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Multivariate family factors in lifetime and current marijuana use among American Indian and white adolescents residing on or near reservations



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ABSTRACT

Background: Rates of marijuana use are consistently high among reservation-based American Indian adolescents. The roles of family are unique in this ethnic group and can serve as sources of both risk and protection for substance use.

Purpose: To assess the relationships between distal and proximal family factors and lifetime and current marijuana use among American Indian and white middle and high school students who attend the same schools on or near reservations.

Methods: In-school surveys were administered to 3380 American Indian and 1562 white students from 35 middle schools and 17 high schools regarding levels of marijuana use and family characteristics. Three logistic regression models (Control, Control + Distal; Control + Distal + Proximal) estimated effects of multiple family variables on lifetime and current marijuana use. Results: Strong effects were found for family structure, parental monitoring, family conflict, and family sanctions against marijuana use. Weaker effects were found for family participation in school events, and no relationship was found for family communication about marijuana. A number of similar results were found across ethnicity and middle and high school students.

Conclusions: Family variables exert strong and largely consistent effects across reservation-based American Indian and white youth on lifetime and current marijuana use. Interventions that include a broad range of targeted family components may serve to both limit uptake and forestall increases in adolescent marijuana use in these two groups.

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1. Introduction

1.1. Marijuana use among American Indian youth

Indigenous youth throughout the world often report higher rates of cannabis compared to their non-indigenous counterparts including First Nation (Tu et al., 2008) and Australian (Lee et al., 2009) youth. Data from population-based studies of adolescent substance use in the U.S. consistently indicate higher rates of marijuana use among American Indian (AI) adolescents as compared to other ethnic/racial groups (Clark et al., 2013; Johnson et al., 2015; Stanley et al., 2014a). Furthermore, the incidence of

marijuana use is likely to increase substantially during the adolescent years (Cheadle and Sittner Harshort, 2012; Novins and Barón, 2004; Walls et al., 2013). Heavy use of marijuana is associated with numerous negative outcomes including neurocognitive deficits (Bolla et al., 2002), reduced affective response (Gruber et al., 2009), lowered task performance associated with reduced motivation (Lane et al., 2005), and a variety of psychosocial problems including school dropout, unemployment, and increased risk for delinquency (Fergusson et al., 2008; Green et al., 2010; Lynskey and Hall, 2000). This raises serious public health concerns regarding the substance use trajectories of AI youth, especially considering their early initiation of marijuana use (Stanley and Swaim, 2015; Whitesell et al., 2012). While various risk factors for substance use have been identified for the general population of adolescents (Hawkins et al., 1992), there is evidence that family factors may be especially important in relation to indigenous youth in general (Calabria et al., 2012) and AI youth in particular (LaFromboise et al., 2006; Swaim et al., 1993).

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1.2. Family factors and American Indian substance use

The nature of family influence, though important to all adolescent development, is unique among AI populations. With time, AI families move farther away from the sad legacy of the early boarding school experience, forced removal from lands, and the loss of cultural and family traditions through these and other loss experiences (Edmunds, 1995; Evans-Campbell, 2008; Glover, 2001). But the intergenerational effects of these traumatic events continue to impact current day Native families (Evans-Campbell, 2008). Despite these ongoing challenges, many AI families are important sources of strength and resilience to their children (Limb et al., 2014; LaFromboise et al., 2006). Various authors (Red Horse, 1997; Stiffman et al., 2007) point to the unique characteristics of strength within Native families such as expectations for kinship responsibility, non-competitiveness, and unobtrusiveness in parenting, along with informal caregiving. This is opposed to the more typical deficit model that emphasizes non-involvement, substance use, and other behavioral problems. Both strengths and deficits are part of the picture among families of all cultural groups. Accordingly, we consider in this study, family variables that fall into both categories. Variation in familial influences may help explain differences in AI youth and their white counterparts who use and do not use marijuana.

1.3. Family factors across developmental stages

The impact of family also varies across the developmental span. As youth age into later adolescence, other social influences, most notably peers, begin to impact values and life choices, with family influences becoming less influential (Sawyer and Stevenson, 2008). Therefore, it is important to consider how family variables may shift in relative importance across differing developmental periods. This study examines differences in the relationship between family variables and lifetime and current marijuana use across middle (MS) and high school (HS) students.

1.4. Ethnic comparisons of American Indian to other youth

The other consideration we address is whether family influences differ across ethnicity. Numerous cross-ethnic studies of U.S. adolescent youth have been conducted to determine potential differences both in epidemiology and etiology of substance use. The findings from these studies point both to similar and unique patterns of use, and risk and protective factors related to use (Barrera et al., 2001, 1999; Oetting et al., 1989; Swaim et al., 1993). This study is part of an ongoing effort to track population-based trends in substance use among reservation AI students in grades 7 through 12. But because the sample includes substantial numbers of white youth attending the same schools on or near reservations, it offers the opportunity to compare effects across these two ethnic/racial groups. In comparison to other studies in which AI youth are contrasted to samples of national youth, the current sample partially controls for some of the socio-economic factors present on reservations, due to surveying youth who reside in the same areas.

1.5. Proximal and distal family factors

As noted in the next section, each of the family variables we considered has shown associations with adolescent substance use in AI or general populations including family structure, family attitudes toward substance use, family communication regarding substance use, family involvement in school, parental monitoring, and family conflict. We employed a common strategy when multiple risk and protective factors are considered, classifying them into distal and proximal categories, and then comparing sequential models that included increasing sets of variables (Salvy et al., 2014; Storvoll

et al., 2015), and examining changes in the relative influence of factors. This approach permitted us to assess the influence of distal versus proximal factors as well as first accounting for the effects of the control variables. Factors that directly related to marijuana use (family attitudes toward marijuana use, family communication about marijuana use) were classified as proximal and factors that were non-specific to marijuana use (parental monitoring, family involvement in school, family conflict) were classified as distal. Family structure and sex, measures of classification, served as control variables.

1.6. Review of family variables and adolescent substance use

1.6.1. Family structure. The constellation of family structure is associated with adolescent substance use. Youth living with both parents are less likely to use alcohol and other substances and this has been well documented in AI samples (Eitle et al., 2013; Henry et al., 2011; Lonczak et al., 2007).

1.6.2. Family sanctions against marijuana use. Negative parental attitudes toward substance use, including marijuana, reduce adolescent risk for use in the general population (Bahr et al., 2005; Kelly et al., 2002) and in AI samples (Beauvais, 1992).

1.6.3. Family communication about substance use. Beyond the effects of parental attitudes toward use, substance-specific parent-child communication also decreases risk. While there does not appear to be current research addressing this factor in AI families, a wide body of research supports the importance of this variable in the general population (Kam and Yang, 2014).

1.6.4. Parental monitoring. Parental monitoring is a robust protective factor in the prevention of adolescent substance use (Dishion et al., 2003; Racz and McMahon, 2011). While Native parents often assume a less active and more indirect approach to parenting (Bigfoot and Funderburk, 2011; Forehand and Kotchick, 1996), several studies confirm that AI families who monitor their child's behavior more effectively, reduce substance use risk (Boyd-Ball et al., 2014; Moon et al., 2014; Rodgers and Fleming, 2003).

1.6.5. Family participation in school. One variable that receives less attention in the literature is family participation in school activities. Kumar et al. (2014) noted both developmental and socioeconomic differences in this factor. They found that parental participation was unrelated to substance use among 10th graders, but associated with higher levels of alcohol use among 12th graders. Additionally, this variable was related to lower levels of adolescent substance use among higher educated parents, but higher levels of use among lower educated parents. The authors suggest that this difference may relate to proactive versus reactive participation, with the latter being in response to student behavioral problems. Others have found that parental school participation related negatively to substance use transitions in urban samples (Mistry et al., 2015). We are aware of no study that has specifically examined this factor in AI samples.

1.6.6. Family conflict. Finally, family environments characterized by arguing, fighting, and conflict are associated with elevated risk for adolescent substance use, and this relationship is supported among AI families (Barrera et al., 2001; Stanley et al., 2014b).

1.7. The current study

The current study examines the relative relationship of family influence variables on lifetime and current marijuana use among a

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