

THESIS

FAMILIAL CONCERN AND ADOLESCENT SIMULTANEOUS POLYSUBSTANCE USE ON AMERICAN
INDIAN RESERVATIONS

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ABSTRACT

FAMILIAL CONCERN AND ADOLESCENT SIMULTANEOUS POLYSUBSTANCE USE ON AMERICAN INDIAN RESERVATIONS

American Indian (AI) adolescents are at increased risk for substance misuse and related problems. AI adolescents initiate consumption earlier compared to non-American Indian (non-AI) adolescents, and are three times more likely to be diagnosed with a substance use disorder than non-AI adolescents. AI families may be more tolerant of substance misuse than non-AI families, and are likely to employ parenting styles which emphasize modeling and the importance of extended family. There is considerable literature on AI substance misuse, but to date no studies have examined simultaneous polysubstance misuse (SPM) within this population. SPM is the ingestion of two or more substances within the same period of time, so that the effects of the substances overlap. The synergistic effects of SPM are related to increasingly problematic outcomes in adolescents, such as increased substance misuse. Based on previous research, 3 hypotheses were offered: (1) that four proposed subscales, Substance Misuse Concern, Substance Misuse Deterrence, Substance Misuse Discussion, and Parental Monitoring, would comprise the latent construct Familial Oversight; (2) that Familial Oversight would significantly negatively predict increased likelihood of SPM endorsement; and (3) that this relation would be significantly moderated by participant's self-identified race, such that, for AI individuals the relation between Familial Oversight and SPM would be stronger than for non-AI individuals. Data were collected from middle and high school students ($n = 4661$) attending schools on or near AI

reservations. Structural equation modeling was utilized to test the hypothesized model. Results indicated that modeling Familial Oversight as a unidimensional latent variable resulted in excellent model fit, $\chi^2(2) = 20.23$, $p < .05$; CFI = 0.994; SRMR = .064; RMSEA = .044 (90% C.I. [.128 - .063]); however, the factor loadings supported a two-factor model. Following modifications, a two-factor model of parenting was created with Parental Monitoring as a separate latent construct and the three remaining factors indicating the latent variable Familial Attitudes on the Misuse of Substances (FAMS); the modified model demonstrated excellent fit, $\chi^2(8) = 32.87$, $p < .05$; CFI = 0.997; RMSEA = .026 (90% C.I. [.017 - .035]). The two-factor model indicated SPM was negatively associated with Parental Monitoring ($b = -0.131$, S.E. = 0.033, $b = -4.04$, $p < .001$) but not significantly related to FAMS ($b = -0.044$, S.E. = 0.025, $b = -1.79$, $p = .07$). Finally, a multigroup SEM was conducted to test invariance, which demonstrated strong fit, $\chi^2(32) = 91.42$, $p < .05$; CFI = 0.980; RMSEA = .028 (90% C.I. [.022 - .035]); however, self-identified racial status did not moderate the relations ($p > .05$). Though the proposed construct was not successfully indicated, Parental Monitoring demonstrated that parental awareness was important in significantly reducing the risk of SPM. Given AI adolescents' increased risk of negative outcomes, the known relation of AI substance misuse to familial influences, and Parental Monitoring's ability to reduce risk, it is important to understand how these factors are related to SPM.

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INTRODUCTION

According to the U.S. Census Bureau, there were approximately 5.2 million American Indian/Alaska Native individuals and 565 federally recognized tribal nations in 2010 (U.S. Census Bureau, 2012). In addition to these federally recognized tribal nations, there were approximately 100 more which were recognized by the state in which they reside (Willis & Spicer, 2013). Within this diverse group there is a variety of culture, traditions, beliefs, and languages that define important tribal characteristics (Whitbeck, Walls, & Welch, 2012). In addition to this rich culture, the American Indian (AI) population in the United States faces a disproportionate burden from a variety of health risk behaviors, most notably substance misuse (Swaim & Stanley, 2018). Historically, AI adolescents demonstrate significantly higher endorsement rates of substance misuse (Beauvais, Jumper-Thurman, & Burnside, 2008) compared to their non-AI counterparts, including co-use of multiple substances; however, no studies to date could be located that have examined simultaneous polysubstance misuse (SPM) in this population. Due to the relative importance of family in AI culture (Spicer et al., 2012), it was posited that Familial Oversight would be significantly related to SPM endorsement.

American Indian Families

AI culture possesses unique familial values and traditions compared to those found in non-American Indian (non-AI) families (Whitbeck et al., 2012). AI culture commonly bases parenting styles on observation and role-modeling (Guilmet & Whited, 1989). This is contrary to what is observed in the non-AI population, where parenting styles are likely to incorporate more explicit instruction and directives. These variations within the culture are a significant piece of AI

familial structure (Spicer et al., 2012), and emphasize the relative importance of family in the lives of AI adolescents (Wilson, Phillip, Kohn, & Curry-El, 1995).

Generally, AI adolescents have a significant connection with their families, and do not value individuation in the same way as non-AI adolescents (Wilson et al., 1995). They are more likely to value and maintain familial relationships throughout their life, and preserve the significance of the bond between all family members (Whitbeck et al., 2012; Wilson et al., 1995). Extended family members are commonly looked to as parental figures and may be considered a mother or father (Red Horse, 1980; Swaim, Oetting, Thurman, Beauvais, & Edwards, 1993). These family values make it difficult to rely upon non-AI norms when developing interventions for AI adolescents, which focus on traditionally western definitions of the nuclear family (Guilmet & Whited, 1989; Whitbeck et al., 2012).

While this family tradition in the AI culture has many benefits; increased stress, lack of support, and limited resources lead to concerns within the familial structure (Musil et al., 2011). There is considerable conflict in many mother-father relationships in the AI population, causing reduced or non-existent paternal care for the child (Bruce & Fox, 1999; Coley, 2001; Coley & Hernandez, 2006). This leads to lower levels of paternal involvement in the child's life, with approximately half of AI adolescents reporting that their father was not involved in their life (Neault et al., 2012). Another result of this familial discord is that approximately half of AI grandparents in the U.S. raise their grandchildren for five years or longer (Fuller-Thomson & Minkler, 2005). These caregivers are likely to be economically deprived, living with some form of disability, and living in overcrowded conditions. AI adolescents are at increased risk for adverse familial outcomes, with increased poverty (Fuller-Thomson & Minkler, 2005), maltreatment, and

substance misuse being of particular concern (Spicer et al., 2012). All of this makes the role of the family in AI culture an important variable to consider when trying to understand why this population faces disproportionate rates of engagement in substance misuse and (Dieterich et al., 2013b; Swaim et al., 1993) other health risk behaviors.

Familial Oversight

Familial Oversight is the amount of care, concern, and engagement of a parental figure in a child's life; specifically, with the child's daily activities and substance misuse (Ryan, Roman, & Okwany, 2015; Swaim et al., 2016; Wilson et al., 1995). Though peer influence is a strong predictor of adolescent substance misuse; Swaim and colleagues (1993) showed that in the AI community, familial influence has a greater effect on substance misuse. AI adolescents report increased substance misuse when the family has poor relationships or ineffective bonds, or if the family has no explicit sanctions deterring substance misuse (Brody, Ge, Katz, & Arias, 2000; Swaim et al., 1993; Swaim et al., 2011; Walls, Whitbeck, Hoyt, & Johnson, 2007). While familial oversight can be operationally defined in a number of ways, for the study presented herein, I will focus on oversight related to substance use and parental monitoring.

Substance Misuse Concern is the perception of whether a parental figure cares if psychoactive substances are consumed. It has been demonstrated that the endorsement of substance misuse in AI adolescents is higher when parental figures or extended family misuse substances (Swaim et al., 2011). Conversely, when parents show concern about their child's substance misuse, they can help protect them from the negative effects and consequences of substance misuse (Steinberg, Fletcher, & Darling, 1994).

Substance Misuse Deterrence is the perception of a parental figure's intention to dissuade consumption of psychoactive substances. Children of parents who misuse substances are at increased risk of multiple negative outcomes, including intergenerational substance misuse (Gruber & Taylor, 2006). Further, the risk that adolescents misuse substances will increase if parental figures are tolerant of their child's substance misuse (Bahr, Hoffmann, & Yang, 2005).

Substance Misuse Discussion reflects the communication between a child and parental figure into the harm and danger of misusing substances. Though there appears to be some discourse on the efficacy of communication as a means to limit substance misuse (Tharp & Noonan, 2012), there is also evidence that communication is likely to decrease risk (Kam & Yang, 2014; Swaim & Stanley, 2016).

Parental Monitoring is described as the level of familial supervision and awareness of a parental figure into their child's social activities. When a parental figure demonstrates concern into their child's activities, they can significantly reduce the risk of substance misuse (Steinberg et al., 1994). This factor has been shown in multiple studies to be especially salient in limiting the risk of substance misuse (Beck, Boyle, & Boekeloo, 2003; Ryan et al., 2015; Steinberg et al., 1994; Svensson, 2003). The impact of Parental Monitoring on decreased substance misuse has also been found within the AI population (Boyd-Ball, Veronneau, Dishion, & Kavanagh, 2014), even considering the unique parenting styles of AI families (Guilmet & Whited, 1989).

American Indian Substance Misuse

Although both AI and non-AI adolescents are at increased risk for substance misuse compared to children and adults (Warner, Kessler, Hughes, Anthony, & Nelson, 1995), AI

adolescents will generally show greater risk than other groups (Swaim, Stanley, & Beauvais, 2013). AI adolescents have consistently reported using alcohol, marijuana, and other drugs at a higher rate than non-AI adolescents since 1980 (Beauvais et al., 2008, Dieterich, Swaim, & Beauvais, 2013b). Consumption rates tend to increase for AI adolescents as they grow older (Swaim, Beauvais, Walker, & Walker, 2011), resulting in disproportionately higher rates of morbidity and mortality than non-AI individuals (Dieterich et al., 2013b). This increase is evident in AI adolescents' increased likelihood of being diagnosed with a substance use disorder compared to non-AI adolescents (Costello et al., 1996). AI adolescents represent three times the number of substance use disorder diagnoses than non-AI adolescents (Whitbeck, Yu, Johnson, Hoyt, & Walls, 2008).

Beauvais and colleagues (2008) compared reservation-based AI adolescent substance misuse to the non-AI substance misuse reported in the Monitoring the Future survey. Among 8th grade students, the mean rate of alcohol consumption reported in the last 30 days was 22.4% for non-AI adolescents, compared to 36.5% for adolescents on AI reservations. This difference between populations was more distinct when analyzing the rates of intoxication in the last 30 days, where non-AI adolescents reported a rate of 7.8%, compared to 21.7% for AI adolescents. The results for marijuana consumption were also remarkable. Among 8th grade students, the rate of marijuana misuse reported in the previous 30 days was 39.3% for AI adolescents, compared to 8.5% for non-AI adolescents. For 12th grade students, the AI adolescents reported a 43.0% rate of marijuana consumption, compared to 21.0% for non-AI adolescents. For many of the substances reported, the difference between AI students and non-AI students in the 12th grade was less pronounced. It was posited that many students on AI reservations who have the

most severe substance misuse may drop out of school, resulting in school-based studies being unable to determine the full picture of substance misuse in this population as they age (Beauvais et al., 2008).

This pattern of AI adolescents reporting higher rates of substance misuse holds even when compared to non-AI adolescents who live on or near the same reservation (Stanley, Harness, Swaim, & Beauvais, 2014). There are areas where the substance misuse of the non-AI population is similar to the AI-population, but generally the risk is significantly greater for AI-adolescents (Swaim et al., 2013). Some of the differences that are found may indicate the inequality evident when examining the social and economic state found on AI reservations, including how social influences, are related to subsequent substance misuse (McLeigh, 2010; Stanley et al., 2014).

Simultaneous Polysubstance Misuse

SPM is the ingestion of two or more substances within the same period of time so that the effects of the substances coincide (Pakula, Macdonald, & Stockwell, 2009). Although research has examined relations between familial variables and adolescent substance misuse, it has not examined how these are related to SPM within the AI population. Generally, SPM studies are scarce, and when they are available, it is likely that they examined the interactions of specific substance combinations (Pakula et al., 2009). The primary danger of SPM is that the effects of multiple drugs may interact in a synergistic manner, which significantly increases overall risk (Martin, 2008; Pakula et al., 2009). This additional danger from SPM includes criminal or deviant behavior (Sittner-Hartshorn, Whitbeck, & Prentice, 2015; Wood, 2009), overdose

hospitalizations (Cone et al., 2004; SAMHSA, 2014), increased substance misuse (Garnier et al., 2009; McCabe, Cranford, & Boyd, 2006), and death (SAMHSA, 2014).

The increased risk related to SPM is dangerous for any population, but especially for AI adolescents due to their rates of substance misuse (Beauvais et al., 2008). The effect of modeling found in AI families (Guilmet & Whited, 1989) and relative lack of familial oversight are substantial risk factors that leave this population vulnerable to SPM consequences (Ryan et al., 2015).

Summary

Research demonstrates that substance misuse is a concern for the AI community, especially adolescents (Beauvais et al., 2008; Stanley et al., 2014; Swaim et al., 2013). AI adolescents consistently endorse significantly higher rates of consumption than the non-AI population (Beauvais et al., 2008). The implementation of strategies to prevent and treat these issues on or near AI reservations must consider the culture of and the role of the family for AI adolescents (Beauvais et al., 2008; Spicer et al., 2012; Whitbeck et al., 2012; Wilson et al., 1995). This is demonstrated when considering the impact of one's social group on subsequent substance consumption (Swaim et al., 1993). The conventional predictor of substance misuse in the non-AI population is associating with friends with lower perceived norms, and/or misuse substances themselves (Dieterich et al. 2013a; Dieterich et al. 2013b; Swaim et al., 2013); however, with AI adolescents, familial variables significantly explain substance misuse after the effect of peer influence has been accounted for (Swaim et al., 1993). Though research has analyzed patterns and factors involved in AI adolescent consumption, the risk of SPM within this population has yet to be established.

Hypotheses

This study examined the relationship between familial factors and SPM, and whether race moderated those relations. Based upon previous research it was hypothesized that:

1. Four observed familial variables, Substance Misuse Concern, Substance Misuse Deterrence, Substance Misuse Discussion, and Parental Monitoring, would significantly indicate the latent construct, Familial Oversight.
2. Adolescents, based on or near AI reservations, would be significantly more likely to endorse SPM when they reported decreased levels of Familial Oversight.
3. Endorsement of American Indian race would significantly moderate the relation between Familial Oversight and SPM, such that AI adolescents would be significantly more likely than their non-AI peers to have positively endorsed SPM when they reported decreased levels of Familial Oversight.

METHODS

The database used in this study was compiled by researchers at the Tri-Ethnic Center for Prevention Research at Colorado State University from 2009 to 2013. All data were collected under the procedures approved by the Institutional Review Board of Colorado State University. The data are based on an annual cross-sectional survey of students (7th – 12th grade) who attended school on or near AI reservations. The data are predominantly comprised of adolescents from various tribes and regions across the United States. Approximately eight to twelve schools on or near AI reservations were administered the survey annually. Schools were incentivized with monetary compensation for participation, as well as a comprehensive report on the survey's results. This sample was not based on an assumption that tribal nations were a homogeneous culture, but rather attempted to properly sample the significant variability inherent across tribes (Beauvais, Jumper-Thurman, Helm, Plested, & Burnside, 2004; Beauvais et al., 2008). Swaim and Stanley (2018) provide a more detailed description of the larger study.

Participants

The data reported in this study represents 4661 adolescents (*M* age = 15.07 years; 49.00 % female; 60.12 % AI race) who attended school on or near AI reservations from five regions across the United States. The regions represented in this study were the Northwest, Northern Plains, Upper Great Lakes, Southeast (including Texas), and the Southwest. The recruitment in each region was conducted to approximate the percentage of AIs that resided in each respective area. Demographic information and descriptive statistics are presented in Table 1.

Procedures

At each school an official was required to complete human subjects training prior to the administration of the survey. This school official was responsible for supervising the administration procedures required of the survey. Parents were notified that they could sign a notification to withdraw their child from the study, or they could call the school and request their child be excluded from the study. Less than 1% of students did not participate due to lack of parental consent.

Prior to distributing the survey, a school official read a brief set of instructions to the students, which disclosed that the survey was voluntary and that they may choose to withdraw from the study at any time. The surveys contained no identifying information, and the study's procedures ensured complete anonymity for participants. Upon completion, the students placed their survey into a large envelope, which was sealed and returned to the Tri-Ethnic Center once all students were finished.

Measures

The measure utilized in this study was the American Drug and Alcohol Survey (ADAS), which was refined for use with AI youth and has been validated for use across multiple minority groups (Oetting & Beauvais, 1990). According to the Substance Abuse and Mental Health Services Administration (SAMHSA) (1999), the ADAS is administered by schools to assess the levels of substance misuse among their students.

Independent measures. There were 16 categorical items on the ADAS (SAMHSA, 1999) that addressed issues within a family system that are indicative of the quality of relationship that the adolescent experiences. All items were Likert-type items, ranging from 0 (Not at all/Not at all

true) to 3 (A lot/Very true). Any cases with missing entries were removed for each of the subscales ($n = 726$).

The 16 items were divided into 4 subscales and summed to create subscale scores. The subscale scores were used in this study to indicate a latent construct, Familial Oversight.

1. Substance Misuse Concern: This factor was comprised of four categorical items which reflect the adolescent's opinion regarding the level of concern that the family has of the adolescent's substance consumption. "How much would your family care if you used marijuana?" is an example item from this factor. The "drank" item (i.e. "How much would your family care if you drank alcohol?") was removed from this factor due to conceptual similarity and high intercorrelation with "drunk" items (i.e. "How much would your family care if you got drunk?").
2. Substance Misuse Deterrence: This factor was comprised of four categorical items which reflect the adolescent's opinion of the family's intention to stop them from misusing substances. An example item from this factor, "How much would your family try to stop you from using other drugs?" The "drinking" item (i.e. "How much would your family try to stop you from using alcohol?") was removed from this factor due to conceptual similarity and the high correlation with "drunk" items (i.e. "How much would your family try to stop you from getting drunk?").
3. Substance Misuse Discussion: This factor was comprised of four categorical items which reflect the extent to which the family discussed the harm and danger of substance misuse with their adolescent. An example item from this factor, "How much has your family talked to you about the dangers of using other drugs." The

“drinking” item (i.e. “How much has your family talked to you about the dangers of drinking alcohol?”) was removed from this factor due to conceptual similarity and the high correlation with “drunk” items (i.e. “How much has your family talked to you about the dangers of getting drunk?”).

4. Parental Monitoring: This factor was comprised of four categorical items which demonstrate the perceived familial awareness of the adolescent’s social activities. These items were reversed scored to aid in interpretation and match the directionality of items comprising the other three factors. “My parents let me go any place I want without asking” is an example item from this factor.

Each subscale demonstrated high internal consistency: Substance Misuse Concern ($\alpha = .92$); Substance Misuse Deterrence ($\alpha = .92$); Substance Misuse Discussion ($\alpha = .93$); Parental Monitoring ($\alpha = .84$). The list of Familial Oversight subscales and measured indicators are presented in Table 2.

Dependent measures. The dependent variable was comprised of four items from the ADAS (1999) which represent endorsement of SPM; “Used alcohol and another drug together”, “Used alcohol and marijuana together”, “Took 2 drugs at the same time”, and “Used cocaine or crack and heroin together.” All items were dichotomous, ranging from 0 (no) to 1 (yes). The items were summated so that all participants who endorsed one of these items were assigned a 1 (29.5%), to indicate positive endorsement of SPM. Remaining participants who did not positively endorse one of four items were assigned a 0 (70.5%), to indicate negative endorsement of SPM. All cases with missing data for these items were removed ($n = 376$).

Analysis

The proposed model consisted of four predictors, the total summed subscale scores, indicating the hypothesized latent construct Familial Oversight. Substance Misuse Concern, Substance Misuse Deterrence, Substance Misuse Discussion, and Parental Monitoring. Confirmatory factor analysis and multigroup structural equation modeling were utilized in MPlus Version 7.0 (Muthen & Muthen, 1998-2017) to test the hypothesized model that among adolescents, based on or near AI reservations: (1) Substance Misuse Concern, Substance Misuse Deterrence, Substance Misuse Discussion, and Parental Monitoring were indicators of the latent construct Familial Oversight; (2) decreased endorsement of the latent construct Familial Oversight would predict increased endorsement of SPM; and (3) positive endorsement of American Indian race would moderate the relation between Familial Oversight and SPM, such that AI adolescents would be significantly more likely than their non-AI counterparts to positively endorse SPM when they reported decreased Familial Oversight.

Criteria suggested by Hu and Bentler (1999) were utilized to evaluate overall model fit: a comparative fit index (CFI) $> .95$, a standardized root mean square residual (SRMR) $< .08$, and a root mean square error of approximation (RMSEA) $< .06$ were the minimal criteria used to establish a good fitting model. Model modification indices were analyzed to determine if any changes were necessary to significantly refine the model and improve model fit (Muthen & Muthen, 1998-2017). All modifications that were conceptually and theoretically indicated were made to the model until acceptable fit statistics were attained.

To test the moderation hypothesis, multigroup analysis was used to determine differences in the relation between Familial Oversight and SPM by self-reported race where all participants who endorsed the AI race were grouped into the AI group, and the remaining

participants were in the non-AI group. To test invariance, the structural path between Familial Oversight and SPM was constrained to be equal between AI/non-AI groups and results of a difference test as well as model fit were evaluated. Invariance was established if model fit was good and if the difference test was not significant, indicating that the difference between the slopes was not significantly different than 0 (Muthen & Muthen, 1998-2017). The hypothesized model is presented in Figure 1.

RESULTS

Descriptive Statistics

Prior to testing the stated hypotheses, descriptive statistics were analyzed to determine data quality and relations between variables. Age demonstrated an approximate normal distribution within those who did and did not endorse a history of SPM. History of SPM was roughly equally distributed amongst both male and female participants. However, analyses revealed a main effect of race on SPM, such that individuals who endorsed AI race were more likely to endorse SPM than their non-AI counterparts, ($\chi^2(1) = 17.98, p < .001$).

Proposed Model

The model with the proposed latent construct Familial Oversight, indicated by the four subscales, demonstrated excellent fit, $\chi^2(2) = 20.23, p < .05$; CFI = 0.994; SRMR = .064; RMSEA = .044 (90% C.I. [.128 - .063]); however, the factor loadings supported the development of a two-factor model, with Parental Monitoring as a unique predictor. Factor loadings for proposed model are provided in Table 3. These results fail to support the first hypothesis that Familial Oversight would be indicated by the four subscales. Due to the nonsignificant results, model modifications were made conceptually and theoretically in a sequential manner until appropriate fit statistics were attained.

Final Model

Model modifications resulted in Parental Monitoring being removed as a subscale of Familial Oversight and replaced in the model as a latent construct. Item Parent1 was removed, with the three remaining items indicating the construct. See Table 5 for updated factor loadings

for two-factor model. See Table 2 for item descriptions. The hypothesized construct Familial Oversight was then indicated by the three remaining subscales; Substance Misuse Concern, Substance Misuse Deterrence, and Substance Misuse Discussion; and subsequently renamed Familial Attitudes on the Misuse of Substances (FAMS). Items numbered 2 and 4 were systematically removed from each of the respective subscales (e.g. Deter2, Concern2, and Discuss2) based on model modification indices. See Table 2 for items removed. This left two items for each of the three remaining FAMS subscales, which is one less than recommended by common model identification standards (Yong & Pearce, 2013). Therefore, subscale scores were created from the sums of the remaining two items per subscale, which indicated the latent variable FAMS. The modified two-factor model demonstrated excellent fit, $\chi^2(8) = 32.87, p < .05$; CFI = 0.997; RMSEA = .026 (90% C.I. [.017 - .035]).

SEM was utilized to test the new two-factor model's relation with SPM endorsement. SEM results indicated that the modified model demonstrated excellent fit, $\chi^2(12) = 65.39, p < .05$; CFI = 0.982; RMSEA = .031 (90% C.I. [.024 - .038]). The two-factor model indicated SPM was negatively associated with Parental Monitoring ($b = -0.131, S.E. = 0.033, b = -4.04, p < .001$) but not significantly related to FAMS ($b = -0.044, S.E. = 0.025, b = -1.79, p = .07$).

Finally, a multigroup SEM was conducted to test invariance, which demonstrated strong fit, $\chi^2(32) = 91.42, p < .05$; CFI = 0.980; RMSEA = .028 (90% C.I. [.022 - .035]). Amongst the AI group, Parental Monitoring was significantly negatively associated with SPM ($b = -0.123, S.E. = 0.041, b = -3.02, p = .003$), but FAMS was not significantly related to SPM ($b = -0.047, S.E. = 0.031, b = 1.52, p > .05$). In the non-AI group, Parental Monitoring was also significantly negatively associated with SPM ($b = -0.128, S.E. = 0.055, b = -2.35, p = .019$), but FAMS was not

significantly related to SPM ($b = -0.041$, S.E. = 0.041, $b = -1.01$, $p > .05$). Additionally, this model was run constraining the paths between the latent variables (Parental Monitoring and SPM, and FAMS and SPM) across AI versus non-AI groups. The diff test on these constrained paths indicated that there was no significant difference between these paths (Parental Monitoring and SPM diff = 0.005, $p > .05$; FAMS and SPM diff = 0.006, $p > .05$). This indicated that AI status did not moderate relations between the latent variables.

DISCUSSION

The present study examined the effect of Familial Oversight, Familial Attitudes on the Misuse of Substances (FAMS), and Parental Monitoring on one's endorsement of SPM, and how this may be moderated by one's race (AI or non-AI). It is the first known study to date to analyze SPM in the AI population. Results indicated significant model misspecification when the four theorized family subscales were loaded onto the single latent variable Familial Oversight, failing to support the first hypothesis. Once modifications were made, the new two-factor model was comprised of Parental Monitoring and FAMS. Results indicated that Parental Monitoring, but not FAMS, was significantly negatively associated with SPM in both AI and non-AI adolescents on or near AI reservations. When examining the difference between the two groups, though AI adolescents were more likely to endorse SPM than non-AI adolescents, multigroup analyses indicated that self-reported race did not significantly moderate this association.

Though familial sanctions concerning substance misuse are directly related to levels of endorsed consumption (Bahr et al., 2005; Swaim et al., 1993; Swaim & Stanley, 2016), the originally hypothesized Familial Oversight was not significantly related to SPM. Three of the subscales (Substance Misuse Concern, Substance Misuse Deterrence, and Substance Misuse Discussion) were comprised of items more related to the concern that a parental figure has for substance misuse specifically, whereas Parental Monitoring appears to be related to the adolescent's perception of parental oversight. Parenting styles that are too restrictive or lenient are associated with negative outcomes in children (Maccoby & Martin, 1983; Steinberg, Mounts, Lamborn, & Dornbusch, 1991), and are specifically linked to engagement in substance misuse

(Beck et al., 2003; Svensson, 2003). In the present study, as the level of Parental Monitoring decreased, the likelihood of SPM endorsement increased. This is congruent with previous research, where awareness of a child's activities and providing adequate monitoring reduced negative behaviors and outcomes, such as SPM (Racz & McMahon, 2011). There is substantial literature supporting a link between parental monitoring and substance misuse (Ryan et al., 2015); therefore, it is logical that it would also be predictive of a form a consumption with even greater risk, SPM (Pakula et al., 2009; Wood, 2009).

Examining the variation between the two groups, on relations between Parental Monitoring and SPM and FAMS and SPM, indicated that participant's endorsement of race did not significantly moderate these relations. This is contrary to what was expected and to current literature (Stanley et al., 2014); as previous research suggests that AI individuals are at greater risk for increased substance misuse outcomes than non-AI individuals, such as increased or more dangerous consumption (Beauvais et al., 2008; Swaim & Stanley, 2018). This aberration could be related to normative influences shared by both AI and non-AI adolescents living on or near an AI reservation (Smith, Conner, Stanley, & Swaim, 2019). Sharing the environment could have a significant effect on the way non-AI families operate. Families may adapt their style of parenting depending on social context and group behavior (Bradley, 2002; Dieterich et al., 2013b), therefore it is reasonable to posit that this relation was not impactful due to the shared environment (Smith et al., 2019).

Several limitations to this study should be noted. First, the surveys were administered through the educational system, and therefore limited to the youth who were still enrolled in school during data collection. This excluded individuals who dropped out of school and those

that were frequently absent from class, of whom a large portion may have been students with relatively high rates of substance misuse (Beauvais et al., 2008). Social and cultural norms could impact the salience of the items included in the proposed construct. For example, if the families of the participants endorse attitudes which are tolerant of marijuana use, this could have had a significant effect on the endorsement rates of the indicators (e.g. “How much would your family care if you used marijuana”). This could be related to the increased substance misuse in their environment (Catalano & Hawkins, 1996; Dieterich et al., 2013b); however, it could be related to cultural characteristics which were not included in the study, such as spiritual consumption of substances (Mazur, 1990; Terry & Trout, 2017). Further, it can be difficult to provide a representative sample of AI adolescents. Though it would be logical to argue the significance of variation between AI tribal nations and communities, data has shown only minor variations (Beauvais et al., 2008). During data collection, researchers attempted to include a representative sample of cultural characteristics, such as linguistic and demographic characteristics. However, this data is from reservation-based AI adolescents and is not generalizable to non-AI or AI adolescents who reside in non-reservation-based communities (Swaim & Stanley, 2018). Additionally, the cross-sectional design of the study does not allow for causal inference. The constructs were limited to the participant’s perception of familial oversight, which does not indicate an actual measure of familial oversight and monitoring (Racz & McMahon, 2011). Finally, the response scale utilized in data collection was categorical. A continuous scale would have allowed for a more accurate representation of the data.

Future research in this area would be enhanced through variations to the study design. Implementing a longitudinal design could illuminate salient trends related to the development of

SPM. This could also allow for a more nuanced understanding of the relation of SPM and familial variables, and how these factors may change over time. Similarly, it may be beneficial to have a comparison group of adolescents that lives farther away from AI reservations. This would ideally include both AI and non-AI students who are not based on AI reservations. Further, it would be beneficial to have more items regarding SPM; and it would also be ideal if the response scale for the SPM items were not yes/no binary questions, as the array of SPM items in the ADAS limited the inferential ability in analyzing the relations. Finally, it appears that Familial Oversight could have been better defined with a broader set of items. Expanding the construct would have allowed Familial Oversight to cover additional potentially relevant areas of risk, such as criminal behavior and deviance.

The familial impact on substance misuse is well established (Beck et al., 2003; Ryan et al., 2015; Svensson, 2003; Swaim et al., 1993; Stanley et al., 2014). This is more apparent in the AI population, where familial relations are of relative importance (Spicer et al., 2012) and have a direct effect on substance misuse (Swaim et al., 1993). Parental Monitoring being the only significant predictor of SPM emphasized the importance of familial oversight and monitoring on subsequent substance misuse with adolescents based on or near AI reservations (Racz & McMahon, 2011). Though Parental Monitoring was limited to the perceptions of familial oversight rather than a measure of actual parental knowledge, awareness of an adolescent's activities is important in the development of SPM. Through meaningful dialogue, parental figures can create an environment in which the adolescent feels comfortable discussing their social life, which could increase the likelihood of free and open discourse about difficult topics. Given the inherent danger of SPM, it is vital that more reliable information is disseminated. Similarly, with

the importance of family and the distinct parenting style of the AI population, the relation of familial influence should be expounded. Future work examining SPM can provide invaluable evidence to inform prevention efforts, evaluate program effectiveness, and infer the need of prevention resources in a community. This would simultaneously enhance current literature and provide a basis to educate those at risk of SPM.

TABLES

Table 1
Demographic Statistics: Separated by Endorsed Race (AI or non-AI)

	American Indian (AI)	Non-American-Indian (non-AI)	Total
	<i>n</i> = 2802	<i>n</i> = 1859	<i>n</i> = 4661
Sex			
Male	1318 (47.0%)	882 (47.4%)	2200 (47.2%)
Female	1391 (49.6%)	900 (48.4%)	2291 (49.2%)
Did Not Respond	93 (3.3%)	77 (4.1%)	170 (3.6%)
Age			
12-13	709 (25.3%)	191 (10.3%)	900 (19.3%)
14-15	1080 (38.5%)	759 (40.8%)	1839 (39.5%)
16-17	850 (30.3%)	768 (41.3%)	1618 (34.7%)
18-21	163 (5.8%)	141 (7.6%)	304 (6.5%)
Region			
Northwest	99 (3.5%)	170 (9.1%)	269 (5.8%)
Northern Plains	1385 (49.4%)	262 (14.1%)	1647 (35.3%)
Upper Great Lakes	344 (12.3%)	967 (52.0%)	1311 (28.1%)
Southeast	83 (3.0%)	339 (18.2%)	422 (9.1%)
Southwest	891 (31.8%)	121 (6.5%)	1012 (21.7%)

Note: American Indian group consists of any participant who endorsed American Indian race. Non-American Indian group consists of participants who endorsed any race other than American Indian.

Table 2

Subscale Indicators of Proposed Familial Oversight Construct

Subscale Factors	Subscale Items
Substance Misuse Concern	
Concern1:	<i>“How much would your family care if you got drunk?”</i>
Concern2:	<i>“How much would your family care if you sniffed something like glue or gas?”</i>
Concern3:	<i>“How much would your family care if you used marijuana?”</i>
Concern4:	<i>“How much would your family care if you used other drugs?”</i>
Substance Misuse Deterrence	
Deter1:	<i>“How much would your family try to stop you from getting drunk?”</i>
Deter2:	<i>“How much would your family try to stop you from sniffing something like glue or gas?”</i>
Deter3:	<i>“How much would your family try to stop you from using marijuana?”</i>
Deter4:	<i>“How much would your family try to stop you from using other drugs?”</i>
Substance Misuse Discussion	
Discuss1:	<i>“How much has your family talked to you about the dangers of getting drunk?”</i>
Discuss2:	<i>“How much has your family talked to you about the dangers of sniffing something like glue or gas?”</i>
Discuss3:	<i>“How much has your family talked to you about the dangers of using marijuana?”</i>
Discuss4:	<i>“How much has your family talked to you about the dangers of using other drugs?”</i>
Parental Monitoring	
Parent1:	<i>“My parents allow me to go out as often as I want.”</i>
Parent2:	<i>“My parents let me go any place I want without asking.”</i>
Parent3:	<i>“My parents are less strict than most parents in letting me have fun with my friends.”</i>
Parent4:	<i>“My parents let me stay out as late as I want.”</i>

Table 3

Familial Oversight Factor Loadings and Endorsement of Subscale Indicators

Subscale Factors	Items:	Factor Loadings	<i>SE</i>	<i>M</i>	<i>SD</i>
Familial Oversight				9.54	3.61
	Concern:	0.75	0.015	10.67	3.22
	Deterrence:	0.87	0.016	10.83	3.05
	Discussion:	0.36	0.015	8.32	4.45
	Monitoring	0.16	0.016	8.34	3.70

Table 4

Correlation Matrix for Familial Oversight Subscale Indicators

	Substance Misuse Concern	Substance Misuse Deterrence	Substance Misuse Discussion	Parental Monitoring
Indicators				
Substance Misuse Concern	1.00			
Substance Misuse Deterrence	0.66*	1.00		
Substance Misuse Discussion	0.30*	0.35*	1.00	
Parental Monitoring	0.13*	0.15*	0.12*	1.00

Note. * $p < .001$

Table 5

FAMS and Parental Monitoring Factor Loadings and Endorsement of Subscale Indicators

Subscale		Factor			
Factors	Items:	Loadings	<i>SE</i>	<i>M</i>	<i>SD</i>
FAMS				4.88	1.84
Substance	Misuse Deterrence:	0.86	0.012	5.24	1.67
Substance	Misuse Discussion:	0.43	0.014	4.24	2.13
Substance	Misuse Concern:	0.79	0.012	5.15	1.73
Parental Monitoring				2.22	0.92
	Parent2:	0.78	0.009	2.43	0.85
	Parent3:	0.67	0.010	1.85	1.00
	Parent4:	0.84	0.009	2.38	0.90

FIGURES

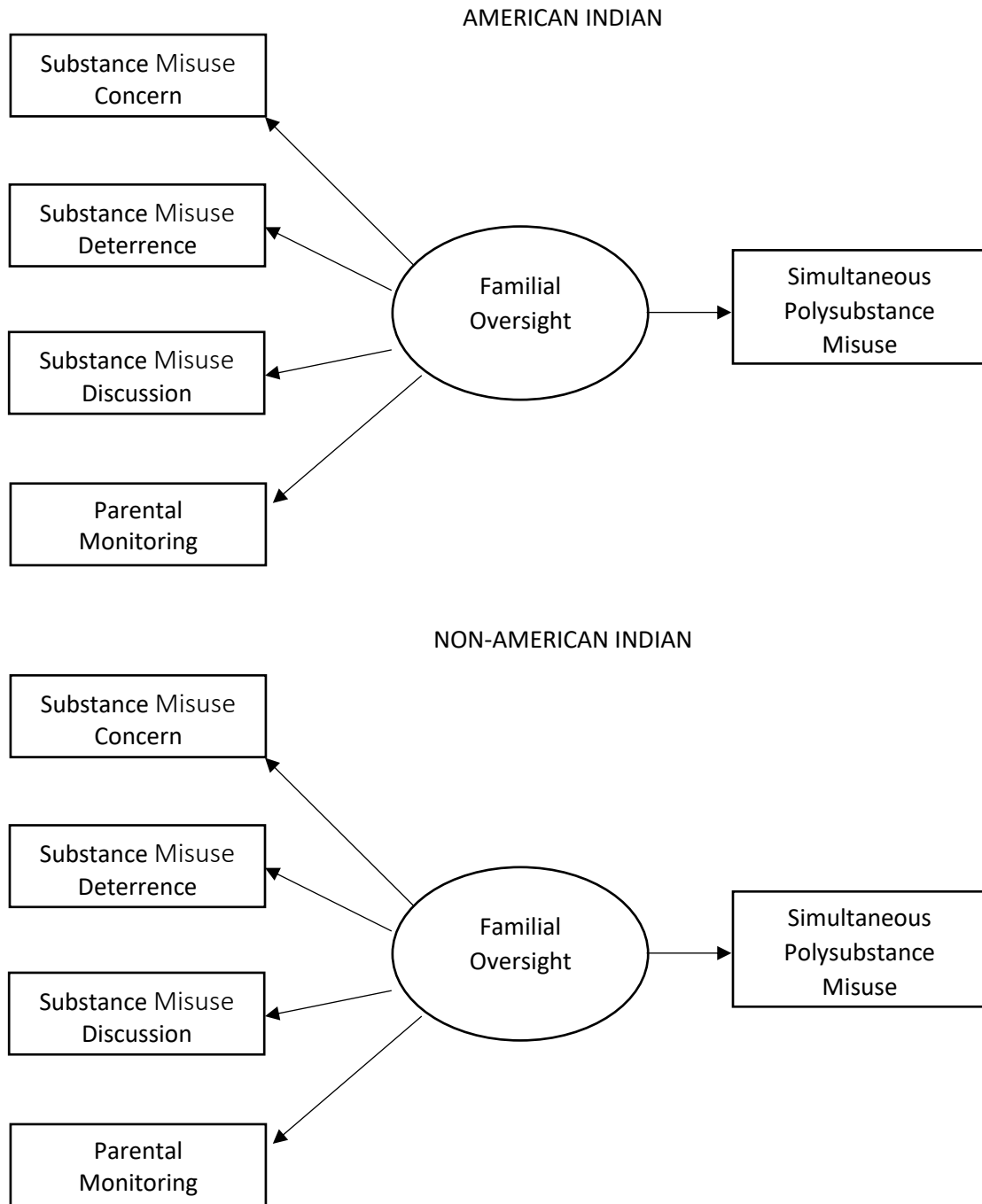
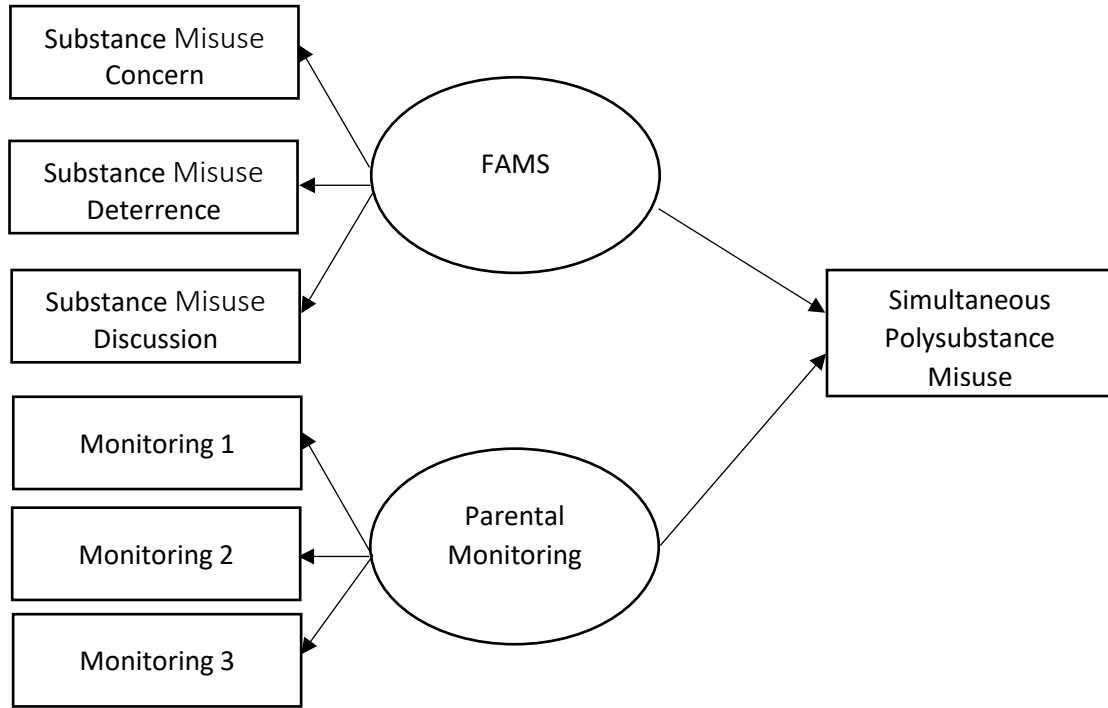


Figure 1. Proposed Model for Familial Oversight and Simultaneous Polysubstance Misuse.

AMERICAN INDIAN



NON-AMERICAN INDIAN

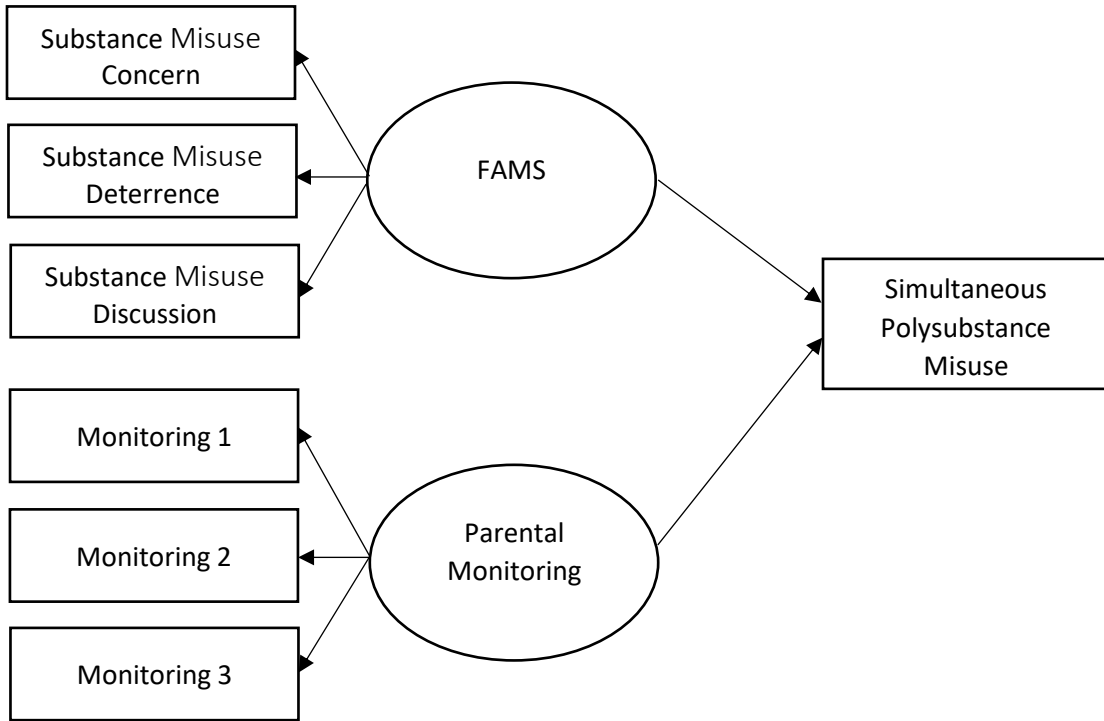


Figure 2. Final Model for FAMS and Parental Monitoring Indicating Simultaneous Polysubstance Misuse

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