FAMILY AND PEER PREDICTORS OF SUBSTANCE USE AMONG ABORIGINAL AND NON-ABORIGINAL ADOLESCENTS

Barbara M. Gfellner
Department of Psychology
Brandon University
Brandon, Manitoba
Canada, R7A 6A9

John D. Hundleby
Department of Psychology
University of Guelph
Guelph, Ontario
Canada, N1G 2W1

Abstract / Resume

This study examined drug use patterns and the influence of family and peers on substance use behaviors of Aboriginal and non-Aboriginal adolescents in a small urban community. Developmental differences were found in Aboriginal adolescents' increased use of substances in comparison to non-Aboriginals. With mother's education controlled, the findings indicated that more peer than family factors were associated with Aboriginal adolescents' use of substances than with non-Aboriginal adolescents' use of substances. Practical and research implications are discussed.

L'article a examiné les modes d'emploi de la drogue et l'influence de la famille et des pairs sur le comportement des autochtones et des adolescents blancs qui utilisent la drogue dans une petite communauté urbaine. On a remarqué que plus les adolescents autochtones se servaient de la drogue et plus il y avait des différences de développement par comparaison avec les allogènes. On a trouvé que lorsque l'éducation de la mère a été bien contrôlée, c'étaient plus les éléments qui concernaient les pairs que les éléments de famille qui expliquaient le fait que les adolescents autochtones utilisaient plus de drogue que les adolescents blancs. On a discuté les implications pratiques et celles de recherche.

The Canadian Journal of Native Studies XI, 2(1991):267-294.

Aboriginal adolescents have the highest incidence of drug use and are at greater risk for substance abuse than other young people in Canada and the United States (Barnes and Welte, 1986; Beauvais, Oetting, Wolf, and Edwards, 1989; Oetting, Beauvais, and Edwards, 1988; Welte and Barnes, 1987). In addition to alcohol, cigarettes, and marijuana, the most frequently used substances, the use of solvents and inhalants especially gasoline sniffing among Aboriginal children and young adolescents is a serious concern (Barnes, 1989; Beauvais, Oetting, and Edwards, 1985; Health and Welfare Canada, 1990); and there is some evidence that Aboriginal youth begin to use drugs earlier than non-Aboriginal adolescents (Oetting, Edwards, and Beauvais, 1988; Okwumabua and Durysa, 1987). As the proportion of Aboriginal youth are increasing at a faster rate than the adolescent population in general, their higher use of substances may be considered epidemic in terms of related health and psychosocial difficulties (McShane, 1988). This demographic information alone warrants attention to the special needs of Aboriginal adolescents for the intervention and treatment of substance abuse and prevention of those at risk.

Apart from documented incidence rates, few studies have focused on the factors which influence substance use among Aboriginal adolescents and how they may differ from those related to drug use of other youth. Such research is essential to increase our understanding of cultural diversity in our society and to facilitate the development of appropriate strategies for intervention and prevention (French, 1990; LaFramboise, 1988; Schinke, Gilchrist, Schilling, Kirkham, Bobo, Trimble, Cvetkovich, and Richardson, 1985). Most studies on drug-use behaviours of Aboriginal youth have targeted those living on Reserves or in isolated communities rather than in urban centres (Beauvais *et al.*, 1989). There is some variability in drug patterns related to geography, and alcohol abstinence on some Reserves has been related to strong sanctions imposed by the communities (Lex, 1987). However, it is unclear how substance use patterns may differ between Aboriginal youth on Reserves and those elsewhere. According to May (1982; 1987), alcohol and drug abuse is likely to occur among Aboriginal youth when they lack commitment to either traditional or contemporary society. This may be less likely in cities than some Reservations or isolated areas due to greater employment opportunities and students' involvement in school and the community. Conversely, Gfellner (1991) indicated that some Aboriginal adolescents in cities may be at greater risk for substance abuse and related problems than those in other locations.

In the large literature on adolescent drug use, many of the risk factors that have been identified for substance abuse such as demographic factors, family history, and personality, are not subject to change. On the other hand,

current interpersonal relationships, especially the family and peers, may be amenable to change through education and other interventions. Family and friends are the two most important influences in the social environment of adolescents. In the present study, Aboriginal and non-Aboriginal adolescents who resided in a small urban community were compared in terms of: (1) their prevalence rates for the use of alcohol, cigarettes, marijuana, solvents, and inhalants; (2) parent and peer attitudes and drug use; (3) adolescents' perceptions of their family functioning; and (4) relations between parent and peer attitudes and drug use, family functioning, and adolescents' use of drugs.

There is evidence that the use of drugs, including alcohol, has its origins in the family. Consistent associations have been reported between parental use of alcohol and other substances, and adolescents' drug use and abuse (Kandel, Kessler, and Marguilies, 1978; McDermott, 1984; Johnson, Schoutz, and Locke, 1984). Studies of family incidence of alcoholism show that alcoholics are more likely to have a history of parents or siblings with alcoholism (Cotton, 1979). Similarly, parental attitudes toward alcohol and drug use have been related to adolescents' use of alcohol and other substances (Kandel, 1982).

Considerable research has focused on the influence of family functioning and parent-child interactions on adolescent drug use (see Glynn and Haenlin, 1988; Hawkins, Lishner, Catalano, and Howard, 1985; for reviews). Most studies indicate that positive family relationships can serve as a deterrent to the use of drugs (Reilly, 1979; Gantman, 1978; Norem-Hebeisen, Johnson, Anderson, and Johnson, 1984; Selnow, 1985). Several studies suggested that although parent drug use, parent attitudes about drug use, and family functioning are associated, they may differentially relate to adolescent drug use (McDermott, 1984; Tec, 1974).

Peer drug use including the number of friends' or best friend's use of drugs or perceived use of drugs, as well as peer attitudes toward drug use, are among the strongest predictors of drug use among adolescents (Elliott, Huizinga, and Ageton, 1985; Hundleby, Carpenter, Ross, and Mercer, 1982; Jessor, Chase, and Donovan, 1980; Kandel and Adler, 1982). Several studies (Penning and Barnes, 1982; Jessor and Jessor, 1978) reported that frequent users of marijuana have a greater orientation to friends than parents, and greater perceived support and models for use. According to Kandel (1978), social settings favourable to substance use reinforce and increase any predisposition to use. Jessor, Chase, and Donovan (1980) reported that perceived environmental predictors such as friends' drug use accounted for twice the variance in drug use as personality factors.

Several longitudinal studies (Elliott *et al.*, 1985; Kandel, *et al.*, 1978) indicated that social bonds to family and school influence drug use indirectly through peer associations. Strong bonds to family and school decreased the likelihood of involvement with drugs and drug-using peers. Furthermore, family and school bonding had only indirect effects upon drug use, which may reflect the time ordering of youths' experiences in the social contexts they encounter. Although the strength of bonding to family and school is determined before exposure to drug-using peers in adolescence, the extent to which youths have become bonded to family and school is likely to be a factor in the selection of prosocial or drug using companions early in adolescence.

Oetting, Edwards, and Beauvais (1988) maintained that the predictors of substance use among American Indians who attend schools on Reservations are similar to those identified in the general literature on adolescent drug use. These authors (Oetting and Beauvais, 1987) emphasized peer clusters, friends with whom youth engage in drug use, as the most important influence in adolescent drug use. In another study, Oetting, Beauvais, and Edwards (1988) reported that less family caring, few sanctions against the use of drugs, coming from a broken home, and positive peer attitudes toward drug use were the most important predictors of drug use among Aboriginal adolescents on Reservations. As indicated previously, May (1982) emphasized that a lack of integration to either traditional or modern society may be related to drug use. Aboriginal youth and their peers, to a greater degree than other youth, face greater uncertainty and integration problems which may lead to escapist behaviours such as substance use, which may be self-supporting and normative in many Aboriginal peer groups. Nevertheless, it is unclear how the social environment (family and peers) of Aboriginal adolescents living in cities may differ from those on Reserves as well as from non-Aboriginal adolescents.

In comparison with other young people, Aboriginal youth are probably more susceptible to drug use because of poverty, prejudice, and lack of economic, educational, and social opportunity. Much of the discrepancy in the general literature on adolescent drug use and family factors has been related to the lack of control for parents' socioeconomic status or education (Flewelling and Bauman, 1990). Liban and Smart (1982) found similar patterns of substance use among Aboriginal and non-Aboriginal adolescents who were matched on father's occupation, lived in the same region, and mostly attended the same schools. However, few studies have been able to control socioeconomic background factors of Aboriginal youth.

The present study examined patterns of drug use and the influence of parents and peers upon substance use among Aboriginal and

non-Aboriginal adolescents who resided in a small urban centre. Consistent with the research literature, differences were predicted in the rate and frequency of use for five substances (alcohol, cigarettes, marijuana, solvents, and glue), parent attitudes and drug use, and peer attitudes and drug use. Greater use of drugs and more positive attitudes toward the use of alcohol and drugs by parents and peers were expected among Aboriginal, in comparison to non-Aboriginal, adolescents. Parent and peer attitudes, drug use, and adolescents' perceptions of their family functioning were examined in relation to Aboriginal and non-Aboriginal adolescents' use of drugs with mothers' level of education used as a predictor of socioeconomic status. The adolescent groups were not expected to differ in associations between family and peer predictors of alcohol and drug use.

Method

Participants

The adolescents were 3,301 students in grade 5 to grade 12 who attended school in a non-metropolitan city in southwestern Manitoba. Forty-nine per cent (n = 1,621) were girls and 51% were boys (n = 1,680). Table 1 provides the sociodemographic and sample characteristics for both Aboriginal (n = 234) and non-Aboriginal (n = 3,067) adolescents. The two groups were distributed similarly across the grades and by gender. Preliminary analyses of variance indicated some differences in the demographic characteristics between the adolescent groups. Overall, Aboriginal adolescents were older than their non-Aboriginal classmates; this difference was found at every grade.

Parents' occupation as rated on the Blishen Index of Occupations in Canada (Blishen and McRoberts, 1976) was significantly higher for non-Aboriginal than Aboriginal adolescents' fathers; for mothers, the main effects approached significance at the .07 level. Similarly, non-Aboriginal adolescents' fathers and mothers had completed more education than Aboriginal adolescents' parents. The disproportionate distribution of the groups for family structure is consistent with statistics reported elsewhere for Aboriginal people in metropolitan cities (McDonald, 1991). More than twice as many non-Aboriginal than Aboriginal adolescents lived with their natural parents; twice as many Aboriginal youth resided with mothers or mother and stepfathers. Finally, nearly a third of the non-Aboriginal adolescents and 44% of the Aboriginal youth reported no religious affiliation.

Table 1: Demographic Characteristics of Aboriginal and Non-Aboriginal Adolescents

Variable	Non-Aboriginal	Aboriginal	F-Value
N	3067	234	
Age	13.8 (2.4)	14.2 (2.7)	178.17[a]
Grade			
5	13% (392)	14% (33)	
6	13% (393)	15% (36)	
7	13% (402)	15% (36)	
8	14% (415)	13% (31)	
9	13% (411)	9% (21)	
10	12% (379)	11% (26)	
11	12% (356)	14% (32)	
12	10% (318)	9% (20)	
Gender			
Female	49% (1506)	49% (115)	
Male	51% (1560)	51% (120)	
Father's SES	43.9 (14.1)	40.6 (15.1)	7.84[c]
Mother's SES	41.7 (13.2)	39.6 (13.0)	2.97
Father's Education			
< high school	28%	42%	
high school	27%	20%	
post secondary	45%	38%	
Mean[1]	3.4 (1.4)	3.0 (1.5)	14.78[b]
Mother's Education			
< high school	20%	37%	
high school	29%	18%	
post secondary	51%	45%	
Mean	3.6 (1.2)	3.1 (1.4)	26.70[a]
Family Structure			
Natural Parents	72%	33%	
Adopted Parents	2%	5%	
Mother	11%	25%	
Mother/Stepfather	7%	11%	
Father	2%	5%	
Father/Stepmother	2%	1%	
Foster Home	< 1%	3%	
Other	4%	16%	
Religion			
Catholic	22%	27%	
Protestant	46%	27%	
Other	< 1%	2%	
None	32%	44%	

[1] Codes range from 1 (junior high school) to 6 (post-graduate degree)
[a] $p < .0001$; [b] $p < .001$; [c] $p < .01$

Instruments

Adolescents' use of cigarettes, alcohol, marijuana, solvents, and glue over the past 12 months were indexed by five items in terms of eight response alternatives ("don't know what it is" and "never used it" for marijuana, and "took a sip to see what it was like" and "never used it" for alcohol, were combined, 1-2 times, 3-5 times, to 40 times or more for values of 1 to 7). These items were adapted from Smart and Adlaf (1989).

The Family Adaptability and Cohesion Evaluation Scale (FACES III; Olson, Portner, and Lavee, 1985) was used to assess family functioning in terms of two dimensions: *cohesion*, the degree of emotional bonding between family members; and *adaptability*, the family's ability to change its power structure (roles and rules) in response to situational and developmental stress. There are twenty items on each scale that are rated in terms of five alternatives. The items are rated twice: how the adolescent currently sees his or her family (actual) and how he or she would like it to be (ideal). Items are summed to give an index of current family functioning and ideal family functioning. FACES III has been used extensively in research and clinical practice. Olson (1985) reported internal reliabilities of .87 for cohesiveness, .71 for adaptability and inter-reliabilities of .80 over 4-5 weeks. A complete description and review is provided by Olson (1985), Olson *et al.* (1985) and Joanning and Kuehl (1986). This study used only the measures for adolescents' perceptions (actual) of their family functioning.

Two items were used to index peer attitudes or tolerance for alcohol and drug use (Newcomb, Fahy, and Skager, 1988). Adolescents were asked to indicate what their friends would think of another student who used alcohol or drugs (separate items) on a regular basis, but did not "get loaded" or cause problems. The four response alternatives were: "avoid the student," "tolerate the student," "see it as okay and sometimes join in," "my friends are pretty much like that."

Parents approval of alcohol and drug use was assessed by two items (Newcomb, Fahy, and Skager, 1988). These concerned parents' attitudes toward the students' use of alcohol and marijuana in terms of five response alternatives ("strongly against it" to "strongly in favour of it").

Friends' drug use was measured by four items. Adolescents were asked to indicate how many of their friends used alcohol, cigarettes, marijuana, and solvents or glue in terms of five response alternatives (0 to 4). Another four items were used to index parents' drug use (alcohol, cigarettes, marijuana, diet pills or tranquillizers). These questions are similar to items used in other studies (Kandel, Kessler, and Marguilies, 1978; Jessor and Jessor, 1977).

Students provided information on their age, grade, gender, race, religious affiliation, family structure, parents' occupation and parents' education completed.

Procedure

Participants were administered the measures during a regular class session by trained testers as part of a larger study that involved all grade 5 to grade 12 students in the school division. Prior to test administration, all students were given a parent consent form that described the study and requested the permission of parents or guardians for the child's participation. Each student was required to return the signed consent form in order to take part in the study. Depending upon the school, some of the older adolescents were required to return the signed consent form only if their parents did not wish them to participate in the study. Test administration took place from November, 1989 to February, 1990.

The 3,301 participants in this study represented 77% of the grade 5 to grade 12 students who were registered in the school division. Nonparticipation was due to absenteeism (9%), failure to return the consent form (4.8%), and parents' refusal to grant consent (3.7%). Another 6.3% were not included in this study as their racial background was neither Aboriginal nor White.

Results

The prevalence rates for Aboriginal and non-Aboriginal adolescents use for each of the five substances at least once or more in the past 12 months is shown in Table 2. As expected, alcohol was the most frequently used substance, followed by cigarettes and then marijuana for both groups. The

Table 2: Percent of Aboriginal and Non-Aboriginal Adolescents' Reported Use of Substances in the Past Year

Substance	Non-Aboriginal	Aboriginal
Alcohol	61	54
Tobacco	18	41
Marijuana	8	30
Solvents	2	8
Glue	1	5

higher percentage of alcohol use among non-Aboriginal adolescents was unexpected; the increased incidence of use for cigarettes, marijuana, solvents, and glue among Aboriginal youth was consistent with other studies (Barnes and Welte, 1986; Beauvais *et al.*, 1989). More than twice as many Aboriginal than non-Aboriginal adolescents used cigarettes; nearly four times as many used marijuana; and the rates for glue and solvents were considerably higher among Aboriginal than non-Aboriginal adolescents.

Differences between Aboriginal and non-Aboriginal adolescents' frequency of use for alcohol, cigarettes, marijuana, solvents, and glue; peer and parent attitudes toward the use of alcohol and drugs and their drug use; and adolescents' perceptions of their family functioning were examined by a series of Group (2) by Grade (3) by Gender (2) Analyses of Variance. Grade was classified into three levels: grades 5 and 6; grades 7 to 9, junior high school; and grades 10 to 12, senior high school. Table 3 shows the mean scores of the variables for Aboriginal and non-Aboriginal adolescents.

As seen in Table 3, Aboriginal adolescents reported greater use of alcohol, cigarettes, marijuana, and solvents than non-Aboriginal youth. For the use of glue, the group difference approached significance at the .08 level. These findings are consistent with the general trends of increased drug use among Aboriginal in comparison with non-Aboriginal youth (Barnes and Welte, 1986; Beauvais *et al.*, 1989; Oetting, Edwards, and Beauvais, 1988; Welte and Barnes, 1987).

As with the frequency of substance use, Aboriginal adolescents reported more positive peer attitudes toward the use of alcohol and drugs and a greater number of friends who used each of the substances than non-Aboriginal adolescents. Conversely, non-Aboriginal adolescents reported more positive parental attitudes toward adolescents' use of alcohol and greater alcohol use by their parents than Aboriginal adolescents. However, Aboriginal youth indicated more permissive parent attitudes toward adolescents' use of marijuana and greater parental use of cigarettes and marijuana than their non-Aboriginal agemates. There were no differences between the groups in adolescents' perceptions of their family adaptability and cohesiveness.

Consistent with the literature (Smart and Adlaf, 1989; Johnson, O'Malley, and Bachman, 1989), more developmental (grade) than gender differences were found for adolescents' use of substances, parent attitudes and drug use, and peer attitudes and drug use. As shown in Table 4, there was a progressive increase in adolescents' use of alcohol, cigarettes, and marijuana over the grades; glue was used more frequently by students in grades 5 and 6 than older adolescents; solvents were used most often by junior high school students in comparison with younger and older students. Boys

reported greater use of alcohol ($F(1,3286) = 15.32$, $p < .0001$; Girls = 2.29; Boys = 2.51) and girls indicated more use of cigarettes ($F(1,3289) = 4.09$, $p < .04$; Girls = 1.65; Boys = 1.59).

Table 3: Means for the Variables in the Study by Sociocultural Group

Variable	Non-Aboriginal	Aboriginal	F-Value
Substances			
Alcohol	2.2	2.4	7.54[b]
Cigarettes	1.6	2.2	49.25[a]
Marijuana	1.2	1.9	136.79[a]
Solvents	1.0	1.1	6.26[b]
Glue	1.0	1.1	2.95
Peer Attitudes			
Alcohol	1.7	2.1	20.39[a]
Drugs	1.3	1.8	122.78[a]
Parent Attitudes			
Alcohol	1.9	1.7	15.02[b]
Marijuana	1.1	1.2	24.53[a]
Parent Drug Use			
Alcohol	2.5	1.9	63.16[a]
Cigarettes	2.3	2.8	31.81[a]
Marijuana	1.1	1.2	38.16[a]
Peer Drug Use			
Alcohol	2.9	3.6	46.99[a]
Cigarettes	2.3	3.5	177.70[a]
Marijuana	1.4	2.3	172.56[a]
Glue/Solvents	1.1	1.3	102.79[a]
Family Functioning			
Adaptability	29.7	29.9	ns
Cohesiveness	35.6	36.2	ns

[a] $p < .0001$; [b] $p < .001$

Table 4: Means for Alcohol and Drug Use Among Aboriginal and Non-Aboriginal Adolescents by Grade

Substance	Grade 5 & 6	Grade Junior High	Senior High	F-Value
Cigarettes				
Non-Aboriginal	1.06[c]	1.35[b]	2.24[a]	
Aboriginal	1.23[c] +	2.21[b] +	3.09[a] +	5.49***[1]
Overall	1.07[c]	1.41[b]	2.29[a]	216.57****
Alcohol				
Non-Aboriginal	1.56[c]	2.13[b]	3.32[a]	
Aboriginal	1.51[c]	2.53[b] +	3.56[a]	2.97*
Overall	1.56[c]	2.16[b]	3.34[a]	632.96****
Marijuana				
Non-Aboriginal	1.01[c]	1.09[b]	1.49[a]	
Aboriginal	1.12[c] +	1.76[b] +	2.91[a] +	32.38****
Overall	1.02[c]	1.14[b]	1.59[a]	109.83****
Glue				
Non-Aboriginal	1.00	1.01	1.00	
Aboriginal	1.07[a] +	1.03[b]	1.00[b]	2.86*
Overall	1.01	1.01	1.00	1.61
Solvents				
Non-Aboriginal	1.01	1.01	1.01	
Aboriginal	1.02[b]	1.07[a] +	1.00[b]	2.97*
Overall	1.01	1.02	1.01	.58

[1] F Value for the grade by group interaction

**** $p < .0001$; *** $p < .001$; ** $p < .01$; * $p < .05$

[abc] Different superscripts refer to mean differences between the grade levels

\+ Significant differences between the groups

Table 5 shows participants' reports of their parents' and peers' attitudes toward adolescents' use of alcohol and drugs across the three grade levels. With increased grade, adolescents reported more positive parent and peer attitudes to alcohol and drugs, except for parents' attitude toward marijuana use which differed between high school students and those younger. The only gender difference was found for boys more positive peer attitudes toward alcohol ($F(1,3279) = 12.93$, $p < .0003$; Boys = 1.94; Girls = 1.82).

Table 5: Means for Aboriginal and Non-Aboriginal Adolescents' Reports of their Parents' and Peer's Attitudes Toward Adolescent Use of Substances by Grade.

Substance	Grade 5 & 6	Grade Junior High	Senior High	F-Value
Peer Attitudes				
Alcohol Use				
Non-Aboriginal	1.29^{c}	1.78^{b}	2.39^{a}	
Aboriginal	1.47^{c} +	2.06^{b} +	2.62^{a} +	$.34^{1}$
Overall	1.30^{c}	1.79^{b}	2.41^{a}	527.09****
Drug Use				
Non-Aboriginal	1.14^{c}	1.29^{b}	1.58^{a}	
Aboriginal	1.35^{c} +	1.76^{b} +	2.31^{a} +	10.87****
Overall	1.56^{c}	1.32^{b}	1.63^{a}	141.22****
Parent Attitudes				
Alcohol				
Non-Aboriginal	1.63^{c} +	1.89^{b}	2.29^{a} +	
Aboriginal	1.38^{b}	1.75^{a}	1.98^{a}	.74
Overall	1.61^{c}	1.88^{b}	2.27^{a}	146.16****
Marijuana				
Non-Aboriginal	1.04^{b}	1.04^{b}	1.11^{a}	
Aboriginal	1.17 +	1.19 +	1.21	.57
Overall	1.06^{b}	1.05^{b}	1.12^{a}	12.44****

[1] F Value for the grade by group interaction

**** $p < .0001$; *** $p < .001$; ** $p < .01$; * $p < .05$

[abc] Different superscripts refer to mean differences between the grade levels

\+ Significant differences between the groups

Adolescents' reports of their parents' use of substances and the number of their friends who use alcohol and drugs are given in Table 6. Grade 5 and 6 students reported less alcohol use by parents than older adolescents; parents' reported use of cigarettes increased over the three grade levels; and there were no grade differences in adolescents' reports of their parents' use of marijuana. As with adolescents' substance use, participants reported a progressive increase in the number of peers who used alcohol, cigarettes,

Table 6: Means for Aboriginal and Non-Aboriginal Adolescents' Reports of Parents' Use of Substances and the Number of Friends Who Use Substances

Substance	Grade 5 & 6	Grade Junior High	Senior High	F-Value
Parents' Behaviour				
Alcohol				
Non-Aboriginal	2.34[c] +	2.50[b] +	2.60[a] +	
Aboriginal	1.94[b]	2.10[a]	1.79[b]	4.16**[1]
Overall	2.31[b]	2.48[a]	2.55[a]	14.68****
Cigarettes				
Non-Aboriginal	2.05[c]	2.29[b]	2.44[a]	
Aboriginal	2.52[b] +	2.89[ab] +	3.00[a] +	.14
Overall	2.09[c]	2.33[b]	2.48[a]	17.51****
Marijuana				
Non-Aboriginal	1.04[b]	1.04[b]	1.08[a]	
Aboriginal	1.26 +	1.25 +	1.11	6.06**
Overall	1.06	1.06	1.09	2.21
Peers' Use				
Alcohol				
Non-Aboriginal	1.34[c]	2.65[b]	4.55[a]	
Aboriginal	2.05[c] +	3.65[b] +	4.72[a]	7.27***
Overall	1.40[c]	2.72[b]	4.57[a]	1381.46****
Cigarettes				
Non-Aboriginal	1.27[c]	1.96[b]	3.31[a]	
Aboriginal	2.11[c] +	3.78[b] +	4.35a +	9.89****
Overall	1.33[c]	2.08[b]	3.38[a]	547.70****
Marijuana				
Non-Aboriginal	1.03[c]	1.24[b]	1.88[a]	
Aboriginal	1.07[c] +	2.28[b] +	3.26[a] +	22.99****
Overall	1.05[c]	1.31[b]	1.98[a]	226.24****
Glue/Solvents				
Non-Aboriginal	1.07[a]	1.07[a]	1.03[b]	
Aboriginal	1.35[a] +	1.57[a] +	1.06[b]	24.10****
Overall	1.09[a]	1.10[a]	1.03[b]	10.90****

[1] F Value for the grade by group interaction

**** $p < .0001$; *** $p < .001$; ** $p < .01$; * $p < .05$

[abc] Different superscripts refer to mean differences between the grade levels

\+ Significant differences between the groups

and marijuana across the grade levels. Younger adolescents reported more friends who used glue and solvents than senior high school students. Girls showed more peer use of cigarettes ($F(1,3279) = 12.23$, $p < .0005$; Girls = 2.39; Boys = 2.29), solvents and glue ($F(1,3285) = 3.73$, $p < .05$; Girls = 1.09; Boys = 1.06).

Aboriginal and non-Aboriginal adolescents' reported use of the five substances is shown in Table 4. As with the overall trends, both adolescent groups reported a progressive increase in the use of alcohol, cigarettes, and marijuana over the grade levels. However, Aboriginal adolescents at junior high school showed greater use of alcohol than non-Aboriginal adolescents.

At every grade level Aboriginal students indicated greater use of cigarettes and marijuana than their non-Aboriginal classmates. Their use of cigarettes and marijuana was similar to that of non-Aboriginal adolescents at each successive grade level so that at senior high school, non-Aboriginal adolescents' use of these drugs was comparable to Aboriginal junior high school students' reported use. In comparison with alcohol, cigarettes, and marijuana, Aboriginal adolescents' use of glue was higher among students in grades 5 and 6 than those at junior and senior high school; and they reported greater use of glue than their non-Aboriginal agemates. Similarly, solvent use peaked among Aboriginal youth at junior high school and these adolescents showed greater use of solvents than non-Aboriginal adolescents.

As seen in Table 5, Aboriginal adolescents reported more permissive peer attitudes toward the use of alcohol and drugs than their non-Aboriginal contemporaries. Non-Aboriginal adolescents at grades 5 and 6 and those at senior high school indicated more liberal parents' attitudes toward adolescent drinking than non-Aboriginal adolescents. Conversely, more positive parents' attitudes toward adolescents' use of marijuana were found among Aboriginal adolescents in grades 5 and 6 and junior high school in comparison with their non-Aboriginal agemates.

As shown in Table 6, Aboriginal adolescents at junior high school reported greater use of alcohol by their parents than those at the other grade levels. However, at each grade level, non-Aboriginal adolescents indicated greater alcohol use by their parents than Aboriginal adolescents. Aboriginal adolescents at every grade level showed more use of cigarettes and marijuana by parents than their non-Aboriginal agemates. Non-Aboriginal adolescents at senior high school in comparison with those younger indicated greater marijuana use by parents; Aboriginal adolescents were comparable across the grade levels.

Aboriginal adolescents at grades 5 and 6 and junior high school reported more peers who used alcohol, glue and solvents than their non-Ab-

Table 7: Summary Tables of the Regression Analyses for the Predictors of Alcohol and Cigarette Use Among Aboriginal and Non-Aboriginal Adolescents

	Non-Aboriginal		Aboriginal	
Alcohol				
F	253.74		16.15	
df	9,2774		9,191	
	p<.0000		p<.0001	
R^2	.452	r	.444	r
Mother's Education	-0.01	-0.12	.05	-0.06
Grade	.13[a]	.52	.15[d]	.51
Gender	.06[a]	.07	.16[c]	.14
Peer Attitude	.15[a]	.51	.16[d]	.47
Parent Attitude	.15[a]	.38	.14[d]	.33
Parent Drug Use	.06[a]	.18	.04	.05
Peer Drug Use	.34[a]	.62	.34[a]	.56
Adaptability	.03[d]	-0.12	.04	-0.16
Cohesiveness	-0.13[a]	-0.34	-0.14[d]	-0.30
Cigarettes				
F	146.6		9.78	
df	9,2778		9,190	
	p<.0000		p<.0001	
R^2	.323		.325	
Mother's Education	-0.05[b]	-0.17	.05	-0.09
Grade	.03	.32	.15[d]	.42
Gender	-0.01	-0.02	-0.08	-0.06
Peer Attitude	.08[a]	.35	.23[c]	.43
Parent Attitude	.06[b]	.24	.05	.23
Parent Drug Use	.09[a]	.22	.13[d]	.19
Peer Drug Use	.43[a]	.54	.28[b]	.45
Adaptability	.03	-0.09	.08	-0.11
Cohesiveness	-0.06[c]	-0.24	-0.04	-0.15

a = p<.0001; b = p<.001; c = p<.01; d = p<.05

original agemates. And at each grade level, Aboriginal students indicated more friends who used cigarettes and marijuana than non-Aboriginal adolescents.

The relative influence of peer attitudes and drug use, parent attitudes and drug use, and family functioning in relation to adolescents' substance use was examined by regression analyses. Regression equations were generated for the appropriate predictors of each of the five substances for Aboriginal and non-Aboriginal adolescents, separately. This would reveal any group differences in the associations between the predictors variables and adolescents' drug use. In order to examine for socioeconomic background, mother's education was entered in each regression model. Mother's education was used to avoid the substantial loss of Aboriginal cases due to missing data. Similar results were obtained with father's occupation, mother's occupation, and father's education. The disparity in sample size between non-Aboriginal and Aboriginal adolescents would increase the likelihood of significance in tests for R^2 and the regression weights for the non-Aboriginal group. The magnitude of the weights and correlations would not be affected.

Tables 7, 8, and 9 provide the results of the regression analyses including the F values, R^2, and beta weights for the predictor variables in each model as well as the correlations between the predictor variables with the criterion. For Aboriginal adolescents, alcohol use was related to being older, being male, positive parent and peer attitudes towards drinking, peer alcohol use, and low family cohesiveness. All of the predictors except mother's education related to non-Aboriginal adolescents' use of alcohol; that is, higher grade, male, positive parent and peer attitudes, parent alcohol use, peer alcohol use, higher family adaptability, and lower family cohesiveness. These factors accounted for the same proportion of the variance (44.4% and 45.2%) in Aboriginal and non-Aboriginal adolescents' use of alcohol.

The predictor variables accounted for a third of the variance in both adolescent groups' use of cigarettes. These included grade (older), peer attitudes toward smoking (more favourable), parent use of cigarettes (higher), and peer use of cigarettes (higher) for Aboriginal adolescents. In comparison, all of the predictor variables except grade, gender, and perceived family adaptability, were related to non-Aboriginal adolescents' cigarette use.

As shown in Table 8, Aboriginal adolescents' use of marijuana was associated with lower mother's education, positive peer attitudes toward marijuana use, and increased peer marijuana use. For non-Aboriginal adolescents, marijuana use was related to grade (older), gender (male), more favourable peer attitude, more favourable parent attitude, and higher peer

Table 8: Summary Table of the Regression Analyses for the Predictors of Marijuana Use by Aboriginal and Non-Aboriginal Adolescents

	Non-Aboriginal		Aboriginal	
Marijuana				
F	248.18		12.11	
df	(9,2771)		(9,190)	
p	$p < .0000$		$p < .0001$	
R^2	.446	r	.375	r
Mother's Education	-0.00	-0.10	-0.13[d]	-0.23
Grade	-0.01	.22	.09	.39
Gender	.04[c]	.03	.06	.07
Peer Attitude	.23[a]	.51	.16[d]	.44
Parent Attitude	.12[a]	.30	.00	.14
Parent Drug Use	.02	.19	.07	.11
Peer Drug Use	.46[a]	.62	.39[a]	.59
Adaptability	.01	-0.05	.01	-0.19
Cohesiveness	-0.01	-0.19	-0.09	-0.21

a = $p < .0001$; b = $p < .001$; c = $p < .01$; d = $p < .05$

use of marijuana. These models accounted for 37.5% of the variance in Aboriginal youths' use of marijuana and 44.6% of the variance for non-Aboriginal adolescents.

As seen in Table 9, solvent use among Aboriginal adolescents was related to more positive peer attitudes toward the use of drugs and peer use of solvents and glue. Mother's education (lower), more positive parent attitudes and peer use of solvents and glue were the predictors for non-Aboriginal adolescents. These models accounted for 8.7% and 11.7% of the variance in the respective groups.

Less maternal education, more favourable parent attitude toward drinking, peer use of solvents and glue, and parent alcohol use were the significant predictors of non-Aboriginal adolescents' use of glue. These variables accounted for 7.3% of the variance in use of glue. Although parent attitudes achieved significance for Aboriginal adolescents' use of glue, the overall F-value was not significant. Some caution should be used in considering the correlational and regressions data for marijuana, solvents, and glue due to the skewed nature of the distributions.

Table 9: Summary of the Regression Analyses for the Predictors of Inhalant Use by Aboriginal and Non-Aboriginal Adolescents

	Non-Aboriginal		Aboriginal	
Solvents				
F	40.96		1.94	
df	9,2792		9,191	
	p<.0001		p<.04	
R^2	.117	r	0.87	r
Mother's Education	-0.06[b]	-0.08	.07	.05
Grade	-0.03	-0.00	-0.11	-0.03
Gender	.02	-0.00	-0.07	-0.09
Peer Attitude	.01	.10	.17[d]	.13
Parent Attitude	.18[a]	.20	.01	.05
Parent Drug Use	.01	.13	-0.01	.02
Peer Drug Use	.24[a]	.27	.17[d]	.18
Adaptability	-0.01	-0.04	-0.02	-0.05
Cohesiveness	-0.03	-0.07	-0.09	-0.11
Glue				
F	24.4		1.29	
df	9,2780		9,189	
	p<.0001		p<.24	
R^2	.073		.061	
Mother's Education	-0.04[d]	-0.05	.03	.04
Grade	-0.04	-0.01	-0.15	-0.03
Gender	-0.00	-0.01	.01	-0.02
Peer Attitude	.01	.08	.09	.05
Parent Attitude	.15[a]	.18	.17[d]	.16
Parent Drug Use	.06[c]	.13	.03	-0.06
Peer Drug Use	.16[a]	.19	-0.05	.00
Adaptability	-0.03	-0.05	.09	.02
Cohesiveness	-0.02	-0.06	-0.11	-0.05

a = p<.0001; b = p<.001; c = p<.01; d = p<.05

Discussion

This study investigated patterns of substance use and family and peer predictors of drug use in a population of Aboriginal and non-Aboriginal adolescents who attended school in a small urban community. Consistent with general drug-use trends of Aboriginal youth on Reservations and elsewhere, the present findings showed substantially higher rates of use for cigarettes, marijuana, solvents, and glue for Aboriginal youth in comparison with non-Aboriginal adolescents. In comparison with other studies, the current findings underestimate adolescent drug use due to the inclusion of grade 5 and grade 6 students; most studies tend not to include students younger than grade 7. This is seen in the comparatively lower incidence rates for alcohol and marijuana and the higher rates for inhalants. Nevertheless, with the exception of alcohol, the current reported rates for Aboriginal adolescents exceed those reported in the general literature on adolescent substance use in Canada (Smart and Adlaf, 1989).

The somewhat higher incidence of alcohol use among non-Aboriginal (61%) than Aboriginal (54%) youth was unexpected. However, this difference is comparable to Beauvais *et al.*'s (1989) reported disparity between American Indian and non-Indian adolescents' use of alcohol in the past month. A number of studies reported higher incidence rates for alcohol among non-Aboriginal adolescents in comparison with other minority groups in the United States including Blacks, Hispanics, and Asians (Johnston, O'Malley, and Bachman, 1989; Maddahian, Newcomb, and Bentler, 1988; Newcomb and Bentler, 1986). Others (Barnes and Welte, 1986; Kandel, Single, and Kessler, 1976) found that non-Aboriginal youth exceeded other minority groups in use of alcohol with the exception of American Indians. Consistent with the higher prevalence rate for alcohol in the current study, non-Aboriginal adolescents reported more permissive parental attitudes toward adolescents' drinking and greater parental use of alcohol than Aboriginal adolescents. These findings seem to reflect the pervasive social acceptance and mixed media messages related to the use of alcohol in North American society (Resnick, Gardner, Lorian, and Marcus, 1990). Other authors have indicated that the values and norms associated with alcohol use in different cultures or ethnic groups have important implications for behaviour (Cheung, 1990-91). The more restrictive parental attitudes associated with drinking and the less frequent use of alcohol reported for Aboriginal parents in the present study may reflect a more conservative view of alcohol than for non-Aboriginal parents. With the data available, it can only be suggested that this is in some way associated with residence in a small urban environment (Heidenreich, 1976; Hill, 1980).

Although more non-Aboriginal than Aboriginal youth had used alcohol in the past year, Aboriginal adolescents showed a higher frequency of alcohol use than their non-Aboriginal contemporaries. In other words, proportionally fewer Aboriginal than non-Aboriginal adolescents reported use of alcohol once or more often in the past twelve months, but Aboriginal youth who used alcohol consumed more alcohol than non-Aboriginal adolescents. As seen in Table 4, the mean alcohol scores of Aboriginal adolescents exceeded those of non-Aboriginal youth at junior and senior high school, but a significant difference was found only among junior high school students. Despite age-related increases in adolescents' use of alcohol at senior high school, the lack of a between-group difference may reflect selective dropout from school by adolescents who are heavier users of alcohol and other drugs. Studies consistently report increased use of alcohol and substances among students who subsequently drop out of school (Oetting and Beauvais, 1990). Longitudinal study is necessary in order to determine if the dropout rate and earlier patterns of alcohol and drug use are comparable between Aboriginal and non-Aboriginal adolescents in this sample.

Despite increased use across the grades, the results showed that Aboriginal adolescents engaged in the use of cigarettes and marijuana earlier than non-Aboriginal adolescents; and at junior high school and senior high school, non-Aboriginal adolescents' frequency of use of these substances was similar to that of younger Aboriginal adolescents at grades 5 and 6 and junior high school, respectively. The use of glue was greatest among grade 5 and 6 Aboriginal children and solvent use was highest among Aboriginal adolescents at junior high school. For both of these substances, the frequency of use was higher among Aboriginal than non-Aboriginal adolescents. These findings are consistent with reports of increased use of marijuana and inhalants among Aboriginal youth in comparison with non-Aboriginal adolescents (Beauvais *et al.*, 1989).

The trend was consistent across the grades for Aboriginal adolescents' reports of more positive peer attitudes toward the use of alcohol and drugs. In comparison, non-Aboriginal adolescents at elementary school and senior high school indicated more liberal parental attitudes toward adolescents' drinking. Alternatively, Aboriginal adolescents' reported more permissive and stable parent attitudes toward marijuana across the grades. As indicated previously, these findings indicate the pervasive social acceptance of alcohol in contemporary society.

The between-grade trends were consistent for non-Aboriginal adolescents' reports of increased alcohol use by parents and Aboriginal adolescents' reports of greater parental use of cigarettes and marijuana

(except at senior high school). Similarly, Aboriginal adolescents' reports of the number of peers who used cigarettes and marijuana exceeded that for non-Aboriginal adolescents at every grade level; for glue or solvents, it was higher only among elementary and junior high school students' reported friends' use.

With mother's education included, the findings showed more consistency than differences in the family and peer predictors of Aboriginal and non-Aboriginal adolescents use of the five substances. Apart from the expected differences for particular substances, the correlations between the predictor and criterion variables were similar in magnitude. Marginal fluctuations of the significance tests for R^2 and the regression weights reflect the disparity in sample size between the Aboriginal and non-Aboriginal adolescents.

In combination with the other predictors, socioeconomic background indexed by mother's education was a less salient predictor of adolescents' substance use than expected. According to Brook, Whiteman, Normura, Gordon, and Cohen (1988), socioeconomic background is an important predictor only for extreme socioeconomic status groups; differences would be expected between those at the lowest level compared to all others. In the present sample, there was considerable variability in mother's education for both Aboriginal and non-Aboriginal adolescents. Consistent with Oetting and Beauvais (1987), the number of friends adolescents' reported as using drugs was the strongest predictor of substance use for both Aboriginal and non-Aboriginal adolescents.

The findings raise questions about the role of the family in relation to Aboriginal adolescents' drug use. Consistent with the literature (Mittlemark, Murray, Leupker, Pechacek, Prie, and Pallonen, 1987; Newcomb, Maddahian, and Bentler, 1986), Aboriginal and non-Aboriginal adolescents' perceptions of family cohesiveness was a significant predictor of their use of alcohol and cigarettes. Most discrepancies in the research on family functioning and adolescent substance use have been related to the confounding effects of socioeconomic background (Flewelling and Bauman, 1990). Although family functioning is considered more important than family structure as a predictor of adolescent drug use (Kurdek and Sinclair, 1988), the high proportion of single mother families requires careful consideration in relation to drug use of Aboriginal adolescents.

In conclusion, the results showed that young Aboriginal adolescents in an urban setting engaged in greater use of cigarettes and marijuana than their non-Aboriginal contemporaries at every grade level; their reported use of glue and solvents exceeded that of non-Aboriginal youth among younger adolescents. Although more non-Aboriginal adolescents had used alcohol

in the past year and they indicated more liberal parental attitudes to adolescent drinking, and greater use of alcohol by parents, it was only junior high school students who consumed significantly more alcohol than their Aboriginal classmates. Overall, there were more similarities than differences in the correlations between the predictor variables and substance use among Aboriginal and non-Aboriginal adolescents.

The findings indicate the importance of implementing preventative and intervention strategies in the elementary school years rather than later when increased use of substances begins to occur. This should include the involvement of parents in the formative years when their impact may be greater. As indicated elsewhere (Oetting and Beauvais, 1987), the current results suggest that utilization of peers is essential for the development of preventative and intervention approaches with Aboriginal adolescents.

The major limitation of the present study is that it is cross-sectional; the findings are based on the first wave of a five-year follow-up study. Longitudinal research is necessary in order to examine causal relationships between predictors of adolescent substance use and how they may change over the adolescent years. To date, no longitudinal study is available on the precursors of substance use among Aboriginal youth. Longitudinal research is essential to effectively address the needs of Aboriginal youth who are involved or at risk for substance abuse.

References

Barnes, G. E.
1989 Gasoline Sniffing in Northern Canada, in S. Epstein (Editor): *Drugs and Alcohol Use: Issues and Factor*. New York: Plenum Press.

Barnes, G. and J. Welte
1986 Adolescent Alcohol Abuse: Subgroup Differences and Relations To Other Problem Behaviours. *Journal of Adolescent Research* 1:79-94.

Beauvais, F., E.R. Oetting and R.W. Edwards
1985 Trends in the Use of Inhalants Among American Indian Adolescents. *White Cloud Journal* 3:3-11.

Beauvais, F., E. R. Oetting, W. Wolf, and R.W. Edwards
1989 American Indian Youth and Drugs, 1976-87: A Continuing Problem. *American Journal of Public Health* 79:634-636.

Blishen, J.H. and H.A. McRoberts
1976 A Revised Socioeconomic Index For Occupations In Canada. *Canadian Review of Sociology and Anthropology* 13:71-79.

Brook, J.S., M. Whiteman, C. Nomura, A.S. Gordon and P. Cohen
1988 Personality, Family, and Ecological Influences on Adolescent Drug Use: A Developmental Analysis. *Journal of Chemical Dependency and Treatment* 1:123-161.

Cheung, Y.W.
1990/91 Ethnicity and Alcohol/Drug Use Revisited: A Framework For Future Research. *International Journal of the Addictions* 25:581-605.

Cotton, N.S.
1979 The Familial Influence of Alcoholism. *Journal of Studies on Alcohol* 40:89-116.

Elliott, D.S., D. Huizinga and S.S. Ageton
1985 *Explaining Delinquency and Drug Use.* Beverly Hills, California: Sage.

Flewelling, R.L. and K.E. Bauman
1990 Family Structure as a Predictor of Initial Substance Use and Sexual Intercourse In Early Adolescence. *Journal of Marriage and the Family* 52:171-181.

French, L.
1990 Substance Abuse Treatment Among American Indian Children. *Alcoholism Treatment Quarterly* 7:63-76.

Gantman, C.A.
1978 Family Interaction Patterns Among Families With Normal, Disturbed, and Drug-Abusing Adolescents. *Journal of Youth and Adolescence* 7:429-440.

Gfellner, Barbara M.
1991 A Profile of Aboriginal Youth in a Community Drug Program. *Canadian Journal of Native Studies* 10:25-48.

Glynn, T. J., and M. Haenlin
1988 Family Theory and Research on Adolescent Drug Use: A Review. *Journal of Chemical Dependency and Treatment* 1:39-55.

Hawkins, J.D., D.M. Lishner, R.F. Catalano, Jr. and M.O. Howard
1985 Childhood Predictors of Adolescent Substance Abuse: Toward an Empirically Grounded Theory. *Journal of Children in Contemporary Society* 8:11-48.

Health and Welfare Canada
1990 National Alcohol and Other Drugs Survey. Ottawa: Health Promotion Directorate.

Heidenreich, C.A.
1976 Alcohol and Drug Use and Abuse Among American Indians: A Review of Issues and Resources. *Journal of Drug-Issues* 6:256-272.

Hill, T.W.
1980 Life Styles and Drinking Patterns of Urban Indians. *Journal of Drug Issues* 10:257-272.

Hundleby, John D., R.A. Carpenter, R.A. Ross and G.W. Mercer
1982 Adolescent Drug Use and Other Behaviours. *Journal of Child Psychology and Psychiatry* 23:61-68.

Jessor, R. and S.L. Jessor
1977 *Problem Behaviour and Psychosocial Development: A Longitudinal Study of Youth.* New York: Academic Press.
1978 Theory Testing in Longitudinal Research on Marijuana Use, in D. Kandel (Editor): *Longitudinal Research on Drug Use.* Washington, D. C.: Hemisphere Publishing Corporation.

Jessor R., J.A. Chase and J.E. Donovan
1980 Psychosocial Correlates of Marijuana Use and Problem Drinking in a National Sample of Adolescents. *American Journal of Public Health* 70:604-613.

Joanning, H. and B.P. Kuehl
1986 A Review of FACES III. *American Journal of Family Therapy* 14:163-165.

Johnson, G.M., F.C. Schoutz and T.P. Locke
1984 Relations Between Adolescent Drug Use and Parental Drug Behaviours. *Adolescence* 19(74):295-299.

Johnston, L.D., P.M. O'Malley and J.G. Bachman
1989 Drug Use, Drinking, and Smoking: National Survey Results From High School, College, and Young Adult Populations. DHHS Pub. No. (ADM)89-1683. Washington, D. C.: Superintendent of Documents, U. S. Government Printing Office.

Kandel, D.B.
1978 Convergences in Progressive Longitudinal Surveys of Drug Use In Normal Populations, in D. Kandel (Editor): *Longitudinal Research In Drug Use: Empirical Findings and Methodological Issues.* Washington, D. C.: Hemisphere-Jihn Witen.

1982 Epidemiological and Psychosocial Perspectives on Adolescent Drug Use. *Journal of American Academic Clinical Psychiatry* 21:328-347.

Kandel, D.B. and D. Adler
1982 Socialization Into Marijuana Use Among French Adolescents: A Cross Cultural Comparison With The United States. *Journal of Health and Social Behaviour* 23:295-302.

Kandel, D.B., R. Kessler and R. Marguilies
1978 Antecedents of Adolescent Initiation Into Stages of Drug Use: A Developmental Analysis. *Journal of Youth and Adolescence* 7:13-40.

Kandel, D., E. Single and R.C. Kessler
1976 The Epidemiology of Drug Use Among New York High School Students: Distribution, Trends, and Changes In Rate of Use. *American Journal of Public Health* 66:43-53.

Kurdek, L.A. and R.J. Sinclair
1988 Adjustment of Young Adolescents In Two-parent Nuclear, Stepfather, and Mother-Custody Families. *Journal of Consulting and Clinical Psychology* 56:91-96.

LaFramboise, T.
1988 American Indian Mental Health Policy. *American Psychologist* 43:388-397.

Lex, B.W.
1987 Review of Alcohol Problems In Ethnic Minority Groups. *Journal of Consulting and Clinical Psychology* 55:293-300.

Liban, C.B. and R.G. Smart
1982 Drinking and Drug Use Among Ontario Indian Students. *Drug and Alcohol Dependency* 9:161-171.

Maddahian, E., M.B. Newcomb and P.M. Bentler
1988 Risk Factors for Substance Use: Ethnic Differences Among Adolescents. *Journal of Substance Abuse* 1:11-23.

May, P.A.
1982 Substance Abuse and American Indians: Prevalence and Susceptibility. *International Journal of the Addictions* 17:1185-1209.

1987 Alcohol and Drug Misuse Prevention Programs For American Indians: Needs and Opportunities. *Journal of Studies on Alcohol* 47:187-195.

McDermott, D.
1984 The Relationship of Parental Drug Use and Parents' Attitude Concerning Adolescent Drug Use To Adolescent Drug Use. *Adolescence* 19(73):89-97.

McDonald, R.J.
1991 Canada's Off-Reserve Aboriginal Population. *Canadian Social Trends* 23:3-7.

McShane, D.
1988 An Analysis of Mental Health Research With American Indian Youth. *Journal of Adolescence* 11:87-116.

Mittlemark, M.B., D.M. Murray, R.V. Leupker, T.F. Pechacek, P.L. Pirie and U.E. Pallonen
1987 Predicting Experimentation With Cigarettes: The Childhood Antecedents of Smoking Study. *American Journal of Public Health* 77:206-208.

Newcomb, M.D. and P.M. Bentler
1986 Substance Use and Ethnicity: Differential Impact of Peer and Adult Models. *Journal of Psychology* 120:83-95.

Newcomb, M.D., B.N. Fahy and R. Skager
1988 Correlates of Cocaine Use Among Adolescents. *Journal of Drug Issues* 18:327-354.

Newcomb, M.D., E. Maddahian and P.M. Bentler
1986 Risk Factors For Drug Use Among Adolescents: Concurrent and Longitudinal Analyses. *American Journal of Public Health* 76:525-531.

Norem-Hebeisen, A., D.W. Johnson, D. Anderson and R. Johnson
1984 Predictors and Concomitants of Changes in Drug Use Patterns Among Teenagers. *Journal of Social Psychology* 124:43-50.

Oetting, E.R. and F. Beauvais
1987 Common Elements in Youth Drug Abuse: Peer Clusters and Other Psychosocial Factors. *Journal of Drug-Issues* 17:133-151.

1990 Adolescent Drug Use: Findings of National and Local Surveys. *Journal of Consulting and Clinical Psychology* 58:385-394.

Oetting, E.R., F. Beauvais and R. Edwards
1988 Alcohol and Indian Youth: Social and Psychological Correlates and Prevention. *Journal of Drug-Issues* 18:87-101.

Oetting, E.R., R.W. Edwards and F. Beauvais
1988 Drugs and Native American Youth. *Drugs and Society* 3:1-34.

Okwumabua, J.O. and E.J. Durysa
1987 Age of Onset, Periods of Risk, and Patterns of Progression In Drug Use Among American Indian High School Students. *International Journal of the Addictions* 22:1269-1276.

Olson, D.H.
1985 Circumplex Model VII: Validation Studies and FACES III. *Family Processes* 25:337-351.

Olson, D.H., J. Portner and Y. Lavee
1985 FACES III. St Paul, Minnesota; University of Minnesota.

Penning, M. and G. Barnes
1982 Adolescent Marijuana Use: A Review. *International Journal of the Addictions* 17:749-791.

Reilly, D.M.
1979 Family Factors in the Etiology and Treatment of Youthful Drug Abuse. *Family Therapy* 11:149-171.

Resnick, H., S.E. Gardner, R.P. Lorian and C.E. Marcus (Editors)
1990 Youth and Drugs: Society's Mixed Messages. OSAP Prevention Monograph 6. U. S. Department of Health and Human Services: Rockville, Maryland.

Schinke, S.P., L.D. Gilchrist, R.F. Schilling II, R.D. Walker, M.A. Kirkham, J.K. Bobo, J.E. Trimble, G.T. Cvetkovich and S.S. Richardson
1985 Strategies For Preventing Substance Abuse With American Indian Youth. *White Cloud Journal* 3:12-1.

Selnow, G.W.
1985 Using a Stratified Approach In Substance Intervention and Prevention Programs Among Adolescents: An Empirical Analysis. *Journal of Drug Education* 15:327-341.

Smart, R.G. and E.M. Adlaf
1989 *The Ontario Student Drug Use Survey: Trends Between 1977-1989.* Toronto: Addictions Research Foundation.

Tec, N.
1974 Parent-Child Drug Abuse: Generational Continuity or Adolescent Deviancy. *Adolescence* 19(74):301-312.

Welte, J. and G. Barnes
1987 Alcohol Use Among Adolescent Minority Groups. *Journal of Studies on Alcohol,* 48:329-336.