ABSTRACT

This article presents the results of a one-year outcome evaluation of a school-based alcohol- and drug-abuse prevention program targeting adolescents in Quebec. This evaluation concerns the school component of the program and includes the first seven classroom interventions. The design is a pre- and post-intervention assessment of both the experimental (n = 145 students) and the control school (n = 179 students). Results obtained do not reveal any significant effect of the program on knowledge and beliefs regarding the use of alcohol and drugs, or any modification in self-efficacy with respect to decision making and ability to resist external pressure concerning the decision to use marijuana/hashish. The results do show, however, a decrease among the exposed students in self-efficacy within the context of alcohol use. Such a result may be a consequence of the program's capacity to raise the students' level of awareness of their susceptibility to social influences. It is plausible that in order to have positive effects, classroom interventions such as the present one need to be supplemented by additional activities targeting youths' environment.

ABRÉGÉ

Cet article présente les résultats obtenus après un an d'implantation d'un programme de prévention de l'abus d'alcool et de drogues destiné à des adolescents québécois. Les activités évaluées ont trait à la composante scolaire du programme et incluent les sept premières leçons présentées en classe. Le devis d'évaluation implique des mesures pré- et post-test dans une école témoin (n = 179 étudiants) et une école expérimentale (n = 145 étudiants). Les résultats révèlent une absence d'effet du programme sur les connaissances et les croyances en matière d'utilisation d'alcool et de drogue d'une part, et, d'autre part, sur le sentiment d'efficacité personnelle quant à la résistance à la pression des pairs et à la prise de décision en matière de consommation de marijuana/hashish. Les résultats montrent toutefois une diminution du sentiment d'efficacité dans le contexte de la consommation d'alcool. Un tel phénomène peut être attribuable à une conscientisation accrue des jeunes quant à leur susceptibilité aux influences sociales. En général, l'étude confirme la nécessité de compléter les interventions scolaires par des activités visant l'environnement des jeunes.

One Year Outcome Evaluation of an Alcohol and Drug Abuse Prevention Program in a Québec High School

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Although a gradual decrease in the consumption of alcohol and drugs by youths in both Quebec and Canada has been observed in the past decade,¹⁻⁴ adolescents and young adults are currently the largest consumers of alcohol in both Quebec and Canada.^{3,4} As a result, in 1992-93, 13% of 15-24 year olds were considered at high risk for alcohol-related problems.⁴

This article reports on the effects of a school-based health education program targeting grade seven students. As well as providing information, the program also attempted to help in the clarification of values and beliefs and in the development of decision-making skills and peer-pressure-resistance strategies.

Among school-based drug education programs, there are many that subscribe to the "social-influence" approach based on the premise that peers, the family, and the media all play an important role in the initiation of drug and alcohol use. According to this approach, the students' ability to resist social influences increases to the extent that students are made aware of these influences, and that they are provided with the means to develop strategies that enable them to resist these pressures. A review of the litera-

ture shows that such programs generally have a positive influence on young people's knowledge concerning the negative effects of drug and alcohol abuse.⁵⁻¹⁵ These programs also affect attitudes about tobacco, alcohol, and marijuana use¹⁶ as well as the perception of the characteristics of users, of the social benefits associated with drug use,^{5,6,12,17,18} and finally, the prevalence of unfavourable attitudes concerning drug and alcohol use among their peers.^{11,18-20} The literature, however, also includes at least one negative result: a Canadian study found an increase in pro-alcohol attitudes among boys following exposure to an education program of this kind.⁷

Other studies show that, after exposure to such programs, young people perceive substance abuse to be less prevalent not only among adults in general,^{6,21} but also among their peers.^{10,11,21} The perception of external influences is also modified with young students becoming more aware of the influence of the media¹⁸ as well as their peers.²² In general, they gain a better understanding of the many pressures and influences to which they are exposed.²³

In addition, the programs reviewed appear to improve the ability of young people to resist negative peer influences;^{5,8,24} to improve communication skills,^{19,20,23} decision-making abilities and reliance on social networks;²³ and to increase the individual's sense of competence to resist influences that encourage consumption.^{15-17,19,25} However, some authors report that those exposed to such educational interventions had greater difficulty making decisions than those in the control group.¹³ Finally, after exposure to social influence type programs, adolescents' intentions or usage behaviours decreased.^{5,6,14-17,20,21,24,26-28}

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It appears that such programs are less effective among those students who had a first experience with drugs or alcohol at an early age,²⁹ particularly true if this early experience was perceived as pleasant.³⁰ Finally, programs tend to be less effective among young people who engage more frequently in unstructured or unsupervised recreational activities.^{29,31-33}

The "PAVOT" Program

The purpose of the PAVOT program (*Promotion de l'autonomie et de la volonté de faire obstacle aux toxicomanies*/Promoting Independence and the Will to Fight Drug Abuse) is to reduce the incidence of abuse of psychoactive substances such as alcohol and illegal drugs. This program is based on several psychosocial models of behaviour and learning.³⁴ The program comprises four components: classroom education, meetings with parents, activities with peers, and a community component. At the time of the study, only the classroom education component had been systematically implemented.

The present evaluation assesses the effects of this education component offered to grade 7 students. The activities consisted of seven 50-minute lessons: four of these provided information about alcohol and drugs, one focussed on the role of external influences, another discussed decision making, and one examined the specific role of peer pressure on young people. Development of peer-pressure-resistance tactics, communication and decision-making skills were fostered by observation through modelling.

The purpose of the study is to evaluate this program one year after its implementation among a group of grade 7 students. It was hypothesized that students exposed to the program, compared to a control group not exposed to the program, would demonstrate an improvement in their knowledge about drugs and alcohol, would favour healthier beliefs regarding the consumption of drugs and alcohol, and would feel a greater sense of self-efficacy with regard to decision making and resistance to peer pressure.

METHOD

Research design and study units

The evaluation was based on a quasi-experimental pretest/post-test design with

a non-equivalent control group. In both groups, the pretest was administered before exposure to the program (in the experimental school) at the beginning of the school year, and the post-test was conducted one year later. The control school was selected to match the experimental school in terms of age and ethnic background. The two schools were located 7.5 miles apart. Two elements prevented a possible contamination bias. First, the two schools were located in two different towns, involving distinct leisure-time organizations and community structures. Second, according to school administrators in the area, the practice of moving from one school to the other was limited to very few students.

The evaluation involved all grade 7 students. No refusals to participate were noted. For the pretest, 491 students completed the questionnaire; 235 from the experimental school, and 256 from the control school. Fewer participated in the post-test. After matching pretest and post-test questionnaires, the study sample included 145 from the experimental school and 179 from the control school. This loss of 38% in the experimental school and 30% in the control school is mainly due to the absence of students at the post-test. The students excluded because of missing information differed from the overall study population in several ways. They tended to be older, to engage more often in unsupervised recreational activities, to perceive drug and alcohol use as more widespread in friends and family, to have more pro-consumption beliefs, and to have experimented with drugs more often and at a younger age. They also indicated a clearer intention to consume drugs, and in fact, did consume more. The bias introduced by this non-random loss of subjects is a common problem in school-based studies of substance abuse.^{6,22, 26}

Measurements and procedures

Level of knowledge about alcohol and drugs was assessed by 14 items ($\alpha = 0.50$) pertaining to the effect of drug/alcohol, the quality of the drugs available on the market and the influences from the advertising industry. The scale has three response categories: true, false, don't know.

Beliefs regarding alcohol and drug use were assessed by four items ($\alpha = 0.75$) rated on a 3-point scale anchored agree/disagree. A "don't know" option was also offered to the respondent.

Self-efficacy was assessed by two scales related to the use of alcohol (4 items, $\alpha = 0.70$) and marijuana/hashish (4 items, $\alpha = 0.75$), respectively. Both scales assessed perceived personal competencies in terms of decision making and ability to resist external pressure concerning the use of these substances. All items were rated on a 4-point scale anchored strongly agree/strongly disagree.

The independent variable is exposure to the program; the covariates are: age, gender, family structure (two-parent, single-parent, other), previous drug use, age at first drug use, perceived satisfaction with first drug use, participation in unsupervised recreational activities (5 items, $\alpha = 0.61$), existence and quality of discussions about drugs and alcohol with parents, perception of drug and alcohol use by friends, perception of friends' beliefs regarding alcohol and drugs (5 items, $\alpha = 0.61$), perception of parents' alcohol consumption, and personal reasons for drug or alcohol consumption. (Survey questionnaire available from first author upon request.)

Data collection and analysis

Data were collected in classrooms using a self-administered questionnaire that required about 20-30 minutes to complete. A preliminary analysis was performed to assess the equivalence of the experimental and control groups and to identify potential confounding variables. Chi-squared and t-tests were used for this purpose. All variables showing a statistical association with membership in either the control or the experimental group ($p < 0.20$) were controlled in all subsequent stages of the analysis.

Each of the four dependent variables was then analyzed using a hierarchical multiple regression. Independent variables were grouped in blocks and entered into the model in the following order: 1) exposure to the program (experimental versus control school); 2) potentially confounding variables identified during pretest analy-

TABLE I
Unstandardized Regression Coefficients of the Bivariate Equations and Multivariate Final Equations Predicting Knowledge and Beliefs About Alcohol and Drugs

	Knowledge [†]	Beliefs [‡]
a) Bivariate equations		
Program	0.54*	0.41
b) Multivariate equations		
Program	0.32	0.02
Knowledge at pretest [†]	0.39**	
Friends' beliefs [‡]	0.18	
Quantity of father's alcohol intake	-0.76	
Beliefs at pretest [‡]		0.57**
Gender		-0.89**
Recreation activities with little supervision [¶]		-0.22*
Use of alcohol by many friends		-0.66
R ² (multivariate)	0.20	0.39

* p < 0.05

** p < 0.01

[†] The higher the score is, the greater the level of knowledge[‡] The higher the score is, the greater the level of beliefs regarding healthy consumption[¶] The higher the score is, the greater the level of recreation activities with little supervision

TABLE II
Unstandardized Regression Coefficients of the Bivariate Equations and Multivariate Final Equations Predicting Self-efficacy With Regard to Alcohol and Drug Use

	Self-efficacy With Regard to Alcohol Use [†]	Self-efficacy With Regard to Marijuana/Hashish Use [†]
a) Bivariate equations		
Program	-0.65	-0.22
b) Multivariate equations		
Program	-0.70*	-0.28
Use of alcohol by many friends	-1.21*	
Recreation activities with little supervision [‡]	-0.35**	
Age		-0.14
Gender		-0.89
Atmosphere of discussions with parents		-0.10
Use of drugs by friends		-0.04
Use of alcohol by: A few friends		-0.69
Many friends		-1.68
Friends' use of alcohol several times per month		0.71
First alcohol experience: Pleasant		-0.71*
Unpleasant		0.66
Alcohol use related to risk		-3.45*
R ² (multivariate)	0.09	0.16

* p < 0.05

** p < 0.01

[†] The higher the score is, the greater the level of self-efficacy[‡] The higher the score is, the greater the level of recreation activities with little supervision

ses; 3) sociodemographic variables (age, gender, family structure); 4) environment-related variables (atmosphere of discussions with parents, prevalence of use by friends of drugs or alcohol, parents' use of alcohol, and friends' beliefs); 5) socialization-related variables (satisfaction with first alcohol or drug experience, reasons for use, unsupervised recreational activities).

RESULTS

Students' characteristics at pretest

At the time of the pretest, the study subjects had an average age of 12.5 years (SD=0.87). More than half were girls (57%); 67% lived in biparental families, 16% in monoparental families, 15% in reconstituted families,

and 2% lived with people other than their parents.

Experimental and control students were comparable at the time of the pretest, except for certain variables related to perception of the environment and to socialization. Differences were observed for age at first experience with drugs, with means of 13.0 and 12.4 years, and for perception of friends' beliefs with means of 4.5 and 4.2 (the higher the score, the greater the level of beliefs regarding healthy consumption) for the experimental and control students, respectively. Other significant differences were noted between experimental and control students with respect to satisfaction with first alcohol experience, reported prevalence and frequency of friends' alcohol use, and reported prevalence and frequency of friends' drug use. While 33% of the students from the control group qualified their first experience with alcohol as very unpleasant, only 17% of the students from the experimental group did so. Moreover, compared to the experimental students, not only did control students have more friends who consumed alcohol and drugs, but they also perceived that these friends consumed more frequently than did the experimental participants' friends.

Effect of the program: Knowledge and beliefs about alcohol and drugs

Table I shows the results of the analyses involving the knowledge and beliefs dependent variables. The results of the bivariate analyses (top panel) show that after exposure to the program, students displayed an increase in their knowledge about drugs and alcohol. Mean percentages of increase observed on these scores were 11.3 and 9.8 for the experimental and control subjects, respectively. No significant effect of the program on the belief variable was noted at the bivariate analysis stage.

As shown in the bottom panel, the effect of the program on the post-test knowledge score was no longer significant in the multivariate analysis. Only knowledge at the pretest emerged as a predictor of this variable. Multivariate analyses carried out on the belief scores revealed that only gender, beliefs at pretest, and engaging in unsupervised activities were associated with post-

test beliefs about alcohol and drug use. No significant association was found with exposure to the program.

Effect of the program: Self-efficacy with regard to alcohol and marijuana/hashish use

Results of the bivariate analyses show first that exposure to the program was not significantly associated with either of the self-efficacy dependent variables (Table II, top panel). However, multivariate analyses revealed that such exposure had a significant effect on self-efficacy with respect to decision making and ability to resist external pressure concerning the use of alcohol. The observed effect, however, was in the opposite direction to what was expected: exposure to the program was associated with a decrease in self-efficacy. The mean percentage of decrease observed on the experimental group's scores was 5.9%, as compared to a mean decrease of 3.4% in the control group's scores. Perception of high prevalence of alcohol use by friends, as well as the participation in unsupervised activities, were also negatively associated with self-efficacy with respect to alcohol use.

Exposure to the program had no effect on self-efficacy with respect to decision making and ability to resist external pressure concerning the use of marijuana/hashish. However, having considered one's first alcohol experience pleasant and choosing to use alcohol for high-risk reasons (e.g., to become less inhibited) decreased feelings of self-efficacy concerning the use of marijuana/hashish.

DISCUSSION

The results of this study show that, one year after exposure to the PAVOT program, knowledge and beliefs with regard to consumption of alcohol and drugs as well as self-efficacy with respect to decision making and ability to resist external pressure concerning the use of marijuana/hashish were not changed. Exposure to the program was, however, associated with a decrease in self-efficacy within the context of alcohol use.

One plausible hypothesis for this apparent lack of positive results may be that the

post-test took place immediately following the summer vacation. Potential benefits of the program might have been observed had they been assessed either immediately after exposure or on a more long-term basis. On the other hand, the results obtained are certainly in line with the current opinion that factors such as parent, peer, and community involvement in changing drug use norms are critical to prevention efforts in this field.³⁵ It is plausible then, that in order to have positive effects, classroom interventions such as the present one need to be supplemented by additional components involving young people's environment. In any case, both hypotheses suggest the need to continue to evaluate the intervention, especially the additional PAVOT components (parental, peer, and community components) yet to be implemented.

The most striking result is certainly that students exposed to the program felt less competent with respect to decision making and external pressure resistance concerning the use of alcohol. This result is similar to those observed in previous studies in which participating teenagers become more aware of their environment in general, and more aware of the role of peer pressure in particular.^{22,23} In one study, it was reported that after a similar program, young people found decision making regarding substance use more difficult, given that they now understood better the steps involved.¹³ It is possible, then, that students in the present study also experienced a similar increase in their awareness of the decision-making process and of the role of environmental influences which altered their perception of personal competence. Qualitative studies aiming at an in-depth description of young people's perceptions and beliefs over the course of the program may be useful in better understanding this result.

In agreement with the results of other studies, lower self-efficacy scores were associated with participation in unstructured and unsupervised activities,³¹ and with the perception of alcohol consumption among friends.^{11,33} Some authors report that the effects of similar programs are diminished in young people who had an early first experience with drugs or alcohol.²⁹ This is the case in our study, as students had their first exposure to alcohol earlier than aver-

age for the Quebec population (10.9 vs 15.2 yrs).² It is possible, therefore, that a positive effect of the program is less likely in such a sample.

Although this first evaluation effort does not confirm the expected effects of the PAVOT program after one year, this study does identify several predictors of youth beliefs and self-efficacy regarding alcohol and drug use. For example, unsupervised leisure activities and the consumption of alcohol for high-risk reasons were found to be associated with known predictors of alcohol and drug use. These could be promising avenues to pursue in the design of prevention programs.

Besides the fact that it is an initial evaluation, the present study also presents certain limitations. It may be important to examine the process of implementation of the program. Given that the teaching of the program is now mandatory, teachers' motivation and ability to present it adequately may vary. Also, the loss of the highest risk subjects at the post-test further limits the generalization of the results. Had this loss not occurred, the results would likely have been poorer, since the characteristics of those excluded because of missing information were in general those associated with decreased program effectiveness.

The PAVOT program represents a theoretically promising path. The inability of the present evaluation to demonstrate positive results should not be used alone to justify its cessation. The results obtained are in line with the current belief that there is a need for a multi-target, multi-setting approach in health promotion. To support this school-based program, other program components would need to be implemented.

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