (%)	Frequency (%)
1993-1994	722 (85.04)	127 (14.96)	849 (100)
1994-1995	398 (86.15)	64 (13.85)	462 (100)
1995-1996	261 (88.18)	35 (11.82)	296 (100)
1996-1997	303 (88.01)	41 (11.92)	344 (100)
1997-1998	1029 (90.18)	112 (9.81)	1141 (100)
1998-1999	520 (81.50)	118 (18.50)	638 (100)
1999-2000	332 (90.71)	34 (9.29)	366 (100)
2000-2001	544 (89.77)	62 (10.23)	606 (100)
2001-2002	360 (86.54)	56 (13.46)	416 (100)
2002-2003	1113 (88.05)	151 (11.95)	1264 (100)
2003-2004	1331 (90.73)	136 (9.27)	1467 (100)
2004-2005	595 (91.82)	53 (8.18)	648 (100)
2005-2006	810 (84.20)	152 (15.80)	962 (100)
2009-2010	757 (81.14)	176 (18.86)	933 (100)
2010-2011	654 (87.2)	96 (12.8)	750 (100)
2011-2012	921 (87.55)	131 (12.45)	1052 (100)
2012-2013	256 (88.89)	32 (11.11)	288 (100)
Total	10906 (87.37)	1576 (12.63)	12,482 (100)

The wide variability and the method of sampling each community meant that the size of samples within the communities varied greatly, therefore the four largest communities by sample

size were identified for additional analyses. These were identified as Communities 11, 47, 48, and 90 in the dataset (see Table 3). These four communities accounted for approximately 40% of the overall sample (n = 5,806). Each of these communities had a sample size of at least 450 participants, in addition to having been sampled at least once in all three waves of data collection (1993-2000, 2001-2005, and 2009-2013) to allow for an examination of the effects of time on gang involvement. The same logistic regression analyses which were conducted on the full sample were utilized for each of these four communities. Analysis of Community 11 showed a negative relationship with time, with a 0.066 decrease in log odds (p = .012) of gang membership with every 1 unit increase in time. By contrast, Community 48 found a significant positive relationship with time, with an .031 increase in log odds of gang membership with each unit increase in time (p = .01). However, neither Community 47 nor Community 90 showed a statistically significant relationship with time. A consistent pattern of growth or decline in gang membership over the observed period of time could not be identified across the sample as a whole. While analyses of the largest communities within the sample showed more discernible trends in specific communities experiencing either a positive (Community 48) or negative (Community 11) trend, no clear patterns of growth emerged.

Table 3
Frequency of gang endorsement (Yes/No) in the 4 largest community samples (communities 11, 47, 48, 90)

Year	Comm 11		Comm 47		Comm 48		Comm 90	
	Yes	No	Yes	No	Yes	No	Yes	No
93-94	-	-	-	-	77	304	-	-
95-96	19	149	-	-	-	-	-	-
97-98	-	-	19	62	-	-	66	732
99-00	-	-	-	-	28	220	-	-
00-01	18	228	-	-	-	-	-	-
03-04	-	-	-	-	-	-	83	780
05-06	-	-	21	130	87	328	-	-
09-10	-	-	21	91	77	217	-	-
10-11	22	404	-	-	-	-	-	-
11-12	-	-	-	-	32	71	69	589
12-13	-	-	13	72	-	-	-	-
Total	840		429		1441		2319	
chi2	($chi^2(2)=7.01$; $p=.03$)		($chi^2(3)=3.77$; $p=.29$)		($chi^2(4)=25.39$; $p=.000$)		($chi^2(2)=2.15$; $p=.34$)	

Note: "Yes" = participant endorsed some level of lifetime gang membership. "No" = participant did not endorse any lifetime gang membership thus far. "-" indicates that this community was not assessed at this time point

Hypothesis 2: Self-reported Substance Use, Delinquency, and Victimization Would Increase as Gang-Involvement Level Increased

We hypothesized that self-report substance use, crime and delinquency, and perpetration of victimization would significantly increase as level of gang affiliation increased. This hypothesis was examined utilizing a one-way analysis of variance (ANOVA) with Tukey's HSD post-hoc comparison to test each of the relationships between the aforementioned constructs and the categorical measure of gang involvement. Each construct was compiled into a cumulative index, with higher scores indicating higher levels of each construct (see Measures for additional details). The categorical measure of gang involvement allowed for five response options to the question "Have you ever been in a gang?" Overall mean scores for each of the indices by gang level can be found in Table 4. First, results showed a significant effect of reported substance use on gang-involvement level for the five groups, $F(4, 6938) = 276.13$, $p = .000$. Post-hoc comparison showed that substance use was significantly higher ($p = .000$) for the *In a gang now* group compared to all other groups. Conversely, substance use was significantly lower ($p = .000$) in the *Will never join a gang* group compared with all other groups. However, the other three groups did not differ significantly ($p > .05$) from each other.

Similarly, a significant effect of crime/delinquency on level of gang involvement also emerged; $F(4, 7866) = 793.04$, $p = .000$. A similar pattern emerged between groups, with Tukey's HSD post-hoc comparison showing that those who reported they will never join a gang reported significantly lower criminal and delinquent behavior than all other groups ($p = .000$), and those who reported that they are currently in a gang reported significantly higher criminal and delinquent behavior than all other groups ($p = .000$). Additionally, individuals who reported that they are *Not a member of a gang, but hang out with a gang* reported significantly lower criminal and delinquent behavior ($M = 3.43$; $SD = 2.51$) than those who reported that they *Used to be in a gang, but not now* ($M = 4.02$; $SD = 2.87$; $t = -4.99$, $p = .000$). No significant difference was found between those who reported that they *Will join a gang later*, and either of the groups *Used to be in a gang, but not now* or *Not a member of a gang, but hang out with a gang* ($p > .05$). Analysis of perpetration of victimizing behavior more specifically also found a significant effect of reported perpetration on level of gang involvement, $F(4, 7984) = 562.59$, $p = .000$ (see Table 4 for additional details). Of the five levels of gang involvement, Tukey's HSD post-hoc comparison again showed that those who endorsed *I will never join a gang* reported significantly lower ($p < .05$) perpetration as compared to all other groups, and those who endorsed that they are *In a gang now* endorsed

significantly higher ($p < .05$) perpetration than all other groups. Those who endorsed that they are *Not a member of a gang, but hang out with a gang* reported significantly lower perpetration (M = 1.63; SD = 1.34) than both those who *Will join a gang later* (M = 2.04; SD = 1.60; t = -3.58, p = .003), as well as those who report that they *Used to be in a gang, but not now* (M = 1.95; SD = 1.45; t = -4.97, p = .000).

Table 4
Perpetration, Crime/Delinquency, and Substance Use Scores by Gang Level

	Perpetration		Crime/Delinquency		Substance Use	
	n	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)
Never been in gang						
Will never join gang	6,049	.67(.93)	5,976	1.23(1.68)	5,427	35.95(13.08)
Will join gang later	101	2.04(1.60)	100	3.84(3.04)	78	49.56(21.94)
Hangs out with gang	937	1.63(1.34)	916	3.43(2.51)	734	46.61(17.41)
Has been in gang						
Used to be in gang	439	1.95(1.45)	428	4.02(2.87)	340	46.79(17.85)
In a gang now	463	2.56(1.67)	451	5.46(3.27)	364	57.84(27.95)

Overall, the greatest differences in substance use, crime/delinquency, and perpetration consistently emerged between those who either entirely endorse or entirely refute gang membership, which set the outer limit of the range of scores. The other three options of past membership, future intent of membership, and gang-affiliated friends then differ to varying degrees within this range.

Hypothesis 3: Increases in Self-reported Gang Involvement over the Early Part of the Time Period Would be Associated with Later Increases in Substance Use, Mood Disturbances, Victimization, and Violence

Finally, we hypothesized that increases in self-reported gang involvement over the early period of this 20-year span would be associated with later increases in substance use, mood disturbances, and experiences of victimization and violence community-wide. Because a consistent pattern of growth or decline was unable to be established in hypothesis 1, hypothesis 3 could similarly not be supported. However, the following analyses attempted to utilize ANOVAs to examine the extent of the interactive relationship between each of the aforementioned constructs, gang involvement, and time.

Alcohol Use

Results of the ANOVA revealed a significant interaction between Time and Gang Membership on Alcohol Use, $F(16, 12425) = 1.89$, $p = .017$. The interaction indicated that the magnitude of difference between gang and non-gang members varied significantly depending on time point, but there was no clear pattern of increased or decreased differences over time. There was a significant main effect for Gang Membership, such that individuals who reported ever being in a gang reported significantly greater alcohol use ($M = 0.499$; $SD = 1.114$) compared to those reporting having never been in a gang ($M = -0.071$; $SD = 0.849$; $t = -19.48$ (1845.45), $p = <.001$).

Marijuana Use

Results of the ANOVA found a significant interaction between Time and Gang Membership on Marijuana Use, $F(16, 12423) = 2.75$, $p = .000$. The interaction effect was similar to the one found for alcohol use. There was a significant main effect for Gang Membership, in which individuals who reported ever being in a gang reported significantly greater marijuana use ($M = 0.639$; $SD = 1.067$), as compared with those who reported having never been in a gang ($M = -0.0990$; $SD = 0.882$; $t = -26.141$, $p = .000$).

Self-esteem

Results of the ANOVA did not find a significant interaction between Time and Gang Membership on the Self-Esteem factor labelled "How others see me," $F(16, 12188) = 1.39$, $p = .137$. The main effect of Gang Membership on this factor of Self-Esteem was not significant ($t = 0.413$, $p = .680$). Similarly, the interaction between Time and Gang Membership on the Self-Esteem factor labelled "How I see myself" was not significant, $F(16, 12272) = 1.53$, $p = .079$. However, the main effect of Gang Membership was significant. Those who reported any lifetime gang membership were found to endorse a significantly higher score on this scale of self-esteem ($M = 0.14$; $SD = 0.89$) than those individuals who have never been in a gang ($M = -0.03$; $SD = 0.76$; $t = -7.20$, $p < .01$). Both scales of self-esteem are reverse coded wherein higher scores indicate worse self-esteem.

Anger

Results of the ANOVA did not reveal a significant interaction between Time and Gang Membership on Anger, $F(16, 12257) = 1.21$, $p = .247$. There was a significant main effect for Gang Membership, such that those who had never been in a gang reported significantly higher scores on the anger scale ($M = 0.048$; $SD = 0.764$) than those who had ever been in a gang ($M = -0.311$; $SD = 0.831$; $t = 16.084$, $p = .000$). The anger scale is reverse coded so that higher scores indicate less anger.

Depressed Mood

Results of the ANOVA revealed a significant interaction effect between Time and Gang Membership on Depressed Mood, $F(16, 12252) = 1.72$, $p = .036$. The magnitude of difference in depressed mood between gang and non-gang members varied significantly depending on time point. There was a significant main effect for Gang Membership, such that individuals who reported never being in a gang reported significantly less depressed mood ($M = 0.029$; $SD = 0.800$), compared to those who reported having ever been in a gang ($M = -0.171$; $SD = 0.876$; $t = 8.47$, $p = .000$). The depressed mood scale is reverse coded so that lower scores indicate a more depressed mood.

Violent Behavior

Results of the ANOVA revealed a significant interaction between Time and Gang Membership on Violent Behavior, $F(12, 9413) = 2.56$, $p = .002$, meaning the magnitude of difference between gang members and non-gang members in reported violent behaviors varied significantly depending on time, but not in a consistent pattern. However, while violent behavior did show a significant negative correlation with time ($r = -.077$, $p = .000$), it was not significantly correlated with gang membership ($r = -.000$, $p = .998$), and overall mean violent behavior scores did not differ significantly between gang members ($M = 0.065$; $SD = 1.07$) and non-gang members ($M = 0.039$; $SD = 0.961$; $t = -0.917$, $p > .05$).

Victimization

Results of the ANOVA did not reveal a significant interaction between Time and Gang Membership on reported Victimization, $F(16, 12057) = 0.68$, $p = .816$ (see Figure 9). Victimization was found to have a significant positive correlation with both time ($r = .060$, $p = .00$) and gang membership ($r = .255$, $p = .000$). There was a significant main effect for Gang Membership, such that individuals who reported having never been in a gang reported significantly less victimization ($M = 0.128$; $SD = 0.197$) than those who had ever been in a gang ($M = 0.233$; $SD = 0.275$; $t = 22.730$, $p = .000$).

In general, significant interactions between time, gang membership, and scale scores were found for alcohol use, marijuana, violent behavior, and depressed mood only. In the overall sample, examination of the figures suggested that scores of violent behavior decreased over time, as did scores of alcohol use. Conversely, scores of victimization, depressed mood, and marijuana use appeared to increase over time.

DISCUSSION

The first study aim was to examine the extent to which self-reported gang involvement increased over the 20-year span surveyed. Multiple analyses were conducted which inspected self-report of the individual's level of gang membership, as well as the amount of gang affiliated peers reported. These analyses were unable to find a consistent pattern of either growth or decline collectively across the entire sample over time. Further examination of specific communities within the data set that accounted for large portions of the population yielded similarly inconsistent patterns, with select communities showing trends towards an increase, others trended towards a decline, and still others did not evidence any change. Overall, a consistent linear relationship between gang involvement and time did not emerge among this sample. These results suggest that, while gang membership numbers have potentially changed at different periods and within different communities between 1993-2013, the data does not support the idea of a generalizable increase in gang involvement among teenagers in AI reservation communities throughout the United States.

This inconsistent pattern may be the result of the unique attributes of many reservation communities, including their size and scale, the amount of consistent ingress and egress, and the geographic realities of their surrounding environment. Leverso and Matsueda (2019) point out that organizational elements of a gang influence the length of gang membership and that perceived legitimacy, control of turf and social respect, and overall group organization contribute to longer self-reported membership. However, in reservation communities, it is not uncommon to find comparatively smaller populations spread across a large area, among other factors, which distinguish reservations from large urban centers in which gang research is often conducted. These vast community differences suggest that what is therefore perceived as constant growth of gang membership might then be attributed to periodic “ebbs and flows,” in which smaller gangs cyclically form, maintain for a short period, and then taper off rapidly without the growth, competition, and perceived results that manage to fuel growth in urban gangs. It is also possible that the growth exists in AI gangs outside of reservations and that gang activity is primarily found among those who have moved or who maintain seasonal or inconsistent residence on a reservation, and who, therefore, would be unlikely to be captured in this dataset.

Due to the previously discussed ill-defined construct of gangs among the general public and law enforcement, it is also possible that changes in behavior or cultural expression may be perceived as increased gang membership. With increased access to media portrayals of gangs, as well as migration of gang culture (Hailer & Hart, 1999; Theriot & Parke, 2008), perhaps increasing

numbers of adolescents and young adults are modelling what community members would perceive to be "gang behavior" (e.g., music, dress, adopting labels such as Crips or Bloods), without consistent increases in measurable gang membership.

The next aim of this study was to examine the relationship between level or category of gang involvement and what could broadly be categorized as maladaptive behaviors: crime, delinquency, substance use, and perpetration of victimizing behavior. While five "levels" of gang involvement (i.e*., Never in a gang, Used to be in a gang, Will join a gang later, Not a member but hangs out with a gang, In a gang now*) were assessed, the largest differences were found between individuals self-identified as definitively in a gang (*In a gang now*) and those who entirely refuted membership (*I will never join a gang*). Across crime/delinquency, substance use, and perpetration, these two groups consistently set the outer limits of the range of scores. Whereas the other three categories, which might be best described as loose gang affiliation (*Used to be in a gang, Will join a gang later, Not a member but hangs out with a gang*), were found to consistently fall between the two outer ranges. In examining these five categories by grouping them into three "levels" of gang involvement (ever in a gang, loose gang affiliation, active member in a gang), we see that all of these externalizing, antisocial, maladaptive behaviors increase as level of involvement increases. This relates back to the aforementioned disconnect between public perception of growth of AI gangs and the actual inconsistent patterns in membership found in the data. One could speculate that the increased severity in overt and external behaviors, particularly criminal behaviors, might contribute to a perception that any growth in gang membership is intolerably severe or damaging. If even a small percentage increase in reported membership is accompanied by a proportional increase in crime, violence, and substance use, it is understandable that concern and alarm from community members would follow.

The final goal of this study was to examine whether patterns of gang involvement over time were related to other areas of clinical concern among the adolescents in these communities, including substance use, mood disturbance, and experiences of violence and victimization. Similar to the outcomes found in hypothesis 1, hypothesis 3 could not be assessed as proposed due to the lack of consistent patterns yielded from hypothesis 1. Results of hypothesis 3 testing did not tend to yield significant linear relationships between the constructs in question and time. However, those individuals who identified as having ever been in a gang at any point consistently scored themselves as more depressed, angrier, engaging in heavier alcohol and marijuana use, experiencing more victimization, and held themselves in lower regard. Gang members were

consistently found to be "worse off" (i.e., endorsing higher scores of negative constructs and/or lower scores of positive ones) than those who have never been in a gang for alcohol use, marijuana use, self-esteem ("How I view myself"), anger, depressed mood, and victimization. Notably, when gang membership was stratified in this dichotomous way (e.g., "Never in a gang", "Ever in a gang") violent behavior was not found to differ significantly between the two groups. These outcomes both illustrate the appeal that gang membership might hold for these students—camaraderie, social support, sense of identity—as well as raise a number of red flags. Given the established public health disparities (Sarche & Spicer, 2008) that set AI youths apart from teens in other ethnic groups for increased risk of negative health outcomes, AI teens who are also identifying as current or former gang members may experience even more severe challenges. The social and emotional functioning of these teens may therefore benefit more from gang intervention implemented from a public mental health perspective, rather than intervention focused on criminalization and incarceration. Evidence-based practices (EPB) tailored for utilization in indigenous communities, such as the American Life Skills Program (formerly Zuni Life Skills Program), have been found to be effective interventions for targeting specific behaviors such as increasing problem-solving skills and decreasing suicidality (LaFramboise & Lewis, 2008; Suicide Prevention Resource Center, 2007). However, the concerted focus on EPBs within psychology overlooks the dearth of research on culturally relevant implementation in general, and with AI/AN communities in particular (Novins et al., 2016). Given the significance of community and individual identity to the dynamics of gang involvement, future discussions of intervention for gang membership among AI adolescents would do well to keep an eye towards prioritizing collaboration and empowerment of community members. The need for a refocus on health over criminalization is particularly compelling given the lack of significant differences in violent behavior—seemingly the construct most likely to elicit police intervention—between the two gang versus non-gang members.

While this study has many identifiable strengths, including the breadth and scope of the data collected, the wide variety of communities surveyed, the number of data collection points over a 20-year span, and its ability to provide unique insight into challenging and potentially stigmatizing experiences facing these vulnerable adolescents, there are several limitations which must be considered for their potential impact on any outcomes. First, this study only included adolescents who attended and were present in school to complete the survey. Given the associations with delinquency and school risk factors, future research should examine similar

questions among adolescents with limited school attendance or who are outside of the school system altogether, as well as adults outside of this study's age range. While this study did have the added strength of measurement at a wide number of time points spread across 20 years, it is still inherently limited to a specific window, and therefore, patterns of growth or decline may not have been captured within the period surveyed. Additionally, research which engages community stakeholders in a way that encourages collaboration and self-determination is recommended going forward. Finally, data collection for this study occurred on or near reservation communities, which account for less than 25% of the total AI population (U.S. Department of Health and Human Services, 2018). Future research which includes data for individuals living in non-reservation rural, suburban, and urban settings would be beneficial for accounting for this variety. However, the size and scope of this study allowed for a more robust examination of AI gang involvement than has previously been seen and, therefore, also allowing for the diversity and within-group heterogeneity that exists within the AI population in the United States.

CONCLUSION

AI gang membership appears to fluctuate at different time points across different reservation communities in the United States. A number of characteristics of those teens who do endorse gang membership may contribute to the perceived, but ultimately unsupported, rise in membership over time. However, lifetime gang membership among AI adolescents was found to be associated with depressed mood, increased anger, experiences of victimization, marijuana use, and alcohol use. Increasing levels of gang affiliation or involvement were associated with similarly increasing levels of behaviors which would logically cause police, community stakeholders, and outsiders concern, including criminal behavior and delinquency, violence, and substance use. Therefore, what has been characterized as a generalizable increase in AI gang involvement might possibly be better explained by a number of other changes or factors. These may include changing perceptions of the associated behaviors, inaccurate labelling of gang members by outside parties, or growth in specific reservation communities or geographic regions in the United States which are then generalized without accounting for within-group diversity. Or perhaps some other yet-to-be examined factor might be influencing the dynamics of gang life among reservation communities.

Future research to fill some of these gaps in the literature would be beneficial. This study points to the need for this research to incorporate not just a traditional criminal justice perspective

on the implications of gang membership, but a psychological and public health lens. In communities already challenged by physical and mental health disparities far beyond what is found in the general population, these adolescents who are reporting that they are or were in a gang may be uniquely primed for what seems to be a myriad of negative outcomes ranging from poor grades and low self-esteem, to violence, victimization, and criminal behavior. Given the vulnerable position they are in, it remains imperative that accurate reporting of trends in growth or decline exist, so that effective intervention and support can be implemented. The current study results might lend credence to the need for interventions which address vulnerabilities and risk factors across developmental domains, and which address the significant internal (low mood, anger, poor self-image) as well as the external (violent/criminal peers, risky home environments, access to substances) challenges that these adolescents face.

REFERENCES

Beauvais, F. (1992). Drug use of friends: A comparison of reservation and non-reservation Indian youth. *American Indian and Alaska Native Mental Health Research, 5*(1), 43-50. https://doi.org/10.5820/aian.0501.1992.43

Beauvais, F. (2014). *Drug use among young american indians: Epidemiology and prediction, 1993-2006 and 2009-2013*. https://doi.org/10.3886/ICPSR35062.v3

Bjerregaard, B. (2010). Gang membership and drug involvement: Untangling the complex relationship. *Crime & Delinquency, 56*(1), 3-34. http://doi.org/10.1177/0011128707307217

Coid, J. W., Ullrich, S., Keers, R., Bebbington, P., DeStavola, B. L., Kallis, C., Yang, M., Reiss, D., Jenkins, R., & Donnelly, P. (2013). Gang membership, violence, and psychiatric morbidity. *The American Journal of Psychiatry, 170*(9), 985-993. https://doi.org/10.1176/appi.ajp.2013.12091188

Decker, S. H., Melde, C., & Pyrooz, D. C. (2013). What do we know about gangs and gang members and where do we go from here? *Justice Quarterly, 30*(3), 369-402. https://doi.org/10.1080/07418825.2012.732101

Donnermeyer, J. F., Edwards, R. W., Chavez, E. L., & Beauvais, F. (2000). Involvement of American Indian youth in gangs. *Free Inquiry in Creative Sociology, 28*(1), 73-80. http://ojs.library.okstate.edu/osu/index.php/FICS/article/view/6993

Eckholm, E. (2009, December 13). Gang violence grows on an Indian reservation. *The New York Times,* p. 14. https://www.nytimes.com/2009/12/14/us/14gangs.html

Federal Bureau of Investigations (FBI). (2012). *2011 National gang threat assessment: Emerging trends* (1614481547). https://www.fbi.gov/stats-services/publications/2011-national-gang-threat-assessment

Fox, K. A. (2017). Gangs, gender, and violent victimization. *Victims & Offenders, 12*(1), 43-70. https://doi.org/10.1080/15564886.2014.989557

Freiburger, T. L., & Burke, A. S. (2011). Status offenders in the juvenile court: The effects of gender, race, and ethnicity on the adjudication decision. *Youth Violence and Juvenile Justice, 9*(4), 352-365. https://doi.org/10.1177/1541204011399933

Freng, A., Davis, T., McCord, K., & Roussell, A. (2012). The new American gang? Gangs in Indian country. *Journal of Contemporary Criminal Justice, 28*(4), 446-464. https://doi.org/10.1177/1043986212458193

Gordon, R. A., Lahey, B. B., Kawai, E., Loeber, R., Stouthamer-Loeber, M., & Farrington, D. P. (2004). Antisocial behavior and youth gang membership: selection and socialization. *Criminology, 42*(1), 55-88. https://doi.org/10.1111/j.1745-9125.2004.tb00513.x

Hailer, J., & Hart, C. (1999). A new breed of warrior: The emergence of American Indian youth gangs. *Journal of Gang Research, 7*(1), 23-33.

Hautala, D. S., Sittner, K. J., & Whitbeck, L. B. (2016). Prospective Childhood Risk Factors for Gang Involvement Among North American Indigenous Adolescents. *Youth Violence and Juvenile Justice, 14*(4), 390-410. https://doi.org/10.1177/1541204015585173

Howell, J. C., & Egley, A., Jr. (2005). Moving risk factors into developmental theories of gang membership. *Youth Violence and Juvenile Justice, 3*(4), 334-354. https://doi.org/10.1177/1541204005278679

LaFromboise, T. D., & Lewis, H. A. (2008). The Zuni Life Skills Development Program: A school/community-based suicide prevention intervention. *Suicide & life-threatening behavior, 38*(3), 343–353. https://doi.org/10.1521/suli.2008.38.3.343

Leverso, J., & Matsueda, R. L. (2019). Gang organization and gang identity: An investigation of enduring gang membership. *Journal of Quantitative Criminology, 35*(4), 797-829. https://doi.org/10.1007/s10940-019-09408-x

Machamer, A. M., & Gruber, E. (1998). Secondary school, family, and educational risk: Comparing American Indian adolescents and their peers. *The Journal of Educational Research, 91*(6), 357-369. https://doi.org/10.1080/00220679809597565

Martin, F. A. (2013). *Rez realities: Exploring the perceptions of crime and justice among tribal police officers in Indian Country* [Doctoral dissertation, *Old Dominion University*]. ProQuest Dissertations & Theses Global: Social Sciences. http://doi.org/10.25777/kn8r-1k08

Napoli, M., Marsiglia, F. F., & Kulis, S. (2003). Sense of belonging in school as a protective factor against drug abuse among Native American urban adolescents. *Journal of Social Work Practice in the Addictions, 3*(2), 25-41. https://doi.org/10.1300/J160v03n02_03

Novins, D. K., Croy, C. D., Moore, L. A., & Rieckmann, T. (2016). Use of evidence-based treatments in substance abuse treatment programs serving American Indian and Alaska Native communities. *Drug and Alcohol Dependence, 161*, 214–221. https://doi.org/10.1016/j.drugalcdep.2016.02.007

Perry, B. (2006). Nobody trusts them! Under- and over-policing Native American Communities. *Critical Criminology, 14*(4), 411–444. https://doi.org/10.1007/s10612-006-9007-z

Sarche, M., & Spicer, P. (2008). Poverty and health disparities for American Indian and Alaska Native children: Current knowledge and future prospects. *Annals of the New York Academy of Sciences, 1136*(1), 126–136. https://doi.org/10.1196/annals.1425.017

Sharkey, J. D., Shekhtmeyster, Z., Chavez-Lopez, L., Norris, E., & Sass, L. (2011). The protective influence of gangs: Can schools compensate? *Aggression and Violent Behavior, 16*(1), 45-54. https://doi.org/10.1016/j.avb.2010.11.001

Simon, T. R., Ritter, N. M., & Mahendra, R. R. (2013). *Changing course: Preventing gang membership.* https://www.ojp.gov/pdffiles1/nij/239233.pdf

Stanley, L.R., Harness, S.D., Swaim, R.C., & Beauvais, F. (2014). Rates of substance use of American Indian students in 8th, 10th, and 12th grades living on or near reservations: Update, 2009-2012. *Public Health Reports (1974)*, *129*(2), 156–163. https://doi.org/10.1177/003335491412900209

Suicide Prevention Resource Center. (2007). *American Indian life skills*. https://www.sprc.org/resources-programs/american-indian-life-skills-developmentzuni-life-skills-development

Taylor, T., Peterson, D., Esbensen, F., & Freng, A. (2007). Gang membership as a risk factor for adolescent violent victimization. *The Journal of Research in Crime and Delinquency, 44*(4), 351–380. https://doi.org/10.1177/0022427807305845

Theriot, M., & Parke, B. (2008). Native American youth gangs: Linking culture, history and theory for improved understanding, prevention and intervention. *Journal of Ethnicity in Criminal Justice, 5*(4), 83–97. https://doi.org/10.1300/J222v05n04_04

Tita, G., & Ridgeway, G. (2007). The impact of gang formation on local patterns of crime. *The Journal of Research in Crime and Delinquency, 44*(2), 208–237. https://doi.org/10.1177/0022427806298356

U.S. Department of Health and Human Services, Office of Minority Health. (2018). Profile: American Indian/Alaska Native. https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=62

Vigil, J. (2003). Urban violence and street gangs. *Annual Review of Anthropology, 32*(1), 225–242. https://doi.org/10.1146/annurev.anthro.32.061002.093426

Weerman, F., Lovegrove, P., & Thornberry, T. (2015). Gang membership transitions and its consequences: Exploring changes related to joining and leaving gangs in two countries. *European Journal of Criminology, 12*(1), 70–91. https://doi.org/10.1177/1477370814539070

Whitbeck, L. B., Hoyt, D. R., Chen, X., & Stubben, J. D. (2002). Predictors of gang involvement among American Indian adolescents. *Journal of Gang Research, 10*(1), 11-26. https://psycnet.apa.org/record/2002-08186-002

AUTHOR INFORMATION

Lauren Fox is a clinical psychology doctoral student in the Department of Psychology at the University of Tennessee in Knoxville, TN. Dr. Todd M. Moore is a Professor of Clinical Psychology in the Department of Psychology at the University of Tennessee in Knoxville, TN.

FUNDING INFORMATION

The authors received no financial support for the research, authorship, and/or publication of this article.

ACKNOWLEDGEMENTS

We would like to express gratitude to the communities, tribal organizations, and individuals who participated in this study, as well as to the Inter-university Consortium for Political and Social Research.

UNDERSTANDING AMERICAN INDIAN YOUTH IN RESIDENTIAL RECOVERY FROM SUBSTANCE USE DISORDER: RISK AND PROTECTIVE EXPERIENCES AND PERCEIVED RECOVERY SUPPORT

Debi A. LaPlante, PhD, Martina Whelshula, PhD, Heather M. Gray, PhD,
and Sarah E. Nelson, PhD

Abstract: Historical trauma has contributed to the reality that addiction disproportionately affects tribal communities, including American Indian youth. We sought to understand American Indian youths' own experiences and perceptions of the environments to which they return after completing residential treatment for substance use disorder. We recruited three cohorts of American Indian residents of a substance use disorder treatment facility (N = 40). These residents completed a survey that measured risk and protective factors, as well as actual risk behaviors, including drug use, gambling, and violence. Participants were at risk not only for substance use disorders, but for other negative outcomes, and had elevated scores on several community, family, and school risk factors, including perceived availability of drugs, community disorganization, family history of antisocial behavior, favorable parental attitudes toward drug use, academic failure, and low school commitment. At the same time, they were exposed to community-level and family protective factors, and they engaged in many tribal cultural activities. When compared to a national sample of American Indian students of similar age, youth in our sample scored similarly on protective factors, including indicators of community, family, and school opportunities and rewards for prosocial involvement, as well as family attachment, suggesting potential resources and strengths for supporting recovery.

INTRODUCTION

The way that people understand addiction has powerful effects upon the way that they respond to addiction. Perspectives on addiction guide public support, prevention strategies, interventions, treatment approaches, research domains, and individuals' own beliefs about their ability to recover. Tribal concepts of health include the idea of a holism that exists among the

mind, body, and spirit in connection to community and the natural world. However, the brutal colonization of American Indian societies beginning over 500 years ago brought about a competing, persisting trauma culture that has affected tribal health (Brave Heart et al., 2011; Libby et al., 2008), including experiences of addiction. Consistently, Eduardo Duran's (2006) indigenous concept of addiction, Soul Wound, suggests that addiction is a complicated outcome of experienced abuses passed down from one generation to the next. Soul Wound stands apart from most historical views of addiction, which often cast people who struggle with addiction in a negative light, perpetuating addiction-related stigma (Freed, 2012). Over time people often have viewed addiction as a personal issue of morality and/or personal will, and with feelings of disgust. In fact, despite the large number of people who have addiction, this de-humanizing tendency against people with addiction seems to be so engrained that it is apparent even at the neurological level, specifically evident in uniquely reduced medial pre-frontal cortex reactivity to both objects and maligned social groups including people who have substance use disorder (SUD; Harris & Fiske, 2006).

Supporting Duran's concept of addiction, research shows that environments can influence the likelihood of both engaging in harmful behaviors, such as those leading to addiction, and also maintaining health over the long term (Mennis et al., 2016). For example, neighborhood characteristics are associated with youth alcohol consumption. Specifically, youth alcohol consumption is elevated within neighborhoods characterized by high alcohol outlet density and economic challenges, and neighborhoods that are relatively socially disorganized, unsafe, and deprived (Jackson et al., 2016). Factors such as these make recovery from addiction an even more difficult process. Although not all tribal communities have these problems, those that do might create barriers to youth's long-term recovery experiences.

Substance Use Disorders among American Indians

The Indian Health Service (IHS) recognizes that American Indian people have struggled with poor health status and health disparities for many years (IHS, 2013). These disparities include lower life expectancy, disproportionate disease burden, and poorer quality of life. The devastating truth is that American Indian people, on average, die 4.4 years earlier than the US general population. They are more likely to die from a number of conditions, including liver disease, diabetes, suicide, and more. Additionally, although SUDs hurt people from all walks of life, they also occur at a particularly high rate among American Indian people (Whitesell et al., 2012). For

example, the rate of death due to alcohol use disorder among American Indian people is more than 500% higher than the national average (IHS, 2013).

As suggested earlier, a growing body of research indicates that social, economic, cultural, and physical environmental factors shape health status. Specifically, environmental factors such as poverty (Costello et al., 2003), poor access to information and care (Geana et al., 2012), discrimination, and isolation can influence health outcomes directly and through their influence on family and community (USDHHS, 2011). Tribal communities, in particular, might struggle with issues like these. Although there is extensive diversity across tribal nations in the United States (Etz et al., 2012), American Indian people share a unique history that is associated with intergenerational trauma and associated harmful coping patterns (e.g., substance abuse, domestic violence) that are sometimes passed down from one generation to the next (Brave Heart et al., 2011; Libby et al., 2008). These experiences likely contribute to the environmental and health outcome disparities and require a great deal of resiliency in the face of continued adversity.

Substance Use Disorders among American Indian youth

Risky behaviors, such as using alcohol and other drugs, gambling, and engaging in violent or criminal activity, are a public health problem for youth across the United States (Eaton et al., 2010). American Indian youth, especially, continue to be at elevated risk for some such harmful behaviors (e.g., Etz et al., 2012; Friese et al., 2011). For instance, to a greater extent than other youth, American Indian youth struggle with earlier substance use initiation, prolonged substance use post-experimentation, and multi-drug use, over time (Hawkins et al., 2004). Risks for SUDs also occur at earlier ages within American Indian communities (Whitesell et al., 2007). This makes American Indian adolescents particularly vulnerable to substance use problems and related health and social consequences.

Sustaining Recovery and Barriers to Sustaining Recovery

The meaning of recovery from SUDs is highly personal; different people have different understandings of this term, and the meaning of recovery is shaped by the cultural values in which one is immersed. SAMHSA defines recovery from substance use/mental health disorders as “a process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential” (del Veccio, 2012, p. 3). Common personal barriers to long-term recovery after SUD treatment include co-occurring physical health, mental health, and

other substance use issues that are not recognized or addressed during treatment and which can contribute to relapse after treatment (del Veccio, 2012).

Additionally, people who lack recovery capital are at higher risk for not sustaining their recovery after treatment. Recovery capital is the set of resources—derived from social networks, education, employment, financial assets, cultural and community strengths, and other sources—that people can draw upon to start and maintain their recovery. Aftercare, or long-term support after treatment, builds bridges to crucial sources of recovery capital and therefore improves the chances of long-term recovery (Duffy & Baldwin, 2013). As noted earlier, a growing body of environmental justice research is highlighting environmental impacts upon substance use behavior that reduce recovery capital (Mennis et al., 2016). For example, this work suggests that environmental factors, such as access to substances and neighborhood disadvantage (e.g., limited opportunities for economic advancement) and disorder (e.g., dilapidated or abandoned infrastructure) affect substance use, such that high levels of neighborhood access, disadvantage, and disorder are associated with increased use. Likewise, environmental barriers to recovery, such as distance from treatment opportunities or culturally-insensitive treatment options, can reduce the likelihood of sustained recovery from SUDs. Although not all tribal communities are challenged in this way, to the extent that a specific tribal community experiences these environmental impacts and barriers, such as neighborhood disadvantage and limited access to treatment opportunities, risks for adolescent substance use and relapse might be elevated.

Cultural Engagement

One potential source of resiliency for Native youth is Native identity. Adolescence is a particularly active time in the development of, and commitment to, one's racial/ethnic identity, especially among minority group members (Corenblum, 2014). For Native adolescents, being socialized into a Native culture (i.e., enculturation)—which might include developing a sense of Native pride and self-worth, learning about historical inequalities and in-group resilience, and participating in cultural activities (e.g., pow wows, hunting/fishing trips)—might protect against risky behaviors by buffering the negative impact of environmental stressors, discrimination, and historical trauma.

Current Study

For adolescents who have completed residential SUD treatment, a group already at relatively high risk for relapse (Spear et al., 1999), returning to a community that is supportive of recovery is especially crucial. Returning home after treatment means returning to the place where these young people first learned to use and misuse substances; often, they feel anxious and unprepared to maintain their sobriety in their home communities (Gonzales et al., 2012).

We sought to gain a better understanding of American Indian youths' *own* perceptions of the environments to which they will return after completing residential treatment for chemical dependency problems. To that end, we invited current American Indian youth residents at the Healing Lodge of the Seven Nations (HL7N), a 45-bed youth residential treatment facility for youth in recovery from chemical dependency, to participate in a strengths and needs assessment. The HL7N was originally established by a coalition of seven tribal nations and its primary focus is the American Indian population, but it serves youth from both Native and non-Native backgrounds. We attempted to gain insight into youth residents' opinions and understanding of the post-treatment recovery resources available in their home communities, as well as their past experiences within their community.

METHOD

With one cohort of American Indian youth residents, we conducted a youth assessment that consisted of two primary activities: (1) a qualitative Group Level Assessment (GLA: Vaughn & Lohmueller, 2014) and (2) a comprehensive quantitative survey. We also administered the comprehensive quantitative survey to two additional cohorts. These additional cohorts did not complete the GLA due to funding limitations. This paper reports upon the findings from the comprehensive quantitative survey.

Participatory Approach

This research used a tribal participatory research approach (Thomas et al., 2011), collaborating with a Working Group of tribal representatives to shape the research questions and methodological process. Working Group members included representatives from seven nations affiliated with the HL7N. Members were board members or other designated representatives of tribes. Working Group members met quarterly and also completed ad hoc surveys to direct the

development of the youth strengths and needs assessment, evaluating and finalizing the assessment measures and materials. The Working Group's oversight of the direction of the research was essential to this work, reflecting the needs and questions of Native stakeholders. The HL7N tribal Board of Directors approved the publication of this manuscript.

Participants

We recruited three cohorts of American Indian youth who were HL7N residents, obtaining parent/guardian permission and youth assent to participate. The first cohort, which participated in both the GLA and the quantitative survey, included all 15 American Indian youth who were HL7N residents at the time of the study. The second and third cohorts, which completed the survey but did not complete the GLA, included 13 of 15 American Indian youth and 12 of 12 American Indian youth, respectively, who were HL7N residents at the time. These youth represented approximately 40% of all current HL7N residents.

Participants included 23 male and 17 female American Indian youth between the ages of 14 and 18 (inclusive), in grades 8-12. About 88% reported that they used English at home most often. All participants identified as American Indian, 24% of participants were from communities represented by the seven Tribal Nations (i.e., Confederated Tribes of the Colville Reservation, Coeur d'Alene Reservation, Kalispel Indian Reservation, Kootenai Tribe of Idaho, Nez Perce Reservation, Spokane Tribe of Indians, Confederated Tribes of the Umatilla Reservation), and 68% of participants lived on reservations. For privacy purposes, we have not provided findings at the level of participants' specific tribal affiliations.

Measures

Participants completed an assessment that included a set of brief measures of youth risk behaviors, cultural engagement, and community resources, as well as the Communities that Care Survey, which measured risk and protective factors.

Demographics

The assessment included questions about youths' age, gender, race, language, and grade in school, as well as whether they belonged to one of the seven Tribal Nations and whether they lived on a reservation.

Cultural Engagement

We adapted Winderowd et al.'s American Indian Enculturation Scale (2008) to assess youths' participation in traditional American Indian cultural activities (e.g., "Attend pow-wows," "Seek help from Elders"). The scale used a 7-point Likert scale to assess frequency of participation from 1 (Not at all) to 7 (A great deal). With the input of our Working Group, we made three changes to this measure. We removed an item about participating in tribal politics, and we added two items, one about participating in hunting and fishing and one about participating in gathering (roots, berries, medicinal plants), for a total of 18 items. We averaged responses to the 18 items to create an overall cultural engagement score for each participant.

Community Resources

To measure access to resources in their community, we asked youth about a set of nine resources, including substance use counseling, youth/community center, school counselor, substance use prevention program, transitional housing/aftercare/safehouse for youth, mental health counseling, self-help groups for youth, cultural activities, and cultural mentors. For each resource, we asked (1) whether the resource was available in their community, (2) whether they had easy access to the resource, (3) whether they had used the resource, and (4) whether they would use the resource if their community had it. We also provided a space for youth to list other resources they felt were important.

Risk Behaviors

To assess risk behaviors that were not directly addressed by the Communities That Care survey (described below), the survey included a set of yes/no questions about other experiences, including impaired driving behavior, gambling behavior, and self- and other-directed violence.

Communities That Care

The Communities That Care (CTC) survey (Arthur et al., 2002) assesses risk and protective factors identified in previous prospective research as being predictive of substance use. The survey includes 196 questions measuring 24 risk factors and 11 protective factors. Risk and protective scale scores are computed by averaging sets of items that measure each factor. The CTC survey also provides cut points calculated from normative samples that indicate whether a score is considered "at risk" (for risk factors) or "protected" (for protective factors). These cut points are based on prior work predicting substance use behaviors; we used the cut points established for tenth graders in Washington state.

The CTC was developed for use by community coalitions that seek to modify risk and protective factors to improve youth well-being. The survey was specifically designed to be administered in a school setting, within a single 50-minute class period, to students in grades 6 through 12. It has been administered at the state, county, and community levels to more than a million students across the United States, including students from multiple racial/ethnic groups (Arthur et al., 2007).

Researchers at the University of Washington and the University of North Dakota (Guttmannova et al., 2017) recently examined how 5,095 American Indian youth from across the United States responded to the CTC survey. They found that all 32 risk and protective factor scores were as internally consistent among American Indian youth as they were within general population youth. This indicates that with American Indian youth, individual items clustered into sub-scales as intended. Additionally, among American Indian youth, scores on 30 of the 32 risk and protective factor scales predicted substance use outcomes as intended. There were two exceptions: (1) the community domain measure of low opportunities for prosocial involvement in the neighborhood did not predict regular drinking among American Indian kids (but did among general population youth), and (2) low attachment to the neighborhood did not predict any substance use outcomes among American Indian kids (but did among general population youth).

Within this paper, we also include data from 2,896 American Indian adolescents (age 14-17) from the CTC Youth Survey Normative Database (USDHHS & SAMHSA, 2007) for comparison with the American Indian youth recovery sample.

Procedures

The Portland Area Indian Health Service Institutional Review Board provided review and oversight for this human subjects research. The Board of Directors of the HL7N, comprised of representatives from the Spokane Tribe of Indians, the Confederated Tribes of the Colville Indian Reservation, the Confederated Tribes of the Umatilla Indian Reservation, the Kootenai Tribe of Idaho, the Kalispel Tribe of Indians, the Coeur d'Alene Tribe of Indians, and the Nez Perce Tribe, signed a resolution supporting the publication of this research.

Parental Permission and Youth Assent

We engaged in a full parent/guardian permission procedure for HL7N American Indian youth residents that provided information about the study and requested written permission from parents or guardians. For parents or guardians who did not return a signed permission form, we

obtained oral permission by phone. A research coordinator discussed the study with HL7N American Indian youth residents and obtained signed assent from each youth participant before the study began.

Survey Administration

We asked the participants to complete the survey using a paper/pencil method. For participants in the first cohort, this occurred after the GLA in the same room that they completed the GLA. For the other two cohorts, participants completed the survey in a group counseling room. We provided each participant with a clipboard and instructed them to spread out in the room and complete the survey on their own. We also provided them with an envelope and instructed them to put their completed survey into the envelope and seal it before returning it to the Research Coordinator. These conditions provided privacy for participants. The survey took about 30-40 minutes total to complete.

Remuneration

We provided remuneration to the youth participants when they left HL7N. For the first cohort, we provided a gift card valued at $20 each: one for the survey and one for the GLA. For the other two cohorts, which completed only the survey, we provided one gift card valued at $20. We coordinated with HL7N discharge staff to ensure that these gift cards were delivered to each participant.

Analytic Plan

To identify the experiences of the youth in our sample, we report basic descriptive information, as well as scores on risk and protective factors identified as part of the CTC survey.

For the CTC survey, we provide comparison data from a national sample of American Indian youth (USDHHS & SAMHSA, 2007). Recall that participants report on their behaviors and attitudes and the behaviors and attitudes of their peers, parents, neighbors, and teachers, in a variety of situations, and the CTC survey combines these items into scales representing risk and protective scores in different domains and then assigns cut points to those scales to determine percent of respondents at-risk or protected in a given domain. We compared our sample of American Indian youth in recovery to an age-matched general population sample of American Indian youth on proportions qualifying as at-risk and protected within each CTC domain, using Chi Square tests.

We used Pearson correlations to examine associations between risk and protective factors and youth behaviors and experiences using data from the HL7N cohorts. Specifically, we examined the associations between community, family, and school risk and protective factors and the youth behaviors measured by the peer-individual constructs, including rebelliousness, positive attitudes toward drug use, positive attitudes toward antisocial behavior, low perceived risks of drug use, interactions with antisocial peers, peer drug use, gang involvement, perceived rewards of antisocial behavior, intentions to use drugs, religiosity, social skills, belief in a moral order, and interactions with prosocial peers. We also used Pearson correlations to examine the associations between risk and protective factors and age of initiation of different risk behaviors, including using marijuana, smoking, drinking, drinking regularly, getting suspended from school, getting arrested, carrying a handgun, attacking someone, and joining a gang. For analyses investigating age of initiation of different risk behaviors, we recoded values representing "never" to 18. This allowed the scale to range from 10, representing 10 or younger, to 18, representing not initiated by age 18. Because of the number of associations tested, for these correlation analyses we used a Bonferroni-corrected alpha of .001.

Finally, we used *t*-tests to examine the relationship between cultural engagement score and youth risk behaviors measured as part of the risk behaviors portion of the survey. For these analyses, cultural engagement score was treated as a continuous dependent variable and each risk behavior was a dichotomous independent variable, as presented in Table 4. For these analyses, we used a Bonferroni-corrected alpha of .006.

RESULTS

Youth Risk Behaviors

Age of Initiation

Within the CTC, participants reported upon age of initiation for various substance use activities and other behaviors. As Table 1 shows, the majority of American Indian youth respondents reported lifetime experience with marijuana, cigarettes, alcohol, school suspension, arrest, carrying a handgun, and attacking someone to hurt them. About 41% indicated a history of gang membership. Notably, most youth respondents reported having these experiences by age 12 or 13.

Table 1
Age of Initiation for Risk Behaviors

How old were you when you first…	Not initiated by age 18	≤10	11	12	13	14	≥15
Smoked marijuana	-	40.0%	20.0%	22.5%	7.5%	5.0	5.0%
Smoked a cigarette, even just a puff	2.5%	53.5%	12.5%	7.5%	5.0%	12.5%	7.5%
Had more than a sip or two of beer, wine, or hard liquor	-	22.5%	30.0%	17.5%	7.5%	15.0%	7.5%
Began drinking alcoholic beverages regularly, that is, at least once or twice a month	2.5%	7.5%	7.5%	30.0%	15.0%	20.0%	17.5%
Got suspended from school	2.6%	35.9%	15.4%	17.9%	15.4%	7.7%	5.1%
Got arrested	5.4%	2.7%	2.7%	18.9%	24.3%	18.9%	32.0%
Carried a handgun	35.0%	10.0%	7.5%	10.0%	5.0%	15.0%	17.5%
Attacked someone with the idea of seriously hurting them	41.0%	7.7%	7.7%	15.4%	15.4%	-	12.9%
Belonged to a gang	59.0%	10.3%	7.7%	5.1%	2.6%	7.7%	7.7%

Lifetime Risk Behaviors

Thirty-nine of the 40 participants answered questions about risk behaviors. Ninety-two percent of respondents (n = 36) reported that they had driven with a driver who was under the influence of intoxicants at some point in their life. Eighty-two percent (n = 32) reported that they themselves had driven under the influence of intoxicants.

Almost 85% (n = 33) of youth respondents reported that someone in their family had gambled during the past year. Fifty-nine percent (n = 23) reported that they had gambled during their lifetime, and about a third (33%; n = 13) said that they had gambled in a casino.

With respect to violence, all but two respondents (n = 37) reported having seen a physical fight in their community and about 69% (n = 27) said they had seen a physical fight in their home. During the past year, about 80% (n = 31) said that they had been in a physical fight in their community, and 51% (n = 20) reported that they had been involved in a physical fight in their home. Also, during the past year, 31% (n = 12) reported that they had been bullied, and 49% (n = 19) reported that they had bullied someone else. Almost half of the respondents (49%; n = 19) reported that they had engaged in suicidal ideation at some point during their lifetime.

Perspectives on Community Resources

Table 2 shows participants' perspectives about their community resources. This table shows that most participating youth seemed to be aware that their communities have a variety of

resources, including substance use counseling, a community center, school counselor, mental health counseling, cultural activities, and cultural mentors. However, a meaningful number reported that their community did not have specific resources that could help with maintaining recovery, or that they did not know whether their community had such resources. For example, 30% or more (n = 12 or more) reported that they did not know whether their community had SUD prevention activities, transitional housing, and youth self-help, or that their community did not have these activities.

Table 2
Awareness, Access, and Use of Community Resources

	My community has...			I have acess to...			I have used...		I would use...		
	No	**Yes**	**Don't know**	**No**	**Yes**	**Don't know**	**No**	**Yes**	**No**	**Yes**	**Don't know**
Substance use counseling	-	85.0%	15.0%	17.5%	80.0%	2.5%	35.0%	65.0%	18.4%	68.4%	13.2%
Community center	12.5%	80.0%	7.5%	27.5%	70.0%	2.5%	59.0%	41.0%	30.0%	62.5%	7.5%
School counselor	10.0%	85.0%	5.0%	17.5%	80.0%	2.5%	40.0%	60.0%	37.8%	51.4%	10.8%
Substance use disorder prevention	17.5%	70.0%	12.5%	23.1%	71.8%	5.1%	47.5%	52.5%	23.1%	66.7%	10.3%
Transitional housing	25.0%	52.5%	22.5%	35.0%	50.0%	15.0%	87.2%	12.8%	46.2%	43.6%	10.3%
Mental health counseling	10.0%	82.5%	7.5%	12.5%	85.0%	2.5%	40.0%	60.0%	25.6%	71.8%	2.6%
Youth self-help	15.0%	65.0%	20.0%	27.5%	67.5%	5.0%	61.5%	38.5%	41.0%	53.8%	5.1%
Cultural activities	12.5%	75.0%	12.5%	22.5%	70.0%	7.5%	32.5%	67.5%	17.9%	79.5%	2.6%
Cultural mentors	7.5%	75.0%	17.5%	22.5%	65.0%	12.5%	46.2%	53.8%	20.5%	76.9%	2.6%

Most youth reported that they believe they have access to a diversity of resources in their communities, including substance use counseling, community centers, school counselors, mental

health counseling, youth self-help, cultural activities, and cultural mentors. Only 50% (n = 20) indicated that they believe they have access to transitional housing.

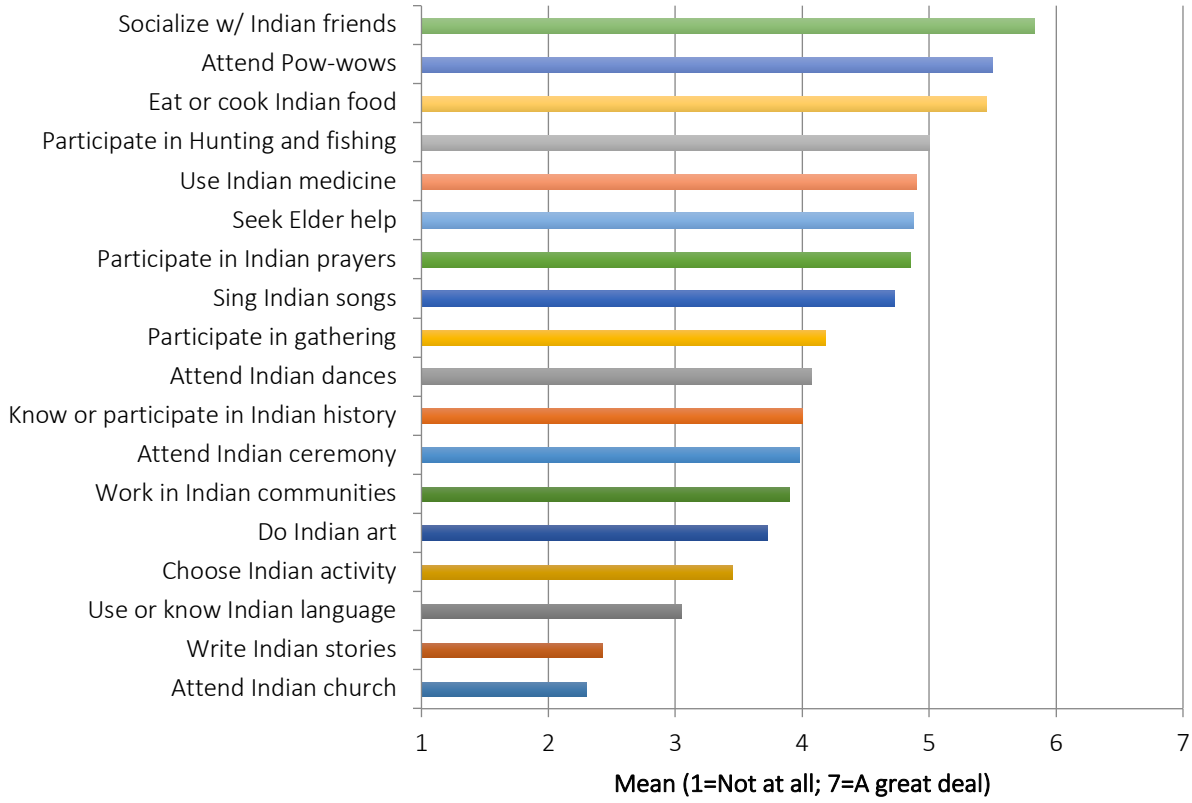
The resources that most youth reported they had used include substance use counseling, school counselors, mental health counseling, and cultural activities. Fewer than half of youth reported that they had used a community center (40%; n = 16), transitional housing (13%; n = 5), or youth self-help (38%; n = 15).

The majority of the 39 who responded to these questions said that they would use all of the resources that we inquired about in the survey other than transitional housing (51%-80%; n = 19-31). One youth volunteered that they would use more school sports in their hometown, and one youth noted that they would use anger management counseling.

Cultural Engagement

As shown in Figure 1, American Indian youth in recovery reported that they had engaged in a variety of cultural activities. In fact, youth rated their involvement in 10 of the 18 activities as more frequent than not (i.e., above 4 on a 1-7 frequency scale) with respect to their participation. The most frequently reported activity was socializing with Indian friends, and the least frequently

Figure 1. Frequency of Participation in Cultural Activities



reported activity was attending Indian church (e.g., Shaker Religion, Native American Church [peyote religion], Longhouse, Smokehouse).

Communities That Care Risk and Protective Factors

Table 3 shows the percent at risk/protected for HL7N American Indian youth and the percent at risk/protected among the national sample of American Indian youth.

Community Risk and Protective Factors

When compared to American Indian youth in the national database, youth in our clinical sample were more likely to experience high community disorganization ($\chi^2[1] = 15.5$, $p < .001$), transitions and mobility ($\chi^2[1] = 10.8$, $p < .01$), and perceived availability of drugs ($\chi^2[1] = 18.0$, $p < .001$). We observed no other statistically significant differences for community risk and protective factors.

Family Risk and Protective Factors

When compared to American Indian youth in the national database, youth in our clinical sample were significantly more likely to report parental attitudes favorable to drug use, parental attitudes favorable to antisocial behavior, and a family history of antisocial behavior ($\chi^2[1] = 27.0$, $p < .001$, $\chi^2[1] = 8.9$, $p < .01$, and $\chi^2[1] = 21.1$, $p < .001$, respectively). We observed no other statistically significant differences for family risk and protective factors.

School Risk and Protective Factors

When compared to American Indian youth in the national database, youth in our clinical sample were more likely to experience academic failure ($\chi^2[1] = 20.4$, $p < .001$) and more likely to have low school commitment ($\chi^2[1] = 15.1$, $p < .01$). We observed no other statistically significant differences for school risk and protective factors.

Peer-Individual Risk and Protective Factors

When compared to American Indian youth in the national database, youth in our clinical sample were more likely to have risk scores above the CTC cut points for all individual/peer risk factors except for rebelliousness, on which their likelihood of exceeding the cut point did not differ from the national sample (gang involvement: $\chi^2[1] = 16.9$, $p < .001$; perceived drug use risk: $\chi^2(1) = 11.8$, $p < .001$; early initiation of antisocial behavior: $\chi^2(1) = 34.0$, $p < .001$; early initiation of drug use: $\chi^2(1) = 29.0$, $p < .001$; favorable drug use attitudes: $\chi^2(1) = 18.8$, $p < .001$; antisocial attitudes: $\chi^2(1) = 19.9$, $p < .05$; antisocial rewards: $\chi^2(1) = 7.8$, $p < .01$; peer drug use: $\chi^2(1) = 27.0$,

$p < .001$; antisocial peers: $\chi^2(1) = 11.8$, $p < .001$; and drug use intentions: $\chi^2(1) = 31.5$, $p < .001$). Youth in our sample were less likely to score above the CTC cut point for social skills than the national sample, $\chi^2(1) = 12.4$, $p < .001$. We observed no other statistically significant differences for peer-individual risk and protective factors. The national database did not include a comparison score for interaction with prosocial peers.

Table 1

Communities that Care Comparison of HL7N Youth Residents with National Sample

Communities That Care Factors	HL7N Youth Residents At-risk/ Protected (*N* = 37-40)	American Indian Youth At-risk/ Protected (National Sample)
Community Risk Factors		
Low Neighborhood Attachment	50.0%	49.6%
Community Disorganization***	94.7%	63.9%
Transitions and Mobility**	82.5%	56.6%
Perceived Availability of Drugs***	77.5%	44.0%
Perceived Availability of Handguns	40.0%	30.5%
Laws and Norms Favorable to Drug Use	70.0%	56.0%
Community Protective Factors		
Rewards for Prosocial Involvement	60.5%	47.0%
Opportunities for Prosocial Involvement	51.4%	41.0%
Family Risk Factors		
Family History of Antisocial Behavior***	89.7%	52.7%
Poor Family Management	65.0%	51.8%
Family Conflict	52.5%	40.5%
Parental Attitudes Favorable Toward Drug Use***	87.2%	45.4%
Parental Attitudes Favorable Toward Antisocial Behavior**	76.9%	52.8%
Family Protective Factors		
Attachment	40.0%	40.7%
Opportunities for Prosocial Involvement	40.0%	48.9%
Rewards for Prosocial Involvement	40.0%	49.3%
School Risk Factors		
Academic Failure***	100.0%	64.3%
Low School Commitment***	80.0%	49.1%
School Protective Factors		
Opportunities for Prosocial Involvement	52.6%	51.6%
Rewards for Prosocial Involvement	56.8%	51.7%
Peer-Individual Risk Factors		
Rebelliousness	62.5%	49.5%
Gang Involvement***	62.5%	31.9%
Perceived Risks of Drug Use***	77.5%	50.1%
Early Initiation of Drug Use***	95.0%	52.2%

continued on next page

Table 2 continued
Communities that Care Comparison of HL7N Youth Residents with National Sample

Communities That Care Factors	HL7N Youth Residents At-risk/ Protected (*N* = 37-40)	American Indian Youth At-risk/ Protected (National Sample)
Peer-Individual Risk Factors		
Early Initiation of Antisocial Behavior***	100.0%	52.5%
Favorable Attitudes Toward Drug Use***	85.0%	50.5%
Favorable Attitudes Toward Antisocial Behavior***	90.0%	54.7%
Rewards for Antisocial Involvement**	62.5%	40.6%
Friends' Use of Drugs***	92.5%	51.2%
Interaction w/ Antisocial Peers***	92.5%	66.9%
Intentions to Use***	89.7%	44.4%
Peer-Individual Protective Factors		
Interaction w/ Prosocial Peers	17.5%	-
Belief in Moral Order	41.0%	54.8%
Social Skills***	15.0%	42.7%
Religiosity	34.2%	39.0%

Chi square ***p < .001; **p < .01; *p < .05

Relationships among Risk and Protective Factors and Domains and Youth Behaviors

Below, we report on associations that reached significance. Recall that for the following analyses, we used a Bonferroni-corrected alpha of .001. We have included full correlation matrices for associations between risk and protective factors, youth behaviors, and age of initiation of youth behaviors in the Appendix (Tables A1-A4).

Risk and Protective Factors and CTC Youth Behaviors

Community-level risk factors were associated with youth interactions with antisocial peers and with peers who used drugs, as well as with youths' social skills. Specifically, community-level perceived availability of drugs was associated with friends' drug use (r = 0.79) and interactions with antisocial peers (r = 0.61). Community-level perceived availability of handguns was associated with interactions with antisocial peers (r = 0.63), earlier age of regular drinking (r = -0.54), and earlier age of first carrying a handgun (r = -0.58). Finally, living in communities with laws and norms that were favorable to drug use was associated with interactions with antisocial peers (r = 0.55) and with lower youth social skills (r = -0.57).

Family risk factors only shared one significant relationship with youth behaviors. Families that exhibited poor family management were more likely to have youth with poor social skills (r = -0.59).

School risk factors related to youth social skills and belief in a moral order. Specifically, youth with lower school commitment had poorer social skills (r = -0.57) and a weaker belief in a moral order (r = -0.55).

We also looked for associations among protective factor domains and youth behaviors. We observed no statistically significant associations among community, family, or school protective factors and youth behaviors.

Risk and Protective Factors and Age of Initiation of Substance-Using and Antisocial Behaviors

Community-level perceived availability of handguns was associated with age youth first started drinking regularly (r = -0.54) and age youth first carried a handgun (r = -0.58). No other community-level, family-level, or school-level risk or protective factors were significantly associated with age of initiation variables.

By construction, the peer-individual risk factor of early drug use was significantly associated with age of initiation of marijuana use (r = -0.80), smoking cigarettes (r = -0.88), drinking (r = -0.85), and drinking regularly (r = -0.81). However, early drug use was also significantly associated with age youth were first suspended from school (r = -0.63) and first arrested (r = -0.64). Similarly, the peer-individual risk factor of early antisocial behavior was, by construction, significantly associated with age youth were first suspended from school (r = -0.59), were first arrested (r = -0.65), first carried a handgun (r = -0.73), first attacked someone (r = -.78), and first belonged to a gang (r = -0.62). Early antisocial behavior also was significantly associated with age of initiation of drinking (r = -0.71) and drinking regularly (r = -0.59). The only other peer-individual risk factor associated with age of initiation variables was gang involvement, which was significantly associated with age youth first carried a handgun (r = -0.53), as well as, by construction, age youth first belonged to a gang (r = -0.91). Age of initiation variables were not significantly associated with any peer-individual protective factors.

Relationship between Cultural Engagement and Youth Behaviors

As an exploratory analysis, we examined the relationship between cultural engagement and youth behaviors, as measured in the youth risk survey completed in addition to the CTC survey. Table 4 presents these results. Cultural engagement scores were unrelated to all risk behaviors. However, cultural engagement was associated with living on a reservation ($t(36) = -3.0$, $p < .01$),

with youth living on a reservation reporting higher cultural engagement (M = 4.61, SD = 1.18) than youth living off reservation (M = 3.39, SD = 1.11).

Table 4
Cultural Engagement and Youth Risk Behavior

	Cultural Engagement Score M(SD)	
	Yes	**No**
Ever driven under the influence of intoxicants	4.41 (1.25)	3.51 (1.25)
Ever gambled	4.50 (1.16)	3.89 (1.40)
Ever gambled in a casino	4.70 (1.28)	4.02 (1.24)
Past Year: Involved in a physical fight in the community	4.38 (1.26)	3.76 (1.31)
Past Year: Involved in a physical fight at home	4.57 (1.32)	3.91 (1.18)
Past Year: Been bullied	4.30 (1.10)	4.23 (1.37)
Past Year: Bullied someone	4.55 (1.22)	3.96 (1.30)
Ever experienced suicidal ideation	4.61 (1.28)	3.90 (1.21)

Note. *t*-tests indicate that cultural engagement did not differ significantly ($p < .05$) by any of these risk behaviors.

DISCUSSION

Participating in the strengths and needs assessment provided American Indian youth with an opportunity to voice their opinions regarding their prospects for long-term recovery from SUD. They identified currently available community supports for, and barriers to, health that await them upon return home. The assessment also allowed these youth to concisely describe their lifetime involvement with risk behaviors, as well as the challenges and resources within their community, family, school, and peer environments.

Survey findings revealed that American Indian HL7N residents were likely to participate in very risky experiences from young ages. These findings are not unexpected and reveal the extent to which American Indian youth in recovery are involved with and affected by a variety of harmful activities, like smoking, consuming alcohol and illicit drugs, gambling, violence (self- and other-directed), and more. However, these residents' awareness of their communities' resources was quite high, which is promising. The majority of American Indian youth in our sample indicated familiarity with community resources related to different types of counseling, prevention activities, and cultural activities and mentors. Areas of improvement might include making youth more aware

of transitional housing and youth self-help resources, if those resources are available in their community. If not, advocating for greater availability and access to such resources will be necessary. Youth perceptions about their access to community resources was similarly high, with the exception of transitional housing and cultural mentors. With the exception of community centers, youth self-help, and transitional housing, the majority of youth indicated use of a variety of community resources (e.g., substance use and mental health counseling, school counselors, cultural activities). Youth also said that they would consider using most of these community resources in the future, indicating that the availability of such resources would be beneficial to American Indian youth in recovery.

The comparisons of the Communities That Care survey results indicate that the American Indian youth in recovery who participated in this study both differed from and were similar to other American Indian youth across the nation. In terms of risk factors in their own communities, families, schools, and peers, American Indian youth in recovery most often reported greater risk. Such risk was evident in elevated reports of community disorganization, transitions and mobility, perceived availability of drugs, family history of antisocial behavior, parental attitudes favorable to drug use and antisocial behavior, and peer drug use and antisocial behavior. American Indian youth in recovery were more comparable to other American Indian youth for many protective factors. In fact, with respect to community, family, and school, American Indian youth in recovery had indistinguishable protective factor scores for community, family, and school opportunities and rewards for prosocial involvement, as well as family attachment. This pattern of findings indicates that the American Indian youth in recovery do have some community, familial, and school-based strengths to rely on; however, their risks are extensive across these domains, and it is unclear whether the strengths reported will be sufficient to cancel out the likely effects of the risks. Their substance use experiences (i.e., the fact that they needed help from the HL7N) suggests that strengths did not cancel out risks.

Some people might be surprised by the absence of negative associations between cultural engagement and risk behaviors. In other words, we did not observe that being culturally engaged, in the way that we have defined, protected HL7N residents from engaging in a variety of risky behaviors. There is conventional wisdom, backed up by research findings, that cultural engagement provides therapeutic benefits for Native youth (Brown et al., 2016; Corenblum, 2014). However, additional investigation of our findings suggests that participants high in cultural engagement still reported engagement in many risk behaviors because cultural engagement was

confounded with living on a reservation; in other words, participants who reported high cultural engagement were more likely to live on a reservation, and in this sample—who represent a cohort of extremely high-risk youth—living on a reservation was itself associated with environmental risk. Because our sample represented youth at high risk, we caution against concluding that cultural engagement does not serve as a protective factor for Native youth. Although our study does not address this issue, additional research might examine what aspects of cultural engagement can provide such youth protective benefits in a way that overcomes the harms of other community, family, school, and peer-level risks.

A limitation of this study includes the small sample size of American Indian youth in residential treatment for chemical dependency. Another limitation is the use of self-report, without independent objective corroboration of youths' claims. Finally, some observed apparent failures, such as academic failure, might reflect system failures rather than things attributable to tribal youth.

Taken together, this assessment suggests that American Indian youth in recovery have strengths that should aid in their long-term health. These include good awareness of community resources and intentions to use such resources. They appear also to have some advantages in terms of protective factors, which suggest that there are areas of tribal community strength that should be maintained and advanced: opportunities for prosocial involvement in the community, family, and schools. However, the American Indian youth in recovery also evidenced substantial risk for relapse, given the early age of initiation for most assessed risk behaviors and the complicated pattern of risk factors related to community, family, school, and peers.

One potential resource for helping American Indian youth in recovery avoid relapse is community-wide mental health/substance use education, including programs that provide laypeople with the tools they need to identify and intervene with youth (and other members of the community) in need. The more individuals in a community who are trained to identify, intervene, and connect struggling individuals with the support they need, the better positioned that community is to create a healthy, supportive recovery environment for its youth. The authors of this paper are building a community mental health/substance use education program with, and for, the Seven Nations communities. Future research will indicate whether such a program helps youth sustain their recovery in the long term.

REFERENCES

Arthur, M. W., Briney, J. S., Hawkins, J. D., Abbott, R. D., Brooke-Weiss, B. L., & Catalano, R. F. (2007). Measuring risk and protection in communities using the Communities That Care youth survey. *Evaluation and Program Planning, 30*, 197-211. https://doi.org/10.1016/j.evalprogplan.2007.01.009

Arthur, M. W., Hawkins, J. D., Pollard, J., Catalano, R. F., & Baglioni, A. J. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The Communities That Care youth survey. *Evaluation Review, 26*, 575-601. https://doi.org/10.1177/0193841X0202600601

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

Brown, R. A., Dickerson, D. L., & D'Amico, E. J. (2016). Cultural identity among urban American Indian/Alaska Native youth: Implications for alcohol and drug use. *Prevention Science, 17*(7), 852-861. https://doi.org/10.1007/s11121-016-0680-1

Corenblum, B. (2014). Relationships between racial-ethnic identity, self-esteem and in-group attitudes among First Nation children. *Journal of Youth and Adolescence, 43*(3), 387-404. https://doi.org/10.1007/s10964-013-0081-8

Costello, E. J., Compton, S. N., Keeler, G., & Angold, A. (2003). Relationships between poverty and psychopathology: A natural experiment. *JAMA, 290*(15), 2023-2029. https://doi.org/10.1001/jama.290.15.2023

del Veccio, P. (2012). SAMHSA's Working Definition of Recovery Updated. https://store.samhsa.gov/sites/default/files/d7/priv/pep12-recdef.pdf

Duffy, P., & Baldwin, H. (2013). Recovery post treatment: Plans, barriers, and motivators. *Substance Abuse Treatment, Prevention, & Policy, 8*(6). https://doi.org/10.1186/1747-597X-8-6

Duran, E. (2006). *Healing the soul wound: Counseling with American Indians and other native peoples*. New York: Teachers College Press.

Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Ross, J., Hawkins, J., Harris, W. A., Lowry, R. McManus, T., Chyen, D. Lim, C. Whittle, L., Brener, N. D., & Wechsler, H. (2010). Youth risk behavior surveillance - United States, 2009. *Morbidity and Mortality Weekly Report, 59*(5), 1-142. https://www.cdc.gov/mmwr/preview/mmwrhtml/ss5905a1.htm

Etz, K. E., Arroyo, J. A., Crump, A. D., Rosa, C. L., & Scott, M. S. (2012). Advancing American Indian and Alaska Native substance abuse research: Current science and future directions. *American Journal of Drug and Alcohol Abuse, 38*(5), 372-375. https://doi.org/10.3109/00952990.2012.712173

Freed, C. R. (2012). Historical perspectives on addiction. In H. J. Shaffer, D. A. LaPlante, & S. E. Nelson (Eds.), *Addiction Syndrome Handbook: Volume I* (pp. pp. 27-47). Washington, DC: American Psychological Association.

Friese, B., Grube, J. W., Seninger, S., Paschall, M. J., & Moore, R. S. (2011). Drinking behavior and sources of alcohol: Differences between Native American and White youths. *Journal of Studies on Alcohol and Drugs, 72*(1), 53-60. https://doi.org/10.15288/jsad.2011.72.53

Geana, M. V., Daley, C. M., Nazir, N., Cully, L., Etheridge, J., Bledowski, C., Choi, W. S., & Greiner, K. A. (2012). Use of online health information resources by American Indians and Alaska Natives. *Journal of Health Communication, 17*(7), 820-835. https://doi.org/10.1080/10810730.2011.650831

Gonzales, R., Anglin, M. D., Beattie, R., Ong, C. A., & Glik, D. C. (2012). Understanding recovery barriers: Youth perceptions about substance use relapse. *American Journal of Health Behavior, 36*, 602-614. https://doi.org/10.5993/AJHB.36.5.3

Guttmannova, K., Wheeler, M. J., Hill, K. G., Evans-Campbell, T. A., Hartigan, L. A., Jones, T. M., Hawkins, J. D., & Catalano, R. F. (2017). Assessment of risk and protection in Native American youth: Steps toward conducting culturally relevant, sustainable prevention in Indian country. *Journal of Community Psychology, 45*, 346-362. https://doi.org/10.1002/jcop.21852

Harris, L. T., & Fiske, S. T. (2006). Dehumanizing the lowest of the low: Neuroimaging responses to extreme out-groups. *Psychological Science, 17*(10), 847-853. https://doi.org/10.1111/j.1467-9280.2006.01793.x

Hawkins, E. H., Cummins, L. H., & Marlatt, G. A. (2004). Preventing substance abuse in American Indian and Alaska native youth: Promising strategies for healthier communities. *Psychological Bulletin, 130*(2), 304-323. https://doi.org/10.1037/0033-2909.130.2.304

Indian Health Service. (2013). Indian Health Disparities. *Fact Sheets.* http://www.ihs.gov/newsroom/includes/themes/newihstheme/display_objects/documents/factsheets/Disparities_2013.pdf

Jackson, N., Denny, S., Sheridan, J., Zhao, J., & Ameratunga, S. (2016). The role of neighborhood disadvantage, physical disorder, and collective efficacy in adolescent alcohol use: A multilevel path analysis. *Health Place, 41*, 24-33. https://doi.org/10.1016/j.healthplace.2016.07.005

Libby, A. M., Orton, H. D., Beals, J., Buchwald, D., Manson, S. M., & AI-SUPERPFP Team. (2008). Childhood abuse and later parenting outcomes in two American Indian tribes. *Child Abuse and Neglect, 32*(2), 17-17. https://doi.org/10.1016/j.chiabu.2007.07.006

Mennis, J., Stahler, G. J., & Mason, M. J. (2016). Risky substance use environments and addiction: A new frontier for environmental justice research. *International Journal of Environmental Research and Public Health, 13*(6), 607. https://doi.org/10.3390/ijerph13060607

Spear, S. F., Ciesla, J. R., & Skala, S. Y. (1999). Relapse patterns among adolescents treated for chemical dependency. *Substance Use & Misuse, 34*, 1795–1815. https://doi.org/10.3109/10826089909039427

Thomas, L. R., Rosa, C., Forcehimes, A., & Donovan, D. M. (2011). Research partnerships between academic institutions and American Indian and Alaska Native tribes and organizations: Effective strategies and lessons learned in a multisite CTN study. *American Journal of Drug and Alcohol Abuse, 37*, 333-338. https://doi.org/10.3109/00952990.2011.596976

U.S. Department of Health and Human Services (USDHHS). (2011). *HHS Action Plan to Reduce Racial and Ethnic Disparities: A Nation Free of Disparities in Health and Health Care*. http://minorityhealth.hhs.gov/npa/files/Plans/HHS/HHS_Plan_complete.pdf

U.S. Department of Health and Human Services (USDHHS), & Substance Abuse and Mental Health Services Administration (SAMHSA). (2007). Communities That Care Youth Survey Normative Database, Public Use Data File. Retrieved August 2017, from Center for Substance Abuse Prevention

Vaughn, L. M., & Lohmueller, M. (2014). Calling all stakeholders: Group-level assessment (GLA) - A qualitative and participatory method for large groups. *Evaluation Review, 38*(4), 336-355. https://doi.org/10.1177/0193841X14544903

Whitesell, N. R., Beals, J., Crow, C. B., Mitchell, C. M., & Novins, D. K. (2012). Epidemiology and etiology of substance use among American Indians and Alaska Natives: Risk, protection, and implications for prevention. *American Journal of Drug and Alcohol Abuse, 38*(5), 376-382. https://doi.org/10.3109/00952990.2012.694527

Whitesell, N. R., Beals, J., Mitchell, C. M., Keane, E. M., Spicer, P., Turner, R. J., & AI-SUPERPFP Team. (2007). The relationship of cumulative and proximal adversity to onset of substance dependence symptoms in two American Indian communities. *Drug and Alcohol Dependence, 91*(2-3), 279-288. https://doi.org/10.1016/j.drugalcdep.2007.06.008

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

AUTHOR INFORMATION

Dr. Debi A. LaPlante is Director of the Division on Addiction at Cambridge Health Alliance and an assistant professor in the Department of Psychiatry at Harvard Medical School in Boston, MA. Dr. Martina Whelshula is a research consultant at the Healing Lodge of the Seven Nations in Spokane, WA. Dr. Heather M. Gray is Director of Academic Affairs of the Division on Addiction at Cambridge Health Alliance and an instructor in the Department of Psychiatry at Harvard Medical School in Boston, MA. Dr. Sarah E. Nelson is Director of Research of the Division on Addiction at Cambridge Health Alliance and an assistant professor in the Department of Psychiatry at Harvard Medical School in Boston, MA.

ACKNOWLEDGEMENTS

With gratitude, we would like to recognize the following individuals for their contributions to the development and execution of this important project. Without their generous attention, wisdom, and contributions this research would not be possible.

We are grateful to the American Indian youth Healing Lodge of the Seven Nations residents who enthusiastically supported this research.

The CIRCLE-NARCH past and present Working Group members: The Honorable Andy Joseph, Jr. (Colville), The Honorable Nancy Johnson (Colville), Dr. Alison Ball (Colville), The

Honorable Sam Penney (Nez Perce), Lindsey Holt (Nez Perce), Jackie McArthur (Nez Perce), The Honorable Carol Evans (Spokane), The Honorable David Browneagle (Spokane), Elima Bird (Spokane), The Honorable Greg Abrahamson (Spokane), Lisa Guzman (Kalispel), Ladonna Boyd (Kalispel), Jenni Jones (Kalispel), The Honorable Velma Bahe (Kootenai), The Honorable Woodrow Starr (Umatilla), Roberta Kipp (Umatilla), Darrel Kipp (Umatilla), The Honorable Bob Shippentower (Umatilla), The Honorable Margaret SiJohn (Coeur d'Alene), The Honorable Charlotte Nilson (Coeur d'Alene), Chiarpah Matheson (Coeur d'Alene), and The Honorable Marquette Hendrickx (Coeur d'Alene).

Healing Lodge of the Seven Nations past and present staff members: Rebecca Crocker, Jim Walde, Danielle Stensgar, Dolores Brockie, Cassie Anderson, and Brad Meyers. Division on Addiction staff members: Tasha Chandler, Vanessa Graham, Howard Shaffer, & Pradeep Singh.

Education liaisons: Barbara Aston, Deirdre Almeida, Robbie Paul, and Wendy Thompson.

Service Learning Student Researchers: Crystal Andrews and LeeAndria Witcraft of Eastern Washington University.

We thank Richard F. Catalano, Ph.D. of the University of Washington for directing us to the CTC comparison data and providing helpful background information about the use of this instrument among Native communities.

FUNDING INFORMATION

This manuscript was supported by a Native American Research Centers for Health (NARCH) grant award (Promoting Cultures of Recovery, #U261IHS0090-03-01) issued to the Healing Lodge of the Seven Nations by the National Institutes of Health's National Institute of General Medical Sciences and National Institute on Drug Abuse, as well as Indian Health Services.

The Division on Addiction currently receives funding from EPIC Risk Management; Foundation for Advancing Alcohol Responsibility; Entain; Massachusetts Department of Public Health, Bureau of Substance Addiction Services via St. Francis House; Massachusetts Department of Public Health, Office of Problem Gambling Services via Health Resources in Action; MGM Resorts International via the University of Nevada, Las Vegas; National Institutes of Health (National Institute of General Medical Sciences and National Institute on Drug Abuse) via The Healing Lodge of the Seven Nations; Substance Abuse and Mental Health Services Administration via the Addiction Treatment Center of New England; and Substance Abuse and Mental Health Services Administration via the Gavin Foundation.

During the past 5 years, the Division on Addiction has also received funding from ABMRF/The Foundation for Alcohol Research; Danish Council for Independent Research via Aarhus University Hospital; the David H. Bor Library Fund, Cambridge Health Alliance; DraftKings, Inc.; Fenway Community Health Center, Inc.; Integrated Centre on Addiction Prevention and Treatment of the Tung Wah Group of Hospitals, Hong Kong; Massachusetts Department of Public Health, Bureau of Substance Addiction Services; Massachusetts Gaming Commission, Commonwealth of Massachusetts.

APPENDIX

Table A1

Correlations between Community Risk & Protective Factors & Family, School, & Peer-Individual Factors & Outcomes (N = 37-40)

	COMMUNITY RISK & PROTECTIVE FACTORS							
	Low Neighborhood Attachment	**Community Disorgani-zation**	**Transitions / Mobility**	**Laws & Norms Favorable to Drug Use**	**Drug Availability**	**Gun Availability**	**Opportunities for Prosocial Behavior**	**Rewards for Prosocial Behavior**
COMMUNITY RISK FACTORS								
Low Neighborhood Attachment	1.00	--	--	--	--	--	--	--
Community Disorganization	.42	1.00	--	--	--	--	--	--
Transitions / Mobility	.11	-.03	1.00	--	--	--	--	--
Laws & Norms Favorable to Drug Use	.22	.40	.14	1.00	--	--	--	--
Drug Availability	-.24	-.17	.01	.45	1.00	--	--	--
Gun Availability	-.08	.31	.09	.36	.37	1.00	--	--
COMMUNITY PROTECTIVE FACTORS								
Opportunities for Prosocial Behavior	-.52	-.24	-.26	-.10	.21	-.01	1.00	--
Rewards for Prosocial Behavior	-.44	-.25	-.26	-.14	.15	-.20	.67*	1.00
FAMILY RISK FACTORS								
Poor Family Management	.25	.44	.19	.52	.18	.35	-.28	-.34
High Family Conflict	.01	.37	.02	.22	.25	.20	.03	-.12
Antisocial History	.04	.20	.28	.37	.58*	.33	.08	-.12
Parent Attitudes Favor Drug Use	.31	.35	.01	.33	-.08	.10	-.08	-.18
Parent Attitudes Favor Antisocial Behavior	.32	.50	.07	.26	-.21	-.04	.12	.04
FAMILY PROTECTIVE FACTORS								
Family Attachment	.01	-.03	-.16	-.03	.01	.04	.08	.24
Opportunities for Prosocial Behavior	-.07	-.09	-.29	-.14	-.08	.08	.34	.18
Rewards for Prosocial Behavior	.03	-.06	-.22	-.03	.07	-.03	.19	.18
SCHOOL RISK FACTORS								
Academic Failure	.12	.11	-.03	.24	.02	.25	-.09	-.27
Low School Commitment	.15	.40	.17	.52	.19	.24	-.13	-.19
SCHOOL PROTECTIVE FACTORS								
Opportunities for Prosocial Involvement	-.31	-.22	-.06	-.27	-.11	-.33	.26	.30
Rewards for Prosocial Involvement	-.36	-.20	-.26	-.34	-.18	-.37	.29	.37

continued on next page

Table A1 continued

Correlations between Community Risk & Protective Factors & Family, School, & Peer-Individual Factors & Outcomes (N = 37-40)

	COMMUNITY RISK & PROTECTIVE FACTORS							
	Low Neighborhood Attachment	**Community Disorgani-zation**	**Transitions / Mobility**	**Laws & Norms Favorable to Drug Use**	**Drug Availability**	**Gun Availability**	**Opportunities for Prosocial Behavior**	**Rewards for Prosocial Behavior**
PEER-INDIVIDUAL RISK FACTORS								
Rebelliousness	.03	.25	-.03	.27	.39	.45	-.16	-.08
Gang Involvement	.16	.30	.15	.10	-.04	.46	-.04	-.04
Low Perceived Risk of Drug Use	.03	.34	-.14	.43	.16	.15	.07	.09
Early Initiation of Drug Use	.09	.13	.04	.45	.41	.39	.07	.07
Early Initiation of Antisocial Behavior	.14	.50	-.07	.31	.22	.55*	.06	-.11
Attitudes Favor Drug Use	.11	.02	-.06	.32	.40	.15	-.13	-.07
Attitudes Favor Antisocial Behavior	.28	.27	.19	.35	.36	.34	-.14	.12
Rewards for Antisocial Behavior	-.16	.09	.03	.04	.32	.33	.06	-.20
Peer Drug Use	.14	-.04	-.04	.47	.79*	.31	-.08	-.18
Antisocial Peers	.15	.36	.07	.55*	.61*	.63*	-.03	-.17
Intentions to Use Drugs	.24	.40	.21	.52	-.01	.30	-.14	.01
PEER-INDIVIDUAL PROTECTIVE FACTORS								
Prosocial Peers	-.28	-.20	-.16	-.13	-.05	-.08	.50	.17
Belief in a Moral Order	-.31	-.53	-.03	-.49	-.25	-.30	.18	.32
Social Skills	-.33	-.39	-.29	-.57*	-.34	-.21	.29	.29
Religiosity	-.32	.01	-.17	-.05	.17	.44	-.14	-.24
AGE OF INITIATION								
Age 1st Used Marijuana	.19	-.01	-.14	-.34	-.44	-.23	-.21	-.28
Age 1st Smoked Cigarettes	-.18	-.02	.04	-.40	-.40	-.19	.01	.02
Age 1st Drank	-.31	-.28	-.08	-.45	-.28	-.36	.18	.11
Age 1st Drank Regularly	.03	-.13	.04	-.30	-.25	-.54*	-.19	-.11
Age 1st Suspended from School	-.01	-.30	.09	-.33	-.29	-.19	.01	.03
Age 1st Arrested	-.29	-.30	.13	-.23	-.14	-.24	.11	.15
Age 1st Carried a Gun	.21	-.25	-.09	-.19	-.14	-.58*	-.07	-.08
Age 1st Attacked Someone	-.26	-.49	.17	-.23	-.17	-.41	-.09	.14
Age 1st Belonged to Gang	-.12	-.33	-.10	-.01	.20	-.49	.04	.06

**p<.001.*

Note. Bonferroni corrections yielded a $p<.001$ significance level. 0s recoded to 18 to reflect "never have" for age of initiation questions.

Table A2

Correlations between Family Risk & Protective Factors & School, & Peer-Individual Factors & Outcomes

	FAMILY RISK & PROTECTIVE FACTORS							
	Poor Family Management	**High Family Conflict**	**Antisocial History**	**Parent Attitudes Favor Drug Use**	**Parent Attitudes Favor Antisocial Behavior**	**Family Attachment**	**Opportunities for Prosocial Behavior**	**Rewards for Prosocial Behavior**
FAMILY RISK FACTORS								
Poor Family Management	1.00	--	--	--	--	--	--	--
High Family Conflict	.23	1.00	--	--	--	--	--	--
Antisocial History	.05	.38	1.00	--	--	--	--	--
Parent Attitudes Favor Drug Use	.34	.28	.09	1.00	--	--	--	--
Parent Attitudes Favor Antisocial Behavior	.28	.08	.03	.09	1.00	--	--	--
FAMILY PROTECTIVE FACTORS								
Family Attachment	-.59*	-.09	.24	-.02	-.01	1.00	--	--
Opportunities for Prosocial Behavior	-.58*	-.01	.06	-.15	-.14	.82*	1.00	--
Rewards for Prosocial Behavior	-.60*	-.03	.21	-.09	-.10	.84*	.72*	1.00
SCHOOL RISK FACTORS								
Academic Failure	.35	.22	-.01	.35	.19	-.11	-.17	-.08
Low School Commitment	.46	.36	.15	.31	.25	-.23	-.40	-.24
SCHOOL PROTECTIVE FACTORS								
Opportunities for Prosocial Involvement	-.31	-.01	-.13	-.23	-.14	-.02	.14	.03
Rewards for Prosocial Involvement	-.40	-.13	-.23	-.38	-.27	.12	.30	.19
PEER-INDIVIDUAL RISK FACTORS								
Rebelliousness	.28	.34	.25	-.12	-.24	-.24	-.24	-.15
Gang Involvement	.03	-.02	.19	.38	.47	.23	.18	.06
Low Perceived Risk of Drug Use	.27	.30	.21	.39	.16	.07	.06	.07
Early Initiation of Drug Use	.32	.16	.18	.36	.36	-.13	-.20	-.14
Early Initiation of Antisocial Behavior	.36	.16	.30	.25	.41	-.20	-.29	-.18
Attitudes Favor Drug Use	.31	.24	.22	.31	-.10	-.32	-.35	-.30

continued on next page

Table A2 continued

Correlations between Family Risk & Protective Factors & School, & Peer-Individual Factors & Outcomes

	FAMILY RISK & PROTECTIVE FACTORS							
	Poor Family Management	**High Family Conflict**	**Antisocial History**	**Parent Attitudes Favor Drug Use**	**Parent Attitudes Favor Antisocial Behavior**	**Family Attachment**	**Opportunities for Prosocial Behavior**	**Rewards for Prosocial Behavior**
PEER-INDIVIDUAL RISK FACTORS								
Attitudes Favor Antisocial Behavior	.33	.25	.30	.22	.20	-.08	-.15	-.01
Rewards for Antisocial Behavior	-.09	.24	.29	-.21	-.24	.12	.13	.12
Peer Drug Use	.15	.26	.47	-.06	-.24	.10	.03	.18
Antisocial Peers	.40	.21	.49	.05	-.01	-.09	-.11	.01
Intentions to Use Drugs	.29	.25	.21	.40	.33	.05	-.01	-.10
PEER-INDIVIDUAL PROTECTIVE FACTORS								
Prosocial Peers	-.27	-.02	.04	-.05	.13	.36	.38	.26
Belief in a Moral Order	-.44	-.38	-.31	-.23	-.18	.13	.20	.11
Social Skills	-.59*	-.23	-.35	-.32	-.14	.31	.52	.36
Religiosity	.21	.33	.16	-.11	-.30	-.28	-.27	-.31
AGE OF INITIATION								
Age 1st Used Marijuana	-.16	-.26	-.35	-.15	-.30	.12	.25	.09
Age 1st Smoked Cigarettes	-.30	-.12	-.24	-.27	-.33	.06	.20	.08
Age 1st Drank	-.35	-.08	-.04	-.17	-.36	.15	.20	.16
Age 1st Drank Regularly	-.24	-.10	.02	-.26	-.23	.12	.03	.14
Age 1st Suspended from School	-.26	-.27	-.09	-.21	-.34	.14	.32	.21
Age 1st Arrested	-.44	-.16	.03	-.27	-.32	.39	.37	.29
Age 1st Carried a Gun	-.21	.02	-.23	-.09	-.21	.20	.21	.24
Age 1st Attacked Someone	-.26	-.14	-.44	-.23	-.29	-.02	.05	-.05
Age 1st Belonged to Gang	.02	.07	-.09	-.29	-.43	-.17	-.14	-.02

**p<.001.*

Note. Bonferroni corrections yielded a $p<.001$ significance level. 0s recoded to 18 to reflect "never have" for age of initiation questions.

Table A3

Correlations between School Risk & Protective Factors & Peer-Individual Factors & Outcomes

	SCHOOL RISK & PROTECTIVE FACTORS			
	Academic Failure	**Low School Commitment**	**Opportunities for Prosocial Behavior**	**Rewards for Prosocial Behavior**
SCHOOL RISK FACTORS				
Academic Failure	1.00	--	--	--
Low School Commitment	.59*	1.00	--	--
SCHOOL PROTECTIVE FACTORS				
Opportunities for Prosocial Involvement	-.51	-.47	1.00	--
Rewards for Prosocial Involvement	-.41	-.55*	.63*	1.00
PEER-INDIVIDUAL RISK FACTORS				
Rebelliousness	.17	.39	-.24	-.38
Gang Involvement	.00	.03	-.02	-.11
Low Perceived Risk of Drug Use	.15	.28	-.08	-.19
Early Initiation of Drug Use	.15	.31	-.21	-.38
Early Initiation of Antisocial Behavior	.26	.40	-.27	-.30
Attitudes Favor Drug Use	.06	.19	-.02	-.16
Attitudes Favor Antisocial Behavior	.23	.21	-.14	-.24
Rewards for Antisocial Behavior	-.03	.13	.17	.14
Peer Drug Use	.13	.27	-.16	-.32
Antisocial Peers	.17	.35	-.31	-.42
PEER-INDIVIDUAL PROTECTIVE FACTORS				
Prosocial Peers	-.16	-.49	.14	.34
Belief in a Moral Order	-.09	-.55*	.34	.39
Social Skills	-.24	-.57*	.32	.44
Religiosity	.14	.17	-.08	-.21
AGE OF INITIATION				
Age 1st Used Marijuana	-.08	-.31	.04	.21
Age 1st Smoked Cigarettes	-.17	-.24	.17	.35
Age 1st Drank	-.20	-.31	.28	.33
Age 1st Drank Regularly	-.08	-.20	.22	.36
Age 1st Suspended from School	-.37	-.45	.25	.37
Age 1st Arrested	-.08	-.24	.25	.27
Age 1st Carried a Gun	-.30	-.31	.14	.18
Age 1st Attacked Someone	-.16	-.26	.22	.14
Age 1st Belonged to Gang	-.03	.01	-.02	.05

**p<.001.*

Note. Bonferroni corrections yielded a $p<.001$ significance level. 0s recoded to 18 to reflect "never have" for age of initiation questions.

Table A4

Correlations between Peer-Individual Risk & Protective Factors & Peer-Individual Outcomes

	PEER-INDIVIDUAL RISK & PROTECTIVE FACTORS														
	Rebelliousness	**Gang Involv**	**Percvd Drug Use Risk**	**Early Drug Use**	**Early Anti-social Behav**	**Favor Drug Use**	**Favor Anti-social Behav**	**Rewards for Anti-social**	**Friend Drug Use**	**Anti-social Peers**	**Intent-ions to Use**	**Pro-social Peers**	**Belief in Moral Order**	**Social Skills**	**Religiosity**
PEER-INDIVIDUAL RISK FACTORS															
Rebelliousness	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gang Involvement	-.03	1.00	--	--	--	--	--	--	--	--	--	--	--	--	--
Low Perceived Risk of Drug Use	.16	.07	1.00	--	--	--	--	--	--	--	--	--	--	--	--
Early Initiation of Drug Use	.28	.30	.13	1.00	--	--	--	--	--	--	--	--	--	--	--
Early Initiation of Antisocial Behavior	.34	.50	.18	.68*	1.00	--	--	--	--	--	--	--	--	--	--
Attitudes Favor Drug Use	.29	-.13	.13	.17	.10	1.00	--	--	--	--	--	--	--	--	--
Attitudes Favor Antisocial Behavior	.40	.37	.04	.27	.19	.42	1.00	--	--	--	--	--	--	--	--
Rewards for Antisocial Behavior	.39	.21	-.12	.07	.24	-.03	.04	1.00	--	--	--	--	--	--	--
Peer Drug Use	.47	.02	.14	.38	.28	.34	.31	.37	1.00	--	--	--	--	--	--
Antisocial Peers	.57*	.24	.16	.36	.44	.25	.46	.38	.69*	1.00	--	--	--	--	--
Intentions to Use Drugs	.15	.41	.47	.30	.32	.18	.37	-.10	-.01	.14	1.00	--	--	--	--
PEER-INDIVIDUAL PROTECTIVE FACTORS															
Prosocial Peers	-.28	-.03	-.21	-.11	-.07	-.21	-.20	-.05	-.15	-.28	-.20	1.00	--	--	--
Belief in a Moral Order	-.40	-.08	-.54*	-.24	-.41	-.28	-.14	-.12	-.30	-.43	-.45	.39	1.00	--	--
Social Skills	-.38	-.10	-.46	-.31	-.38	-.44	-.35	-.08	-.36	-.42	-.44	.45	.60*	1.00	--
Religiosity	.42	-.11	-.07	.17	.32	.23	-.05	.20	.04	.05	-.13	-.10	-.17	-.10	1.00
AGE OF INITIATION															
Age 1st Used Marijuana	-.18	-.19	-.09	-.80*	-.52	-.09	-.20	-.12	-.25	-.24	-.26	.01	.13	.19	-.23
Age 1st Smoked Cigarettes	-.20	-.15	-.14	-.88*	-.51	-.18	-.21	.01	-.41	-.26	-.20	.13	.15	.30	-.10
Age 1st Drank	-.25	-.34	-.02	-.85*	-.71*	-.07	-.28	-.07	-.38	-.32	-.31	.14	.25	.35	-.07
Age 1st Drank Regularly	-.32	-.33	-.16	-.81*	-.59*	-.23	-.24	-.07	-.24	-.38	-.25	.10	.26	.21	-.21
Age 1st Suspended from School	-.33	-.14	-.13	-.63*	-.59*	-.04	-.20	-.08	-.32	-.20	-.25	-.03	.08	.32	-.24
Age 1st Arrested	-.06	-.20	-.16	-.64*	-.65*	-.20	-.07	.05	-.16	-.26	-.18	.21	.35	.39	-.21
Age 1st Carried a Gun	-.30	-.53*	-.08	-.39	-.73*	-.07	-.27	-.27	-.07	-.40	-.32	.13	.14	.15	-.23
Age 1st Attacked Someone	-.21	-.40	-.27	-.31	-.78*	-.10	-.11	-.18	-.25	-.36	-.20	.04	.48	.28	-.20
Age 1st Belonged to Gang	.06	-.91*	-.10	-.27	-.62*	.14	-.19	-.12	.15	-.09	-.46	-.02	.10	.06	-.02

**p<.001.*

Note. Bonferroni corrections yielded a $p<.001$ significance level. 0s recoded to 18 to reflect "never have" for age of initiation questions.

THE BRAVE STUDY: FORMATIVE RESEARCH TO DESIGN A MULTIMEDIA INTERVENTION FOR AMERICAN INDIAN AND ALASKA NATIVE YOUNG ADULTS

Stephanie Craig Rushing, PhD, MPH, Allyson Kelley, DrPH, MPH, Steven Hafner, PhD, David Stephens, RN, Michelle Singer, BS, Dyani Bingham, MPH(c), Colbie Caughlan, MPH, Bethany Fatupaito, MPH, Amanda Gaston, MAT, Thomas Ghost Dog, Paige Smith, CADC1, CPS, Danica Love Brown, PhD, MSW, and Celena McCray, MPH

Abstract: American Indian and Alaska Native (AI/AN) young adults are strong and resilient. Interventions designed to improve their mental health and help-seeking skills are especially needed, particularly those that include culturally relevant resources and relatable role models. This paper presents formative research from the BRAVE study, a five-year community based participatory research project led by the Northwest Portland Area Indian Health Board. Formative research included three phases and more than 38 AI/AN young adults and content experts from across the United States. Results indicate that behavioral interventions can be feasibly delivered via text message to AI/AN young adults and that including Native youth in the formative research is critical to designing a comprehensive, culturally-responsive intervention. Lessons learned from this five-year process may help other youth-serving organizations, prevention programs, policymakers, researchers, and educators as they support the next generation of AI/AN leaders.

INTRODUCTION

American Indians or Alaska Natives (AI/AN) under the age of 24 make up 37.6% of the AI/AN population (US Census, 2017). As a population, they have a multitude of strengths, including connection to culture, strong social support networks, extended families, and individual and community resilience (Anderson, et al., 2016). These strengths are challenged by high unemployment rates, lower educational attainment, high rates of trauma and loss, loss of culture and traditional values, and unhealthy behaviors (Center for Native American Youth, 2019). AI/AN young adults experience violence, substance misuse, aggression, and limited opportunities to

develop help-seeking skills; AI/AN young men experience these inequities at higher rates than females (Schonert-Reichl & Muller, 1996; National Center for Health Statistics, 2016).

A recent study published by the National Institute of Justice (Rosay, 2015) found that 82% of AI/AN men had experienced some type of violence in their lifetimes. Among AI/AN men, rates of violent victimization were 1.3 times higher than for non-Hispanic White men. Further, 73% of AI/AN men had ever experienced psychological aggression by an intimate partner, 43% of AI/AN men had ever experienced physical violence by an intimate partner, 27% of AI/AN men had ever experienced sexual violence, and 19% of AI/AN men had ever experienced stalking. In addition to high rates of victimization, AI/AN men also experience a disproportionate rate of incarceration. In 2015, 75% of all persons in jails in Indian Country were male (Minton, 2016). A high-risk segment of the population for violence involvement is young people (Division of Violence Prevention, 2020).

Substance misuse among AI/AN young adults also presents a major public health challenge. Data from the 2018 National Survey on Drug Use and Health show that one in five AI/AN young adults ages 18-25 has a substance use disorder (Substance Abuse and Mental Health Services Administration, 2019). Previous research indicates that they have a higher prevalence of substance use, earlier onset of use, more severe substance-related consequences, and lower perceived risk from harm related to substance use when compared with non-Native youth and young adults (Lawrence et al., 2014; Swaim & Stanley, 2018).

Developing healthy coping strategies and help-seeking skills in adolescence through young adulthood are critical for maintaining lifelong well-being. Previous research with Native American young adults indicates that they are more likely to seek help from informal sources than formal sources (Bee-Gates et al., 1996), and males are less likely to seek help than females (Schonert-Reichl & Muller, 1996). Factors known to promote help-seeking include emotional competence, positive attitudes, and social influences.

Unique behavioral interventions are needed to address these topics, while promoting cultural assets that can reach Native teens and young adults when and where they are ready. Mobile health (mHealth) interventions show promise. A meta-analysis by Badawy and Kuhns (2017) found that 42% of studies that utilized text messaging and mobile apps demonstrated significant improvements in preventive behaviors. Another study among college students found that text messaging was an effective platform for increasing awareness about health (Glowacki et al., 2018).

In sum, technology-based interventions are emerging as an effective strategy for promoting health and well-being among this age group.

AI/AN Media Use

The limited research on media and technology use among AI/AN teens and young adults suggests that social media and technology use is comparable to that of young people of other races and ethnicities (Markham et al., 2016). Focus groups conducted by the Center for Native American Youth (CNAY) with 230 AI/AN youth across the United States in 2015 indicated that youth desired technology-based mechanisms to improve health and wellness, including those delivered via smartphones and social media (CNAY, 2016). In 2016, the We R Native conducted a Youth Health Tech Survey that reached 675 AI/AN teens and young adults to learn more about their technology use and health information seeking practices and preferences. Results indicated that 88% of youth surveyed had regular access to a smartphone, and 63% had regular access to a desk or laptop computer. Over 92% reported accessing the internet from a phone on a daily or weekly basis, and 50% reported going online from a computer as often. Over 62% reported getting health information from the internet on a weekly or monthly basis, and 66% reported getting health information from social networking sites as often (NPAIHB, 2016).

In response to these trends, Rushing and Stephens (2012) developed recommendations for designing culturally appropriate, technology-based health interventions, with guidance to include medically accurate age- and gender- appropriate content, be holistic, be real ("reflect the unique life experiences of Native youth and address the root social determinants of their health"), be based in culture, focus on assets and skills, encourage dialogue with trusted adults, be interactive, and include evaluation plans to monitor use and assess impact. In sum, these findings suggest the potential feasibility of designing technology-based interventions to support health behavior change for AI/AN youth, with sufficient formative research.

This paper describes the development of a multimedia behavioral intervention; the process used to engage Native teens and young adults, content experts, and other stakeholders in the process; findings from the formative research; and lessons learned along the way.

Formative Research

To meet the unique needs of AI/AN young men, and in light of the lack of existing work in this domain, formative research was needed to ensure relevant, effective interventions are

developed. Formative research is used before an intervention is implemented and provides an opportunity to engage stakeholders in the research design process (Vastine et al., 2005), while examining the best ways to reach the target audience and target behavior change. Documenting the formative research processes and key findings with diverse populations like AI/ANs is important because most behavior change interventions are not designed with this population in mind. Results from formative research are rarely reported in the literature, yet results are valuable for informing programs, policies, and future health behavior change interventions (Gittelsohn et al., 2006).

Facilitating Organization and Partners

The Northwest Portland Area Indian Health Board (NPAIHB) is a tribal organization that represents 43 federally recognized tribes in Washington, Oregon, and Idaho (NW). The mission of the NPAIHB is to "eliminate health disparities and improve the quality of life of American Indians and Alaska Natives by supporting Northwest Tribes in their delivery of culturally appropriate, high-quality health care." The NPAIHB's governing board meets quarterly and is composed of one delegate from each member tribe, selected by the individual tribal governments. The Northwest Tribal Epidemiology Center (NW TEC) is housed under NPAIHB and provides support in the way of research, surveillance, and public health capacity building in partnership with the NW Tribes. This formative research was a collaboration between the NPAIHB's THRIVE and We R Native projects, the Department of Social & Behavioral Sciences at the Harvard T.H. Chan School of Public Health, Harvard University, and Sky Bear Media.

Guiding Principles

All of the NPAIHB's research and public health programs are guided by principles of community-based participatory research (CBPR). CBPR assumes that interventions can be strengthened by community insight and community theories and that participation in such efforts enhances the health and well-being of people (Wallerstein & Duran, 2006). As an orientation to research, CBPR was appropriate for this study because it focuses on AI/AN young adults as experts, acknowledges cultural influences, and identifies elements of substance misuse, violence, and aggression that are relevant to Native young adults and communities (Jumper-Reeves et al., 2014).

Principles of social marketing and narrative health communication also informed the design of the intervention. Social marketing is defined by Andreasen (1994) as "the application of

commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audience members in order to improve their personal welfare and that of society" (p. 110). Narrative health communication (i.e., role model videos) is an increasingly common form of behavioral intervention that stands in opposition to more factual approaches that attempt to change health behavior. Generally, it includes a story with a beginning, middle, and end, and with conflict, resolution, and identifiable characters (Hinyard & Kreuter, 2007). Hinyard and Kreuter (2007) posit that narrative communication reduces counter-arguing the messages and that user-engagement with the messages and identification with the characters increases their persuasiveness, improving narrative success. Another important component in narrative communication may be related to how believable participants find characters and situations to be. When characters are similar to participants in their characteristics or social views, participants may feel greater identification with characters that may lead to increased intervention effectiveness (Green & Brock, 2000).

Study Goals

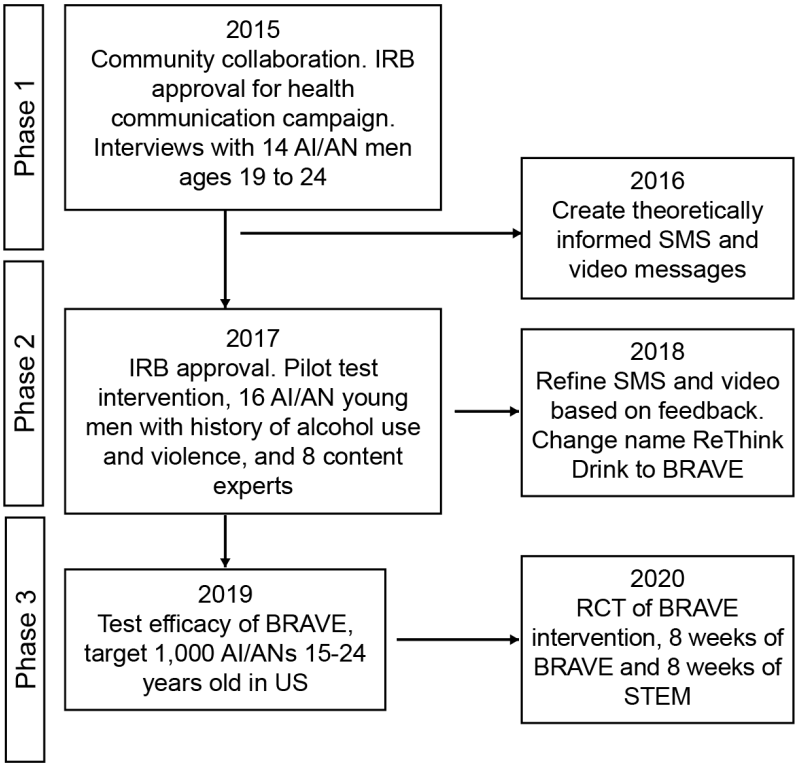
The BRAVE study is a multi-phase, national study to develop and evaluate a text message intervention featuring relatable role model videos. The goals of the formative research activities were to document Native teen and young adult views on safety and violence; design a text message sequence and video script to address violence, substance misuse, and promote help-seeking skills; pilot the intervention; and finalize the intervention text messages and role model videos for a nationwide randomized controlled trial (RCT). This study demonstrates the feasibility of our planed intervention delivery methods using role model videos and text messages and offers new information about how to develop and implement a behavioral intervention with AI/AN young adults.

METHODS

The study team utilized their experiences from a previous study, Texting 4 Sexual Health to guide the formative research process (Yao et al., 2018). Multiple behavior change theories guided the development process, including the health belief model, social cognitive theory, and the theory of planned behavior (Glanz et al., 2008).

All data collection methods were approved by the Portland Area Indian Health Service Institutional Review Board (PA IHS IRB) in Portland, OR (*PI:* Craig Rushing, *Protocol #:* 753252-5). Informed consent was obtained from parents or guardians for participants under 18 years of age. All instruments and data collection approaches were reviewed and revised by the NPAIHB team before data collection occurred. The consort flow diagram guided all phases of the BRAVE research and reporting process. Figure 1 outlines phases and participation throughout the research project. The present paper focuses on Phases 1-2 only.

Figure 1. Flow of Research from the BRAVE Study



Phase 1

The first phase of the study focused on better understanding alcohol misuse and the context of violence among Native males between the ages of 18-24 years. In July 2015, the project received Institutional Review Board (IRB) approval, and participants were recruited via We R Native's social media channels. We R Native is a multimedia health resource for Native youth, by Native youth, that uses web and social channels to reach over 1 million viewers per year. Our team designed an interview guide and conducted interviews with 14 AI/AN men 19-24 years of age, living in 13 states. Ten (10) participants lived in urban communities; four participants lived in rural

communities (Supplement A). The purpose of the interviews was to obtain information that could be used to design a messaging campaign addressing violence and alcohol misuse.

In July 2016, our team designed a series of theoretically informed, culturally relevant text messages (SMS) based on key informant interviews and evidence-based alcohol prevention and treatment interventions. The messages were designed to shift alcohol outcome expectancies, provide normative feedback based on reported behavior, teach non-violent anger management skills, and promote healthy social norms (i.e., offering alternatives to alcohol use, setting and maintaining personal limits, respecting peer's limits, etc.). In collaboration with Sky Bear Media, a Native-run filmmaking crew, we developed role model scripts to accompany the text messages.

Phase 2

In July 2017 we received IRB approval to pilot test the intervention with 16 AI/AN young men with a history of alcohol use and violence, and with 8 topical experts in alcohol prevention, alcohol treatment, violence prevention, health communication, and adolescent health. We put out a call for participants in NPAIHB's Healthy Native Youth eNewsletter. A study interest form was used to identify and select eligible young men who reported current alcohol use and who either witnessed or participated in violent acts. Both the young men and topical experts participated in the pilot test at the same time, and received the same information before, during, and after the study. The purpose of the pilot was to test the tone, content, and frequency of the planned text messages and video episodes (three staff read the role model script for the pilot test).

We collected pre- and post-surveys to document participant feedback on individual text messages, the 12 video episodes, intervention methods, and whether or not the text message series and videos would help achieve desired behavioral outcomes. The pre-survey included 12 questions that asked respondents about their age, work and school status, alcohol consumption, peer communications about alcohol consumption, and violent or aggressive behaviors and the frequency that alcohol was involved in these instances. Post-survey questions included 25 questions, the same pre-survey questions, and additional questions about alcohol consumption, alcohol expectancies, norms about alcohol, and confidence in ability to talk with a friend about alcohol consumption and aggressive or violent behaviors (see Supplement B and C). Participants were also asked for suggestions to improve the text message series or role model videos. During this phase, we changed the intervention name from "Rethink Your Drink" to "BRAVE" and improved the role model script

based on pilot test feedback. In 2019, Sky Bear Media filmed and edited the final BRAVE intervention videos.

Analysis

We used qualitative methods to analyze data collected in Phases 1-2. For Phase 1 data, we used TranscribeMe software to transcribe recorded interviews for analysis. Next, we created a codebook and domains from the original interview guide and used content analysis to allow themes to emerge from the data (Hsieh & Shannon, 2005). Domains included violence causes and effects, public safety, and violence prevention and messaging. We assessed inter-rater reliability for each domain using Dedoose's built-in testing abilities that reports Cohen's kappa. The Cohen's kappa for the domains analyzed were between 0.69 and 0.81, which according to Landis and Kock (1977) indicate substantial agreement. Our team used Dedoose version 7.5.9, a web-based mixed-methods analysis application, to analyze all qualitative data.

Analysis of Phase 2 data followed similar content analysis guidelines but included apriori themes from survey questions and analyzing responses based on feedback received and recommendations for improvement. We analyzed pre- and post-survey data from Phase 2 using similar content analysis methods from Phase 1 but used hand-coding techniques. Analysis followed a deductive process where codes and themes that emerged came from existing theories about health communication campaign messaging. Validity was achieved by using a coding scheme that guided the analysis process and assessing themes independently and as a group (Potter & Levine-Donnerstein, 1999). Overall, inter-rater reliability testing results indicated that there was general agreement between coders. We developed summary reports for each phase with subsequent themes that were reviewed by AI/AN young adults, NPAIHB team members, partners, and content experts. Revisions to the text messaging campaign and video scripts came from this iterative qualitative analysis process.

FINDINGS

Phase 1 – Interviews to design Health Communication Campaign 2015-2016

Key informant interviews with 14 AI/AN young adults ranged in length from 21 minutes to 67 minutes, with an average interview length of 42 minutes. Interviews included three sections:

violence effects and causes, public safety, and violence prevention messaging (see Supplement A). Themes from key informant interviews indicate that violence is widespread, but the effects of violence are not fully understood by respondents. For example, respondents discussed the role of alcohol and substance use in violence perpetration and as a coping mechanism following violence victimization, but these were not always linked to broader impacts to the community. The most prevalent type of violence included bullying and domestic violence. Drugs and alcohol, and other anti-social behaviors, were identified as contributors to violent behaviors and a detriment to public safety. Based on this feedback, we expanded the scope of our messages beyond violence and identified drug and alcohol users as an important target audience for the intervention.

The focus of our formative research at this point was to decrease violence, aggression, and alcohol consumption among Native young adult males ages 18-24 across the United States. Using themes from the key informant interviews, we developed a theoretically informed text message campaign. To create a complementary role model video that could reinforce the skills described in the text messages, we shared the interview themes with Sky Bear Media, who wrote the first draft. The script shared the story of Alex, Christina, and Benny, depicting three relatable character-types (perpetrator, survivor, and bystander), including their personal histories with alcohol and violence, their relationships to one another, and a turning-point for each character that demonstrated behavior change skills and cultural resources. The scenes and dialogue were collaboratively edited and refined by the team over 12 months.

Phase 2 – Piloting Intervention 2017-2018

The pilot test involved 16 AI/AN young men 18-24 years old with a history of alcohol use and violence, and 8 topical experts in alcohol prevention, alcohol treatment, violence prevention, health communication, and AI/AN adolescent health promotion. Altogether, 23 AI/AN young men and topical experts provided feedback on components of the SMS intervention; 14 young men participated in the pre-survey, and 12 participated in the post-survey. On average, participants who gave feedback felt individual text messages were useful or relevant 82% of the time.

Overall, participants thought the intervention was relatable and helpful. One AI/AN young man wrote, “During this time I have been going through very stressful times, I have started drinking a lot and the messages I received kept me grounded during these times. I was a big fan of the videos.” Another participant wrote, “They did a really good job of making you realize you are

responsible for our own actions and how we can better to control them." Recommendations for improvement from AI/AN young men were limited, "I think everything was relevant and helpful… but maybe try giving me a quiz on things I've learned."

Topical experts suggested the first few video episodes could be used to emphasize the family histories that influenced the characters, then shift to vignettes that would encourage the audience to reassess their behaviors and reach out to trusted adults (like counselors and helplines). Experts loved that the intervention had youth sharing their own experiences and recommended that the intervention promote honesty while encouraging youth to reach out to others. One expert said, "My two suggestions are to provide more positive vignettes and to encourage youth to reach out to trusted mentors and role models." Another expert felt more information was needed about the purpose of BRAVE:

> Give a little background into who you are and what you're hoping to accomplish with this series. Also let us know to expect a series of videos from Alex and friends, [that they're] the same group of friends. Also provide some sobriety resources at the end, and say, "You don't have to drink again if you don't want to. Remember when you are ready to stop drinking there are people who will support and help you."

Other changes to the intervention's target audience, content, and age groups were related to shifting funding sources over the course of the project. One agency felt the audience needed to be broadened to include females; they did not ultimately fund the study. A second agency funded the next phase of the project, but required that there be greater focus on demonstrating help-seeking skills and the inclusion of participants 15-18 years old. Inclusion and exclusion criteria were thus modified for Phase 3, when the intervention was evaluated for efficacy. The messages and script were subsequently reviewed by the team to increase focus on trauma and resilience, intimate partner violence, bystander skills, alcohol and drug resources, help-seeking from trusted adults, suicide warning signs, and the power of culture to provide a sense of identity and purpose.

Table 1 outlines changes that that were made to improve the text messages and video script based on key informant interviews, pre- and post-surveys, and content expert recommendations. Exemplars provide statements from data that describe the recommended change. Categories outline formative research guidelines in the areas of feasibility and acceptability with a strong emphasis on content.

Table 1
Changes to Improve Text Messaging and Video Scripts

Phase and Focus	Recommended Changes	Exemplar	Category
Phase 1- Exploring Health Communications Campaign and Violence	Expand to all AI/AN young adults 18-24, men and women	"A broad campaign that is relevant to several different groups would be best for a prevention messaging campaign." - Research Partner	Recruitment
	Include alcohol and drug-related violence	"This project indicates that alcohol- and drug-related violence is an issue that warrants particular attention." - Research Partner	Content
	Use multimedia format	"Multimedia was the only identified format for any campaign." - Research Partner	Delivery
Phase 2- Pilot test intervention videos	Changed the intervention name from Rethink Your Drink to BRAVE	"ReThink Your Drink was already being used by a water promotion campaign." - Principal Investigator	Acceptability
	Define intended audience, intervention goals, expand to help-seeking skills	"…behavioral skills I would suggest is promoting the trait of honesty in their lives- being able to look at their behaviors and honestly share them with someone else." - Content Expert	Delivery and content
	Create stand-alone pre-video trailer, reduce number of episodes, offer two delivery options	"I think we need to cut down the length of the videos. They ended up longer than we originally anticipated." - Content Expert	Content
	Revise storyline, introduce videos	"Be more specific in the messages you try to get across. Keep developing videos." - AI/AN Young Adult Male	Content
	More positive tone, emphasize honesty, responsibility, traditional values	"…describes positive outcomes from living a healthy life." - AI/AN Young Adult Male	Content
	Broaden target age group, include females	"So we moved forward… with 15-18 age group and females…" - Principal Investigator	Audience
Phase 2 Pilot test intervention text messages	Provide mental health and sobriety resources	"…provide some sobriety resources at the end. And say you don't have to drink again if you don't want to." - Content Expert	Content
	Include quiz to test knowledge gained	"…everything was relevant and helpful. But maybe try giving me a quiz on things I've learned." - AI/AN Young Adult Male	Content
	Include message about not drinking before a ceremony	"… drinking before or after ceremony, on the drum or at powwow, things like that are really bad… it directly contradicts teachings of wearing ceremonial items or with the respect of honoring certain objects or moments." -Content Expert	Content
Phase 3 BRAVE		Intervention is active, pending results	

Phase 3 – Randomized Controlled Study 2019-2020

With the formative research and video series complete, the team began the RCT to test the efficacy of the intervention with 1,000 AI/AN teens and young adults aged 15-24 years old nationwide in September 2019, expanding the original inclusion criteria to include females and teens 15-17 years old. Youth who enrolled in the study were randomized to receive either 8 weeks of BRAVE text messages, designed to improve mental health, help-seeking skills, and promote cultural pride and resilience, or 8 weeks of Science Technology Engineering and Math (STEM) text messages, designed to elevate and re-affirm Native voices in science, technology, engineering, math, and medicine. Afterward, the two groups switched, and participants received the other set of messages. Eligible teens and young adults received three to six text messages per week in the evenings and received $40.00 for completing four surveys over 9 months. Results from the BRAVE study will be published when complete.

Lessons Learned from BRAVE Formative Research

- AI/AN teens and young adults are a unique population who experience multiple health inequities. Formative research to design behavioral health interventions in this population has the potential to improve health equity.
- Formative research requires commitments that withstand the test of time – changes to the target audience, health focus, team members, and funding agency occurred over the five-year study.
- Formative research must be funded, but there are limited resources available in AI/AN communities to support this iterative process. BRAVE pulled funding from multiple sources; this required changing the intervention's focus, target population, and intervention strategy over time. Greater flexibility from funding agencies is needed to support formative research and the design of behavioral interventions tailored to the unique needs and experiences of specific populations.
- NPAIHB worked with a Native-owned film crew, Sky Bear Media, to develop, test, and revise the script. This working relationship was essential to the formative research process. Sky Bear Media's willingness to work iteratively, weaving in feedback from youth and topical experts, improved the final video immensely.

- NPAIHB's strong collaborations with THRIVE, We R Native, and the Department of Social & Behavioral Sciences at the T.H. Chan School of Public Health at Harvard University were critical to develop and test the BRAVE intervention. The collaboration was ultimately successful because of a shared mission and values to design an evidence-based intervention that would help Native youth.
- We recognize that experts exist in all places. Formative research requires teams to seek out this expertise and create a collective knowledge base that honors the unique knowledge, skills, and histories of the target population. In this study, it was AI/AN teens and young adults and tribal communities.
- The equitable involvement of communities and stakeholders in the formative research process may increase the likelihood that an intervention will be successful. BRAVE formative research viewed feedback from AI/AN teens and young adults as equal to feedback from content experts.

DISCUSSION

This paper summarizes the process used to develop a theoretically informed, culturally relevant text message intervention with role model videos for AI/AN young adults in the United States. NPAIHB's partnerships and extensive AI/AN social media presence contributed to the overall success of the formative research. Through the key informant interviews in Phase 1, we were able to assess the cause and consequences of violence among young adult AI/AN males. The findings indicated that alcohol was often a contributing factor, so alcohol misuse was portrayed in the role model video script.

In 2015, when the ReThink Your Drink Study began, we did not know how best to address violence in AI/AN young men. Themes from key informant interviews conducted in Phase 1 recommended and expanded the intervention's focus. In Phase 2 of the project, we pilot tested the video scripts and text message series to determine if they were relatable to the audience and could effectively reduce self-reported alcohol use and alcohol-related violent incidents. Reviewers—including AI/AN young adults, content experts, and funding agencies—felt the intervention could be effective, but could be improved by opening the intervention up to female and teen participants, amplifying and reinforcing healthy social norms and cultural values, incorporating suicide warning signs, better-preparing youth to initiate difficult conversations with peers and trusted adults, and

encouraging youth to access health resources (i.e., tribal clinics, chat lines, intimate partner violence counseling).

With Phase 3 of the BRAVE study now underway, we believe the formative research outlined in this manuscript contributed to a better intervention. With few evidence-based interventions designed with AI/AN teens and young adults in mind, this is one of the first interventions of its kind using culturally relevant images, narrative role model videos, and text messages that address alcohol misuse, intimate partner violence, and help-seeking skills, while promoting cultural pride.

Strengths and Limitations

The BRAVE formative research had several strengths and limitations. The length of the project, the commitment and leadership of NPAIHB, the diversity of AI/AN young adults involved, and the assistance from content experts provided consistent support for the BRAVE study. BRAVE's focus on culturally relevant images, language, and the use of peers as role models demonstrated respect for diversity, values, and translation of health communication messaging that AI/AN youth could identify with.

Limitations of the BRAVE formative research mainly relate to the changes in the target audience and approach. Grant funders and community stakeholders recommended that we expand the target audience to include females and younger teens than originally interviewed (and pilot tested). These changes were not pilot tested but integrated into the BRAVE RCT; the team is waiting to see whether the intervention is as effective for female participants and younger teens, as it is for those who met the original inclusion criteria.

We used convenience sampling methods; therefore, the interview and pilot test findings are not representative of the entire population of AI/AN young adults. The sample was recruited largely through We R Native, a multimedia health and wellness resource, which may have influenced how they viewed the BRAVE study and their participation in it. Participants represented 10 communities, and they did not represent the geographic and tribal diversity of all AI/AN young adults in the United States. Qualitative analysis in Phase 1 relied on Dedoose software, which limits how codes are applied to interviews. Additionally, structured interview guides limited the comprehensiveness of responses and additional thoughts that participants may have had if the interviews were less structured and informal.

Next Steps

Phase 3 of the BRAVE intervention is now underway, and staff at the NPAIHB are enthusiastic about the results of this nation-wide study involving nearly 1,000 AI/AN urban and reservation youth. If the BRAVE intervention demonstrates improvements in mental health, help-seeking skills, and cultural pride and resilience, it will be the first evidence-based health intervention of its kind for AI/AN teens and young adults.

CONCLUSION

Native teens and young adults are indeed brave. They come from a long line of ancestors who fought for freedom, defended their culture and homelands, and relied upon kinship systems and community support to live a healthy life. Formative research from BRAVE builds on this history and connects AI/AN teens and young adults to people, stories, resources, and teachings that demonstrate what it means to be strong and resilient.

REFERENCES

Anderson, K.M., & Olson, S. (2016). Contributors to Resilience. In National Academies of Sciences, Engineering, and Medicine (Ed.), *Advancing Health Equity for Native American Youth: Workshop Summary*. Washington, DC: The National Academies Press. https://doi.org/10.17226/21766

Andreasan, A. R. (1994). Social marketing: Its definition and domain. *Journal of Public Policy & Marketing, 13*(1), 108-114. https://doi.org/10.1177/074391569401300109

Badawy, S. M., & Kuhns, L. M. (2017). Texting and mobile phone app interventions for improving adherence to preventive behavior in adolescents: A systematic review. *JMIR mHealth and uHealth*, *5*(4), e50. https://doi.org/10.2196/mhealth.6837

Bee-Gates, D., Howard-Pitney, B., LaFromboise, T., & Rowe, W. (1996). Help-seeking behavior of Native American Indian high school students. *Professional Psychology: Research and Practice, 27*(5), 495. https://doi.org/10.1037/0735-7028.27.5.495

Center for Native American Youth (CNAY). (2016). *Health innovation & equity: Recommendations from Native American youth*. Washington, DC: Center for Native American Youth, The Aspen Institute.

Center for Native American Youth (CNAY). (2019). *State of Native Youth Report, Native Youth Count.* Washington, DC: Center for Native American Youth, The Aspen Institute. https://www.cnay.org/wp-content/uploads/2019/11/2019-State-of-Native-Youth-Report_PDF.pdf

Division of Violence Prevention. (2020). *Understanding youth violence*. Atlanta, GA: Division of Violence Prevention, National Center for Injury Control, Centers for Disease Control and Prevention, US Department of Health and Human Services. https://www.cdc.gov/violenceprevention/pdf/yv/YV-factsheet_2020.pdf

Gittelsohn, J., Steckler, A., Johnson, C. C., Pratt, C., Grieser, M., Pickrel, J., Stone, E. J., Conway, T., Coombs, D., & Staten, L. K. (2006). Formative research in school and community-based health programs and studies: "State of the art" and the TAAG approach. *Health Education & Behavior*, *33*(1), 25-39. http://dx.doi.org/10.1177/1090198105282412

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). *Health behavior and health education: theory, research, and practice.* San Francisco, CA: John Wiley & Sons.

Glowacki, E. M., Kirtz, S., Hughes Wagner, J., Cance, J. D., Barrera, D., & Bernhardt, J. M. (2018). HealthyhornsTXT: A text-messaging program to promote college student health and wellness. *Health Promotion Practice*, *19*(6), 844–855. https://doi.org/10.1177/1524839917754089

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701-721. https://doi.org/10.1037/0022-3514.79.5.701

Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior*, *34*(5), 777-792. http://dx.doi.org/10.1177/1090198106291963

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277-1288. http://dx.doi.org/10.1177/1049732305276687

Jumper-Reeves, L., Dustman, P. A., Harthun, M. L., Kulis, S., & Brown, E. F. (2014). American Indian cultures: How CBPR illuminated intertribal cultural elements fundamental to an adaptation effort. *Prevention Science*, *15*(4), 547-556. http://dx.doi.org/10.1007/s11121-012-0361-7

Landis, R. J., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174. https://doi.org/10.2307/2529310

Lawrence, E. M., Pampel, F. C., & Mollborn, S. (2014). Life course transitions and racial and ethnic differences in smoking prevalence. *Advances in Life Course Research*, *22*, 27-40. http://dx.doi.org/10.1016/j.alcr.2014.03.002

Markham, C. M., Rushing, S. C., Jessen, C., Gorman, G., Torres, J., Lambert, W. E., Prokhorov, A. V., Miller, L., Allums-Featherston, K., Addy, R. C., Peskin, M. F., & Shegog, R. (2016). Internet-based delivery of evidence-based health promotion programs among American Indian and Alaska native youth: A case study. *JMIR Research Protocols*, *5*(4), e225. http://dx.doi.org/10.2196/resprot.6017

Minton, T. D. (2016). *Jails in Indian Country, 2015.* Washington, DC: Bureau of Justice Statistics, Office of Justice Programs, US Department of Justice.

National Center for Health Statistics. (2016). *Compressed Mortality File 1999-2015 on CDC WONDER Online Database*. Atlanta, GA: National Center for Health Statistics, Centers for Disease Control and Prevention, US Department of Health and Human Services. https://wonder.cdc.gov/controller/datarequest/D132;jsessionid=CB6D30304A7A062BF98C5C2202BF535B

Northwest Portland Area Indian Health Board. (2016). We R Social: Findings from the 2016 Youth-Health-Tech Survey. http://www.npaihb.org/wp-content/uploads/2016/02/We-R-Social-Youth-Health-Tech-Survey-20161.pdf

Potter, W. J., & Levine-Donnerstein, D. (1999). Rethinking validity and reliability in content analysis. *Journal of Applied Communication Research*, 27(3), 258-284. http://dx.doi.org/10.1080/00909889909365539

Rosay, A. B. (2015). *Violence Against American Indian and Alaska Native Women and Men: 2010 Findings from the National Intimate Partner and Sexual Violence Survey.* Washington, DC: National Institute of Justice, Office of Justice Programs, US Department of Justice.

Rushing, S. C., & Stephens, D. (2012). Tribal recommendations for designing culturally appropriate technology-based sexual health interventions targeting Native youth in the Pacific Northwest. *American Indian and Alaska Native Mental Health Research 19*(1), 76-101. http://dx.doi.org/10.5820/aian.1901.2012.76

Schonert-Reichl, K. A., & Muller, J. R. (1996). Correlates of help-seeking in adolescence. *Journal of Youth and Adolescence*, *25*(6), 705-731. https://doi.org/10.1007/BF01537450

Substance Abuse and Mental Health Services Administration. (2019). *2018 National Survey on Drug Use and Health Detailed Tables*. https://www.samhsa.gov/data/report/2018-nsduh-detailed-tables

Swaim, R. C., & Stanley, L. R. (2018). Substance use among American Indian youths on reservations compared with a national sample of US adolescents. *JAMA Network Open*, *1*(1), e180382-e180382. http://doi.org/10.1001/jamanetworkopen.2018.0382

US Census Bureau. (2017). *S0201 Selected population profile in the United States: 2017 American Community Survey 1-Year estimates*. Washington, DC: US Census Bureau, US Department of Commerce. https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_1YR_S0201&prodType=table

Vastine, A., Gittelsohn, J., Ethelbah, B., Anliker, J., & Caballero, B. (2005). Formative research and stakeholder participation in intervention development. *American Journal of Health Behavior*, 29(1), 57-69. https://doi.org/10.5993/ajhb.29.1.5

Wallerstein, N. B., & Duran, B. (2006). Using community-based participatory research to address health disparities. *Health Promotion Practice*, *7*(3), 312-323. http://dx.doi.org/10.1177/1524839906289376

Yao, P., Fu, R., Craig Rushing, S., Stephens, D., Ash, J. S., & Eden, K. B. (2018). Texting 4 Sexual Health: Improving attitudes, intention, and behavior among American Indian and Alaska Native youth. *Health Promotion Practice, 19*(6), 833-843. https://doi.org/10.1177/1524839918761872

ACKNOWLEDGEMENTS

We appreciate the support of NPAIHB and the commitment of teens and young adults throughout Indian Country. Thank you for helping us understand more about formative research and the BRAVE intervention.

FUNDING INFORMATION

The BRAVE intervention was developed, in part, with staff funded by grant number H79SM082106 from SAMHSA. The views, opinions and content of this publication are those of the authors and contributors, and do not necessarily reflect the views, opinions, or policies of CMHS, SAMHSA, or HHS, and should not be construed as such.

The final phase of the study was funded by a grant from the Technology and Adolescent Mental Wellness (TAM) program at the University of Wisconsin-Madison. The content is solely the responsibility of the authors and does not necessarily represent the official views of the university or the TAM program.

AUTHOR INFORMATION

Dr. Stephanie Craig Rushing is a Principal Investigator at the Northwest Portland Area Indian Health Board in Portland, OR. Dr. Allyson Kelley is a Senior Community Health Scientist and President at Allyson Kelley & Associates in Sisters, OR. Dr. Steven Hafner (Oglala Sioux) is a Research Scientist for the National Missing and Unidentified Persons System in Washington, DC. David Stephens is a Project Director at the Northwest Portland Area Indian Health Board in Portland, OR. Michelle Singer (Navajo) is Project Manager at the Northwest Portland Area Indian Health Board in Portland, OR. Dyani Bingham (Assiniboine/Blackfeet/Metis) is a Senior Evaluation Associate at Allyson Kelley & Associates in Sisters, OR. Colbie Caughlan is a Project Director at the Northwest

Portland Area Indian Health Board in Portland, OR. Bethany Fatupaito is a Senior Evaluation Associate at Allyson Kelley & Associates in Sisters, OR. Amanda Gaston (Zuni) is a Consultant for the Northwest Portland Area Indian Health Board in Portland, OR. Thomas Ghost Dog (Burns) is a Project Coordinator at the Northwest Portland Area Indian Health Board in Portland, OR. Paige Smith (Modoc, Paiute, Shoshone) is a Project Coordinator at the Northwest Portland Area Indian Health Board in Portland, OR. Dr. Danica Love Brown (Choctaw Nation of Oklahoma) is a Project Director at the Northwest Portland Area Indian Health Board in Portland, OR. Celena McCray (Navajo) is a Project Manager at the Northwest Portland Area Indian Health Board in Portland, OR.

APPENDIX

Appendix A: Phase 1 BRAVE Interview Guide

BRAVE- Interviewer Guide

A sub-set of these questions will be used for each interview/mini focus-group.

Final revisions to this guide will be made in late June/early July in consultation with the PI, Co-PI, and other members of the Northwest Portland Area Indian Health Board.

Script:

Hello! My name is_____ and I am from the Northwest Portland Area Indian Health Board. Thank you for participating in this interview. I am part of a group that is looking at how young adults view violence and safety in their communities. Because you are in this age group, I want to better understand your ideas and thoughts around violence and public safety in your community.

Before we begin, let's go over a few things that will help our conversation:

This discussion will be pretty informal. I will be tape recording and taking notes, so please try to speak up. If there's anything that is unclear, please stop me. If there's anything you feel uncomfortable talking about, you can just say 'pass.'

From time to time, I may interrupt the conversation or change the subject so that we have enough time to cover all our questions. If you feel strongly about a certain subject and we have time at the end, we can continue talking about it, or you can talk to us after the group is over. Any questions so far?

***[Interviews]** Also, everything that is said in this interview will remain completely confidential. If you have any concerns about privacy related to this interview, please let me know at any time. Feel free to ask any questions you want at any time.*

***[Focus groups]** Last thing before we begin, we will be using what's called a "closed talking circle." This means that whatever is said in the group, stays in the group, period. We are doing this to respect each other's thoughts and opinions by not sharing each other's names or any comments people make. These things will not leave this room when we are finished. If you have any concerns about this please come talk to either of us after our session is over.*

Finally, I will be tape recording the discussion, only because I don't want to miss any of your comments. However, I want you to feel confident knowing that no one outside the research team will have access to these tapes. They will be destroyed after we write the reports we need to. If you don't want to be recorded, you can still participate. Do you agree to be recorded?

□Yes □No

Do you have any questions before we begin?

Warm up Questions:

1. Can you tell me about the community in which you live?
    a. PROBE: Is it an urban community or tribal community?
    b. PROBE: Is it mostly Native or non-Native? Are the Natives in your community all from the same tribe or do they come from different tribes?
    c. PROBE: Is your sense of community defined by the people living in the same area as you; as sharing the same attitudes, beliefs, or interests as you; or on some other characteristic?

Violence Prevalence and its Effects

2. Do you feel that violence is an issue in your community as defined above?
3. Which of these types of violence is most prevalent in your community?
    a. PROBE: Why do you think this type of violence is most prevalent in your community? Types of violence include bullying, domestic violence (i.e., within homes), intimate partner violence (e.g., between partners), sexual assault (including rape, reproductive control, etc.), stalking, physical assault, and gun violence.
4. What effect do you think this violence has on your community?
5. What type of people do you believe commit the most violence in your community?
    a. PROBE: Why do you think these types of people are committing violence?
6. To what extent do you believe that violence in your community is related to other issues in your community?
    a. PROBE: What other health behaviors, such as alcohol use, do you think contribute to violence in your community?
    b. PROBE: What other social factors, such as unemployment, do you think contribute to violence in your community?

We are particularly interested in knowing more about "public safety" as it relates to violence.

7. Do you feel safe in your community?
    a. PROBE: What makes your community feel safe or unsafe?
8. To what extent does the physical environment contribute to feelings of safety in your community?
    a. PROBE: What about the physical environment makes your community feel safe or unsafe (e.g., no street lights, cracked sidewalks, trash)?
9. To what extent does the social environment contribute to feelings of safety in your community?
    a. PROBE: What about the social environment makes your community feel safe or unsafe (e.g., gangs, low police presence, drug trade, many bars)
10. What are your attitudes towards law enforcement in your community?
    a. PROBE: What makes it effective at preventing violence in your community?
    b. PROBE: What makes it ineffective at preventing violence in your community?

11. Do you think most people in your community trust the law enforcement in your community?
    a. PROBE: What factors influence a person's trust in their law enforcement?
12. Do you think law enforcement in your community treats Natives the same way as non-Natives?
    a. PROBE: If no, how are they treated differently?
    b. PROBE: What effect does this different treatment have on your views towards law enforcement?
13. Do you think law enforcement is concerned with violence in your community?
    a. PROBE: What issues do you think law enforcement is most concerned with in your community (e.g., drugs)?
14. What types of things could law enforcement do to be more effective at preventing violence in your community?
15. Are there any other government agencies or community organizations that contribute to feelings of public safety in your community, either positively or negatively?
    a. PROBE: How do these organizations contribute in such ways?

Violence Prevention

16. Who do you think is most responsible for preventing violence in your community?
17. What types of resources do you think would be helpful for young adults who are committing violent act?
18. What types of things could someone your age do if they know someone who is committing violent acts?
    a. PROBE: What should someone your age do in that situation?
    b. PROBE: What types of things could any young adult do if they were aware of violence in their community?
19. If you saw something that concerned you, what would cause you to take action?
20. Are there any other people who might be aware of the situation who could take action to help?
21. What are some things that could stop someone from taking action?
    a. PROBE: If you saw something that concerned you, what would stop you from doing something about it?
    b. PROBE: Are there any other things that stop young adults from intervening?

Messaging

22. What types of messages do you think would help in preventing violence in your community?
23. To whom do you think such messages should be targeted (e.g., perpetrators, policymakers, other community members)?
    a. PROBE: How do you think the messages should differ between these groups?
24. What do you think would be the most effective ways to get messages to these members of your community?
    a. PROBE: Social media? If so, which ones?

What tone do you think such messages should take?

Appendix B: Phase 2 Pilot SMS

BRAVE Visual Plot of Pilot SMS Message and Other Questions

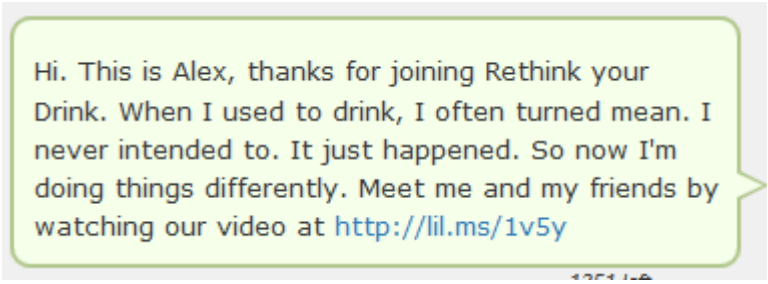
This is an example of the BRAVE pilot SMS messages and follow up SMS messages that were sent after they received the text messages and role model videos. After each video, participants were asked two questions:

1) Did the last text seem useful or relevant? *Yes* or *No*
2) Is there anything you'd change or suggest that we do differently? Open text response

The study team also monitored click-thru numbers to monitor participant engagement with the content.

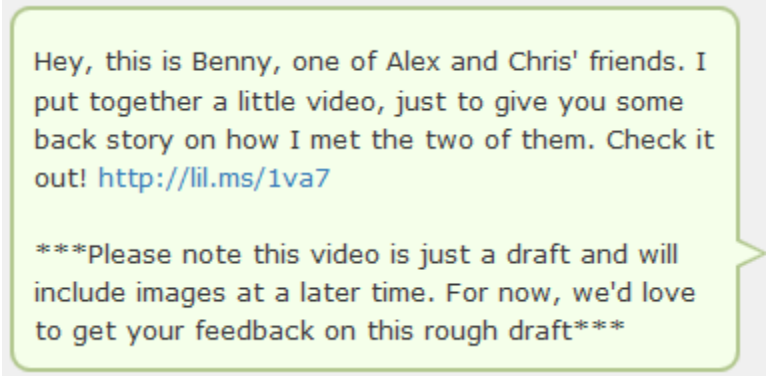
These are the actual text messages that participants received.

1. **Feedback on Video – Episode #1:**



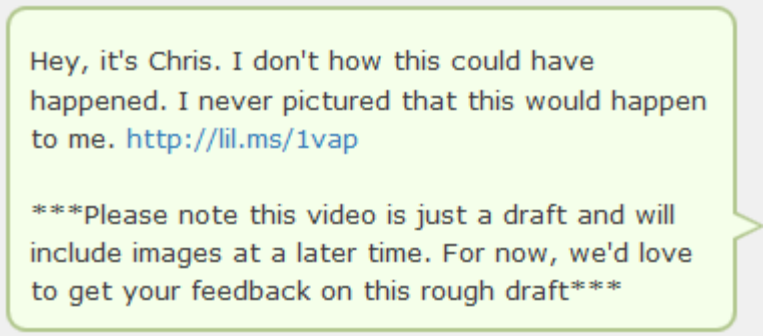
2. **Feedback on Video – Episode #2:**

3. **Feedback on Video – Episode #3:**

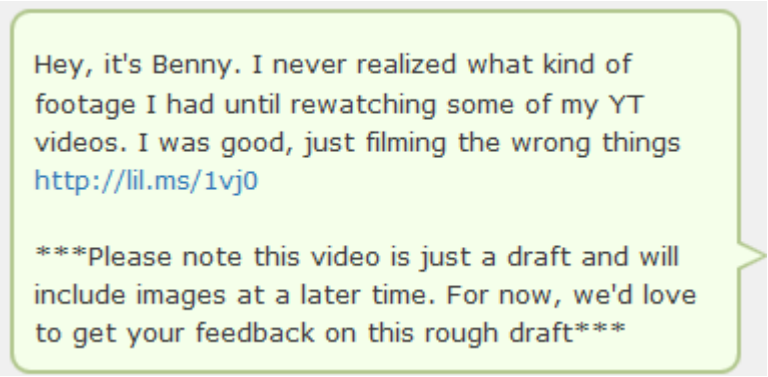


4. **Feedback on Video – Episode #4:**

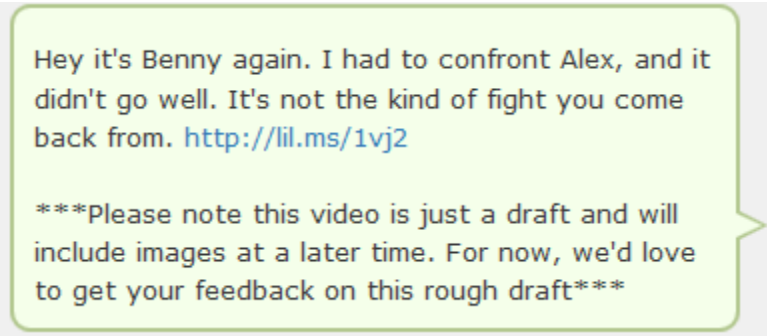
5. **Feedback on Video – Episode #5:**



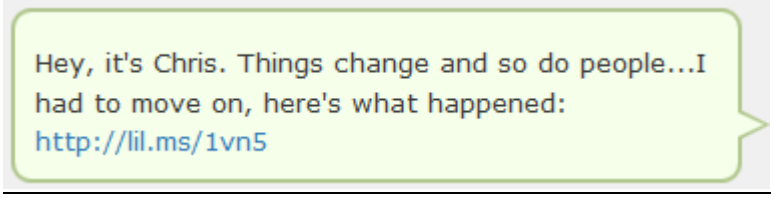
6. **Feedback on Video – Episode #6:**



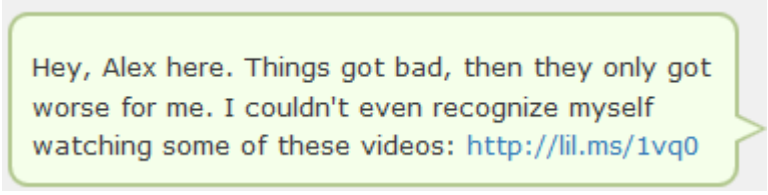
7. **Feedback on Video – Episode #7:**



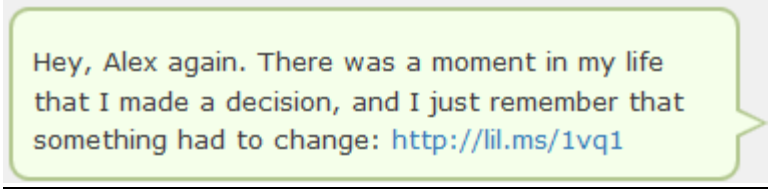
8. **Feedback on Video – Episode #8:**



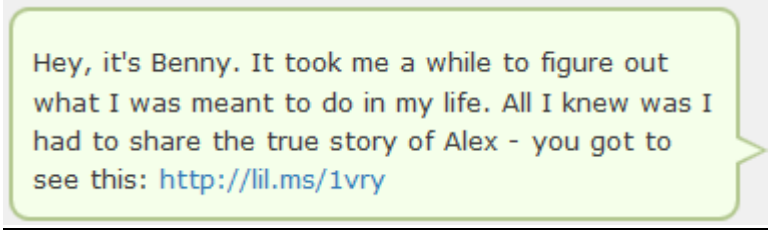
9. **Feedback on Video – Episode #9:**



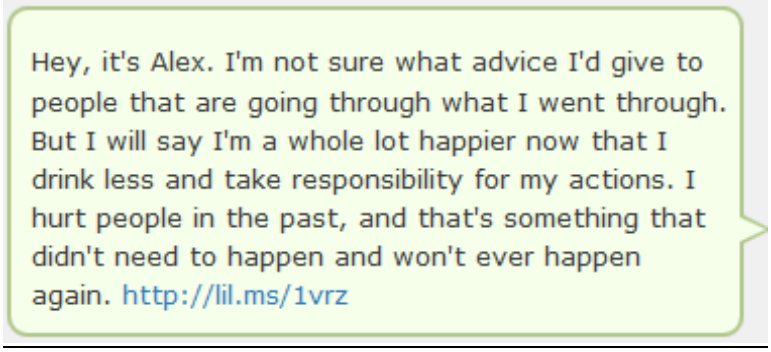
10. **Feedback on Video – Episode #10:**



11. **Feedback on Video – Episode #11:**



12. **Feedback on Video – Episode #12:**

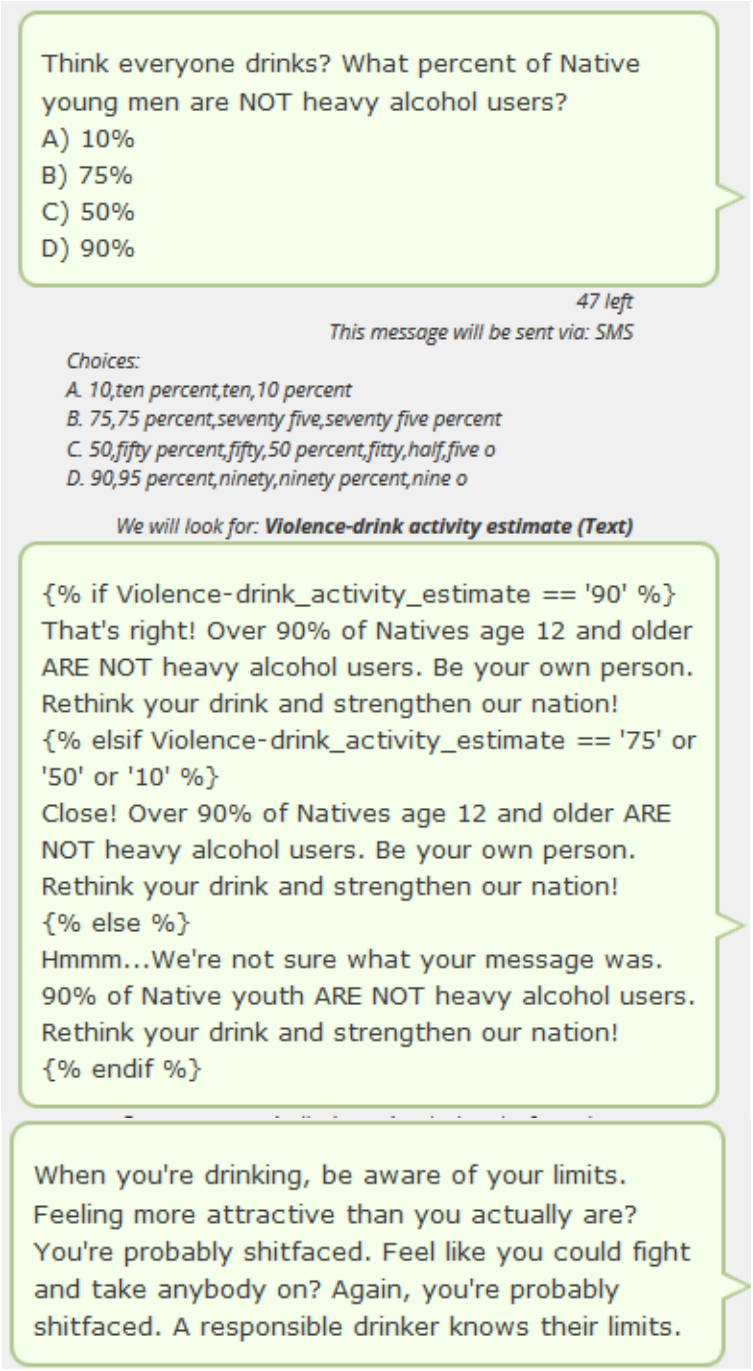


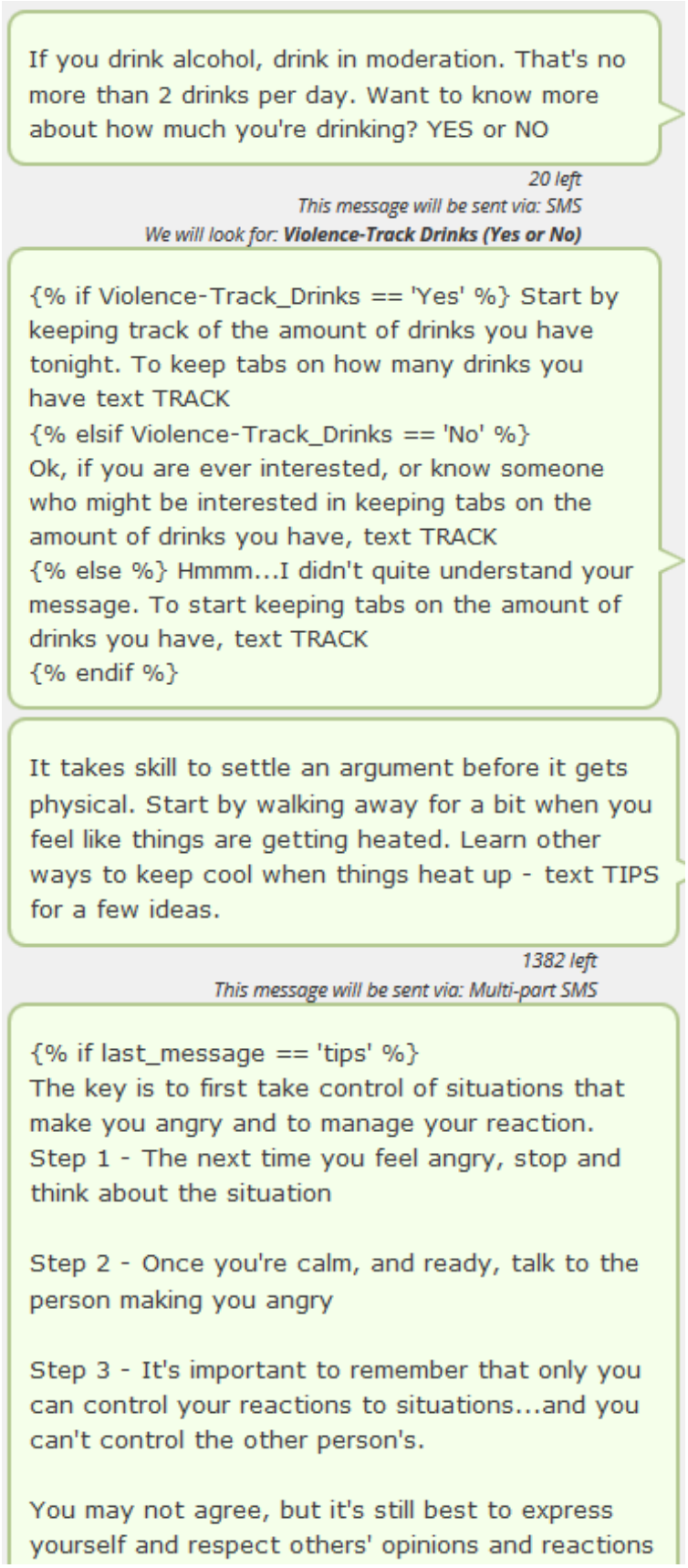
Participants also received individual text messages; these are presented below. After each text message, participants were asked to provide feedback about the message,

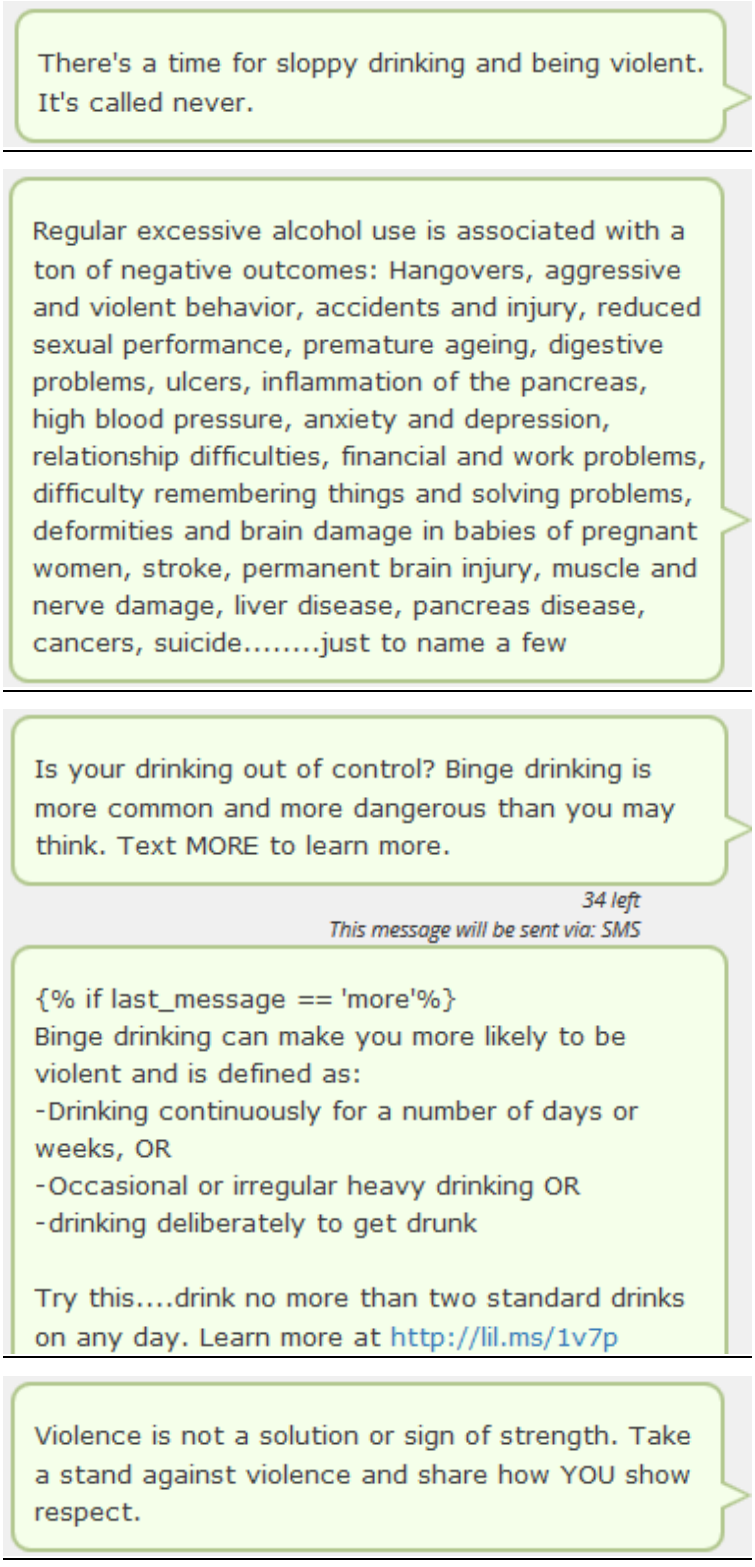
1) Did the last test seem useful or relevant? *Yes* or *No*

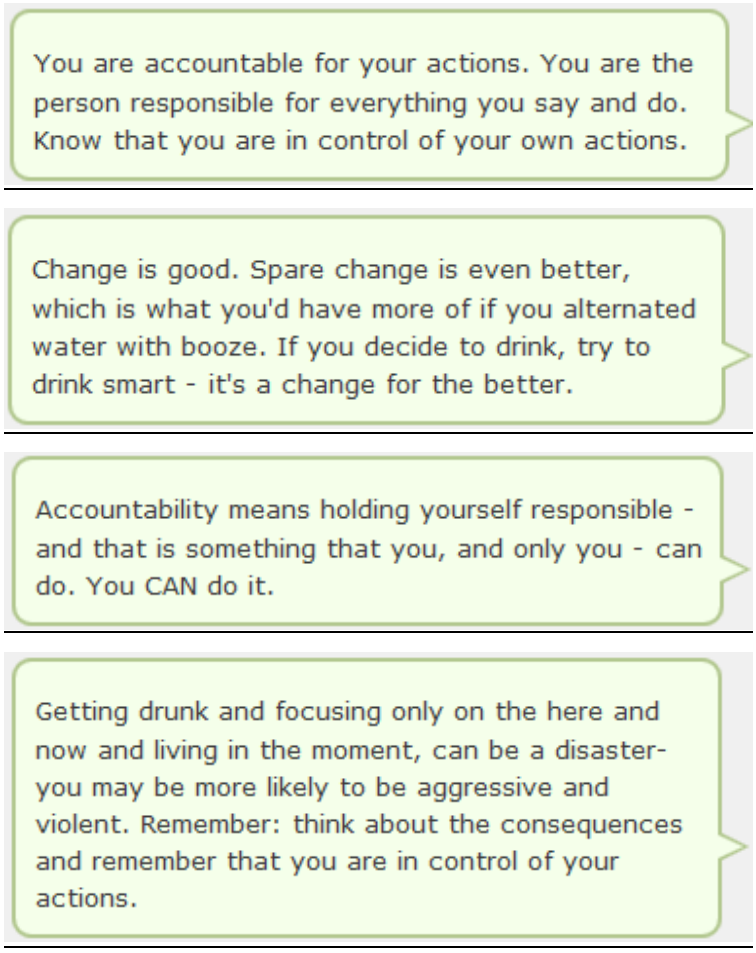
2) Is there anything you'd change or suggest we do differently? Open text response

The study team also monitored click-thru numbers to monitor participant engagement with the content.









Appendix C: Phase 2 Survey Questions

WERNATIVE

Rethink Your Drink Pre-Survey

Please enter the cell phone number that you are using to receive the Rethink Your Drink text messages:

1. What is your date of birth?
2. How old are you?
3. Are you currently enrolled in school?
4. Do you currently have a job?
5. How often do you have a drink containing alcohol?
6. How confident are you that you can talk to a friend about THEIR alcohol consumption, if you were worried about their drinking?
7. How confident are you that you can talk to a friend about THEIR violent or aggressive behavior, if you were worried about them?
8. In the last 3 months, how many times did you get into a physical fight?
9. In the last 3 months, how many times were you verbally mean or aggressive toward someone else?
10. How many times was alcohol involved?
11. In the last 3 months, how many times have you witnessed someone ELSE being verbally or physical aggressive toward someone?
12. How many times was alcohol involved?

Rethink Your Drink Post-Survey

Please enter the cell phone number that you are using to receive the Rethink Your Drink text messages:

1. What is your date of birth?
2. How old are you?
3. Are you currently enrolled in school?
4. Do you currently have a job?
5. How often do you have a drink containing alcohol?
6. How many drinks containing alcohol do you have on a typical day when you are drinking?
7. How often do you have 6 or more drinks on one occasion?
8. In the last 3 months, how often have you failed to do what was normally expected from you because of drinking?
9. Have you or someone else been injured as a result of your drinking?
10. In the next 6 months, how likely are you to drink enough alcohol to feel drunk or intoxicated?
11. In the next 6 months, how likely are you to get into a fight or argument while drunk or intoxicated?
12. Agree or Disagree: Drinking alcohol to feel drunk or intoxicated is completely normal.
13. Agree or Disagree: Drinking alcohol does not cause people to become angry or violent.
14. During the next 3 months, how often do you expect to consume enough alcohol to feel drunk or intoxicated?
15. During the next 3 months, how often do you expect to get in a fight or argument while drinking?

16. In the next 6 months, how confident are you that you can stop drinking before you feel drunk or intoxicated?

17. In the next 6 months, how confident are you that you can avoid getting in a fight or an argument while drinking?

18. How confident are you that you can talk to a friend about THEIR alcohol consumption, if you were worried about their drinking?

19. How confident are you that you can talk to a friend about THEIR violent or aggressive behavior, if you were worried about them?

20. In the last 3 months, how many times did you get into a physical fight?

21. How many times was alcohol involved?

22. In the last 3 months, how many times were you verbally mean or aggressive toward someone else?

23. How many times was alcohol involved?

24. In the last 3 months, how many times have you witnessed someone ELSE being verbally or physical aggressive toward someone?

25. How many times was alcohol involved?

THE RELATIONSHIP OF SELF-COMPASSION AND SUICIDE RISK FACTORS IN AMERICAN INDIAN/ALASKA NATIVE PEOPLE

Sarah Dolezal, PhD, Carrie Winterowd, PhD, and Aisha Farra, MA

Abstract: In this study, positive aspects of self-compassion (i.e., self-kindness, common humanity, and mindfulness of one's thoughts and feelings) were explored in relation with suicide risk factors (i.e., perceived burdensomeness and thwarted belongingness) in a community sample of 242 self-identified American Indian/Alaska Native (AI/AN) adults. Participants completed a survey packet including a demographic form, the Interpersonal Needs Questionnaire, and the Self-Compassion Scale at several Indian Health Service clinics and tribal centers in the Great Plains of the United States. Results indicated that positive aspects of self-compassion (i.e., self-kindness, common humanity, and mindfulness) were associated with and predictive of less suicide risk (i.e., less perceived burdensomeness and thwarted belongingness) among AI/AN adults. Of those with a history of suicidal ideation (n = 89), positive aspects of self-compassion were predictive of less perceived burdensomeness, but were not predictive of thwarted belongingness. Implications for prevention and intervention programs that emphasize self-compassion, mindfulness, and culturally relevant practices, as well as mental health advocacy, including suicide prevention, for AI/AN people are highlighted.

INTRODUCTION

Suicide Risk Among American Indian/Alaska Native People

In 2018, the Centers for Disease Control and Prevention (CDC; 2020) reported suicide as the second leading cause of death for American Indian/Alaska Native (AI/AN) people between the ages of 10 to 34. Since 2003, AI/AN people have the highest suicide rates compared to other ethnocultural groups, which have been steadily increasing over time (Leavitt et al., 2018; O'Keefe et al., 2014). When looking at the AI/AN population as a whole, suicide remains one of the top 10 leading causes of death (CDC, 2019). Some of the risk factors that increase AI/AN people's suicide risk include, but are not limited to, traumatic experiences, hopelessness, lack of support, mental

health concerns, family violence, impulsivity, suicide attempt history, and access to lethal means (Gray & McCullagh, 2014). Historical and intergenerational trauma is a specific risk factor for suicide among AI/AN people as these traumas are embedded in families and communities and passed down to future generations (FitzGerald et al., 2017; Gray & McCullagh, 2014).

Interpersonal Psychological Theory of Suicide

One theory of suicidal risk and behaviors is Joiner's Interpersonal Psychological Theory of Suicidal Behavior (IPTS). IPTS draws on several components to explain why people may be at risk for death by suicide and ultimately why people die by suicide, including thwarted belongingness, perceived burdensomeness, and acquired capability (Joiner, 2005; Van Orden et al., 2010).

Thwarted belongingness refers to the mental suffering that occurs as a result of a lack of connectedness with others. Human beings are born to be relational and desire to feel connected, and when this does not occur, it results in loneliness and increases thwarted belongingness (Joiner, 2005).

Perceived burdensomeness is the extent to which people believe they are a burden to those who play an important role in their lives (i.e., family, friends, community, etc.). Therefore, the greater the sense of being a burden on others (regardless of whether or not others view the person as a burden), the greater the suicide risk. The combination of perceived burdensomeness and thwarted belongingness are theorized to be risk factors for suicide and death by suicide for people in general (Joiner, 2005; O'Keefe et al., 2014; Van Orden et al., 2010).

Acquired capability refers to an individual's ability to follow through with the actual act of suicide (Van Orden et al., 2010). The actual act of suicide can be a fearful and painful event. Human beings are not innately designed to follow through with such an act (Joiner, 2005). So, the way people develop the acquired capability to carry out the act of suicide is through repeated exposure to painful events (e.g., experiencing traumatic events, being bullied). While there is merit in studying acquired capability, many researchers in the field of suicidality tend to focus on thwarted belongingness and perceived burdensomeness as suicide risk factors (Brailovskaia et al., 2020; El et al., 2018; Martin et al., 2018; McClay et al., 2020; O'Keefe, 2014; Roeder & Cole, 2018). Therefore, thwarted belongingness and perceived burdensomeness will be the aspects of suicide risk explored in the present study.

Thwarted Belongingness and Perceived Burdensomeness as Suicide Risk Factors for AI/AN People

O'Keefe and colleagues (2014) were the first group of researchers to explore the linear relationships of demographics (i.e., gender, age, and family income) and levels of depression, thwarted belongingness, and/or perceived burdensomeness with suicidal ideation in a sample of 171 AI/AN college students from three midwestern campuses, ranging in age from 18 to 62, and representing 27 different tribes/nations. They found that perceived burdensomeness significantly predicted suicidal ideation for these AI/AN college students, more than what demographics and levels of depression explained, and that the interaction between thwarted belongingness and perceived burdensomeness significantly predicted AI/AN college students' suicidal ideation beyond what depression levels and demographics explained. However, thwarted belongingness did not significantly predict suicidal ideation beyond what was accounted for by participant demographics and levels of depression in their AI/AN college student sample (O'Keefe et al., 2014).

Despite this finding, thwarted belongingness appears to be a relevant construct for AI/AN people given that a sense of belonging is important in AI/AN youth, families, clans, and tribal communities given the importance of relational ways (Chacko & Menon, 2013; Krmpotich et al., 2016). Connectedness to family, including extended family, has been identified as a protective factor against suicidality for AI/AN adolescents (Goldston et al., 2008). AI/AN people often identify with their tribal community including participating in cultural events, spiritual guidance, and/or engaging with tribal leaders and members. In one study, AI/AN people who were separated from their tribal communities, either due to distance or lack of tribal involvement, were found to have an increased risk for thwarted belongingness (Rhoades-Kerswill, 2012). In another study, Hill (2009) explored belongingness in relation to suicidality among AI/AN people and found that more disconnection (i.e., higher thwarted belongingness) was associated with a greater risk for suicidal ideation. Other researchers have noted the connection to family members as well as their tribal community as a protective factor against suicidal thoughts, attempts, and completions among AI/AN people (Alcántara & Gone 2007; Henson et al., 2017). Alcántara and Gone (2007) found that family and tribal connectedness, as well as commitment to cultural spirituality, interpersonal communication skills, cultural continuity, and the presence of nurses (in clinic or school settings) were buffers against suicidality for AI/AN people. In reviewing the literature, Henson et al. (2017) found that family connectedness (i.e., experiencing affection and close relationships with parents)

and non-familial connectedness (i.e., caring relationships with school officials, religious leaders, and tribal leaders) were protective factors for AI/AN adolescents related to suicidality. Therefore, furthering these research efforts in understanding the relationship between thwarted belongingness and suicidal ideation in AI/AN adults in community settings is warranted.

Perceived burdensomeness is another potential risk factor for suicidality among AI/AN people. If someone feels like a burden to their family, given the importance of connectedness and closeness of family relationships in AI/AN communities, it is possible that AI/AN individuals may be at risk for depression and possibly suicidal risk in combination with other factors. According to Rhoades-Kerswill (2012), perceived burdensomeness for AI/AN people might increase when they believe that they are not fulfilling their traditional roles, which could create a sense of burdensomeness on their community and/or family. There are only a few research findings suggesting that AI/AN people have an increased risk for suicidal thoughts and behaviors when they feel like a burden to others (O'Keefe et al., 2014; Rhoades-Kerswill, 2012; Olson et al., 2011). Given that perceived burdensomeness is an important component identified in the IPTS that may enhance one's desire to die by suicide, further research on perceived burdensomeness among AI/AN people is needed.

Positive Aspects of Self-Compassion as Potential Protective Factors for Suicide Risk Among AI/AN People

Knowing that AI/AN people have an increased rate of suicidal risk and behaviors, including death by suicide, compared to other ethnocultural groups, it is also important to research the protective factors related to suicidality within AI/AN cultures. Self-compassion is a positive psychology construct, and to the best of our knowledge, it has not been explored in AI/AN communities and may indeed be a protective factor against suicidality in AI/AN adults in community settings.

Self-compassion refers to the ability to have empathy toward oneself and one's suffering (Neff, 2003), which has been known to increase positive emotional states while reducing depression and anxiety (Neff & Vonk, 2009). Neff (2003) identified three theoretical dimensions of self-compassion including self-beliefs, relational beliefs, and the relationship to one's own thoughts and feelings. The three positive aspects of self-compassion are self-kindness, common humanity, and mindfulness.

Self-kindness refers to how kind an individual is to oneself while refraining from judging oneself. Common humanity involves embracing imperfection as a shared human experience. Mindfulness of one's thoughts and feelings is the ability to equalize experiences, that is, to experience one's thoughts and feelings in the moment, instead of amplifying individual suffering (Akin & Akin, 2015; Neff, 2003).

A self-compassionate mindset is created when all three positive self-compassion (i.e., self-kindness, common humanity, and mindfulness of one's thoughts and feelings) components blend together and reciprocally interact (Neff & McGehee, 2010). If self-compassion is linked with connectedness, happiness, and optimism (Neff & McGehee, 2010), then it is likely that an increase in self-compassion could potentially avert and/or decrease suicidal thoughts.

Of interest, only four studies to date have explored self-compassion as a protective factor against suicidality in the general population. In two studies, lower levels of self-compassion were associated with higher rates of suicide plans (i.e., particularly self-kindness and common humanity; Ali, 2014) and/or suicide attempts for children and adolescents (Tanaka et al., 2011). Self-compassion was also found to be directly and inversely related to suicidal behavior and depressive symptoms among college students (Rabon et al., 2018). Lastly, Rabon and colleagues (2019) explored the relationship between self-compassion and suicidal behavior in a sample of 541 United States veterans and found a significant inverse relationship between self-compassion and suicidal behavior among veterans, which was strengthened as the level of suicide risk severity increased.

No researchers to date have explored the relationship of self-compassion and suicide risk factors among AI/AN people, demonstrating the need for the present study. Current research has focused on identifying protective factors within AI/AN families and tribal communities (Alcántara & Gone 2007; Gilligan, 2002; Goldston et al., 2008; Henson et al., 2017; Hill, 2009; Rhoades-Kerswill, 2012). Understanding the relationship of self-compassion with suicide risk factors, such as thwarted belongings and perceived burdensomeness, may provide a new perspective in identifying internal/psychological protective factors related to suicidality among AI/AN people. Protective factors related to suicide risk tend to be understudied and receive less attention in research studies in general (FitzGerald et al., 2017). Identifying and increasing protective factors may be more effective than interventions aimed to reduce suicide risk factors (FitzGerald et al., 2017; Freedenthal & Stiffman, 2004).

The purpose of the present study was to explore the relationship of the three self-compassion dimensions with suicide risk factors of thwarted belongingness and perceived

burdensomeness in a sample of AI/AN people. The research questions for this study were: 1) What is the linear relationship of self-compassion dimensions with perceived burdensomeness among AI/AN adults? and 2) What is the linear relationship of self-compassion dimensions with thwarted belongingness among AI/AN adults? It was hypothesized that the self-compassion dimensions of self-kindness, common humanity, and mindfulness of one's thoughts and feelings would be significantly and inversely correlated with and predictive of 1) perceived burdensomeness and 2) thwarted belongingness among AI/AN people.

METHODS

Participants

The sample consisted of 242 self-identified AI/AN adults (83 men and 159 women) who came to one of several Indian Health Service (IHS) and/or tribal centers in the Great Plains of the United States. To respect participants' anonymity, as well as tribal approvals and university IRB processes and procedures, specific tribal affiliations of participants will not be reported. See Table 1 for the demographics of the sample.

The participants identified the presenting issues that brought them to the centers/clinics (often checking more than one box); the most common of which were depression (44.2%), anxiety (41.3%), financial stress (40.9%), high blood pressure (30.6%), relationship issues (28.1%), diabetes (26%), and employment (24%). In terms of level of social support, participants reported, on average, having four close friends ($M = 4.08$, $SD = 1.92$).

In terms of suicidality, 62.9% ($n = 151$) of the participants did not have a history of suicidal ideation whereas 37.1% ($n = 89$) of the participants reported a history of suicidal ideation. The majority of the participants reported no history of suicide attempts (81.3%, $n = 196$), but 18.7% ($n = 45$) of the participants did identify a history of attempting suicide (of whom 71.1% had attempted once or twice and 28.9% reported three or four attempts).

Procedure

Tribal research and university IRB approvals were obtained prior to the start of this study. AI/AN adults who visited their IHS and/or tribal centers were recruited via flyers that were posted at their center or recruited by their behavioral health care providers and/or the front desk staff at the centers. They were invited to participate in the study and informed that their participation was

voluntary and that their decision whether or not to participate did not influence any services received at the centers.

If participants stated an interest in this research study, they were given an envelope, which included the informed consent form, the demographic questionnaire, the Interpersonal Needs Questionnaire, the Self-Compassion Scale, and a resource page. The participants did not write their names on any survey forms, so there was no way to connect their survey responses with their identities. The participants sealed the envelope after completing the survey and dropped it off to the front desk staff at the center, who put the envelope in a locked file cabinet. Participants received $5 upon completion of the survey by the staff at the center/clinic.

Measures

Demographic Page

On the first page of the survey, participants completed questions related to their demographics including their age, gender, race, tribal membership, marital status, current living arrangements, past living arrangements, highest level of education completed, annual family income, spiritual preference, previous suicidal ideation and/or attempts, number of close friends, and type(s) of current presenting concerns.

Interpersonal Needs Questionnaire

The Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012) is a 15-item self-report measure of thwarted belongingness and perceived burdensomeness, which are two of the three key constructs derived from Joiner's Interpersonal Psychological Theory of Suicidal Behavior (IPTS; 2005), which proposes that for an individual to develop the desire for suicidal intent, they must possess thwarted belongingness and perceived burdensomeness, which refer to specific types of disconnections in their interpersonal relationships. The first six items on the INQ measure perceived burdensomeness (e.g., "These days, the people in my life would be better off if I were gone"). The last nine questions on the INQ measure thwarted belongingness (e.g., "These days, I feel disconnected from other people"). Participants read each item and responded using a 7-point Likert scale (1 = not at all true for me to 7 = very true for me). Items 7, 8, 10, 13, 14, and 15 of the INQ are reverse scored. Higher scores on these two subscales indicate more difficulties related to perceived burdensomeness and thwarted belongingness. The psychometric properties of this instrument are well-established in terms of internal consistency reliability, construct validity, and convergent validity (Van Orden et al., 2012). The internal consistency reliability estimates

(Cronbach alpha's) for the INQ subscales were .93 for perceived burdensomeness and.88 for thwarted belongingness for the current AI/AN adult sample. The INQ has been identified as a reliable and valid measure and used in several AI/AN studies (e.g., O'Keefe et al., 2014)

Self-Compassion Scale

The Self-Compassion Scale (SCS; Neff, 2003) is a 26-item self-report measure of self-compassion. The positive subscales of SCS were included in this study: self-kindness (e.g., "I try to be loving towards myself when I'm feeling emotional pain"), common humanity (e.g., "When things are going badly for me, I see the difficulties as part of life that everyone goes through"), and mindfulness (e.g., "When something upsets me, I try to keep my emotions in balance"). Participants rated each item, using a 5-point Likert scale (1 = almost never to 5 = almost always). For the current AI/AN sample, the internal consistency reliability estimates (Cronbach alpha's) for the self-compassion subscales were as follows: .83 for self-kindness, .73 for common humanity, and .78 for mindfulness. The psychometric properties of the SCS are established as being a reliable and valid measure of self-compassion (Neff, 2003), and this is the first study to use the SCS with AI/AN participants.

Table 1
Demographics of the Sample (n = 242)

Variable Name	Frequency (n)	Percentage (%)
Gender		
Male	81	34.3
Female	155	65.7
Race		
American Indian/Alaska Native (AI/AN)	188	77.7
AI/AN and White	38	15.7
AI/AN and Hispanic/Latinx	9	3.7
AI/AN and Black	4	1.7
AI/AN, Hispanic/Latinx, and White	2	.8
AI/AN, Black, and White	1	.4
Age		
19-24	22	9.1
25-30	30	12.4
31-35	27	11.2
36-40	25	10.3
41-45	32	13.2
46-50	26	10.7
51-55	26	10.7
56-60	24	9.9
61-65	14	5.8
66-70	7	2.9
71-75	4	1.7
76-80	5	2.1

continued on next page

Table 1 continued
Demographics of the Sample (n = 242)

Variable Name	Frequency (n)	Percentage (%)
Marital Status		
Never Been Married	99	40.9
Married	75	31
Divorced	51	21.1
Widowed	17	7
Highest Education		
Junior High	9	3.7
Some High School	31	12.8
High School/GED	59	24.4
Vo-Tech	10	4.1
Some College	80	33.1
Undergraduate Degree	25	10.3
Some Graduate College	6	2.5
Graduate Degree	20	8.3
Other	2	.8
Current Living Arrangement (Check all that apply)		
Reservation	5	2.1
Rural	46	19
Tribal Housing	28	11.6
Urban	141	58.3
Other	39	16.1
Past Living Arrangement (Check all that apply)		
Reservation	47	19.4
Rural	55	22.7
Boarding School	24	9.9
Tribal Housing	35	14.5
Urban	144	59.5
Other	28	11.6
Spiritual Preference		
Native American Church	70	28.9
Methodist	10	4.1
Catholic	27	11.2
Baptist	12	5
Lutheran	15	6.2
Other	78	32.2
None	45	18.6
Annual Income		
< 10,000	76	31.4
10,001 to 20,000	41	16.9
20,001 to 30,000	53	21.9
30,001 to 40,000	13	5.5
40,001 to 50,000	26	11
50,001 to 60,000	4	1.7
60,001 to 70,000	9	3.8
70,001 to 80,000	3	1.3
80,001 to 90,000	5	2.1
> 90,001	6	2.5

RESULTS

Inspection of the descriptive statistics for the main study variables revealed that, on average, this sample of AI/AN people experienced mild to moderate levels of self-compassion and thwarted belongingness, with some variation in scores, and on average, mild levels of perceived burdensomeness, with less variation in scores. See Table 2 for the descriptive statistics for the main study variables.

Preliminary analyses were conducted to see how demographic variables might relate to the outcome variables of the study. T-tests were conducted to explore potential demographic group differences (categorical) in the outcome variables of perceived burdensomeness and thwarted belongingness. Pearson correlational analyses were conducted to explore the relationship of the demographic variables (continuous) with the outcome variables of perceived burdensomeness and thwarted belongingness.

Table 2
Means and Standard Deviations for Main Study Variables for this AI/AN Sample (n = 242)

Variable Name	Mean	SD	Actual Range
Perceived burdensomeness	9.74	6.64	6-36
Thwarted belongingness	24.67	12.62	9-63
Self-kindness	15.99	4.74	5-25
Common humanity	13.58	3.54	4-20
Mindfulness of thoughts/feelings	13.90	3.71	4-20

There were no gender differences in perceived burdensomeness, t (240) =1.66, $p > .05$. However, there were gender differences in thwarted belongingness, t (240) = 2.45, $p < .05$. AI/AN men (M = 27.39, SD = 14.29) reported more thwarted belongingness compared to AI/AN women (M = 23.25, SD = 11.44).

Age was not significantly related to perceived burdensomeness (r = -.11, $p > .05$) or thwarted belongingness (r = -.08, $p > .05$). Educational level was also not significantly correlated with perceived burdensomeness (r = -.11, $p > .05$) or thwarted belongingness (r = -.11, $p > .05$).

Annual family income was significantly and inversely related to perceived burdensomeness (r = -.16, $p < .05$) and thwarted belongingness (r = -.18, $p < .01$). Higher levels of annual family income were associated with lower levels of perceived burdensomeness and thwarted belongingness for the AI/AN adults in this study.

Based on these preliminary findings, annual family income was statistically controlled for in the multiple regression analysis for perceived burdensomeness, and gender and annual family income were statistically controlled for in the multiple regression analysis for thwarted belongingness.

Correlation Analyses

Pearson correlational analyses were conducted to explore the bivariate relationships between and among the self-compassion subscales, perceived burdensomeness and thwarted belongingness. See Table 3 for the correlation matrix for the main study variables.

A statistically significant positive relationship was found between perceived burdensomeness and thwarted belongingness ($r = .58$, $p < .001$). More of a sense of belonging was associated with less perceived burdensomeness.

The positive aspects of self-compassion were significantly and inversely related to perceived burdensomeness, including self-kindness ($r = -.27$, $p < .001$), common humanity ($r = -.10$, $p < 001$), and mindfulness of one's thoughts and feelings ($r = -.22$, $p = .001$). The positive aspects of self-compassion were significantly and inversely related to thwarted belongingness, including self-kindness ($r = -.44$, $p < .001$), common humanity ($r = -.31$, $p < 001$), and mindfulness ($r = -.40$, $p < .001$). Thus, being kind to oneself, feeling more connected to the common conditions of humanity, and being more mindful of one's thoughts and feelings were associated with feeling less of a burden to others and fewer struggles in belongingness in interpersonal relationships.

Table 3

Correlation Matrix for Perceived Burdensomeness, Thwarted Belongingness, and Self-Compassion Subscales for the AI/AN sample (n = 236)

	PB	TB	SK	CH	M
PB	1	.58**	-.27**	-.10	-.22**
TB		1	-.44**	-.31**	-.40**
SK			1	.58**	.73**
CH				1	.64**
M					1

* = $p < .05$; ** = $p < .01$

PB = Perceived Burdensomeness; TB = Thwarted Belongingness; SK = Self-Kindness; CH = Common Humanity; M = Mindfulness

Multiple Regression Analyses

Two separate multiple regression analyses were conducted to explore the relationship of the self-compassion scales with 1) perceived burdensomeness and 2) thwarted belongingness.

In the first multiple regression analysis for perceived burdensomeness, annual family income was entered into the first block of the analysis, and then the three positive self-compassion subscales (i.e., self-kindness, common humanity, and mindfulness of one's thoughts and feelings) were entered into the second block. In the first model, annual family income significantly entered the equation and accounted for 2.6% variance in perceived burdensomeness scores, F (1, 234) =6.13, $p < .05$. In the second model, the three positive self-compassion subscales were added to the equation, accounting for an additional 8.2% of the variance in perceived burdensomeness scores, F (4, 231) = 16.99, $p < .001$. Examination of the standardized beta weights (for model 2) revealed that self-kindness ($\beta = -.29$, $t = -3.16$, $p < .01$) and annual family income ($\beta = -.17$, $t = -2.75$, $p < .001$) were the significant individual predictors of perceived burdensomeness. See Table 4.

Table 4
Multiple Regression Findings for Self-kindness, Common Humanity, and Mindfulness as Predictors of Perceived Burdensomeness While Controlling Annual Income

	R	R^2	F	β
Model 1				
Predictor Variable(s)				
Annual Income	.160	.026	6.13*	
Model 2				
Predictor Variable(s)				
	.329	.108	6.99**	
Annual Income				-.17**
Self-kindness				-.29**
Common Humanity				.10
Mindfulness				-.06

* = $p < .05$; ** = $p < .01$; *** = $p < .001$; R^2 = R-Squared; β = Standardized Beta Weight

In the multiple regression analysis for thwarted belongingness, gender and annual family income were entered into the first block of the analysis. In this first model, gender and annual family income significantly entered the equation and accounted for 5.6% in thwarted belongingness, $F (2, 233) = 6.96$, $p = .001$. In the second model, the three positive self-compassion subscales were added to the equation, accounting for an additional 20.3% of the variance in

thwarted belongingness scores, F (5, 230) =16.10, $p < .001$ Examination of the standardized beta weights for model 2 revealed that self-kindness (β = -.33, t = -3.89, $p < .001$, annual family income, β = -.19, t = -3.24, $p < .001$), and gender (β = -.18, t = -3.21, $p < .01$) were the significant individual predictors of thwarted belongingness. In summary, self-kindness was the strongest individual predictor of perceived burdensomeness and thwarted belongingness for this AI/AN sample. See Table 5.

Table 5

Multiple Regression Findings for Self-kindness, Common Humanity, and Mindfulness as Predictors of Thwarted Belongingness While Controlling for Gender and Annual Income

	R	R^2	F	β
Model 1				
Predictor Variable(s)				
	.237	.056	6.96***	
Gender				
Annual Income				
Model 2				
Predictor Variable(s)				
	.509	.269	16.10***	
Gender				-.18**
Annual Income				-.19**
Self-kindness				-.33***
Common Humanity				-.03
Mindfulness				-.13

* = $p < .05$; ** = $p < .01$; *** = $p < .001$; R^2 = R-Squared; β = Standardized Beta Weight

Post-hoc analyses

For participants who reported a history of suicidal ideation (n = 89), the three positive aspects of self-compassion, when considered together, accounted for 19.9% in perceived burdensomeness scores, F (3, 85) = 7.03, p <.001. However, for these same participants, the three positive aspects of self-compassion did not significantly predict struggles with belongingness in relationships with others, F (3, 85) = 1.18, $p > .05$. Therefore, for those AI/AN people with a history of suicidal ideation in this sample, being more self-compassionate in general was predictive of feeling less of a burden to others, but not predictive of thwarted belongingness.

DISCUSSION

The purpose of this study was to explore the positive aspects of self-compassion in relation to two interpersonal components of suicide risk—perceived burdensomeness and thwarted belongingness among AI/AN adults.

As hypothesized, the positive aspects of self-compassion, including self-kindness, common humanity, and mindfulness of one's thoughts and feelings, were significantly and inversely related to perceived burdensomeness and thwarted belongingness for AI/AN adults. Few researchers have specifically focused on perceived burdensomeness and thwarted belongingness among AI/AN people, yet Hill (2009) recognized the unique dimensions of belongingness, which included the psychological, sociological, physical, and spiritual connections of individuals, families, and communities within the AI/AN population. However, no researchers to date have explored the self-compassion experiences of AI/AN people in relation to these variables.

In the current study, self-kindness was the most significant individual predictor of perceived burdensomeness and thwarted belongingness in this sample of AI/AN people. Therefore, those who more kind to themselves tended to struggle less with belongingness, which is in line with Neff and McGehee's (2010) findings that self-compassion was a significant predictor of connectedness among adolescents. In previous research, self-compassion has been associated with emotional regulation (see Vettese et al., 2011). Therefore, self-compassion could serve as a buffer against negative thoughts such as thwarted belongingness or other unwanted feelings.

While this is the first study of its kind to explore how self-compassion is a protective factor related to perceived burdensomeness and thwarted belongingness among AI/AN adults, these findings are in line with the Ali (2014) findings with a predominantly White adolescent sample in that higher levels of self-compassion were associated with lower levels of suicidality.

Annual family income was found to be a significant predictor of perceived burdensomeness and thwarted belongingness, but only accounted for a small portion of the variance in comparison to self-compassion. Having more financial resources was associated with more belongingness and feeling less of a burden to others. Thus, the relationship between financial well-being and suicide risk factors among AI/AN people should not be underestimated.

Age was not related to perceived burdensomeness and thwarted belongingness, which is a unique finding in the suicidality literature in general. However, age as a variable, was not the focus of this study.

There were no gender differences in perceived burdensomeness. However, gender was a significant individual predictor of thwarted belongingness. AI/AN men, on average, reported more thwarted belongingness than women. More research is needed to understand potential gender differences in suicide risk for AI/AN people, including relevant protective factors such as self-compassion. FitzGerald et al. (2017) found gender differences in protective factors related to suicidality (i.e., attempts) for AI/AN youth. Positive relationships in the home, school, and community were significant protective factors for girls, and positive relationships with adults in the home was the protective factor for boys.

The post-hoc findings of the current study revealed that the three positive aspects of self-compassion were significant predictors of perceived burdensomeness for AI/AN people who reported a history of suicidal ideation (n = 87), but were not for thwarted belongingness. These findings provide some support for one previous research study in which researchers found that perceived burdensomeness was related to suicidal ideation among AI/AN college students (O'Keefe et al., 2014).

Implications for Counseling Practice and Prevention Programs with AI/AN Adults

The results from this study indicate that the positive aspects of self-compassion, in particular, self-kindness, common humanity, and mindfulness of one's thoughts and feelings, were significantly and inversely related to and predictive of feelings of perceived burdensomeness and thwarted belongingness for AI/AN adults, and thus, self-compassion appears to be a protective factor for AI/AN adults. Given that positive aspects of self-compassion explained more than 8% of the variance in perceived burdensomeness and over 20% of the variance in thwarted belongingness among AI/AN adults seeking Indian Health Services and/or tribal center services, more self-compassionate and mindfulness-based interventions should be incorporated into health and wellness programs as well as culturally relevant evidence-based counseling and psychotherapy support to AI/AN adults.

Potential thoughts of burdening others may be a relevant issue for AI/AN people in that families are often extended, and connections to tribal communities can be as strong as the traditional immediate family. Rhoades-Kerswill (2012) theorized that perceived burdensomeness among AI/AN people might become more evident when they are not fulfilling their traditional roles, which could result in feeling like a burden on their families and /or communities.

Mental health professionals can assess their AI/AN clients' families, clans, and tribal/nation histories, along with creating family genograms, to explore family relationships as well as relational dynamics to provide insight as to significant and meaningful family and tribal connections in their lives. AI/AN adults may benefit from narrative storytelling to express their cultural experiences and traditions and how AI/AN adults view themselves, and their people, including their experiences of self-compassion and cultural resilience. Being kind to oneself, feeling that one's experiences are part of the human condition, and being aware of one's thoughts and feelings in a balanced, nonjudgmental way may be protective in combating interpersonal aspects of suicidality, which may have been passed down from generations of historical cultural oppression.

Mindfulness is an important technique that mental health professionals could incorporate into their sessions with AI/AN adults who feel like a burden to others and/or feel as though they do not belong. Teaching AI/AN clients how to relate to their internal experiences without judging or overanalyzing them is essential for well-being and hope, given the findings of this study. Learning stress-reduction and mindfulness techniques will help AI/AN people focus on being in the moment and being more self-compassionate in general. Cognitive behavioral techniques and skills could be incorporated to assist AI/AN clients with their automatic thoughts, images, and core beliefs as well as their emotional well-being, with the goal of establishing a kind, compassionate relationship with their own thoughts and feelings, being more of an observer and investigator of these internal experiences, and noticing one's thoughts and feelings *and* learning how to specifically respond to them internally in helpful, non-judgmental ways.

The fact that self-compassion was related to less perceived burdensomeness and thwarted belongingness within the AI/AN adult community is exciting news for those developing prevention programs in such communities. Self-kindness, common humanity (i.e., realizing the commonalities in our experiences as human beings), and mindfulness (i.e., noticing and acknowledging what we think and feel, without judging ourselves and/or others) could be utilized as skills to be taught at a young age to AI/AN children in schools as well as to adults and older adults in community settings. Not only could the positive aspects of self-compassion allay any feelings of being a burden or not belonging in the future, but it could also increase the ability to cope with one's thoughts and emotions that might be encountered.

As mental health professionals advocate and support AI/AN adults, it would be important for clients' financial resources to be assessed and explored in relation to their emotional well-being

and potential for perceived burdensomeness, thwarted belongingness, and/or other aspects of suicidality. If AI/AN individuals experience job loss, changes in financial resources, and/or lack of financial funds, it would be important to assist in finding financial resources as well as discussing thoughts and feelings associated with financial concerns, given that financial needs could result in people feeling like a burden on others and/or influence their sense of interpersonal connection or belonging.

Finally, mental health care professionals must recognize that AI/AN men may be more at risk for thwarted belongingness than AI/AN women, based on the results of this study. Assessing for disconnections and feelings of remorse or guilt, and/or even feelings of responsibility that could be potentially detrimental to AI/AN men, may be worthwhile. We concur with FitzGerald et al.'s (2017) recommendation that gender differences in protective factors related to suicidality must be taken into consideration when developing prevention and intervention programs for AI/AN individuals to make them more culturally and gender sensitive. Exploring the types of preventative and counseling programs that may benefit AI/AN men and women in unique ways is warranted.

Limitations of the Study and Areas for Further Research

The results from this study need to be interpreted in light of the following potential limitations. Given the survey nature of the study, it is possible that the participants in this study may have responded in socially desirable ways. Participants completed the survey in the waiting room of their IHS and tribal centers, so they may or may not have felt comfortable completing the survey with others nearby. The presenting issues that brought participants into the clinic could have potentially affected their responses to the survey. The majority of participants in this sample were AI/AN adults from the Great Plains of the United States, and thus, the results may not generalize to AI/AN adults from other parts of the country and/or from specific sovereign nations.

Further research is needed to explore the effectiveness of self-compassion and mindfulness-based interventions with AI/AN people who may present with interpersonal suicide risk factors, such as perceived burdensomeness and thwarted belongingness. Researchers could also explore how one's identification with mainstream ways compared to more traditional practices/ways relate to self-compassion and interpersonal risk factors associated with suicidality among AI/AN people. Mixed methods and qualitative methods would allow future researchers to gather further insight into understanding the personal, family/interpersonal, and tribal/cultural factors that might influence self-compassion and/or suicide risk for AI/AN people.

CONCLUSION

This research on self-compassion as a protective factor related to the mental health and wellness of AI/AN people is the first study of its kind. It is hoped that this information will be beneficial to AI/AN individuals and communities in the future. Given the diverse and unique experiences of AI/AN people and their communities, there is much to be learned from AI/AN traditions/ways as well as from self-compassionate and mindfulness practices in general to enhance the health and wellness of AI/AN people. The blending of these self-compassion and mindfulness practices with AI/AN traditions/ways and healing may guide and support AI/AN individuals and communities in the future.

REFERENCES

Akin, U., & Akin, A. (2015). Examining the predictive role of self-compassion on sense of community in Turkish adolescents. *Social Indic Resources, 123*, 29-38. https://doi.org/10.1007/s11205-014-0724-5

Alcántara, C., & Gone, J. (2007). Reviewing suicide in Native American communities: Situating risk and protective factors within a transactional-ecological framework. *Death Studies, 31*(5), 457-477. https://doi.org/10.1080/07481180701244587

Ali, A. (2014). We matter too! Suicidal thoughts and behaviors among youth at a therapeutic day school. Dissertation: Chicago School of Professional Psychology.

Brailovskaia, J., Ujma, M., Friedrich, S., & Teismann, T. (2020). Thwarted belongingness and perceived burdensomeness mediate the association between bullying and suicide ideation. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, *41*(2), 136–140. https://doi.org/10.1027/0227-5910/a000596

Centers for Disease Control and Prevention (CDC). (2019). Suicidal behavior in American Indian and Alaska Native Communities: A health equity issue. https://www.cdc.gov/grand-rounds/pp/2019/20190319-preventing-suicide-behavior.pdf

Centers for Disease Control and Prevention (CDC). (2020). Web-Based Injury Statistics Query and Reporting System (WISQARS). Fatal Injury Data. Atlanta, GA: National Center for Injury Prevention and Control. http://www.cdc.gov/injury/wisqars/index.html

Chacko, E., & Menon, R. (2013). Longings and belongings: Indian American youth identity, folk dance competitions, and the construction of "tradition." *Ethnic and Racial Studies*, 36(1), 97–116. https://doi.org/10.1080/01419870.2011.634504

El, B. A. F., Beitra, D., Zullo, L., Mbroh, H., & Stewart, S. M. (2018). Measuring thwarted belongingness and perceived burdensomeness in clinically depressed and suicidal youth: Refinement and reduction of the interpersonal needs questionnaire. *Suicide and Life-Threatening Behavior, 49*(5), 1463-1472. https://doi.org/10.1111/sltb.12527

FitzGerald, C. A., Fullerton, L., Green, D., Hall, M., & Peñaloza, L. J. (2017). The association between positive relationships with adults and suicide-attempt resilience in American Indian youth in New Mexico. *American Indian and Alaska Native Mental Health Research*, *24*(2), 40–53. https://doi.org/10.5820/aian.2402.2017.40

Freedenthal, S., & Stiffman, A. R. (2004). Suicidal behavior in urban American Indian adolescents: A comparison with reservation youth in a southwestern state. *Suicide and Life-Threatening Behavior*, *34*(2), 160-171. https://doi.org/10.1521/suli.34.2.160.32789

Goldston, D., Molock, S., Whitbeck, L., Murakami, J., Zayas, L., & Hall, G. (2008). Cultural considerations in adolescent suicide prevention and psychosocial treatment. *American Psychologist, 63*(1), 14-31. https://doi.org/10.1037/0003-066X.63.1.14

Gray, J., & McCullagh, J. (2014). Suicide in Indian country: The continuing epidemic in rural Native American communities. *Journal of Rural Mental Health, 38*(2), 79- 86. https://doi.org/10.1037/rmh0000017.supp

Henson, M., Sabo, S., Trujillo, A., & Teufel-Shone, N. (2017). Identifying protective factors to promote health in American Indian and Alaska Native adolescents: A literature review. *The Journal of Primary Prevention*, 38(1–2), 5–26. https://doi.org/10.1007/s10935-016-0455-2

Hill, D. (2009). Relationship between sense of belonging as connectedness and suicide in American Indians. *Archives of Psychiatric Nursing, 23*(1), 65-74. https://doi.org/10.1016/j.apnu.2008.03.003

Joiner, T. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.

Krmpotich, C., Howard, H., & Knight, E. (2016). From collection to community to collections again: Urban Indigenous women, material culture and belonging. *Journal of Material Culture*, 21(3), 343–365. https://doi.org/10.1177/1359183515610362

Leavitt, R. A., Ertl, A., Sheats, K., Petrosky, E., Ivey-Stephenson, A., & Fowler, K. A. (2018). Suicides among American Indian/Alaska Natives — National Violent Death Reporting

System, 18 States, 2003–2014. *MMWR Morbidity & Mortality Weekly Report, 67,* 237–242. http://dx.doi.org/10.15585/mmwr.mm6708a1

Martin, R. L., Assavedo, B. L., Bryan, A. O., Green, B. A., Capron, D. W., Rudd, M. D., Bryan, C. J., & Anestis, M. D. (2018). The relationship between post-battle experiences and thwarted belongingness and perceived burdensomeness in three united states military samples. *Archives of Suicide Research, 24*(Suppl 1), 156-172. https://doi.org/10.1080/13811118.2018.1527266

McClay, M. M., Brausch, A. M., & O'Connor, S. S. (2020). Social support mediates the association between disclosure of suicide attempt and depression, perceived burdensomeness, and thwarted belongingness. *Suicide and Life-Threatening Behavior, 50*(4), 884-898. https://doi.org/10.1111/sltb.12622

Neff, K. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223-250. https://doi.org/10.1080/15298860309027

Neff, K., & McGehee, P. (2010). Self-compassion and psychological resilience among adolescents and young adults. *Self and Identity, 9,* 225-240. https://doi.org/10.1080/15298860902979307

Neff, K., & Vonk, R. (2009). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of Personality, 77*(1), 23-50. https://doi.org/10.1111/j.1467-6494.2008.00537.x

O'Keefe, V., Wingate, L., Tucker, R., Rhoades-Kerswill, S., Slish, M., & Davidson, C. (2014). Interpersonal suicide risk for American Indians: Investigating thwarted belongingness and perceived burdensomeness. *Cultural Diversity and Ethnic Minority Psychology, 20*(1), 61-67. https://doi.org/10.1037/a0033540

Olson, L., Wahab, S., Thompson, C., & Durrant, L. (2011). Suicide notes among Native Americans, Hispanics, and Anglos. *Qualitative Health Research, 21*(11), 1484-1494. https://doi.org/10.1177/1049732311412789

Rabon, J. K., Hirsch, J. K., Kaniuka, A. R., Sirois, F., Brooks, B. D., & Neff, K. (2019). Self-compassion and suicide risk in veterans: When the going gets tough, do the tough benefit more from self-compassion? *Mindfulness, 10,* 2544–2554. https://doi.org/10.1007/s12671-019-01221-8

Rabon, J. K., Sirois, F. M., & Hirsch, J. K. (2018). Self-compassion and suicidal behavior in college students: Serial indirect effects via depression and wellness behaviors. *Journal of*

American College Health, *66*(2), 114–122. https://doi.org/10.1080/07448481.2017.1382498

Rhoades-Kerswill, S. (2012). The application of the interpersonal psychological theory of suicidal behaviors to an American Indian sample. Master's Thesis, Oklahoma State University.

Roeder, K. M., & Cole, D. A. (2018). Simultaneous longitudinal examination of hopelessness, thwarted belongingness, and perceived burdensomeness as predictors of suicide ideation. *Suicide and Life-Threatening Behavior, 49*(4), 1058-1071. https://doi.org/10.1111/sltb.12508

Tanaka, M., Wekerle, C., Schmuck, M., Paglia-Boak, A., & the MAP Research Team. (2011). The linkages among childhood maltreatment, adolescent mental health, and self-compassion in child welfare adolescents. *Child Abuse & Neglect, 35*(10), 887-898. https://doi.org/10.1016/j.chiabu.2011.07.003

Van Orden, K., Cukrowicz, K., Witte, T., & Joiner, T. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the interpersonal needs questionnaire. *Psychological Assessments, 24*(1), 197-215. https://doi.org/10.1037/a0025358.supp

Van Orden, K., Witte, T., Cukrowicz, K., Braithwaite, S., Selby, E., & Joiner, T. (2010). The interpersonal theory of suicide. *Psychological Review, 117*(2), 575-600. https://doi.org/10.1037/a0018697

ACKNOWLEDGEMENTS

We would like to, first and foremost, offer our gratitude and honor to the AI/AN people who participated in this research study as well as the tribal communities who provided their trust in us, and the permissions, to conduct this research regarding the personal and cultural resilience of AI/AN people in their communities. We also thank Ms. Kayla Winterowd Reed for her assistance in reviewing earlier versions of this manuscript and providing helpful feedback and support. We also give special thanks to our families and friends for their support in all of our endeavors related to this research, including their ways of being, knowing, and sharing. We dedicate this manuscript publication to the AI/AN, Indigenous, and First Nations people worldwide for their personal and cultural resilience, as we are a universal community.

FUNDING INFORMATION

This research was based on the dissertation work of the first author, Sarah Dolezal, PhD, with mentorship and support from her advisor and chair, Carrie Winterowd, PhD, the second author, and the research and writing support of Aisha Farra, MA, the third author. There was no outside funding for this study. Dr. Sarah Dolezal funded this research project.

AUTHOR INFORMATION

Sarah Dolezal, PhD, has worked extensively in providing counseling and prevention services to AI/AN people in tribal communities, and she is a graduate of the doctoral program in Counseling Psychology (APA-accredited) at Oklahoma State University in Stillwater, OK. Carrie Winterowd, PhD, is a Professor of Counseling and Counseling Psychology at Oklahoma State University in Stillwater, OK and she has served AI/AN people and tribal communities as an educator, mentor, researcher, and as a Health Service Psychologist. Aisha Farra, MA, is a master's student in the Counseling program (CACREP-accredited) at Oklahoma State University in Stillwater, OK. All three researchers are committed to the personal and cultural resilience of AI/AN people and their communities, including advocacy for culturally relevant, evidence-based counseling practices and culturally relevant, strength-based research with AI/AN people and communities.