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Perceived Access to Reinforcers as a Function of Alcohol Consumption Among One First Nations Group

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Abstract

Background—Spillane & Smith (2007) postulated that high levels of problem drinking in some First Nation (FN) communities resulted in part from the perception that there is low access to alternative reinforcers (e.g., jobs, friendships, family relationships, and financial security), that many alternative reinforcers are less contingent on sobriety, and that others are available regardless of drinking status for reserve-dwelling FN members.

Methods—This study examined perceptions of access to alternative reinforcers and the extent to which access varied as a function of drinking in 211 FN members living on one reserve in Canada, 138 middle-socioeconomic status Caucasians (MCC), and 98 low-socioeconomic status Caucasians (LCC).

Results—The FN group expected less access to employment, quality family and friend relationships, and financial security compared to the MCC group. After controlling for perceived access in general, gender, and age, the FN group reported that drinking would not cause a decrease in access to employment, family relationships, friendships, and finances as compared to the MCC group. The FN group did not differ from the LCC group in the degree to which they expected drinking to cost access to family relationships or finances, but the LCC group expected drinking to have less of an impact on access to jobs and friendships as compared to the FN group.

Conclusions—The results provide initial support for the Spillane and Smith theory of problem drinking among this one First Nation Group. The results suggest that increasing access to these reinforcers may reduce problematic drinking in this First Nation group.

Delete

Problematic alcohol use is a major health concern for many Native communities in both Canada and the United States. However, while some Native communities appear to have relatively high numbers of individuals experiencing alcohol-related problems, other reserves (or reservations as they are called in the United States) do not (Spillane and Smith, 2007). Because health disparities related to alcohol use are pronounced in this population

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(Beauvais, 1996, Whitbeck et al., 2006, Beals et al., 2005), it is important to study factors that may contribute to the risk for this set of problems. One important consideration for understanding problem drinking in Native communities is how the context in which these individuals live affects perceptions of heavy alcohol use and decisions to drink.

A theory has been proposed which argues that there are important contextual differences between First Nation people living on reserves (FN) and middle-socioeconomic status Caucasians (MCCs) (Spillane and Smith, 2007). One feature of their behavioral approach involved an adaptation of behavioral choice theory (Vuchinich and Tucker, 1988). They suggested that among the determinants of problematic drinking among reserve-dwelling FN members is that certain alternative reinforcers are less available or more costly to First Nation people than MCCs and other reinforcers are less contingent on drinking level for FN members compared to MCCs.

Behavioral Choice Theory applied to First Nation People

Behavioral choice theory holds that engaging in a behavior represents a choice among a range of possible alternative behaviors (Rachlin et al., 1986). One chooses behavior designed to pursue a particular reinforcer because other reinforcers are unavailable, less accessible, or more costly. Applied to problem drinking, the theory states that drinking will vary based on two determinants: the constraints placed on access to alcohol including the cost of alcohol, and access to and costs of alternative reinforcers (Vuchinich and Tucker, 1988).

Vuchinich and Tucker (1988) argued that the important determinant in alcohol consumption is usually the availability of alternative reinforcers. Indeed, studies do suggest that individuals with fewer alternative reinforcers drink more than individuals with many reinforcers available to them. Experimental research with human and nonhuman animals has suggested that greater availability of alternative reinforcers such as money, food, or recreational activities is associated with reduced substance use (Higgins et al., 2004). Spillane and Smith (2007) applied this model at the group level and suggested that to the degree that FN people have less access to alternative reinforcers, they are more likely to rely on alcohol consumption for reinforcement. Due to contextual factors that are characteristic to many reserves, access to many fundamentally important reinforcers, such as employment, friends, family support, and ability to pay one's bills (described by Spillane & Smith, 2007, as standard life reinforcers, or SLRs) may be less available and/or less contingent on sobriety for FN people than for MCCs. That is, FN people expect **heavy** drinking to have less of an impact on their access to some fundamental reinforcers compared to MCCs.

Many SLRs, including employment, tend to be far less available or to be associated with a much higher cost for FN people as well as other Native populations than for MCCs. Thus, heavy drinking tends not to interfere with access to them. For example, some reserves tend to have very high unemployment rates, in some cases as high as 80% (Beauvais, 1998, Costello et al., 1997, Ramasamy, 1996, US Census Bureau, 2006). Moreover, it is often true that most of the few available jobs consist of unskilled labor and, frequently, seasonal labor only. Therefore, the theory would suggest that FN people would expect low access to

employment compared to MCCs and thus drinking would interfere less with access to this reinforcer.

As another example, household incomes for Aboriginals living in Canada, including FN people, Inuit, and Metis are quite low: the Canadian census reported that the median income for Aboriginals in 2006 was \$18,962 which was 30% lower than the non-Native Canadians (Wilson and Macdonald, 2010). With so little access to income or jobs, the influence of drinking on income becomes constrained. Indeed, research has found that socioeconomic status (SES) was virtually unrelated to drinking among one American Indian group (Weisner et al., 1984). On the other hand, the Great Smokey Mountain Study, a quasi-experimental study which investigated income supplements made from the tribe's casino (Costello et al., 2010) found that exposure to increased income during adolescence was associated with fewer psychiatric disorders in adulthood. This suggests that increased access to SLRs (i.e., income and jobs) can have lasting effects into adulthood. The creation of a casino increased the availability of jobs both at the casino and in the surrounding area. This appears to suggest that there is a relationship between employment and alcohol use. However, to the extent that money or jobs are unavailable, we would argue that alcohol consumption can have little impact.

Spillane and Smith (2007) argued that access to some SLRs varies for reserve-dwelling FN people, but not as a function of heavy drinker status. FN people are considered a collectivistic group that takes care of family members and does not shun them when they are injured, hurt, or need help (Red Horse, 1997). The collectivist context in which FN people live suggests that family closeness is less likely to be jeopardized by heavy drinking for FN people compared to MCCs. FN people will see drinking as having less of an impact on their relationships with family and friends compared to MCCs.

Hypotheses for the Current Study

In addition to studying MCCs, we also selected a low-socioeconomic class group of Caucasians (LCCs) for the following reason. A comparison of MCCs to reserve-dwelling FN members involves a comparison of different contexts with respect to SLR access but also a comparison of two different ethnicities. We anticipated that the LCC group would also expect less access to SLRs than the MCC group; if this difference was present there would be less reason to believe that a similar difference between the MCC and FN groups was an artifact of ethnic differences.

We had two sets of hypotheses. The first examined differences in perceived access to SLRs and the second examined differences in access to SLRs as a result of heavy drinking. Thus, first, we hypothesized that after controlling for gender and age the FN group would perceive less access to jobs, family and friend relationships, and financial security compared to the MCC group, but more access to jobs, family and friend relationships, and financial security compared to the LCC group. Second, we hypothesized that after controlling for gender, age, and perceived likelihood of SLR access, the FN group would perceive less change in access to jobs, friends/family relationships, and financial security as a result of heavy drinking compared to the MCC group. We hypothesized that the FN and LCC groups would not

differ in perceived change in access to SLRs due to heavy drinking, because of the generally low level of access to SLRs we believe characterizes both groups.

Method

Participants

Participants comprised three groups. The first group consisted of a group of reserve-dwelling First Nation members from a tribe located in the province of New Brunswick, Canada. The FN sample consisted of 211 individuals (96 male) whose ages ranged from 18 to 70 years old (mean age of 35). Approximately 70% of the sample's family income fell below \$20,000 (see Table 1). None were homeless. The second group consisted of 138 MCCs (73 male) collected primarily from the U.S. ($n = 119$), with the remainder coming from the area surrounding the reserve. Participants who were recruited in Canada came from a small city with a population around 50,000. Participants who were collected in the U.S. were collected from a city with a population around 280,000. Members of the two groups did not differ on any variables. MCC participants' ages ranged from 19 to 64 years (mean age of 39). Approximately 69% of the participants in this sample reported family income greater than \$50,000. The third group consisted of a sample of 98 LCCs (55 male) were recruited from the area surrounding the reserve ($n = 50$) and from the U.S. These participants were recruited from homeless shelters and soup kitchens. The U.S. and Canadian LCC samples did not differ on any variable. These participants' ages ranged from 19 to 69 years old (mean of 39). All participant family incomes fell below \$20,000.

Measures

Demographics. This is a 14-item questionnaire that asks age, gender, education level achieved, occupation, parental education, and parental employment.

Standard Life Reinforcers (SLRs). To assess each of the SLRs, we developed two parallel measures. These measures were administered to a select group of individuals prior to this study to assess readability. SLRs were measured under two different contexts: (1) perceptions of general access to each of four different reinforcers and (2) perceptions of access to the four reinforcers if one was drinking heavily.

Likelihood of SLR access—We examined each of 4 SLRs: employment, family relationships, friend relationships, and financial stability (Spillane & Smith, 2007). *Employment* was measured with three items that accessed the likelihood of finding a job, finding a job that pays well, and a job that is interesting. Measures of internal consistency for these three items were .89 (FN), .90 (LCC), and .85 (MCC). *Family relationships* were measured with two items that **assessed** access to good quality relationships with family and children. Internal consistency estimates for this scale were .64 (FN), .69 (LCC), and .78 (MCC). *Friend relationships* were measured with 2 items that assessed the access to quality friendships and boy/girlfriends. Internal consistency estimates for this scale were .66 (FN), .72 (LCC), and .81 (MCC). *Finances* were measured with three items that assessed the likelihood of being financially secure, able to afford the things you want or need, and being able to pay monthly bills. Internal consistency estimates using coefficient alpha were .89

(FN), .90 (LCC), and .93 (MCC). Items on each scale were rated on a 5-point likert-scale ranging from unlikely (1) to very likely (5). Higher scores indicated greater likelihood of access.

Likelihood of access if drinking heavily—We examined each of 4 SLRs: employment, family relationships, friend relationships, and financial stability. Overall estimates of internal consistency were good. Estimates of internal consistency for employment were .86 (FN), .76 (LCC), and .90 (MCC), for the family scales was .82 (FN), .94 (LCC), .85 (MCC), for the friends scale was .81 (FN), .71 (LCC), and .84 (MCC), and finally for the finances scale .86 (FN), .79 (LCC), and .95 (MCC). This measure mirrored the items from the previous questionnaire, except that we asked participants the likelihood of access if they were drinking heavily.

Drinking Style Questionnaire (DSQ: Smith, McCarthy, & Goldman, 1995)—The DSQ provides indices of heavy and problematic drinking. The items measure various negative consequences of consumption (e.g. legal difficulties, trouble with family, trouble with relationships, illness). Coefficients alpha for the problem drinking factor were .68 for the FN and MCC groups and .78 for the LCC group.

Acculturation—The Native American Acculturation Scale (NAAS:(Garrett and Pichette, 2000). The NAAS is a 20-item self-report measure that assesses language, identity, friendships, behaviors, generational/geographic background, and attitudes (Garrett & Pichette, 2000). Responses are made on a scale of 1 to 5, with 1 indicating low acculturation and 5 suggesting high acculturation. A score of 3 indicates an individual who is bi-cultural. For this scale, bi-cultural indicates that the individual is generally accepted by the dominant society as well as the tribal society, and is simultaneously able to know, accept, and practice both mainstream values/behaviors and the traditional values and beliefs of their cultural heritage (Garrett & Pichette, 2000). The scale appears to be internally consistent with a reported coefficient alpha of .91 in a sample of high school students (Garrett and Pichette, 2000). The coefficient alpha for the FN sample was .77. The mean for the current sample was 2.81 (SD = 0.47) indicating that these individuals were, on average, fairly bi-cultural. Although we did not anticipate acculturation being a factor in this study, we evaluated its relationship with the other study variables.

Procedure

Data Collection—For the FN sample, the data were collected in two different trips to the reserve. A flyer was sent out two weeks prior to each visit which described tribal members' opportunity to participate in the study; fliers were also posted around the reserve. The fliers described the investigator, the purpose of the study, when they would be approached to consider participating, and how much they would be paid (\$10 USD). The first author went door-to-door to recruit participants. When an individual agreed to participate, he/she completed consent forms and then the investigator left a packet of questionnaires with him or her and scheduled a return visit to pick up the completed materials. Participants were also provided a phone number they could use to contact the investigator.

The MCC participants were mostly recruited through advertisements placed in newspapers and fliers posted around communities. Interested individuals called the phone number provided and given a brief description of the study. If interested, they scheduled an appointment to complete the consent procedures and questionnaires. They were paid \$10 for their participation.

LCCs were recruited from the geographic area surrounding the reserve in Canada and from the Midwestern United States. We recruited individuals from homeless shelters and soup kitchens. Participants at these sites were approached in person. If they agreed to participate, they completed consent forms and then the measures. If those individuals agreed to participate, they completed consent forms and then we left study materials with them. We returned to retrieve the completed materials at a scheduled time. All participants were paid \$10US.

All participants were introduced to the study as an investigation of drinking styles. After completing the consent forms, they completed the measures in counterbalanced order. Completed questionnaires were placed in a sealed envelope and stored in a locked file. At the completion of the study, participants were paid, debriefed, and thanked for their participation.

This study was approved by the University's Institutional Review Board for research as well as by the members of the tribal council and chief on the reserve where the research was conducted.

Data analysis

Perceptions of reinforcer availability among the FN, LCC, and MCC groups—

We ran a series of multiple regression analyses. To test whether expected access to reinforcers differs based on group, we ran multiple regression analyses with group dummy coded with FNs as the reference group. The first model included the two dummy coded group variables as the sole predictors of expectation of access to a particular reinforcer (i.e., employment, friend relationship, family relationships, and financial situation). In the next model, we adjusted for age and gender.

Perceptions of change in access to reinforcers as a function of drinking by group status—

To test whether change in access to reinforcers as a function of heavy drinking differs by group we first created change scores by subtracting perceived access to the reinforcer in general from perceived access if they were drinking heavily. Higher scores indicate a larger drop in expected access. This score was then used as the dependent variable in two separate models using multiple regression analyses to assess whether change in expected access differed by group status. The first model included the two dummy coded group variables, with FNs as the reference group, gender, and age. The second model included age, gender, and perceived access to a particular reinforcer (i.e., employment, friend relationship, family relationships, and financial situation) as covariates.

Results

Preliminary Analyses

Before testing our hypotheses, we obtained bivariate correlations between acculturation and problem drinking and expected access to SLRs. We did not expect acculturation to be related to any of the study variables, and it was not. Therefore, we did not include acculturation in subsequent analyses.

Table 2 presents the means for problem drinking for the three groups. We tested whether the FN sample reported higher mean levels of problem drinking than did MCCs or LCCs. The three groups differed in problem drinking as tested by a one-way analysis of variance (ANOVA: $F(1,2) = 16.90, p < .001$). Planned contrasts revealed that the FN group reported higher mean levels of problem drinking compared to the MCC group ($t(1, 444) = 4.19, p < .001$), but lower mean levels than the LCC group ($t(1, 444) = -2.28, p = .023$). Therefore, we included problem drinking in the final model as a covariate to see how this influenced the results.

Primary Analyses

Perceptions of reinforcer availability among the FN, LCC, and MCC groups—

Figures 1–4 represent graphical representations of the unadjusted means for the likelihood of access to the four reinforcers and the likelihood of their access if drinking heavily across the three groups. In each of the figures, the three groups perceive different levels of access to each of the four reinforcers with the FN group perceptions of access in middle of the MCC and LCC groups. In terms of differences in the perceptions of the likelihood of access to SLRs across the three groups, results from regression analyses showed that when controlling for gender and age (Table 3) the FN group reported that they perceived less access to employment ($B = .63, p < .001$), good family relationships ($B = .60, p < .001$), friend relationships ($B = .57, p < .001$), and finances ($B = .71, p < .001$) than the MCC sample. Conversely, the FN sample reported more access to jobs ($B = -.62, p < .001$), family relationships ($B = -.64, p < .001$), friend relationships ($B = -.61, p < .001$), and finances ($\beta = -.78, p < .001$) as compared to the LCC sample.

Although Figures 1 – 4 appear to show that the three groups tend to perceive heavy drinking's influence on access to each of the SLRs as similar, after controlling for age and gender regression analyses showed the following. The FN group reported that they perceived that heavy drinking would be less costly in terms of access to employment ($B = -.25, p < .05$), good family relationships ($B = -.61, p < .001$), friend relationships ($B = -.45, p < .01$), and finances ($B = -.28, p < .05$) than the MCC sample. Similarly, the FN sample reported that they perceived that heavy drinking would be less costly in terms of access to employment ($B = -.38, p < .01$), friend relationships ($B = -.56, p < .001$), and finances ($B = -.36, p < .05$) as compared to the LCC sample. However, the FN and LCC groups did not differ in their perceptions for how heavy drinking would influence their access to family relationships ($B = -.28, ns$).

Perceptions of change in access to reinforcers as a function of drinking by group status—Next, we conducted analyses to examine how change in perceived SLR access as a function of drinking differs by group while controlling for differences in perceived access to the reinforcer being tested. Table 4 presents regression analyses when controlling for age, gender, and perceived access. Consistent with our hypothesis, the FN group reported that drinking would cause less of a change in access to employment, family relationships, friendships, and finances as compared to the MCC group. Also consistent with our hypothesis, there were no differences between the FN and LCC group with respect to how drinking would change their perception of the availability of family relationships or finances. Counter to our hypothesis, the LCC group reported that they expected drinking to have less of an impact on access to jobs and friendships than the FN group.

Discussion

Results showed that the studied group of FN people appeared to fall in between the LCC and MCC groups with respect to their expectations for access to fundamentally important life reinforcers, with the LCC group perceiving less access and the MCC group perceiving greater access. It is also important to note that while the unadjusted means for how heavy drinking would influence access to reinforcers appear similar, regression analyses show that after adjusting for age and gender the LCC and MCC groups both expect less access to all reinforcers than the FN group with one exception: The LCC and FN groups did not differ in their expectation for how heavy drinking would influence their access to family relationships.

Taking baseline differences in perceived SLR access into account, as hypothesized, the FN group reported that heavy drinking would be less apt to cost them access to these important reinforcers than was true for the MCC group. Perhaps FN people who reside on reserves are at higher risk for problem drinking than MCCs in part because they perceive the negative consequences of excessive consumption to be less pronounced. We anticipated that FN individuals would be similar in this regard to less financially fortunate, LCC individuals. In part they were, but counter to our hypothesis, the LCC group did expect drinking to have less of an impact on their access to jobs and friendships than the FN group.

It was striking that an unselected sample of members of an FN reserve were similar to a highly selected group of Caucasians—those at homeless shelters and soup kitchens. It thus seems that the normative experience, at least on the reserve we studied, with respect to SLR access is more similar to that of destitute Caucasians than of Caucasians in general.

These findings have important treatment and prevention implications. Consider the effective treatment for alcoholism that is known as the community reinforcement approach (Sisson and Azrin, 1989). Many serious alcoholics in the U.S. have lost access to many sources of reinforcement and thus have reduced incentive not to drink. In the community reinforcement approach, treatment providers reintroduce access to many reinforcers, and access to them is only removed upon a return to alcohol consumption. A key step in the intervention is to make reinforcers available, in order to re-introduce contingency between sobriety and reinforcer access. Thus, for the treatment to work, SLRs need to be available. To the degree

that reserves are characterized by reduced access to SLRs, this useful treatment is difficult to implement. However, while CRA would be difficult to implement using these SLRs as reinforcers, it would not be impossible. Through some form of external support or some new, entrepreneurial initiative, reserves could be increase the number and quality of positions available. Doing work that is important to the individual may make employees more invested in their positions and less likely to drink problematically for fear of losing their jobs. Indeed our results suggest that expecting that problematic or heavy drinking will cost access to SLRs is negatively associated with problem drinking.

An easier approach to using CRA would include finding other possible reinforcers that may be less costly to implement within the CRA framework. Reinforcers that compete with substance use may prove fruitful to use. For example, increasing community events may be a useful reinforcer that could be contingent upon sobriety. Providing sufficient access to the SLRs we studied to implement community reinforcement would involve a significant change to life on the reserve we studied. However, finding smaller scale, easily controlled reinforcers may prove more feasible and still fruitful.

The present findings suggest promise to the Spillane and Smith (2007) model, and they also suggest the value of attempts to apply behavioral principles to understand important differences in context experienced by different groups. Researchers can rely on what appear to be universal psychological processes, such as those of behavioral theory, in order to better understand important contextual factors that contribute to different behaviors by different groups (Smith et al., 2006).

Interestingly, our hypothesis that FN individuals would perceive less loss of family support from drinking heavily than the LCC group was not supported; in fact, the opposite finding emerged. We cannot know the reason for this outcome, and it should be replicated. We can offer one speculation. Perhaps a combination of the more individualistic focus of Caucasian culture (Smith et al., 2006) and a lack of LCC family cohesiveness due to the effects of poverty, psychopathology, or both reduces the degree to which LCC individuals rely on family support in comparison to FN individuals. It is possible that FN individuals rely on family support more consistently on a daily basis, and so have more to lose from drinking heavily in this respect. This possibility merits investigation. Should this finding be replicated, it would have important treatment implications for using the family unit as a motivation for treatment and/or to include the family into the treatment of the individual.

It is also important to appreciate what this study did not show. First and foremost, this study was not an investigation of individual differences in FN members' drinking and risk. We tested one component of a risk model, and that component pertained to group, contextual risk. It is by no means true that all FNs engage in problem drinking, or even drinking at all. In fact, Spillane and Smith (2007) reviewed evidence for high rates of abstinence from alcohol in Indian Nation. Group-level, contextual risk processes influence the risk matrix, but they of course operate in the context of profound variability among people. In another study, we reported the findings from a risk model to help explain individual differences in problem drinking among FN members (Spillane and Smith, 2010).

Second, we did not test whether there are, in fact, differences in contingency between sobriety and SLR access for the groups we compared. Spillane and Smith (2007) argue for that position, but the aim of this study was different. We sought to test what we considered the more proximal aspect of the risk process: whether FN and MCCs/LCCs perceived the contingencies differently. Our perspective was that differences in the perception of the contingencies would be associated with differences in behavior, and they were.

Third, this study does not describe a risk process that applies to all FN people. We have only provided evidence that it may apply in contexts where the relative lack of contingency between sobriety and SLR access exists. Reserves vary a great deal from each other. Although there are reserves where the unemployment rate is near 80% (Beauvais, 1998, Costello et al., 1997, Ramasamy, 1996, US Census Bureau, 2006), Beals and her colleagues correctly noted that 2000 U.S. Census data indicated an overall reserve unemployment rate of 14% (Beals et al., 2009). Although unconscionably high, that figure obviously represents an average of very different rates on different reserves. Access to a sample of relatively affluent reserve-dwelling FN members would shed further light on the degree to which the effects we observed were specific to non-affluent reserve-dwelling individuals.

Fourth, we do not know, in detail, how members of the FN group are similar to, or different from, members of the LCC group. For example, information on the medical and psychiatric status of members of each group, as well as information on the degree and chronicity of homelessness among the LCC group, could shed further light on the nature of their perceived access to SLRs.

Fifth, the Spillane and Smith (2007) model describes one possible risk process. No doubt, many other factors contribute to risk for FN people. Concerning FN, the profoundly tragic history of Indigenous groups in North America, including the nature of early Caucasian – Indigenous interactions around alcohol (Beauvais, 1998), and Indigenous perceptions of discrimination (Whitbeck et al., 2001) all likely played a role in creating a risk context, along with other factors (see review by Spillane & Smith, 2007). This empirical report does not address those important possibilities.

Sixth, we did not study non-reserve-dwelling FN people. The differences and similarities in the challenges, possibilities, and risk factors faced between non-reserve dwelling and reserve-dwelling FN people was beyond the scope of this paper.

It is important that researchers study all aspects of Indigenous life, including both the many profound strengths of FN culture and the difficulties some members from FNs face. One of those difficulties, for some FN people, is problem drinking. We hope that this empirical test, along with tests of alternative, competing theories, will lead to successful efforts to ameliorate this problem.

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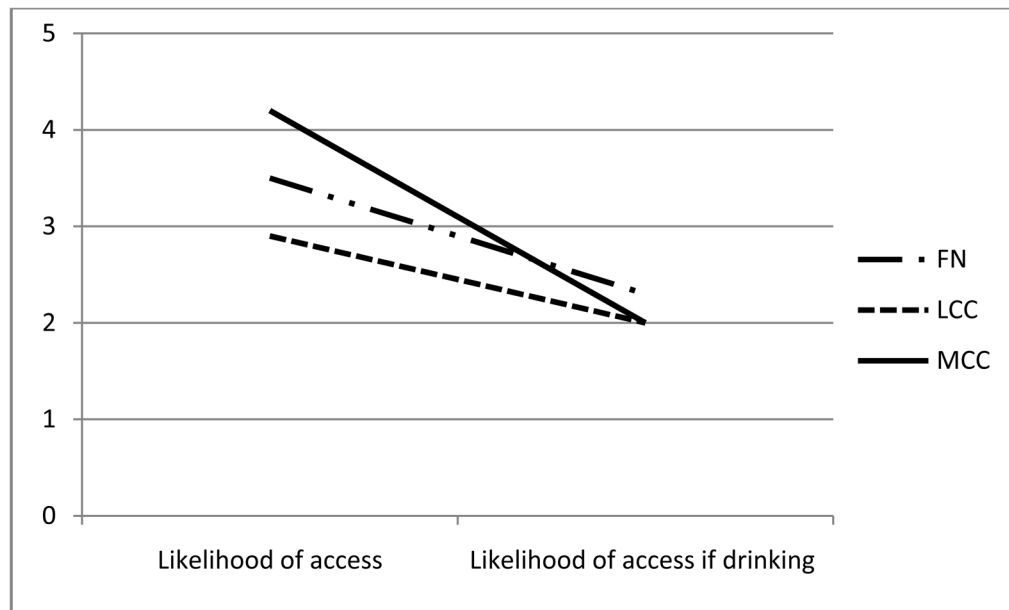


Figure 1.

Unadjusted means for likelihood of access to employment and likelihood if drinking across the three groups.

Note: FN = First Nation, LCC = Low-socioeconomic status, and MCC – middle-socioeconomic status. Participants were asked about their likelihood of access to a particular reinforcer both in general and if they were drinking heavily.

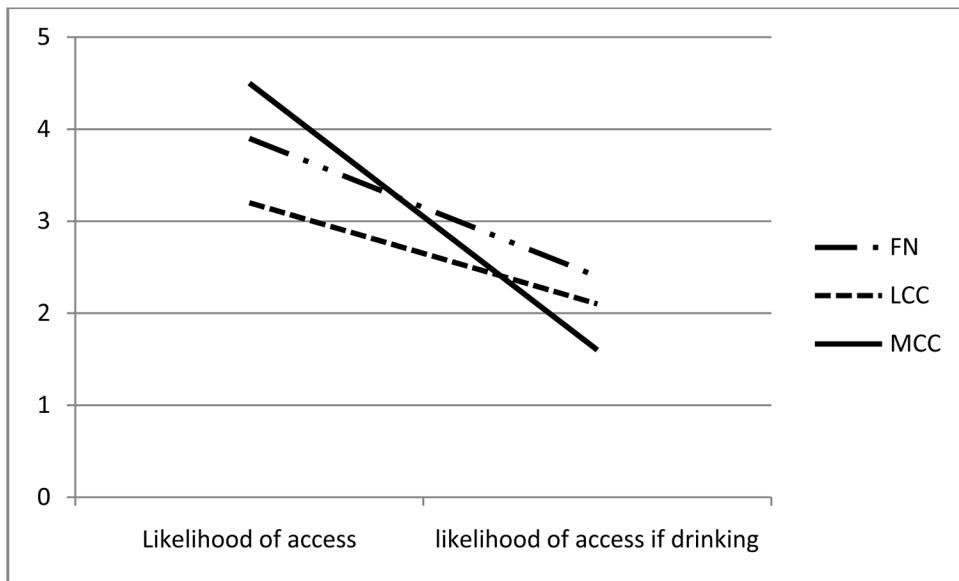


Figure 2. Unadjusted means for likelihood of access to quality family relationships and likelihood if drinking across the three groups.
Note: FN = First Nation, LCC = Low-socioeconomic status, and MCC – middle-socioeconomic status. Participants were asked about their likelihood of access to a particular reinforcer both in general and if they were drinking heavily.

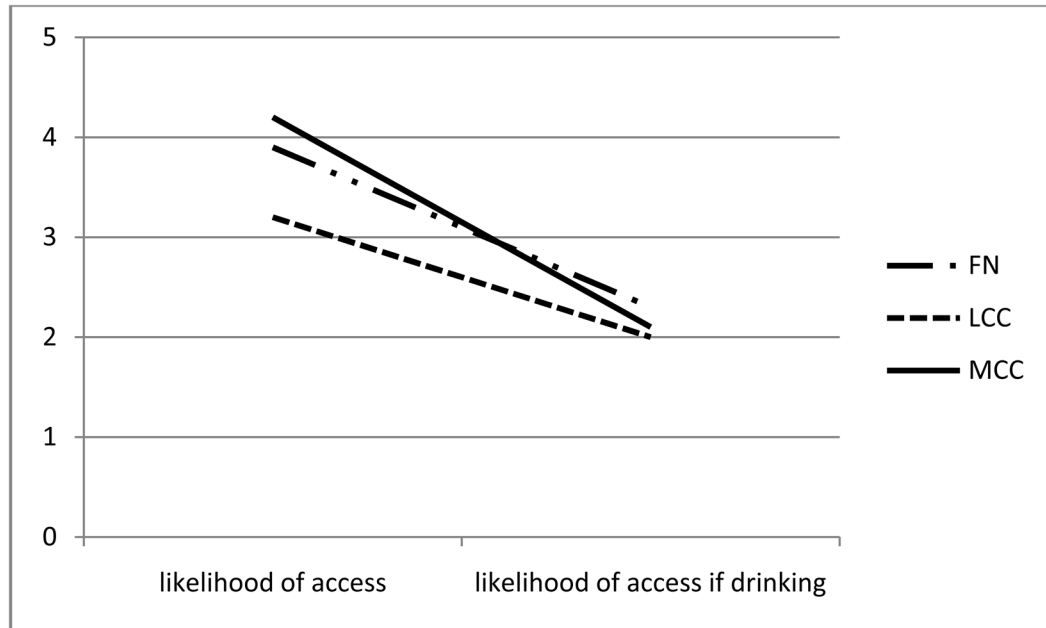


Figure 3.

Unadjusted means for likelihood of access to quality friend relationships and likelihood if drinking across the three groups.

Note: FN = First Nation, LCC = Low-socioeconomic status, and MCC – middle-socioeconomic status. Participants were asked about their likelihood of access to a particular reinforcer both in general and if they were drinking heavily.

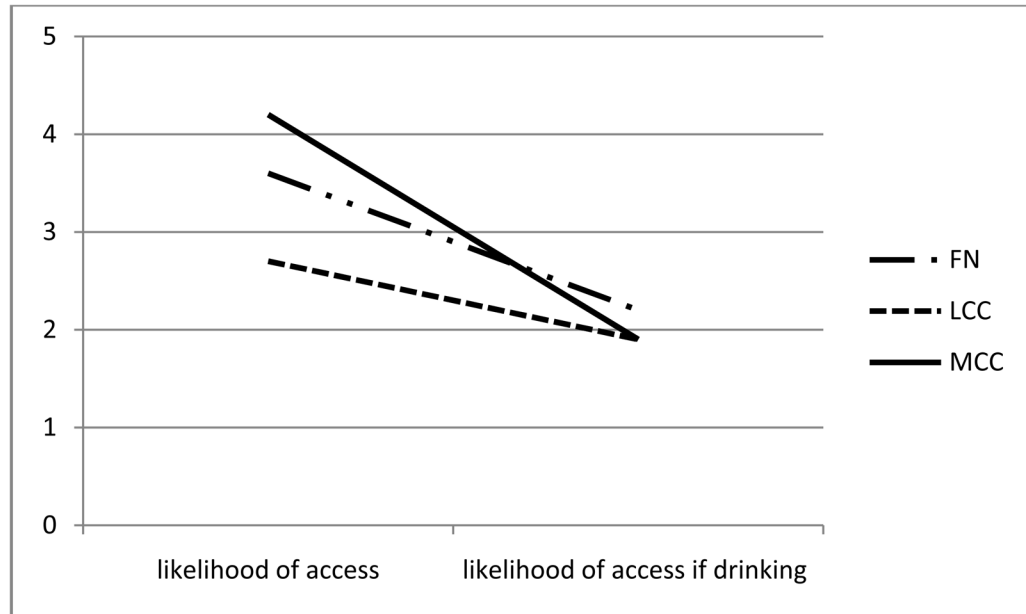


Figure 4.

Unadjusted means for likelihood of access to finances and likelihood if drinking across the three groups.

Note: FN = First Nation, LCC = Low-socioeconomic status, and MCC – middle-socioeconomic status. Participants were asked about their likelihood of access to a particular reinforcer both in general and if they were drinking heavily. These lines represent the unadjusted means. Multiple regression analyses, controlling for gender and age showed that the FN group perceived less access to being financially stable as compared to the MCC group ($B=.71$, $p<.001$). The FN group reporte

Table 1

Descriptive statistics for demographic variables, covariates, and drinking among First Nation members, LCC, and MCC groups.

	FN (n = 211)		LCC (n = 98)		MCC (n = 138)	
	%	Mean (SD)	%	Mean (SD)	%	Mean (SD)
Demographics						
Age (years):		35 (13)		39 (11)		39 (10)
Gender (male):	46		57		54	
Education level:						
No H.S.	37		34		4	
H.S. Graduate	33		37		9	
<H.S.	30		28		87	
Employed	93		70		98	
Income:						
<15,000	56		91		0	
15,000–19,999	14		9		0	
20,000–29,999	12		0		13	
30,000–39,999	8		0		12	
40,000–49,999	4		0		14	
>50,000	4		0		61	
Drinking:						
Drinking Frequency:						
Infrequent (4 times/year)	32		10		30	
Monthly	24		32		20	
Weekly	35		26		36	
Daily	10		21		14	
Drinking Quantity:						
3 drinks/occasion	40		44		80	
4–8 drinks/occasion	29		21		14	
>8 drinks/occasion	31		35		6	

Note. FN = First Nation group, LCC = Low Socioeconomic Status group, and MCC = Middle Socioeconomic Status group.

Table 2
 Mean Scores and Analysis of Variance of Drinking Behaviors & Problem Drinking Based on Group Status

		df	F
	FNs (n = 217)	LCCs (n = 98)	MCCs (n = 138)
Problem	3.89	4.59	2.73
Drinking		2, 454	16.09**

Note. FN = First Nation group, LCC = Low Socioeconomic Status group, and MCC = Middle Socioeconomic Status group. ANOVA performed with drinking problems as the dependent variable. The FN group reported more problem drinking than the MCC group $p < .001$. The FN reported less problematic drinking than the LCC group, $p < .05$.

Table 3

Adjusted models for the association of group and likelihood of access to Job, Family, Friend, and Financial reinforcers.

	B	SE B	β	p
Job				
Constant	3.30	.20		<.001
Female	.11	.11	.04	<i>ns</i>
Age	.00	.00	.05	<i>ns</i>
LCC	-.62	.15	-.20	<.001
MCC	.63	.13	.23	<.001
Family relationships				
Constant	3.47	.20		<.001
Female	.39	.12	.15	<.01
Age	.01	.01	.06	<i>ns</i>
LCC	-.64	.15	-.20	<.001
MCC	.60	.14	.21	<.001
Friendship				
Constant	3.70	.18		<.001
Female	.28	.10	.12	<.01
Age	.00	.00	.01	<i>ns</i>
LCC	-.61	.14	-.22	<.001
MCC	.57	.12	.23	<.001
Finances				
Constant	3.56	.20		<.001
Female	.30	.11	.13	<.01
Age	.00	.00	.02	<i>ns</i>
LCC	-.78	.15	-.25	<.001
MCC	.71	.14	.25	<.001

Note: FN = First Nation group, LCC = Low Socioeconomic Status group, and MCC = Middle Socioeconomic Status group. The FN group is the reference group for all analyses. The scale for the dependent variables - 1 = unlikely; 2 somewhat unlikely; 3 = neither likely nor unlikely; 4 = moderately likely; 5 = very likely

Table 4

Adjusted models for the association between group and change in likelihood of access to reinforcers as a function of drinking.

	B	SE B	β	p
Job				
Constant	-2.16	.24		<.001
Female	.44	.11	.13	<.001
Age	.00	.01	-.01	<i>ns</i>
Perceived access	.91	.05	.71	<.001
LCC	.32	.14	.08	<.05
MCC	.31	.13	.09	<.05
Family relationships				
Constant	-2.05	.32		<.001
Female	.31	.14	.08	<.05
Age	.00	.01	.02	<i>ns</i>
Perceived access	.85	.06	.57	<.001
LCC	.18	.19	.04	<i>ns</i>
MCC	.71	.17	.17	<.001
Friend relationships				
Constant	-2.57	.27		<.001
Female	.36	.11	.11	<.001
Age	.01	.01	.04	<i>ns</i>
Perceived access	.92	.05	.66	<.001
LCC	.51	.15	.13	<.01
MCC	.50	.14	.14	<.001
Finances				
Constant	2.12	.26		<.001
Female	.46	.12	.13	<.001
Age	.00	.01	.01	<i>ns</i>
Perceived access	.91	.05	.69	<.001
LCC	.29	.15	.07	<i>ns</i>
MCC	.35	.14	.09	<.05

Note: FN = First Nation group, LCC = Low Socioeconomic Status group, and MCC = Middle Socioeconomic Status group. The FN group is the reference group for all analyses. Dependent variables are change scores created by perceived access – perceived access if someone was drinking heavily.