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Exploring Risk and Protective Factors for Alcohol and Tobacco Use Among Youth: An Innovative Approach

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BACKGROUND & PURPOSE

Underage alcohol and smoking are growing public health concerns especially among the youth of the nation. Centers for Disease Control and Prevention (CDC) estimates that youth between 12 to 20 years of age are responsible for 11% of total alcohol consumption in United States CDC, (2014). Additionally, 90% of this 11% alcohol is consumed in the form of binge drinking (CDC, 2014). Alongside with alcohol, tobacco use is also a concerning health issue among the youth; each day more than 3,800 adolescents smoke their first cigarette and an additional 2,100 youth become daily cigarette smokers (CDC, 2015). Although, cigarette smoking has declined in recent years, other forms of tobacco such as electronic cigarettes, hookahs, and smokeless tobacco have become more popular (CDC, 2015).

Similar to the nationwide trends, underage drinking and tobacco use continues to be a health problem among the youth population in Florida. According to Florida Youth Risk Behavior Survey, in 2013, 34.8% of middle and high school students reported consuming at least one drink of alcohol on one or more days in the past 30 days from the day of the survey (Florida Department of Health (FDOH), 2013). Moreover, 10.8% of middle and high school students reported smoking cigarettes on one or more days in the past 30 days from the day of the survey (FDOH, 2013).

There are several factors that prevent and/or promote the use alcohol and tobacco among the youth. Personal experiences and perceptions, biological makeup, and social environment are some major factors that influence the alcohol and tobacco consuming behaviors. Social environment such as positive media advertisement, peer pressure and personal experiences of childhood abuse and/or dating violence increase the likelihood of substance abuse problem among the youth (Fisher, Miles, Austin, Camargo, & Colditz, 2007; Hearst, Fulkerson, Maldonado-Molina, Perry, & Komro, 2007; Janinski, Williams, & Siegel, 2000; Maldonado-Molina, Reingle, Delcher, & Branchini, 2011; Simantov, Schoen, & Klein, 2000). On the other hand, positive parental involvement and monitoring, and engagement in extracurricular activities have been proven to decrease vulnerability to substance abuse (Cohen, Richardson, & Labree, 1994; Simantov, Schoen, & Klein, 2000).

There are multiple emotional, academic, and economic consequences of underage alcohol consumption and tobacco use, it is therefore imperative to understand the risk factors that lead to such behaviors (Office of Juvenile and Delinquency Prevention, 2012). The purpose of this study is to determine unique segments of youth at-risk and protected from underage alcohol consumption and cigarette smoking in Sarasota, Florida.

METHODS

The Youth Risk Behavior Survey (YRBS), a CDC's Youth Risk Behavior Surveillance System (YRBSS), measures the prevalence of health-risk behaviors among adolescents through representative national, state, and local surveys. The Sarasota County School District has assessed the prevalence of priority health-risk behaviors of high school youth attending Sarasota County public schools by conducting the YRBS. The High School YRBS has been conducted in Sarasota every other year since 1999. This study relied on secondary analysis of YRBS data obtained primarily from 9th and 11th graders across all high schools in the county. A total of 2,613 high school youth were included in this analysis. An exploratory audience segmentation approach, Chi-Squared Automatic Interaction Detection (CHAID), was used to identify unique segments most at-risk for and protected from past 30 day tobacco use and past 30 day alcohol use in order to inform prevention programming in the school district. Overall classification accuracy rates are reported in order to support model performance. In addition, cross validation strategies were used to test model fit and provide evidence of the validity of the segmentation results. In addition, descriptive statistics were used to provide a summary of student demographic information. CHAID is an exploratory approach so results should be considered suggestive. Future efforts will seek to confirm the results presented herein with a confirmatory approach such as multilevel modeling. Permission to analyze these data was obtained from the School Board of Sarasota County and the Georgia Southern University Institutional Review Board.

RESULTS

Demographic Item	Response Options	Valid Percent (N=2,613)
Age	14 years old	30%
	15 years old	25%
	16 years old	27%
	17 years old	16%
	18 years old or older	2%
Gender	Female	54%
	Male	46%
Grade	9 th grade	56%
	10 th grade	3%
	11 th grade	37%
	12 th grade	3%
Race/Ethnicity	American Indian/Alaska Native	1%
	Asian	3%
	Black or African American	9%
	Native Hawaiian/Pacific Islander	1%
	Hispanic/Latino	11%
	White	75%

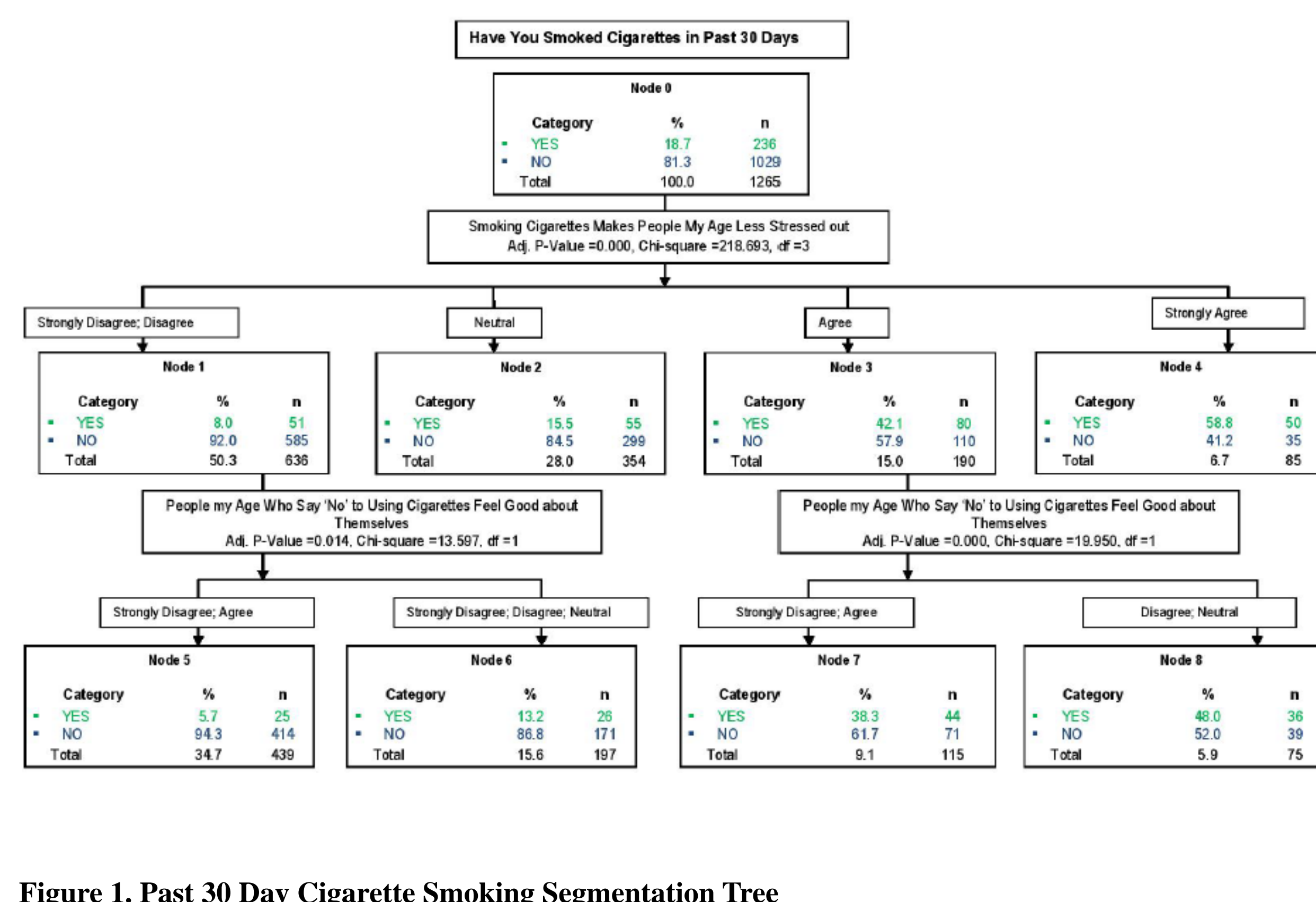


Figure 1. Past 30 Day Cigarette Smoking Segmentation Tree

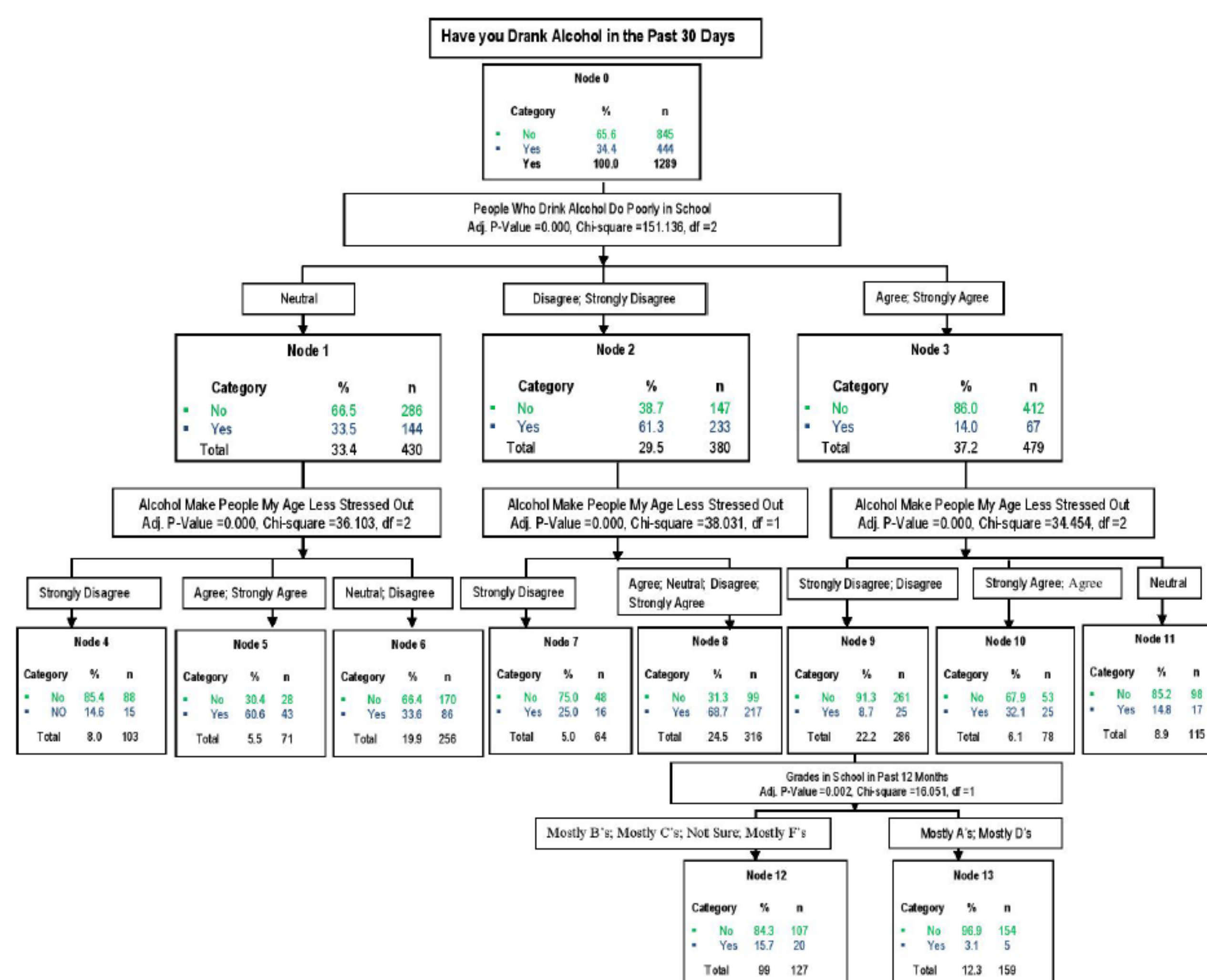


Figure 1. Past 30 Day Alcohol Use Smoking Segmentation Tree

RESULTS

- Most participants were in 9th and 11th grades, which is consistent with survey procedures.
- Most participants were female and White, with some variation in race/ethnicity, which is consistent with county demographics.
- The segment most at-risk for current cigarette smoking were those youth who used cigarettes to cope with stress and did not believe that youth who say 'no' to cigarettes feel good about themselves.
- The segment protected from cigarette use comprised youth who disagreed that smoking reduced stress and felt good about saying 'no' to tobacco use.
- The segment most at-risk for having consumed alcohol in the past thirty days was comprised of those who disagreed that alcohol use made youth do poorly in school and tended to agree that alcohol made people their age less stressed out.
- The segment most protected from alcohol use comprised those who were neutral toward alcohol making youth do poorly in school and strongly disagreed that alcohol made people their age less stressed out.
- Classification accuracy for both test models exceeded 70%.
- All results were significant at or below the p=.05 level.

CONCLUSIONS

The purpose of the secondary analysis study using YRBS data from 2011 was to use an innovative segmentation approach, CHAID, to identify unique segments at risk for and protected from tobacco and alcohol use to inform future public health efforts. The sample comprised 2,613 youth in high school from racially diverse backgrounds. Results suggest a variety of complex interactions determine past thirty day tobacco and alcohol use. Overall, risk factors for past 30 day cigarette use included coping with stress and not believing youth who say 'no' to cigarette smoking feel good about themselves. Thus, school-based prevention programming should focus on providing high school youth with healthier ways to cope with stress and changing social norms to reflect a belief that saying 'no' to tobacco makes youth feel good about themselves. Overall, risk factors for past 30 day alcohol consumption were more complex and included the disagreeing with the statement about alcohol making youth do poorly in school and agreeing with the statement that alcohol use reduced stress among their peers. These results suggest prevention programming in high schools targeted at alcohol reduction should change the social norms to support the belief that those who use alcohol do poorly in school and offer youth healthier strategies for coping with stress. Limitations of this study should be considered when interpreting the results, with the primary limitation being the exploratory nature of CHAID. Future research will seek to confirm these results using multilevel modeling.

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