Background
Adolescents who misuse alcohol are at a high risk to experience negative consequences such as poor academic performance, physical and sexual assault, and traffic accidents (Peleg-Oren, Sait Jean, Cardenas, Tammaroa, & Pierre 2009). Furthermore, alcohol use in adolescence has been shown to negatively affect brain development, including compromised white matter integrity and increased white matter deterioration (McQueeney et al. 2009). Chronic use of marijuana has also been shown to exhibit similar, yet more subtle effects on the brain (Jacobs, Bava, Cohen-Zion, Mahmood, & Tapert 2009) and can lead to impaired coordination, decreased problem solving and learning skills, reduced attention span, and short-term memory loss in adulthood. Effective prevention programs that identify early signs of substance use disorders before adolescents experience serious adverse effects are relatively rare. The present study investigated potential risk factors in participants in one such prevention program.

Previous research suggests that male and female adolescents differ in their reasons for using alcohol and marijuana. Researchers have found that female adolescents drink for coping reasons (to cope with negative affect) more often than do male adolescents while the reverse is true for social (to enhance social situations) and enhancement (to enhance positive affect) reasons (Kuntsche, Knibbe, Gmel, & Engels 2006). Other studies have found that marijuana use shows similar sex differences in motives among adolescents, with female adolescents reporting more coping motives and male adolescents reporting more social, enhancement, and conformity (to conform to a group) motives for using. A motive unique to marijuana use, expansion motives, are rare. The present study investigated potential risk factors in participants in one such prevention program.

Methods
Sample
Secondary data analysis was conducted on data from the Focus on Consequences for Adolescents (FOCA) prevention program. FOCA is an indicated prevention program that provides services for youths referred by local courts, schools, mental health professionals or parents because of substance-related incidents. The sample consisted of 1,064 participants who had gone through the FOCA program. Participants’ ages ranged from 13-22 with a mean age of 18. Female adolescents made up 21.2% and male adolescents made up 78.8% of the program, and most of the sample was Caucasian (62.1%) with the rest being Black (7.1%), Hispanic (2.3%), Asian (7.1%), Native American (.5%), and mixed or other (27.3%).

Measures
Motives: Participants reported motives for drinking on the 20-item Drinking Motives Questionnaire-Revised (DMQ-R). The four motives assessed were Social Enhancement, Conformity, Coping and Affect Enhancement. Motives for marijuana use were measured with the 25-item Marijuana Motives Questionnaire (MMQ), measuring the same motives as the DMQ-R with an addition of Enhancement as a motive.

Results
Social motives were the most commonly reported drinking motive followed by enhancement, coping, and conformity (see Table 1). A two-sample t-test revealed statistically significant sex differences for coping (t = 3.76, p < .001) and conformity motives (t = 1.79, p = .001) with female adolescents scoring significantly higher for both. The results were similar for marijuana use, as female adolescents reported significantly higher coping (t = 3.76, p < .001) and conformity (t = 1.85, p < .01) motives.

Discussion
The results revealed that female adolescents indeed showed much higher scores for coping and conformity motives than male adolescents for both alcohol and marijuana. This suggests that female adolescents referred for treatment may feel that they have more to cope with and may be more driven to conform to their social context.

The results of the alcohol path analysis revealed that for both sexes coping and conformity motives significantly predicted alcohol-related problems, and that the pathway from coping to related problems was even stronger for girls than for boys. The results suggest that not only are female adolescents at greater risk for using alcohol as a means of coping, but they are also at greater risk for that motive leading to negative consequences. Marijuana also shows similar results to that of alcohol in regard to coping and conformity motives predicting related problems for both sexes. For prevention and treatment personnel, it may be especially beneficial to be attentive to addressing coping skills and how to deal with social pressure with female adolescents.

For both sexes, enhancement motives showed a strong indirect prediction of problems as a result of increased use of alcohol. This provides evidence that enhancement may be a common and high-risk motive regarding alcohol use.

The marijuana path analysis revealed that enhancement motives provided a fairly strong indirect prediction of related problems for male adolescents, but not female adolescents. This might be because male adolescents tend to externalize more than female adolescents, causing them to get into more trouble.

References