

**A MULTIDIMENSIONAL EXAMINATION OF SHORT- AND LONG-TERM OUTCOMES FOR THE
DRUG ABUSE RESISTANCE EDUCATION (DARE) PROGRAM:
AN EVALUATION REPORT SUBMITTED TO THE SAINT JOHN POLICE FORCE**



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TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
BACKGROUND AND PURPOSE OF EVALUATION	3
QUESTIONNAIRES.....	4
<i>Drug Abuse Resistance Education Survey</i>	4
<i>Substance Use Experience and Opinion Survey</i>	4
<i>Problem Oriented Screening Instrument for Teenagers</i>	4
<i>Resiliency Scales for Children and Adolescents</i>	5
EVALUATION STUDY PROCEDURE	5
RESULTS: GRADE 7 YOUTH	6
<i>Sample Descriptives</i>	6
<i>Patterns of Substance Use</i>	6
<i>Attitudes Towards Substance Use</i>	9
<i>Psychosocial Functioning</i>	11
<i>Resiliency Profiles</i>	14
<i>Summary of Qualitative Comments</i>	17
RESULTS: GRADE 12 YOUTH	18
<i>Sample Descriptives</i>	18
<i>Rate of Substance Use</i>	19
<i>Summary of Qualitative Comments</i>	22
SUMMARY OF EVALUATION AND CONCLUSION.....	24
<i>Impact of DARE-R on Grade 7 Youth</i>	24
<i>Impact of DARE on Grade 12 Youth</i>	27
RECOMMENDATIONS.....	28
REFERENCES	30
APPENDIX A: DRUG ABUSE RESISTANCE EDUCATION SURVEY	31
APPENDIX B: SUBSTANCE USE EXPERIENCE AND OPINION SURVEY.....	32

EXECUTIVE SUMMARY

The Drug Abuse Resistance Education (DARE) program is a school-based primary prevention program that seeks to reduce substance use and negative life outcomes in youth. Here we report on two studies that were conducted to evaluate the impact of the “DARE experience” among youth located in Saint John, New Brunswick, Canada.

In Study 1, we prospectively evaluated the impact of the recently revised DARE curriculum (DARE-R) among a cohort of Grade 7 youth based on their responses to a number of indicators prior to and after the 10 week DARE-R program delivery, and at a one year post-DARE-R follow-ups. Overall, these youth were generally at very low risk for substance use and misuse. Consistent with previous studies using the original DARE program, we found that DARE-R had little to no impact on preventing future substance use. There also was no change over time on substance use attitudes. We did find evidence of small improvements in resiliency among youth identified as medium to high risk for substance misuse. There also were small changes indicative of increased problems in the areas of family relationships and behavioural problems (e.g., aggression, delinquency) in the overall sample over time. Qualitative comments suggest that these Grade 7 youth tend to only retain the basic “drugs are bad” message of DARE-R.

In Study 2, we retrospectively assessed the impact of the original DARE curriculum among a cohort of Grade 12 youth. We found nearly all Grade 12 youth reported alcohol use in the year prior to their study participation, and over a third reported having used tobacco and cannabis. As expected, those identified as high risk for substance use had the greatest and more varied substance use history, whereas youth identified as low risk had the lowest rates of use. In general, Grade 12 students could only recall the basic “drugs are bad” content of DARE, particularly the information regarding the adverse/negative consequences of substances. Youth felt the program exaggerated many of its claims regarding the dangers associated with substance use and did not prepare them for the reality of peer pressure.

Overall, the findings of the current evaluation suggest that DARE had limited impact on reducing future substance use, and had mixed results with respect to psychosocial outcomes. In regards to the administration of DARE-R, we recommend that the program be reserved for youth between 12 to 15 years of age, which was the average age at which youth first begin to experiment with substances and are most vulnerable. Although the DARE-R content related to the negative consequences of alcohol and drugs is important, we recommend greater emphasis on content pertaining to improving decision-making and skills to cope with risk factors for substance use (i.e., pro-substance use attitudes, delinquent behaviour, aggressiveness, motives for use, certain risk vulnerable personality profiles, etc.). As such, and in line with the literature on effective substance use prevention programs, we recommend adopting a risk-focused approach towards substance use prevention in which empirically-valid risk factors relevant to substance use/misuse among youth are assessed, and intervention is matched to the youth’s unique set of vulnerability factors for substance use, such as that provided by the “Preventure” program.

A MULTIDIMENSIONAL EXAMINATION OF SHORT- AND LONG-TERM OUTCOMES FOR THE DRUG ABUSE RESISTANCE EDUCATION (DARE) PROGRAM

BACKGROUND AND PURPOSE OF EVALUATION

The Drug Abuse Resistance Education Program (DARE) is a primary prevention program that is administered to Grade 5 and 7 students across Canada. The main goal of DARE is to educate youth about the harmful effects of alcohol, smoking, and drugs. In addition to educating youth about these substances, the DARE program teaches youth strategies on how to resist the various social influences they may encounter in life that encourage use of these substances. DARE also seeks to instill positive attitudes and respect towards police and the law. In Saint John, New Brunswick, Canada, DARE has been administered to youth by police officers from the Saint John Police Force since 1998.

Despite the laudable goals which DARE attempts to achieve, various empirical investigations suggest that the DARE program is somewhat ineffective in reducing/preventing substance use and later negative life outcomes in youth. Some studies report no impact on these outcomes as a result of participating in DARE, whereas other studies report small/weak associations, which suggests that DARE may have limited efficacy in achieving its desired outcomes (Pan & Bai, 2009; Thombs, 2000; West & O'Neal, 2004). In response to the modest findings that have resulted from this research and the criticisms it has generated, the DARE program developers have made substantial revisions to the program. Referred herein as DARE-revised (DARE-R), this new version continues to include the same core components from the previous version, namely, preventing substance use and negative life outcomes and fostering positive attitudes towards the criminal justice system. In addition, DARE-R has a stronger emphasis on building skills that help youth with effective decision-making, developing and maintaining positive interpersonal relationships, and promoting self-esteem. From a theoretical standpoint, DARE-R includes more evidence-based methods rooted in social learning theory. Furthermore, DARE-R may exert its effects by enhancing resiliency in youth, which may reduce their vulnerability to substance use behaviours and other negative life outcomes. To examine the impact of DARE-R, Chief William Reid of the Saint John Police Force has asked researchers from the Department of Psychology and the Centre for Criminal Justice Studies at the University of New Brunswick for assistance in evaluating the DARE-R program among Saint John youth. The researchers include Dr. Mary Ann Campbell (Associate Professor), Dr. Caroline Brunelle (Assistant Professor), and Donaldo Canales (Doctoral student).

Currently, there is no published research that has examined the efficacy of DARE-R in Canada. In addition, there exists a need to examine the potential short- and long-term effect of DARE-R given the less promising original DARE research results and the costs of delivering the program. The current evaluation had several objectives. First, we examined the impact of DARE-R on

future substance use behaviours and attitudes, areas of psychosocial functioning (e.g., social skills, peer relationships, aggressive behaviours), and resiliency for Grade 7 Saint John students over a one year follow up period. Second, we reported on the substance use behaviours of Grade 12 students who participated in the original DARE program. Third, qualitative comments to open-ended questions provided by Grade 7 and 12 youth regarding their “DARE experience” and perceived impact of DARE were obtained and analyzed for thematic content.

QUESTIONNAIRES

Drug Abuse Resistance Education Survey

- This questionnaire was developed by the research team for the current evaluation and was completed by both Grade 7 and Grade 12 youth (Appendix A). It consists of demographic questions and four open-ended questions that asked youth (a) what they recalled from their most recent participation in DARE, (b) what they found most useful about DARE, (c) what they found least useful about DARE and (d) the impact of DARE on their decisions regarding substance use.

Substance Use Experience and Opinion Survey

- This questionnaire assessed information regarding substance use behaviours and attitudes (Appendix B). It was developed by the research team for the current evaluation and consists of two sections:
 - Section one was completed by Grade 7 and Grade 12 youth. It provides a list of various substance types (e.g., alcohol, cannabis, cocaine, etc.) and their associated common street names. Youth were asked to indicate their level of use (i.e., never used, used only once in my life, used at least once in past 30 days, used ≥ 5 times in past year) and the age of first use for each type of substance.
 - Section two was completed by Grade 7 youth. Referred to as the *Attitudes Towards Substance Use* (AT-SU) scale, this section consists of 10 questions rated on a 4-point scale (0 = strongly disagree to 3 = strongly agree). The questions were constructed to assess attitudes that are favorable or unfavorable of substance use (e.g., alcohol/drugs are no big deal if I only use them once in a while; I can use drugs and not get addicted to them).

Problem Oriented Screening Instrument for Teenagers (POSIT; Rahdert, 1991)

- Designed for youth between the ages of 12 to 19, the POSIT is a multidimensional self-report instrument composed of 139 yes/no questions. The POSIT screens for difficulties in the following 10 psychosocial areas: substance use/abuse, physical health, mental health, family relations, peer relations, educational status (e.g., learning disabilities), vocational status (only applicable to youth ≥ 16 years of age), social skills, leisure/recreation, and aggressive behaviour/delinquency. Scores for each subscale can be classified as falling in low, medium, or high risk ranges. Both cohorts completed the POSIT.¹

¹ The POSIT is available online at <http://www.emcdda.europa.eu/html.cfm/index4439EN.html> .

Resiliency Scales for Children and Adolescents (RSCA; Prince-Embury, 2006)

- Grade 7 youth completed the Sense of Mastery scale of the RSCA, which assesses a general ability to cope with adverse circumstances. The Sense of Mastery scale is divided into three subscales labeled Optimism (i.e., positive attitudes about the world and one’s own life), Self-Efficacy (i.e., competence, problem-solving attitudes), and Adaptability (i.e., ability to be receptive to criticism, learn from mistakes). Only the Sense of Mastery scale of the RSCA was completed by Grade 7 youth given time constraints on survey administration.²

EVALUATION STUDY PROCEDURE

Ethics approval for the study was granted from the Research Ethics Board at the University of New Brunswick-Saint John campus. We then requested permission to carry out the study from the Anglophone South School District Superintendent (formerly School District 8), which covers all English-speaking schools in the city of Saint John. After receiving permission from the Superintendent, we contacted school Principals directly to ask permission to survey their students. Schools were selected to maximize representation of different communities in Saint John and maximize sample size. Four middle schools and two high schools agreed to participate in the study. Parental consent was obtained for all youth aged 17 and younger.

For Grade 7 students, questionnaires were administered in large groups at three different time points. The first survey session occurred in late January 2012 in the week before the commencement of DARE-R, and this served as our baseline measurement. The second survey session occurred 10 weeks later (late April) upon completion of the DARE-R program. The final survey session was a one year follow-up when the students were in Grade 8 (April/May 2013). Questionnaires were administered to Grade 12 students only once in a large group setting in May 2012. It is important to note that DARE-R was implemented in 2012, thus, the Grade 12 data will only be able to speak to the impact of the original DARE curriculum.

The substance use subscale of the POSIT was of particular importance to the current evaluation because, based on the scores for this subscale at baseline, we were able to differentiate youth into different groups for future substance use risk. We theorized that risk for substance use may be high for some youth and low for other youth, and potential relationships may be “masked” or “washed out” by analyzing the aggregate sample. Thus, examining the impact of DARE-R separately for youth at different thresholds for substance use risk may be a more theoretically meaningful analytical strategy than examining the sample as one group.

² The RSCA is copyrighted and its item content cannot be reproduced.

RESULTS: GRADE 7 YOUTH

Sample Descriptives

Information was collected from a total of 137 Grade 7 students. These youth had an average age of 12.45 years ($SD = .56$; range = 11 to 14), were mostly female (57.7%), and were predominately of Caucasian ethnicity (75.2%). The number of students from each of the four middle schools and the Saint John neighborhoods represented were as follows:

School	Location	Sample Size
A	North End	3.6% ($n = 5$)
B	North End	22.6% ($n = 31$)
C	North End	26.3% ($n = 36$)
D	East Side	47.4% ($n = 65$)

As previously mentioned, the POSIT substance use subscale was used to examine whether DARE-R had any differential effects on youth at different levels for substance use risk. On the basis of POSIT substance use subscale scores obtained at baseline (i.e., before administration of DARE-R), the majority of these youth were identified as low (81.1%) substance use risk. Several youth fell at medium (17.2%) and high (1.6%) substance use risk; however, due to the prohibitively small group sizes for these latter two groups, they were merged into a single med-high (18.8%) substance use risk group to facilitate analyses.

Patterns of Substance Use

At the start of the evaluation (i.e., baseline), 21.2% of the overall sample reported having tried substances at least once in their lifetime. When separated by substance use risk, 17.2% of low risk and 52.2% of med-high risk youth reported previous substance use on at least one occasion.

Table 1 lists the rate of any history use for each substance type at each follow-up time point. Note that both the 10 week and one year follow-up data represent cumulative frequencies (i.e., a combination of baseline frequencies plus any new cases of substance use over the respective follow up periods). As can be seen, alcohol was the most commonly used substance, followed by tobacco and cannabis. In addition, alcohol, tobacco, and cannabis had the largest cumulative increases across both follow-up periods. Most other substances had very low rates of use, with cumulative frequencies of four or less by one year follow up. Mescaline/Peyote, barbiturates, and benzodiazepines had no reported use. It also can be seen that a small subset of youth reported having used 'harder' drugs, and most new cases of 'hard' drug use occurred during the time interval between baseline and 10 week follow-up, when youth were receiving DARE-R programming. Based on the one year follow-up data, the average age of first substance use was 11.66 years. The percentages in Table 1 are also displayed graphically in Figure 1.

Table 1: Number of Youth Reporting Any History of Substance Use

Substance type	Baseline		10 week Follow-up		One Year Follow-up	
	Frequency <i>n</i>	Percent <i>%</i>	Cumulative Frequency <i>n</i>	Cumulative Percent <i>%</i>	Cumulative Frequency <i>n</i>	Cumulative Percent <i>%</i>
Alcohol	28	20.4	36	26.3	57	41.6
Tobacco	9	6.6	12	8.8	17	12.4
Cannabis	7	5.1	9	6.6	17	12.4
Psilocybin	0	--	2	1.5	2	1.5
LSD	0	--	1	0.7	1	0.7
Mescaline/Peyote	0	--	0	--	0	--
PCP	1	0.7	2	1.5	2	1.5
Club drugs	1	0.7	1	0.7	1	0.7
Inhalants	3	2.2	4	2.9	4	2.9
Cocaine	1	0.7	1	0.7	3	2.2
Amphetamine	2	1.4	3	2.2	3	2.2
Opiates	0	--	1	0.7	1	0.7
Barbiturates	0	--	0	--	0	--
Benzodiazepines	0	--	0	--	0	--
Steroids	0	--	1	0.7	1	0.7

Figure 1: Percentages for Any History of Substance Use

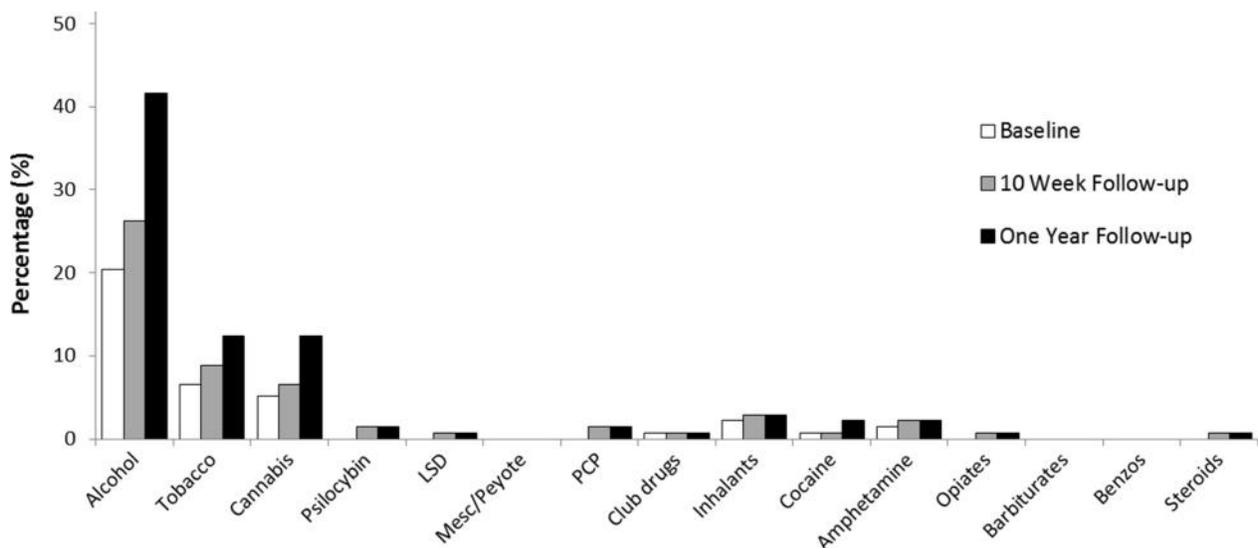
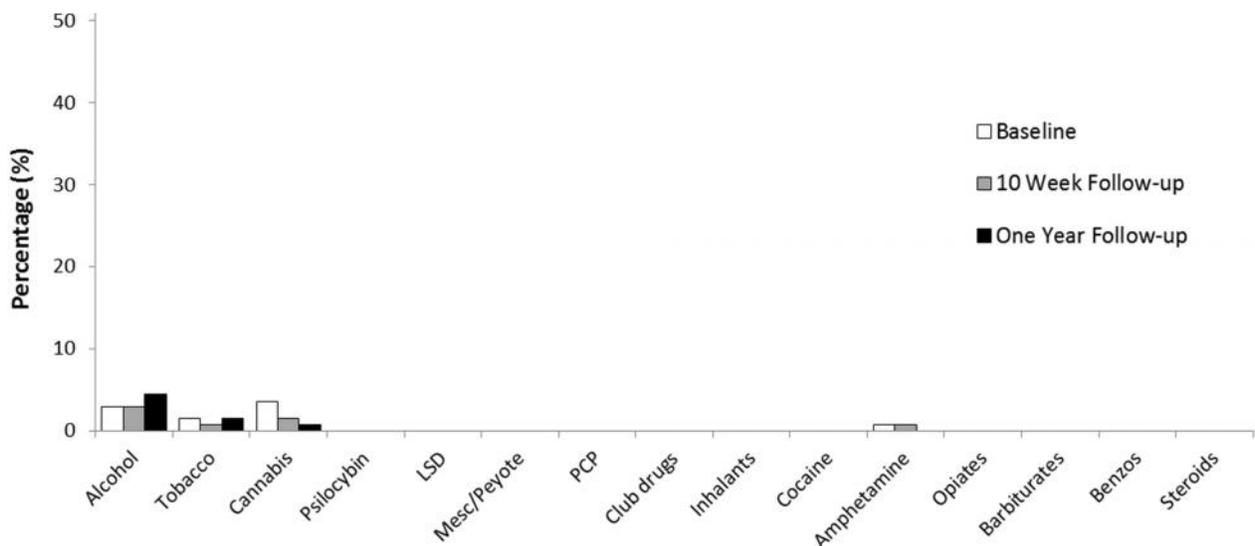


Table 2 and Figure 2 list the rate of substance use ≥ 5 times in the past year, which we used as an indicator of “problematic” use. For all time points, the rate of substance use ≥ 5 times in the past year was very low and limited to alcohol, tobacco, cannabis, and one case of amphetamine use.

Table 2: Number of Youth Reporting Substance Use ≥ 5 Times in Previous Year

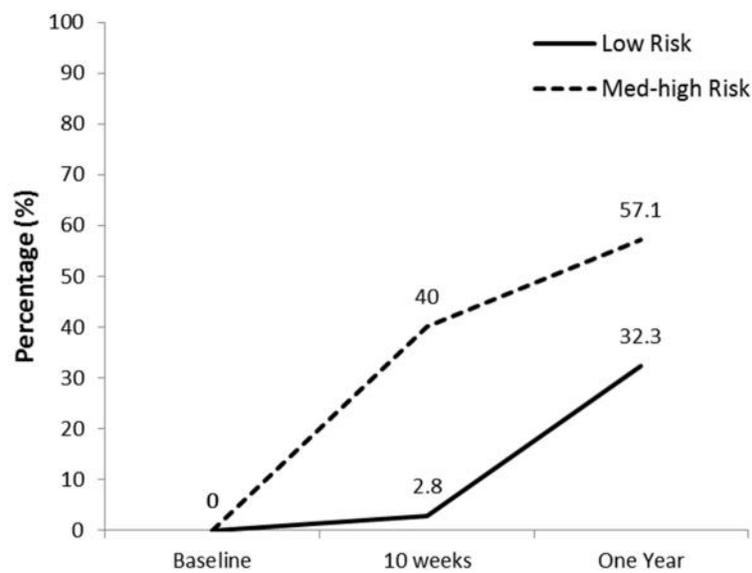
Substance type	Baseline		10 week Follow-up		One Year Follow-up	
	Frequency <i>n</i>	Percent %	Frequency <i>n</i>	Percent %	Frequency <i>n</i>	Percent %
Alcohol	4	2.9	4	2.9	6	4.4
Tobacco	2	1.5	1	0.7	2	1.5
Cannabis	5	3.6	2	1.5	1	0.7
Psilocybin	0	--	0	--	0	--
LSD	0	--	0	--	0	--
Mescaline/Peyote	0	--	0	--	0	--
PCP	0	--	0	--	0	--
Club drugs	0	--	0	--	0	--
Inhalants	0	--	0	--	0	--
Cocaine	0	--	0	--	0	--
Amphetamine	1	0.7	1	0.7	0	--
Opiates	0	--	0	--	0	--
Barbiturates	0	--	0	--	0	--
Benzodiazepines	0	--	0	--	0	--
Steroids	0	--	0	--	0	--

Figure 2: Percentages for Substance Use ≥ 5 Times in Previous Year



To assess the impact of DARE-R on future substance use, the rate of new incidents of substance use over the follow-up period was examined. Only youth with no history of substance use were the focus of this analysis, which allowed us to examine the impact of DARE-R on *prevention* of substance use. By 10 weeks, 2.8% of low risk and 40% of med-high risk youth engaged in their first substance use experience, and this difference in percentages was significantly different [Fisher’s Exact Test, $p = .002$]. At one year, this rate further increased to 32.3% and 57.1% for low and med-high risk youth, respectively, but they were not significantly different based on statistical criteria [Fisher’s Exact Test, $p = .184$]. As seen in Figure 3, despite having participated in the DARE-R program, both low and med-high risk youth increased their use of substances over the follow-up year, but med-high risk youth increased quicker and to higher levels.

Figure 3: Impact of DARE-R on Future Substance Use



Attitudes Towards Substance Use

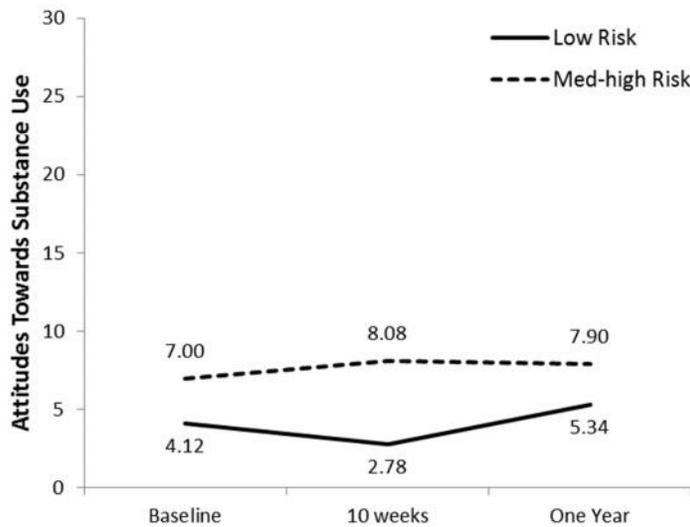
Table 3 lists the average AT-SU scores for a subset of 81 youth with complete data for this measure across all three time points. Given that this measure was developed for the current evaluation, we have no established criteria as to what constitutes a ‘low,’ ‘medium,’ or ‘high’ score on this scale. However, given that the possible range of scores on the measure ranges from 0 to 30, all scores fell on the lower end of the measure, suggesting that few youth had attitudes that were favorable of substance use at baseline.

Table 3: AT-SU Scores at Baseline

Time period	Low Risk ($n = 69$) M (SD)	Med-high Risk ($n = 12$) M (SD)
Baseline	4.12 (3.98)	7.00 (5.49)
10 week follow-up	2.78 (3.11)	8.08 (5.92)
One year follow-up	5.34 (4.57)	7.90 (5.84)

To examine the impact of DARE-R on substance use attitudes, changes in AT-SU scores across time were examined using a repeated-measures analysis of variance (RM-ANOVA). Results from the RM-ANOVA found no significant changes in attitudes over time for either substance use risk group [$F(2, 158) = 2.52, p = .083$], and no significant changes across time when both risk groups were aggregated into one single group [$F(2, 158) = 1.89, p = .154$]. However, as seen in Figure 4, med-high risk youth were found to consistently have higher AT-SU scores from baseline through the entire follow up period [$F(1, 79) = 11.09, p = .001$]. Despite this finding, all scores fell in the lower end of the scale, indicating that attitudes were generally not problematic at any point. Further, both lines were relatively flat across time, which suggests that DARE-R did not impact (i.e., improve or worsen) substance use attitudes for these youth.

Figure 4: Changes in Substance Use Attitudes



The baseline AT-SU scores (i.e., total score and item scores) for all youth with no previous history of substance use were also assessed for their ability to predict new incidents of substance use at both follow-up periods. This was done using Receiver Operating Characteristics curve analyses through examination of the area under the curve (AUC) statistic.³ Results indicated that only the total score of the AT-SU scale, which was designed to capture general attitudes favorable of substance use, was moderately predictive of new incidents of substance use at one year (AUC = .65, 95% CI = .52 to .78). Thus, as attitudes become increasingly favorable of substance use, the probability of using substances increases, and can be predicted over a one year time frame.

³ The AUC statistic ranges from 0 to 1.00 with .50 representing chance (i.e., no prediction) and 1.00 representing perfect prediction. An AUC = .70, for example, would be interpreted as a 70% probability that a randomly selected youth that engaged in substance use would score higher on a given measure than a randomly selected youth that did not engage in substance use. For an AUC value to be statistically significant, its 95% confidence interval must not include .50. AUC values of .56, .64, and .71 are considered the minimum values for small, medium, and large effect sizes, respectively (Rice & Harris, 2005).

Psychosocial Functioning

Next, we examined the impact of DARE-R on psychosocial outcomes via changes in the POSIT substance use subscale among 77 youth with complete data. This was not done separately for substance use risk groups as these groups were created using scores from this subscale, and would make such an analysis inappropriate. Results from a RM-ANOVA found no significant changes in POSIT scores across time for substance use risk [$F(1.70, 129.10) = 1.24, p = .289$, Greenhouse-Geisser correction]. As seen in Figure 5, there were no changes in substance use risk across time among youth that participated in DARE-R. In addition, POSIT scores at each time point were at the very low risk range of the substance use scale,⁴ as the vast majority of youth had no history of substance use.

Figure 5: Changes in POSIT Substance Use Scores

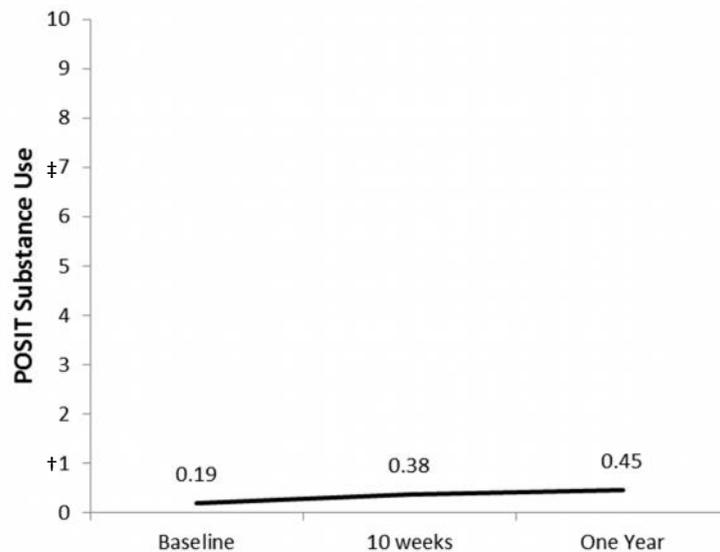


Table 4 lists the average POSIT subscale scores at baseline and the corresponding risk level categories for each POSIT need area for low and med-high substance use risk groups. The low risk youth scored in the low risk range for most psychosocial needs, with the exception of the needs related to educational status and social skills, which fell in the medium risk range. The pattern for med-high risk youth was different in that average scores for the needs of physical health, mental health, educational status, social skills, and aggressive behaviour/delinquency fell in the medium risk range.

⁴ All POSIT subscales differ in the number of items that make up each subscale, as well as the cut-off values for low, medium, and high risk ranges. Given that none of the POSIT subscales scores exceeded a score of 10, all the Y-axes (i.e., vertical line) for each POSIT-related graph were truncated to a maximum score of 10. To denote the differing risk levels cut-off values for each subscale, values below the symbol of † fall in the low risk range, values between the symbols of † and ‡ fall in the medium risk range, and values above the symbol ‡ fall in the high risk range.

Table 4: POSIT Subscale Scores at Baseline

POSIT Subscale	Substance Use Group					
	Low Risk (<i>n</i> = 66)			Med-High Risk (<i>n</i> = 11)		
	<i>M</i>	(<i>SD</i>)	Risk Level	<i>M</i>	(<i>SD</i>)	Risk Level
Physical health	1.44	(1.55)	Low	3.00	(1.55)	Med
Mental health	4.89	(4.21)	Low	7.18	(3.66)	Med
Family relationships	1.03	(1.40)	Low	1.64	(1.21)	Low
Peer Relationships	1.18	(1.26)	Low	1.91	(1.58)	Low
Educational Status	6.26	(4.47)	Med	8.27	(4.61)	Med
Social skills	4.02	(1.49)	Med	4.27	(1.10)	Med
Leisure and recreation	3.86	(1.47)	Low	3.82	(1.99)	Low
Aggressive behavior/ delinquency	2.71	(2.75)	Low	3.55	(2.98)	Med

To evaluate the impact of DARE-R on the eight POSIT subscales, changes were assessed using a repeated-measures multivariate analysis of variance (RM-MANOVA). Despite small increases and decreases in scores, there were no significant changes in any of the POSIT subscale scores over time for both low or med-high substance use risk groups [$V = .16$, $F(16, 60) = .69$, $p = .789$]. Second, although the med-high risk youth had slightly more elevated scores than low risk youth, both groups were not significantly different from each other across all POSIT subscales from baseline across the 10 week and one year follow-ups [$V = .10$, $F(8, 68) = .91$, $p = .511$].

The RM-MANOVA did, however, reveal a significant change in at least one POSIT subscale across time, but only when low risk and med-high risk groups were merged into one single group [$V = .33$, $F(16, 60) = 1.87$, $p = .042$]. Further analysis revealed a small, but significant, increase in scores over time only for the POSIT subscales of family relationships [$F(2, 150) = 5.59$, $p = .005$; linear trend, $F(1, 75) = 7.75$, $p = .007$] and aggressive behaviour/delinquency [$F(2, 150) = 3.59$, $p = .030$; linear trend, $F(1, 75) = 7.56$, $p = .007$]. As can be seen below in Figures 6a-h, most POSIT subscale scores did not change for this sample of youth that participated in DARE-R, but very small trends towards increased difficulties were found for the psychosocial areas of family relationships and aggressive behaviour/delinquency in the sample overall.

Figure 6a: Physical Health

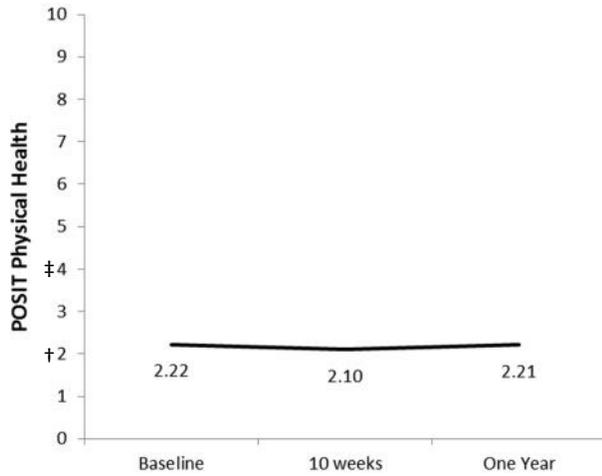


Figure 6b: Mental Health

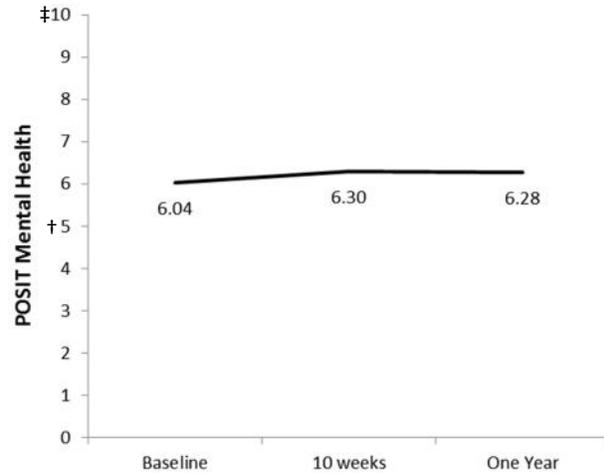


Figure 6c: Family Relationships

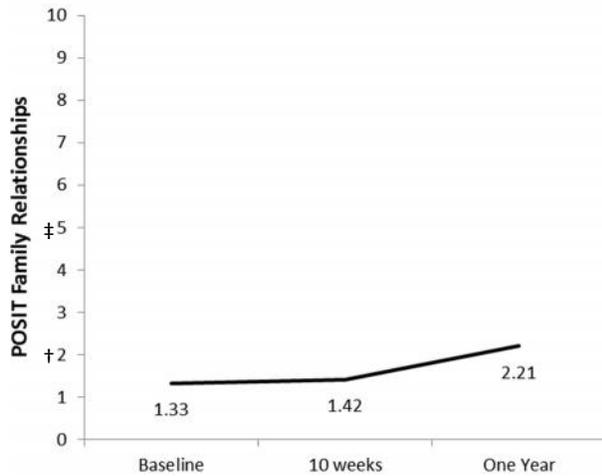


Figure 6d: Peer Relationships

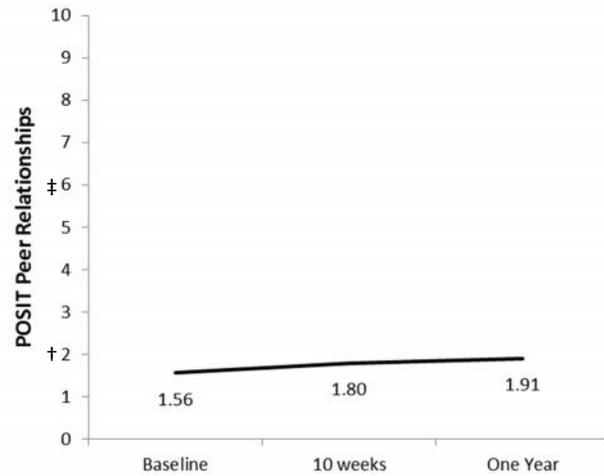


Figure 6e: Educational Status

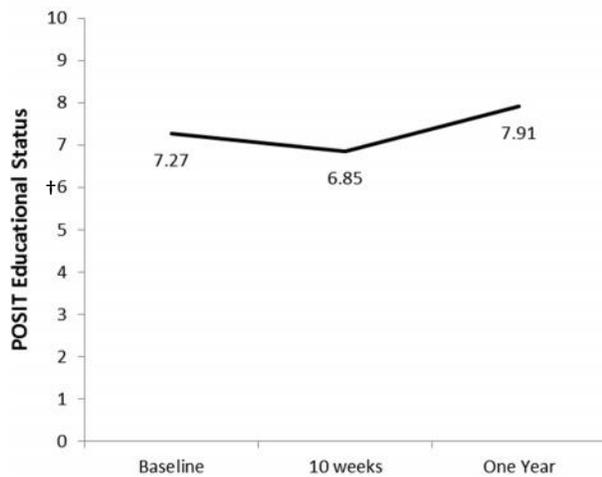


Figure 6f: Social Skills

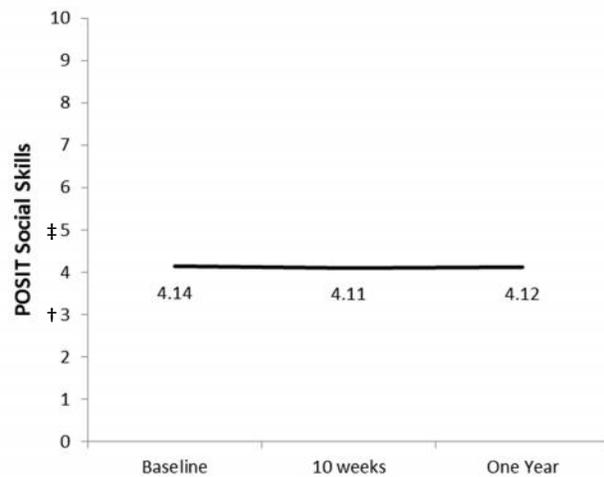


Figure 6g: Leisure and Recreation

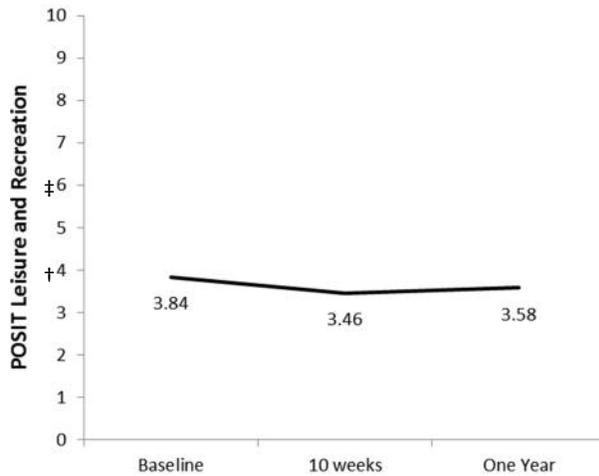
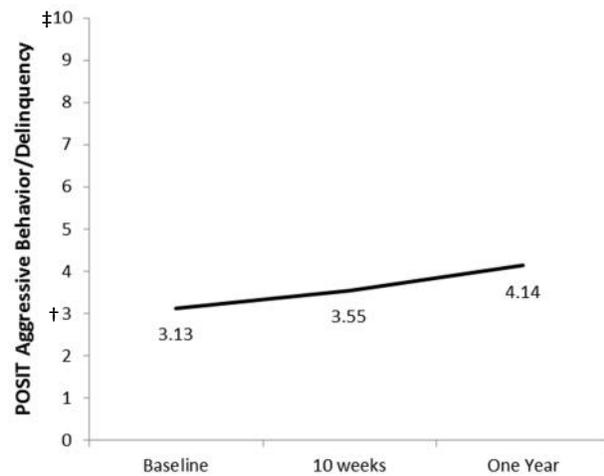


Figure 6h: Aggressive Behaviour/Delinquency



Lastly, baseline scores for all POSIT subscale were assessed for their ability to predict new incidents of substance use at both follow-up periods for all youth with no previous history of substance use. Results revealed that only the baseline POSIT scores for the aggressive behaviour/delinquency (AUC = .78, 95% CI = .65 to .92) subscale strongly predicted new incidents at 10 weeks. No baseline POSIT subscale predicted new incidents of substance use at one year follow-up. This would suggest that as aggressive behaviour/delinquency risk increases, substance use can be predicted, but this is only limited to short-term prediction.

Resiliency Profiles

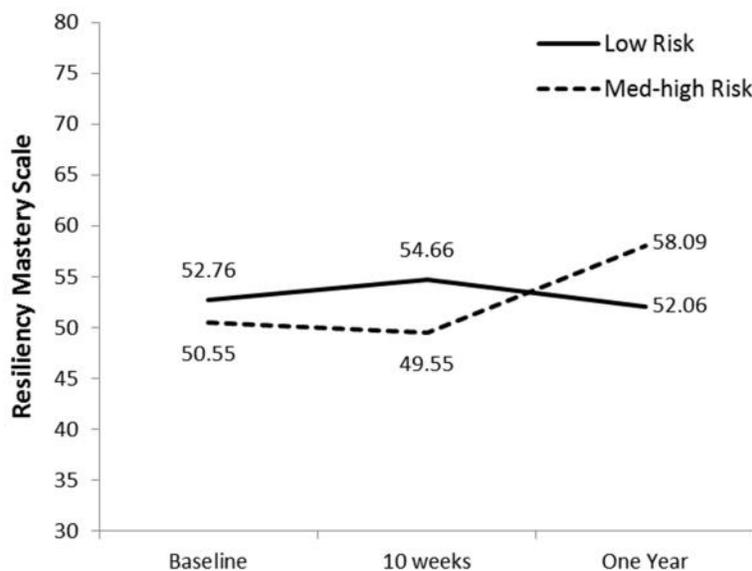
Finally, the impact of DARE-R on resiliency was investigated among a subsample of 78 youth with complete resiliency data at all three time points. Table 5 displays the resiliency profile at baseline for both substance use risk groups. The scores for the Mastery scale indicated that sense of mastery (i.e., ability to cope with adverse circumstances) fell within the average range for adolescents of similar age to the sample. Scaled scores for the three mastery subscales (i.e., Optimism, Self-Efficacy, and Adaptability) also fell within the average range. Thus, when compared to a normative sample of other youth of similar age, the baseline profile for the youth in the current study suggests that these youth had relatively normal levels of resiliency.

Table 5: Resiliency Scores at Baseline

Resiliency Scales for Children & Adolescent Scores	Low Risk (n = 67)		Med-High Risk (n = 11)			
	M	(SD)	Normative Ranking	M	(SD)	Normative Ranking
Mastery scale	52.76	(12.23)	Average	50.55	(7.67)	Average
Optimism	10.91	(3.19)	Average	11.09	(2.21)	Average
Self-Efficacy	10.78	(3.52)	Average	9.82	(2.44)	Average
Adaptability	10.63	(3.04)	Average	9.36	(2.46)	Average

To determine if DARE-R influenced resiliency across time, a RM-ANOVA was conducted for the Mastery scale. This analysis revealed a significant change in Mastery scale scores across time for the substance use risk groups [$F(1.78, 135.25) = 3.71, p = .032$, Greenhouse-Geisser correction]. Further analyses revealed that changes in resiliency scores were only present for the med-high substance use risk youth, and this change occurred primarily during the time interval between 10 weeks and one year [quadratic trend: $F(1, 76) = 5.61, p = .020$]. Thus, as seen in Figure 7, med-high substance use risk youth had no significant changes in resiliency scores from baseline to 10 weeks, but from 10 weeks to one year follow-up, resiliency scores significantly increased into the ‘above average’ range (i.e., enhanced sense of mastery) when compared to other youth of similar age. There were no significant changes across time for low substance use risk youth.

Figure 7: Changes in Mastery Scale Scores



DARE-R’s impact on the three mastery subscales of Optimism, Self-Efficacy, and Adaptability was assessed with a RM-MANOVA. Results from this analysis found no significant change across time for either substance use risk group [$V = .11, F(6, 71) = 1.50, p = .191$] and no significant change across time when both substance use groups were collapsed into a single group [$V = .04, F(6, 71) = .79, p = .793$]. Lastly, the average scores for both substance use risk groups were not significantly different from each other across the Optimism, Self-Efficacy, and Adaptability subscales [$V = .04, F(3, 74) = .96, p = .415$]. Figures 8a-c below show the resiliency score trends across time for both substance use risk groups.

Finally, baseline scores for the Mastery scale and the Optimism, Self-Efficacy, and Adaptability subscales were assessed for their ability to predict abstinence from substances at both follow-up periods. This analysis only included youth with no history of substance use. Results from Receiver Operating Characteristic curve analyses revealed that none of the resiliency scales predicted abstinence from substance use. In other words, increases in resiliency were not associated with a decreased risk for future substance use.

Figure 8a: Optimism

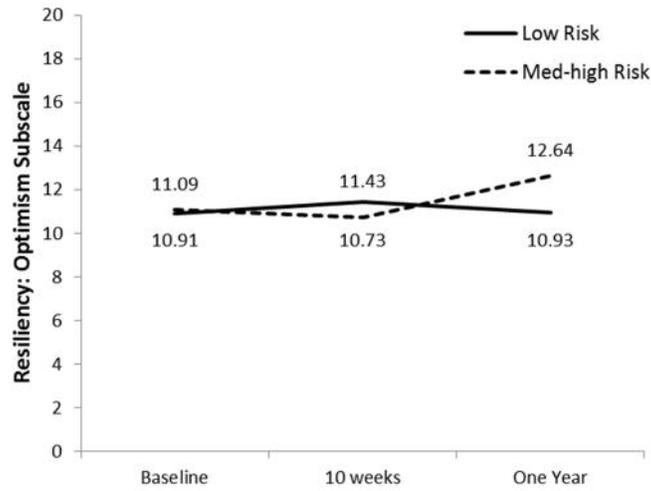


Figure 8b: Self-Efficacy

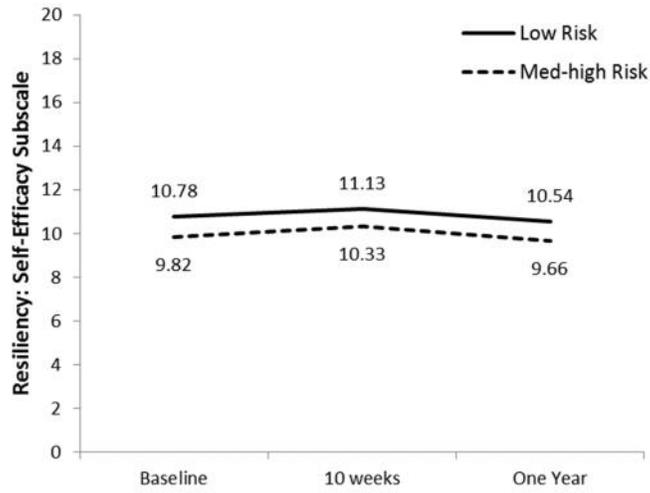
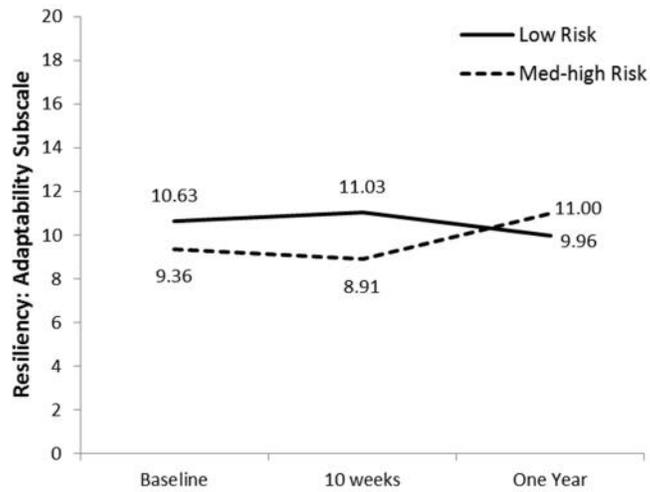


Figure 8c: Adaptability



Summary of Qualitative Comments

Comments were grouped according to themes that emerged in the Grade 7 youths' responses about their experience of DARE-R. Only the one year follow-up comments were summarized given that they would indicate if DARE-R had lasting impressions on youth up to one year after completing DARE-R. Sample comments relating to each theme are provided in parentheses.

The first open-ended question asked youth what they remembered from taking the DARE-R program. Four themes emerged. The percentage of responses for each theme is indicated along with example statements reflecting that theme:

- **Basic Content (65%):** Reflects basic and elemental information about DARE-R (e.g., "How to say no", "The effects of drugs and alcohol", "Drugs, drinking + smoking is bad. Say no").
- **Deep Content (16%):** Youth recalls slightly more in-depth information about DARE-R (e.g., "I remember the DARE decision making model...", "I remember the strategies on how to avoid drugs", "How drugs and alcohol can affect your life and the people around you...")
- **No Recollection (10%):** These were "I don't know" or "I don't remember" statements.
- **Activities (8%):** Comment referred to activities that the youth engaged in during DARE-R but do not reflect content (e.g., "Writing an essay at the end of the year", "Talking with [the DARE-R Instructor] about lots of stuff")

The second open-ended question asked youth what they recalled being the most valuable thing they learned from the DARE-R program. Again, the same four themes emerged:

- **Basic Content (69%):** Reflects basic and elemental information about DARE-R (e.g., "How to say no to drugs", "What are in drugs", "Don't do drugs or you will amount to nothing").
- **No Recollection (21%):** These were "I don't know" or "I don't remember" statements.
- **Deep Content (9%):** Youth recalls slightly more in-depth information about DARE-R (e.g., "Making decisions", "The consequences of taking drugs and the effect they have...")
- **Activities (2%):** Comment referred to activities that the youth engaged in during DARE-R but do not reflect content (e.g., "watching videos")

The third open-ended question asked youth what they recall being the least valuable thing they learned from the DARE-R program. Six themes emerged:

- **No Recollection (54%):** These were "I don't know" or "I don't remember" statements.
- **Basic Content (15%):** Reflects basic and elemental information about DARE-R (e.g., "What dare stands for", "That smoking is bad I already knew that", "what it does to you")
- **Not Classifiable (10%):** These were statements that could not be classified into any theme.
- **Activities (9%):** These comments referred to activities or mention of certain program aspects of DARE-R but didn't reflect any content (e.g., "The videos", "Surveys", "The Lion Mascot", "the teacher")
- **Everything Valuable (9%):** Nothing specific was offered, only a general statement that everything was helpful/useful (e.g., "... everything is useful", "I don't know I think everything was helpful")
- **Deep Content (3%):** Suggests slightly more in-depth content about DARE-R (e.g., "How to stop a bully", "How these things can affect you and your life style")

Youth were then asked to rate on a 4-point scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) whether they felt if the DARE-R program has had any influence on their decisions regarding alcohol or drug use. The average rating for this question was 3.05 ($SD = .88$), which indicates that most youth “agree” that DARE-R has influenced their decisions regarding substance use. As a follow up, the last open-ended question asked youth in what ways they felt the DARE-R program influenced their behaviour and attitudes towards alcohol and drug use. Seven themes emerged:

- **Influence via Adverse/Negative Consequences (32%):** Indication that DARE-R influenced youth through knowledge of the negative consequence of substance use (e.g., “Telling me the affects it causes and how they can mess your life up when you get addicted”, “You can get in bad accednts [*sic*] and go to jail”)
- **Positive Influence (18%):** General indication that DARE-R influenced youth’s desire to not use substances (e.g., “Stopped me from wanting to do drugs”, “It influence my behavior because I know not to do them”, “It has made me not want to do drugs or drink even more”)
- **No Influence (17%):** Youth indicated that DARE-R had no influence on them either because they do not engage in substance use behaviors or have no plans to use substances (e.g., “Well I don't smoke so my behaviors are good”, “I thought these thoughts before DARE”). Some youth stated that they disagreed with DARE-R as influencing them (e.g., “It didn't really influence me at all, only for harder drugs because I was already against them”).
- **No Recollection (14%):** These were “I don’t know” or “I don’t remember” statements.
- **Basic Content (9%):** Reflects basic and elemental information about DARE-R (e.g., “Never do drugs or alcohol”, “saying no”, “Don’t do drugs!”).
- **Not Classifiable (7%):** These were statements that could not be classified into any theme.
- **Deep Content (3%):** Only three comments fell in this grouping, but were sufficiently different to warrant a separate grouping. Two youth indicated that DARE-R taught them to avoid substances (e.g., “To avoid places where you know drugs are”, “DARE taught me to stay away from drugs/alcohol...”) and one youth indicated making better decisions (e.g., “By helping me make smarter desecions [*sic*] in life”)

RESULTS: GRADE 12 YOUTH

Sample Descriptives

Surveys were administered to 119 Grade 12 students with roughly an equal proportion of participation from each of the two high schools (55.5% and 44.5%). This sample had an average age of 17.47 years ($SD = .83$), was mostly female (70.1%) and of Caucasian ethnicity (83.9%). A total of 107 youth (89.9%) participated in the DARE program when they were younger. Thus, all results described only pertain to these 107 participants as there were an insufficient number of non-DARE students to conduct any comparison analyses to the DARE participants. Given that this Grade 12 sample would have participated in the original DARE program and not the DARE-R program, we will only present a summary of their rate of substance use at the time of the survey, their POSIT-based substance use profile, and a summary of the qualitative comments regarding the original DARE program.

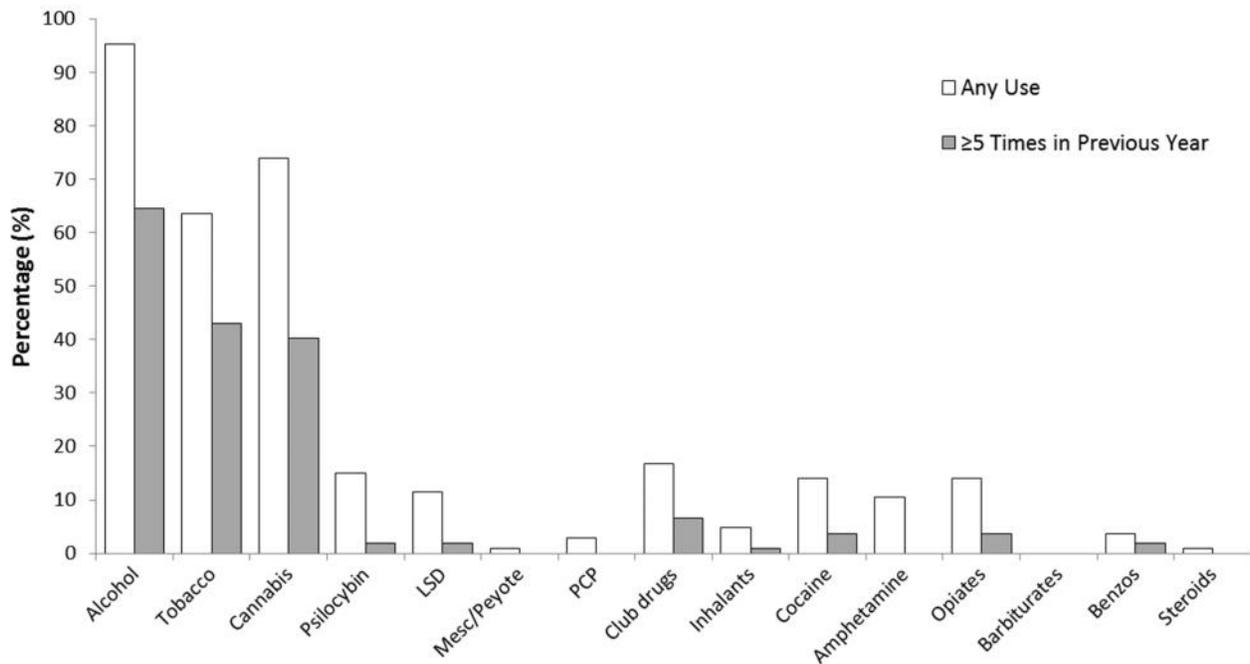
Rate of Substance Use

Table 6 and Figure 9 list various types of substances along with the frequencies and percentage of youth who indicated having tried each substance on at least one occasion and ≥ 5 times within the past year. If a youth indicated having used a specific type of substance, they were also asked to provide the approximate age of first use. For any use, alcohol (95.3%), cannabis (73.9%), and tobacco (63.5%) were the most widely used substances, followed by club drugs (e.g., ecstasy; 16.8%) and psilocybin (e.g., mushrooms; 14.9%). Mescaline/Peyote, PCP, inhalants, benzodiazepines, and steroids had low frequency of use. No youth in this sample reported using barbiturates. The overall average age of first substance use was 15.11 years, with alcohol and tobacco having the youngest ages of first use. Youth were most likely to have used alcohol, tobacco, and cannabis ≥ 5 times in the previous year. No youth reported problematic use of mescaline/peyote, PCP, amphetamines, barbiturates, but a small group reported problematic use of ‘hard’ drugs (e.g., cocaine, opiates). The average age of youth who engaged in substance use ≥ 5 times in the previous year was 14.66 years.

Table 6: Substance Use Frequencies for Grade 12 Youth

Substance type	Any use			≥ 5 times in previous year		
	Frequency <i>n</i>	Percent %	Age of first use <i>M</i> (<i>SD</i>)	Frequency <i>n</i>	Percent %	Age of first use <i>M</i> (<i>SD</i>)
Alcohol	102	95.3	14.48 (1.97)	69	64.5	14.26 (2.11)
Tobacco	65	63.5	14.80 (2.16)	46	43.0	14.57 (2.34)
Cannabis	79	73.9	15.01 (1.68)	43	40.2	14.86 (1.55)
Psilocybin	16	14.9	16.50 (1.55)	2	1.9	17.50 (0.71)
LSD	12	11.5	16.31 (1.25)	2	1.9	16.50 (2.12)
Mescaline/Peyote	1	0.9	15.00 (--)	0	--	--
PCP	3	2.8	15.67 (0.58)	0	--	--
Club drugs	18	16.8	16.00 (1.03)	7	6.5	15.57 (1.13)
Inhalants	5	4.9	16.00 (1.41)	1	0.9	14.00 (--)
Cocaine	15	14.0	16.20 (1.15)	4	3.7	15.50 (1.73)
Amphetamine	11	10.5	15.80 (1.40)	0	--	--
Opiates	15	14.0	15.40 (1.77)	4	3.7	15.00 (2.16)
Barbiturates	0	--	--	0	--	--
Benzodiazepines	4	3.7	16.25 (1.50)	2	1.9	16.00 (1.41)
Steroids	1	0.9	18.00 (--)	0	--	--

Figure 9: Percentages for Any Substance Use and ≥ 5 Times within the Past Year



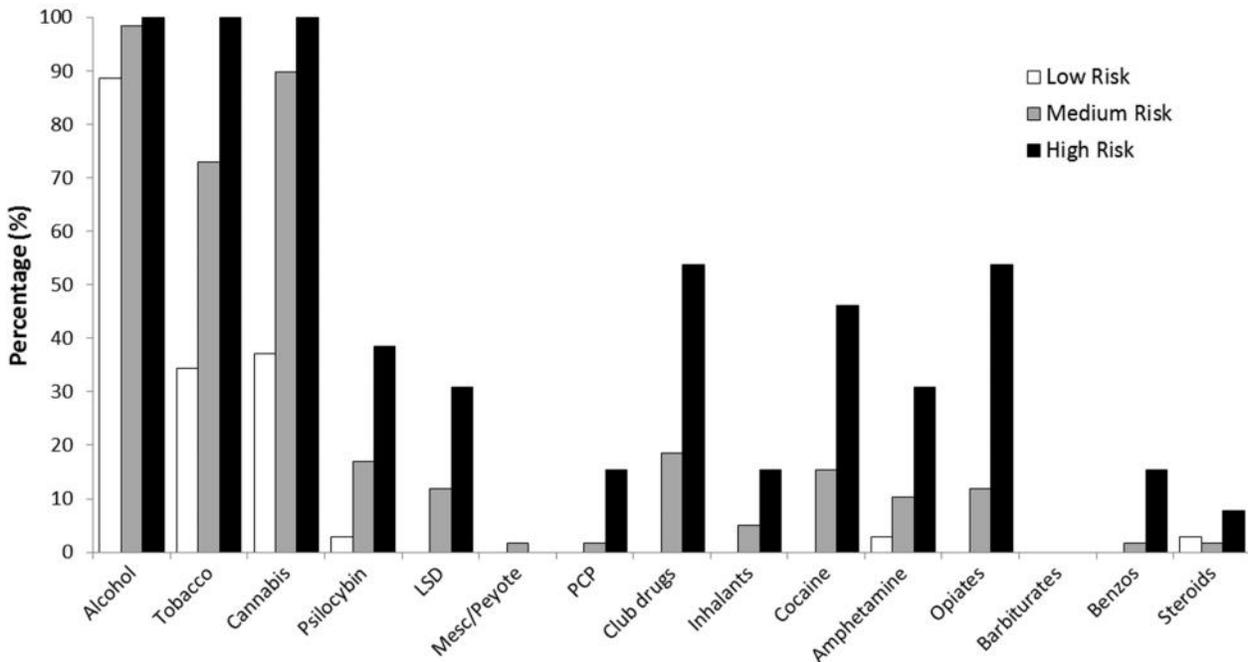
This sample of Grade 12 youth also completed the POSIT questionnaire. Although the POSIT-based data was not a primary focus for this sample, the patterns of substance use broken down by substance use risk group were of interest. Scores on the POSIT substance use subscale indicated that about a third were low risk ($n = 35$; 32.7%), over half were medium risk ($n = 59$; 55.1%), and smaller group were high risk ($n = 13$; 12.1%).

As seen below in Table 7 and Figure 10, regardless of substance use risk, most youth report having used alcohol. Slightly over a third of low substance use risk reporting using either tobacco or cannabis, but these two substances were very common among medium and high substance use risk groups. The remaining substances use frequencies appeared to increase in a stepwise manner as substance use risk increased. Thus, low risk youth had little to no use for most substance types, high risk youth had the greatest level of use, and medium risk youth fell in the intermediate range.

Table 7: Any Substance Use as a Function of POSIT Substance Use Risk

Substance type	Low Risk (<i>n</i> = 35)		Medium Risk (<i>n</i> = 59)		High Risk (<i>n</i> = 13)	
	Frequency <i>n</i>	Percent %	Frequency <i>n</i>	Percent %	Frequency <i>n</i>	Percent %
Alcohol	31	88.6	58	98.3	13	100
Tobacco	12	34.3	43	72.9	13	100
Cannabis	13	37.1	53	89.8	13	100
Psilocybin	1	2.9	10	16.9	5	38.5
LSD	0	--	7	11.9	4	30.8
Mescaline/Peyote	0	--	1	1.7	0	--
PCP	0	--	1	1.7	2	15.4
Club drugs	0	--	11	18.6	7	53.8
Inhalants	0	--	3	5.1	2	15.4
Cocaine	0	--	9	15.3	6	46.2
Amphetamine	1	2.9	6	10.2	4	30.8
Opiates	0	--	7	11.9	7	53.8
Barbiturates	0	--	0	--	0	--
Benzodiazepines	0	--	1	1.7	2	15.4
Steroids	1	2.9	1	1.7	1	7.7

Figure 10: Percentages for Any Substance Use by POSIT Substance Use Risk



Summary of Qualitative Comments

As with the Grade 7 cohort, the open-ended qualitative comments from the *Drug Abuse Resistance Education Survey* for the Grade 12 cohort were examined. As a reminder, the qualitative comments summarized pertain only to the original DARE program.

The first question asked the Grade 12 youth what they remember from taking the original DARE program. Five themes emerged:

- **Basic Content (71%):** Youth recalls only basic and elemental information about DARE (e.g., “I remember learning about the effects of drugs and how they can ruin your life”, “I remember learning about drug and alcohol abuse, what it does to your system and how it affects your life”).
- **Activities (13%):** These comments referred to activities the youth engaged in or certain program aspects of DARE but didn’t reflect any content (e.g., “We had booklets to fill out, discussed what DARE stood for, and passed a bear around”, “The Teddy Bear, taking it in Gr. 5&7, Graduating from the program”).
- **No Recollection (7%):** Youth stated they could not recall anything from the DARE program.
- **Not Classifiable (5%):** Statements that could not be categorized into any theme.
- **Deep Content (4%):** Youth recalls slightly more in-depth information about DARE (e.g., “I remember learning strategies on how to approach situations where people around me were doing drugs...”, “I remember learning all of the effects drug and alcohol abuse [sic] can do to you. We learned the ways to say no, and other ways besides drugs and alcohol to have fun”).

The second open-ended question asked Grade 12 youth what they recall being the most valuable thing they learned from the original DARE program. The following six themes emerged:

- **Adverse/Negative Consequences (47%):** Youth stated the most valuable thing about DARE was learning about the adverse/negative consequences of substance use (e.g., “How drugs could affect my athletic life, my school life, and my family”, “What heavy drugs can do to your life”, “How harmful certain drugs are”).
- **Basic Content (29%):** Youth recalls only basic and elemental information about DARE (e.g., “Don't do drugs and what kind of drugs are out there”, “Drugs are bad”, “To stay away from drugs”).
- **Peer Pressure (13%):** Youth stated that the most valuable thing about DARE was learning about peer pressure (e.g., “That its okay to refuse no matter what people say”, “How to resist drugs and alcohol.”, “Most valuable thing I learned was that it is ok to say no.”).
- **Not Classifiable (5%):** Statements that could not be categorized into any theme.
- **No Recollection (3%):** Youth stated they could not recall anything from the DARE program.
- **Nothing Valuable (2%):** Two youth stated that they did not find the DARE program to be valuable (e.g., “Nothing, dare did not work with me and my friends”, “I did not consider to program to be valuable”).

The third open-ended question asked youth what they recall being the least valuable thing they learned from the original DARE program. Six themes emerged:

- **No Recollection (29%):** Youth stated they could not recall anything from the DARE program.
- **Basic Content (20%):** Youth's comments suggest that they found the basic DARE content to be the least valuable (e.g., "Learning about alcohol", "statistics", "Drugs are bad being told that means nothing").
- **Unrealistic/Exaggerated (17%):** Comment suggests they found the information unrealistic, exaggerated, that it does not reflect the real world (e.g., "It was over exaggerated, it was hard to take the class seriously", "How they tell you to just say no to drugs. I don't believe that is enough", "It didn't really prepare me for the reality of it", "That every single drug and all alcohol is bad for you").
- **Everything Valuable (12%):** General statement that everything was valuable, even if it did not impact youth later on in life (e.g., "It was all valuable but it did not impact my life whatsoever.", "... Everything was very good and had valid points", "There wasn't really anything taught that wouldn't be valuable").
- **Not Classifiable (11%):** Statements that could not be categorized into any theme. However, two interesting comments emerged that are worth noting:
 - "I remember that least valuable thing was probably being taught this in Gr. 5 rather than Gr. 9."
 - "I think most kids would have no idea what drugs were if DARE didn't introduce them to us. They shouldn't be teaching it to such young children."
- **Activities (7%):** Referred to activities the youth engaged in or certain program aspects of DARE but didn't reflect any content (e.g., "How to shake hands", "What it feels like to be drunk. It was pointless").

Youth were asked to rate on a scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) whether they felt the DARE program has had any influence on their decisions regarding alcohol or substance use. The average rating for this question was 2.37 ($SD = .77$) which indicates that most youth "disagree" that participation in DARE when younger had influenced their decisions regarding substance use. As a follow up, the last open-ended question asked youth in what ways they think the original DARE program has influenced their behaviour and attitudes towards alcohol and drug use. Five themes emerged:

- **Knowledge of Averse/Negative Effects (28%):** Youth indicated DARE helped become more knowledgeable about the negative consequences of substance use (e.g., "How they effect your body and health", "It influenced me in the aspect that drugs/alcohol are not good for you", "I know how they can harm people, and I will never do hard drugs like heroin, cocaine, etc.").
- **No Influence (22%):** Responses indicated that DARE had no influence over decision to use substances (e.g., "In no way whatsoever", "I think it opened my eyes to the effects of substances but it didn't influence my choices.").
- **Limited Influence (21%):** Youth indicated that DARE exerted some limited influence over their substance use behaviors, but they continued to use substances (e.g., "Sure I smoke weed, but I will never sniff anything. It helped me make life choices I will never regret", "it

kept me away from heavy drug useage [sic]", "... DARE made my choices with alcohol better, encouraged me to not drink. Through these lessons I feel I drink quite responsibly [sic]").

- **Positive Influence (19%):** General indication that DARE-R influenced youth's desire to not use substances (e.g., "It has helped me be confident and to not fall for peer pressure and to never drink and drive and do drugs", "D.A.R.E. has made me more aware of the drugs that are out there. And taught me how to get out of peer pressure", "I think it helped expose drugs/alcohol in a good way, rather than having to try and understand them when you are faced to make a decision regarding drug use or alcohol.>").
- **Not Classifiable (10%):** Statements that could not be categorized into any theme.

SUMMARY OF EVALUATION AND CONCLUSION

The goal of the current study was to evaluate the impact of the DARE program on Saint John, NB youth in regards to future substance use behaviours and multiple life outcomes. Through the use of several questionnaires, we were able to collect rich and descriptive information that spanned a year in the lives of Grade 7 youth and assess the long-term impact for youths now in Grade 12. What follows is a summary of the results pertaining to the impact of DARE-R for Grade 7 youth, and the impact of the original DARE program for Grade 12 youth.

Impact of DARE-R on Grade 7 Youth

As a whole, the sample was very low risk for substance use, and remained very low risk throughout the duration of the evaluation. The rate of previous substance use at baseline (pre-DARE-R) for youth at low and med-high substance use risk was markedly different (17.2% vs 52.2%, respectively). Among low and med-high substance use risk youth with no previous history of substance use prior to participating in DARE-R, the rate of new incidents of substance use *increased* over the follow-up period. At one year post-DARE-R follow-up, 32.3% of low risk and 57.1% of med-high risk who initially had no previous history of use had engaged in first time substance use. Thus, it appears that among this sample of Grade 7 Saint John youth, participation in DARE-R did not meaningfully prevent future substance use. With that said, this finding should be interpreted with caution in the absence of a non-DARE-R control group. Without the inclusion of a control group it is not possible to know what would happen to youth if they had not participated in DARE-R. Rather, our research design only permits us to conclude that DARE-R did not appear to prevent future substance for youth who participated in the program. Another important finding was that very few youth engaged in "problematic" substance use (i.e., 5 or more times in the previous year), with a rate of 5.1% at baseline and 4.4% at follow-up. Unfortunately, given that so few youth met this criterion, we could not conduct any meaningful analysis to examine whether DARE-R may impact problematic substance use.

Thus, for Grade 7 youth with no history of substance use, and particularly youth at low risk for substance use, DARE-R appeared to have little to no effect in preventing future substance use. Given that the outcome for this trend was for "any new incident of substance use" and not "problematic substance use," the increased use of substances might be a reflection of the

normative substance use experimentation that occurs during early adolescence for many youth rather than progression into serious substance use. As part of their developmental transition, youth are coming into contact with new social pressures to use substances and undergoing social, emotional, cognitive, and physical developmental changes that may influence their risk of youth (e.g., more risk taking or sensation seeking tendencies). DARE-R does not appear to influence this risk.

Some evidence emerged of problematic substance use among a small percentage of youth in the Grade 7 sample. This group included any youth who indicated having used any substance ≥ 5 times in the year prior to DARE-R participation, and the results suggested that problematic use was primarily limited to alcohol, tobacco, and cannabis. Some youth reported previous use, but not necessarily problematic use (i.e., ≥ 5 times in past year), of narcotics such as cocaine, amphetamine, and opiates. Although definitions of what is considered problematic use may vary, there clearly exists a minority of youth who were engaging in substance use at a concerning level and that may require more specialized programming than what can be achieved by a universal prevention program like DARE-R.

The results pertaining to the AT-SU scale yielded interesting findings. First, most Grade 7's held non-supportive attitudes towards substance use, and these attitudes remained low over each time period. As expected, youth in the med-high substance use risk category endorsed greater attitudes in support of substance use at all three data collection time periods than the low risk youth. However, there was also no decline in support for these attitudes post-DARE-R participation in the med-high risk group. The lack of impact on substance abuse attitudes is a concern given that greater endorsement of these attitudes was moderately predictive of new instances of substance use over the long-term. Thus, although problematic attitudes were low, as attitudes become increasingly favorable of substance use, they were linked to future substance use. This finding is generally consistent with previous literature which has found that favorable attitudes towards drugs and alcohol usually precede their use (Hawkins, Catalano, & Miller, 1992; O'Malley, Johnston, & Bachman, 1998), especially when the harm from drugs and alcohol is perceived to be low (Eurobarometer, 2011; Järvinen & Østergaard, 2011). Although DARE-R strives to change youths' attitudes about substance use, it did not appear to achieve this objective in the current sample. A major issue is that most youth already had anti-substance use attitudes, and this created a floor effect in the data. The lack of impact on attitudes in the more vulnerable med-high risk group, however, points to the ineffectiveness of DARE-R to change these attitudes.

DARE-R may have an indirect impact on the life of youths by promoting better life choices. As such, we assessed the broader impact of DARE-R participation using the POSIT, which measured such functional areas as family problems, engagement in delinquency, and educational problems. All POSIT subscale scores from baseline to one year follow-up among the low substance use risk youth remained low. This picture changed somewhat when examining the results for the med-high substance use risk youth. These youth showed significant increases (i.e., greater difficulties) in the psychosocial need areas of family relationships and aggressive behaviour/delinquency. It is not likely that DARE-R caused this increase in family problems and

delinquent behaviours, but it also did not contribute to a reduced risk in these life domains. That said, these increases were small and scores remained in the low end of the medium risk range for these two domains. Effecting change in these areas is perhaps beyond what DARE-R can accomplish in the span of its 10 week duration, especially considering that change in psychosocial areas is not the main goal of DARE-R. If targeting these psychosocial areas was a primary objective for DARE-R, then the predictive association between the baseline aggressive behaviour/delinquency need area and future new incidents of substance use suggests that it is improvement in this psychosocial area that may translate into reduced substance use.

The profiles of Grade 7 youth suggest that the sample had average levels of resiliency at baseline relative to what is typically reported for adolescents at this stage of development in the general population. DARE-R appeared to have some impact on resiliency in regards to the overall Mastery scale, but not when examining the three resiliency subdomains of Optimism, Self-Efficacy, and Adaptability. Med-high substance use risk youth had improved Mastery scores at the one year follow-up. However, despite this change, analyses did not find the Mastery scale predictive of reduced incidents of substance use. This finding suggests that, although strengthening resiliency may be an important and worthwhile goal, improvements in resiliency do not seem to translate into reduced substance use risk. Similar to psychosocial needs, the content of DARE-R is not designed to address or change resiliency, but to enhance aspects of resiliency. However, this appears to have limited impact on reducing substance use.

In regards to the qualitative comments of Grade 7 students, most of what was recalled only pertained to very basic DARE-R content (e.g., “Just Say No”, “Drugs are bad”) one year after DARE-R participation. Deeper content, which would include various strategies to avoid substances, deal with peer pressure, or improve decision-making skills, were recalled to a much lesser degree. When asked to recall specific ways in which DARE-R influenced their behaviour and attitudes towards substance use, youth mentioned that it was the content regarding the aversive and negative consequences of substances which influenced them to avoid substances. Several youth indicated that DARE-R had a positive influence on their decisions to not use substances. Overall, the qualitative comments for Grade 7 youth suggest that on the whole, youth did not remember much of the DARE-R program at one year follow-up.

To summarize, we found no evidence of DARE-R having an impact on reducing substance use behaviors or attitudes among Grade 7 youth. We found evidence of a negative influence on the psychosocial outcomes of family relationships and aggressive behaviour/delinquency, and a minor positive influence on one aspect of resiliency. Furthermore, the only variables that predicted instances of any future substance use, but not necessarily problematic use, were attitudes favorable of substance use, aggressive behavior, and delinquency. Identification of problematic attitudes and behaviours, and incorporating content that targets these attitudes and behaviours as part of the DARE-R curriculum (or as a supplemental educational module) would be necessary if the DARE-R program seeks to have an appreciable impact on reducing substance use.

Impact of DARE on Grade 12 Youth

In regards to substance use, almost the entire Grade 12 sample had used alcohol, and a sizeable majority had tried tobacco and cannabis. A smaller percentage, approximately 10-17%, reported using more serious drugs such as club drugs, amphetamines, cocaine, and opiates. Based on the average age of first use, most youth appear to be experimenting with substances around the late middle school to early high school years. Youth who were identified as low risk for substance use had expected low rates of substance use, and their experiences with substances were primarily limited to alcohol, tobacco, and cannabis. Youth identified as medium and high risk for substance has the most varied experiences with substances, but as expected, high risk youth had the greatest rate of substance use.

High school students also provided rich and descriptive qualitative comments regarding their experience of the original DARE program. When asked what they remembered about DARE, the majority recalled only the basic content of DARE, such as learning about substances and being told that drugs are “bad.” The more complex DARE content regarding strategies for refusing substances and making better decisions were recalled to a much lesser extent. These youth also stated that the most valuable part of their DARE experience was learning basic information about the adverse and negative consequences of substance use, such as their short and long term effects on the body, and how substances can affect their social lives from interpersonal relationships to vocational and educational opportunities. When asked what they found the least valuable about the program, they also mentioned the basic content of DARE. Youth felt that much of the information did not prepare them for actual reality of pressure from peers, and that the many of the claims regarding substances and their effects were exaggerated. Finally, when asked to rate the impact of DARE on their decisions to not use substances, the overall consensus was that most disagreed that DARE had an impact on their behaviour. When asked to elaborate, it appears that the knowledge of the adverse/negative consequences of substances may have had some limited influence: some said that it influenced them not to use, others indicated that they continue to use but in moderation and responsibly, whereas other stated that it had no influence.

Unfortunately, whether DARE did or did not have a long term impact on these Grade 12 youth cannot be adequately addressed based solely on qualitative comments. The information offered by these youth do provide some insight regarding what type of DARE content tends to be recalled most often several years after completion of the program. The information that tends to be retained over the long term is the basic “drugs are bad” message of DARE, but the impact of this messages is questionable, and is consistent with other research on the efficacy of DARE (Pan & Bai, 2009). Given that few youth remember any of deeper content, which includes strategies for dealing with peer pressure, some youth found that DARE did not prepare them when they encountered peer pressure. Taken together, it appears that DARE had limited long term impact for these Grade 12 youth.

RECOMMENDATIONS

1. DARE-R is currently administered to all Grades 5 and 7 Saint John youth. However, the Grade 7 data suggest that youth begin to experiment with substances approximately around 12 years of age, whereas the Grade 12 data suggests that the average age of any first use is 15 years. These age ranges reflect the end of middle school and the first years of high school. Further, the low base rate of use among Grade 7s raise question about the impact of DARE-R on Grade 5 youth, whose use is likely even lower. Thus, we believe that any substance use prevention or intervention program may serve as more impactful if administered sometime during Grades 7 to 10, as these are the years in which most youth report actively experimenting with substances.
2. The DARE-R curriculum appears to overemphasize the negative consequences of substances in order to encourage youth not to engage in substance use. Although educating youth about the types of different substances and their negative effects is necessary, we recommend placing more emphasis on skills concerned with how to resist peer pressure and improve decision-making. In addition, the results of the current suggest placing greater attention to attitudes that are favorable of substance use and associated problematic behaviors (i.e., aggression, delinquency), as well as addressing risk factors for substance use (i.e., family problems, delinquent behaviour).
3. One problem with the DARE-R program is that it erroneously assumes that substance use is primarily a result of peer pressure. Although peer pressure is one reason why youth use substances (Bahr, Hoffmann, & Yang, 2005), it is only one of the many reasons why youth will engage in substance use. We hold the position that in order to have a meaningful impact on substance use behaviour, prevention programs should adopt a risk-focused approach (Hawkins et al., 1992). In other words, empirically-validated risk factors for substance use need to be systematically assessed and targeted for interventions. Individuals who are found to be at risk based on their unique risk factors should then receive interventions that are matched to their specific reason for using and unique vulnerability factors for substance use. This may in part explain the small/weak findings of previous DARE research, as well as DARE-R's limited impact in the current study. Our rationale for this type of approach, in which risk factors are assessed and matched to interventions, stems from the following studies:
 - a. A study by Woicick, Stewart, Pihl, and Conrod (2009) reports on the *Substance Use Risk Profile Scale (SURPS)*, which identifies four personality risk profiles that increase risk for substance use. The SURPS systematically assesses the following personality profiles reflecting different motives for using substances:
 - i. **Hopelessness**: This personality profile generally reflects depressive symptoms such as sadness, low mood, and sensitivity to punishment. Thus, substance use is motivated by a desire to alleviate physical and emotional distress.
 - ii. **Anxiety Sensitivity**: Individuals with anxiety sensitivity tend to experience heightened levels of anxiety and physical arousal. The relaxation and sedative

effects of substances is their motivation for using, as a way to self-medicate and cope with their anxiety.

- iii. **Impulsivity:** This personality style is characterized by deficits in controlling behaviour and favoring immediate rewards with disregard for the long-term negative consequences of substances. Thus, the motive for substance use for these individuals is to experience their immediate rewarding effects.
- iv. **Sensation-Seeking:** This personality profile is characterized by a strong tendency to engage in novel and stimulating experiences. Substance use is motivated by the desire to experience the rewarding and euphoric effects of alcohol and drugs.

b. Conrod, Castellanos-Ryan, and Strang (2010) identified 732 secondary school students with elevated SURPS scores (i.e., at-risk for substance misuse) and randomly assigned them to an intervention group or a no-intervention control group. Students in the intervention group received two 90-minute group sessions at their school consisting of personality-matched coping skills intervention. Over a 2 year follow-up, students who received personality-matched interventions had reductions in the number of illicit drugs used and in the frequency of illicit drug use while the control group increased their use of substances over this time period.

4. An alternative program to DARE-R, which has been administered in the United Kingdom and in Nova Scotia, is the “Preventure” program.⁵ In line with the research presented in recommendation #3, this program screens youth for personality-based risk factors for substance misuse and matches these profiles with personality-specific interventions that are skills-based and cognitive-behavioral in nature. Three separate randomized control trial studies evaluating the efficacy of the Preventure program have been conducted (Conrod et al., 2000; Conrod, Stewart, Comeau, & Maclean, 2006; Conrod et al., 2010). Collectively, these studies have demonstrated that personality-targeted interventions reduce alcohol/drug use outcomes, and reduce the onset and escalation of substance misuse among youth identified as high risk over 6, 12, 18, and 24 month follow-ups. A related study (O’Leary-Barrett, Mackie, Castellanos-Ryan, Al-Khudhairy, & Conrod, 2010) found that the positive effects of the Preventure program were achieved and sustained over a 6 month follow-up when delivered by classroom teachers. In addition, a culturally sensitive version of the program was developed in collaboration with the Mi’kmaq First Nations communities in Nova Scotia (Mushquash, Comeau, & Stewart, 2007). Given that DARE-R has historically produced modest outcomes, we recommend adopting the Preventure program should the Saint John Police Force decide to explore alternative substance use prevention programs.

⁵ More information on the Preventure program can be obtained online from www.coventure.ca/en/

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APPENDIX A: DRUG ABUSE RESISTANCE EDUCATION SURVEY

Please indicate your gender: MALE FEMALE

How old are you? _____

Please indicate your ethnicity (check off one):

<input type="checkbox"/> White	<input type="checkbox"/> Asian
<input type="checkbox"/> Hispanic or Latino	<input type="checkbox"/> Aboriginal or First Nation
<input type="checkbox"/> Black or African	<input type="checkbox"/> Other

For this survey, we are interested in knowing if you remember anything about the DARE program from when you took it in school. Try your best to remember anything you can!

1. Do you remember participating in the DARE program when you were younger?

YES NO I DON'T KNOW

2. If yes, did you take it in a school in Saint John, Rothesay, or Quispamsis?

YES NO I DON'T KNOW

3. If yes, in the space below, tell us what you remember from taking the DARE program

4. If yes, what do recall being the **MOST** valuable thing you learned from the DARE program?

5. If yes, what do recall being the **LEAST** valuable thing you learned from the DARE program?

6. If yes, do you feel that the DARE program has had any influence on your decisions regarding alcohol or drug use?

Strongly Agree	Agree	Disagree	Strongly Disagree
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7. If yes, in what ways do you think that the DARE program has influenced your behavior and attitudes towards alcohol and drug use?

APPENDIX B: SUBSTANCE USE EXPERIENCE AND OPINION SURVEY

Instructions: In order for us to understand what types of drugs are used by students your age, we are asking that you indicate below which drugs you have used and how often. Remember that this survey is confidential and anonymous. Your answers will not be shared with your teachers, the DARE officers, or your parents.

For each drug, please check how often you have used it. Depending on how often you use it, more than one box may be checked for each type of drug. Please write in how old you were when you tried that drug for the first time:

Type of Substance (with street names)	Never used	Used once in my life	Used once in past 30 days	Used 5 or more times in past year	Age you first tried it?
Alcohol/Liquor (beer, rum, whiskey, vodka, wine, coolers, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Cannabis (marijuana, green, stank, hash, hash oil, weed, joints, ganga, pot, refer, grass, dope, mary jane/MJ, THC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Psilocybin (magic mushrooms, shrooms, mush, zoomers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
LSD (acid, Bartman, Bart Simpson, microdots, gelatin chips, windowpanes/blotter, paper/blotter, white lightning, blue heaven, and sugar cubes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Mescaline and Peyote (mesc, buttons, cactus)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
PCP (angel dust, ozone, rocket fuel, Hog, Horse tranquilizer, killerjoints, peace pill, sherman sticks/tank, loveboat, lovely)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Club drugs (ketamine, special K, vitamin K, ecstasy, MDMA, MDA, hug drug, love drug, GHB, liquid X, liquid G)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Inhalants (whippets, poppers, snappers, laughing gas, nitrous oxide, glue, solvents, gasoline, spray paint, paint thinner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Cocaine (coke, snow, flake, blow, crack, free-base, rock)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old

Amphetamines/Methamphetamines (Ritalin, bennies, black beauties, bumble bees, co-pilots, crank, cross tops, crystal meth, dexies, meth, footballs, hearts, hot ice, ice, L.A. glass, pep pills, speed, uppers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Opiates (heroin, smack, "H", ska, junk, dust, horse, Codeine, China White, Darvon, Darvocet, Demerol, Dilaudid, methadone, Morphine, Percocet, Percodan, Talwin, Vicodin, Tylenol 2, Tylenol 3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Barbiturates (downers, Amytal, Nembutal, Phenobarbital, Reds, Red birds, Red devils, Seconal, Tuninal, yellow jackets)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Benzodiazepines (Rohypnol, Roofies, Flunitrazepam, roofies, roches, R-2, Valium, Ativan, Xanax)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Steroids (gym candy, juice, pumpers, stackers, roid rage)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Tobacco (cigarettes, smokes, cigars, rollies, smoke pipe, chewing tobacco, cigs, butt, cancer stick, dart)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old
Any other drug (What is it?)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	___ years old

Now we would like to know some of your opinions of using drugs and alcohol. Below each of the sentences, please circle the response that best tells us whether you "strongly agree", "agree", "disagree" or "strongly disagree" with what is says. Please only make one answer for each sentence.

- It's ok to use alcohol/drugs if my friends or people in my family also use them.

Strongly Agree
Agree
Disagree
Strongly Disagree
- Using alcohol/drugs will hurt my body and/or make me feel bad.

Strongly Agree
Agree
Disagree
Strongly Disagree
- Alcohol/drugs are no big deal if I only use them once in a while.

Strongly Agree
Agree
Disagree
Strongly Disagree

4. Using alcohol/drugs will get in the way of the plans I have for my future life (e.g., job, school).

Strongly Agree	Agree	Disagree	Strongly Disagree
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5. I can control what I think and do even though I'm drunk from using alcohol or high from taking drugs.

Strongly Agree	Agree	Disagree	Strongly Disagree
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6. Using alcohol/drugs could get me in trouble with the police and the law.

Strongly Agree	Agree	Disagree	Strongly Disagree
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7. My friends can't make me use drugs or alcohol if I don't want to try them.

Strongly Agree	Agree	Disagree	Strongly Disagree
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8. It's ok to take drugs a doctor prescribed to someone other than me.

Strongly Agree	Agree	Disagree	Strongly Disagree
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9. It's ok to drink alcohol because adults are allowed to buy it legally.

Strongly Agree	Agree	Disagree	Strongly Disagree
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10. I can use drugs and not get addicted to them.

Strongly Agree	Agree	Disagree	Strongly Disagree
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