

***Effectiveness of School-Based Interventions in  
Reducing Adolescent Risk Behaviours:  
A Systematic Review of Reviews (2005)***

Chronic Diseases & Injuries  
Chronic Disease Prevention  
Injury Prevention Including Substance Abuse Prevention

Family Health  
Sexual Health

Infectious Diseases  
Sexually Transmitted Diseases (STDs) including HIV/AIDS

**December 2005**

**REDSP**  
Programme de recherche,  
d'éducation et de développement  
en santé publique

  
Hamilton

**PHRED**  
Public Health Research, Education  
& Development Program

# Effectiveness of School-Based Interventions in Reducing Adolescent Risk Behaviours: A Systematic Review of Reviews (2005)

Effective Public Health Practice Project (EPHPP)  
Epidemiology and Evaluation  
City of Hamilton, Public Health Services

December 2005

Helen Thomas, MSc<sup>1</sup>  
Sandra Micucci, Msc<sup>2</sup>  
Donna Ciliska, PhD<sup>3</sup>  
Marlene Mirza, BA<sup>2</sup>

- 1 McMaster University, School of Nursing, HSC-3N28C, 1200 Main Street West, Hamilton, Ontario L8N 3Z5 Phone: 905-525-9140, 22299; Fax: 905-521-8834; [thomash@mcmaster.ca](mailto:thomash@mcmaster.ca)
- 2 City of Hamilton, Public Health Services, PHRED Program, 2 King Street West, Dundas, Ontario L9H 6Z1 Phone: 905-546-2424, 1578; Fax: 905-628-6465; [mmirza@hamilton.ca](mailto:mmirza@hamilton.ca)
- 3 McMaster University, School of Nursing, HSC-3N25, 1200 Main Street West, Hamilton, Ontario L8N 3Z5, Phone: 905-525-9140, 22529, Fax: 905-526-7949, [ciliska@mcmaster.ca](mailto:ciliska@mcmaster.ca)

---

City of Hamilton  
Public Health Services

Kingston, Frontenac and Lennox  
& Addington Public Health

Middlesex-London Health Unit

Sudbury District Health Unit

Ottawa People Services

Public Health Branch  
Ministry of Health and Long-Term Care

Effective Public Health Practice Project (EPHPP) Steering Committee 2005				
Joanne Beyers	Maureen Cava	Nancy Edwards	Valerie Mann	Sandra Micucci
Isabelle Michel	Marlene Mirza	Deborah Radcliffe	Elizabeth Rolland	Jane Soldera
Helen Thomas				
EPHPP Team:	Project Leader	Project Coordinator	Research Analyst	Research Assistant
	Helen Thomas	Sandra Micucci	Lili Liu	Marlene Mirza
Project Support:	Elena Goldblatt	Barb Allen	Shari Krishnaratne	

## EPHPP Reviews and Summary Statements

To determine the effectiveness of interventions included in the Mandatory Health Programs and Services Guidelines (MHPSG), the following systematic reviews and summary statements were completed. Funding for the project has been provided by the Public Health Research, Education and Development (PHRED) Program of the Public Health Branch, Ministry of Health and Long-Term Care and Public Health Services in the City of Hamilton, Ontario, Canada.

GENERAL STANDARDS		
<b>Equal Access</b>		
<b>Health Hazard Investigation</b>		
	• New roads and human health: A systematic review	2005
	• Effectiveness of public health in organized response to non-natural environmental disasters *	1999
	• Effectiveness of environmental awareness interventions *	1999
<b>Program Planning and Evaluation</b>		
	• Psychosocial and psychological interventions for preventing postpartum depression	2005
	• Effectiveness of physical activity programs at worksites with respect to work-related outcomes	2005
	• Meta-analysis of psychosocial interventions for caregivers of people with dementia	2005
	• Health related virtual communities and electronic support groups: Systematic review of the effects of online peer-to-peer interactions	2005
	• Web sites for promoting health	2003
	• The effectiveness of patient diabetes education in the management of type 2 diabetes	2002
	• The effectiveness of on-line health information for consumers	2002
	• Mass media interventions: Effects on health services use	2001
	• A meta-analysis of fear appeals: Implications for effective public health campaigns	2001
	• Electronic social support groups to improve health *	2000
	• Effectiveness of video for health education	2000

<b>CHRONIC DISEASE AND INJURIES</b>		
	• Effectiveness of environmental awareness interventions *	1999
<b><i>Chronic Disease Prevention</i></b>		
	• The effectiveness of school-based interventions in reducing adolescent risk behaviours: A systematic review of reviews *	2005
	• The effectiveness of interventions to prevent excessive weight gain in pregnancy *	2005
	• Dietary advice given by a dietitian versus other health professional or self-help resource to reduce blood cholesterol	2005
	• A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations	2005
	• Counseling to promote a healthy diet in adults: A summary of evidence for the US Preventive Services Task Force	2005
	• Reviews of evidence on interventions to prevent dental caries, oral and pharyngeal cancers, and sports-related craniofacial injuries	2005
	• Systematic review of long-term effects of advice to reduce dietary salt in adults	2005
	• Effectiveness of physical activity enhancement and obesity prevention programs in children and youth (Health Weights Review (HWR))* comprised of the following five reviews: • Environmental interventions to improve nutrition and increase physical activity in children and youth • Interventions to improve nutritional intake in children and youth • Interventions to increase physical activity and nutritional intake in children and youth • Interventions to increase physical activity in children and youth • Interventions to reduce physical inactivity in children and youth	2004
	• Effectiveness of worksite physical activity programs on physical activity, physical fitness and health	2004
	• Exercise and self-esteem in children and young people	2004
	• Mass media interventions for preventing smoking in young people	2004
	• Exercise as an aid in smoking cessation	2003
	• Young people and healthy eating: A systematic review on barriers and facilitators	2003
	• The effectiveness of routinely taught breast self-examination in reducing mortality	2003
	• The effectiveness of patient diabetes education in the management of type 2 diabetes	2002
	• The effectiveness of school based strategies for the primary prevention of obesity and for promoting physical activity and/or nutrition, the major modifiable risk factors for type 2 diabetes: A review of reviews	2002
	• Effectiveness of school-based strategies for primary prevention of eating disorders *	2001
	• Using school-based programs to improve heart healthy eating behaviours of children	2001
	• Effectiveness of interventions to promote healthy eating in pre-school children aged 1 to 5 years	2001
	• Effectiveness of smoking cessation interventions	2001
	• Limited (information only) patient education programs for adults with asthma	2001
	• The effectiveness of health promotion interventions in the workplace	2001

<ul style="list-style-type: none"> <li>The effect of exercise training on bone mass among pre- and post-menopausal women</li> </ul>	2001
<ul style="list-style-type: none"> <li>The effectiveness of the health promoting schools approach and school-based health promotion interventions</li> </ul>	2001
<ul style="list-style-type: none"> <li>Effectiveness of home based support for older people</li> </ul>	2001
<ul style="list-style-type: none"> <li>The effectiveness of school-based interventions in promoting physical activity and fitness among children and youth: A systematic review *</li> </ul>	2001
<ul style="list-style-type: none"> <li>Effectiveness of dust mite control to reduce asthma symptoms</li> </ul>	2000
<ul style="list-style-type: none"> <li>The effectiveness of interventions for preventing tobacco smoke in public places</li> </ul>	2000
<ul style="list-style-type: none"> <li>Effectiveness of a telephone intervention as a delivery strategy within the scope of public health nursing practice</li> </ul>	2000
<ul style="list-style-type: none"> <li>Effectiveness of postpartum smoking relapse prevention strategies: A systematic review of the evidence 1992-1999 *</li> </ul>	2000
<ul style="list-style-type: none"> <li>The effectiveness of community interventions to increase fruit and vegetable consumption in people four years of age and older *</li> </ul>	1999
<ul style="list-style-type: none"> <li>Effectiveness of coalitions in heart health promotion, tobacco use reduction and injury prevention: A systematic review of the literature 1990-1998 *</li> </ul>	1999
<ul style="list-style-type: none"> <li>Smoking cessation during pregnancy</li> </ul>	1999
<ul style="list-style-type: none"> <li>The effectiveness of community-based heart health projects: A systematic overview update *</li> </ul>	1999
<ul style="list-style-type: none"> <li>The effectiveness of workplace-based health risk appraisal in improving knowledge, attitudes or behaviours</li> </ul>	1999
<b><i>Early Detection of Cancer</i></b>	
<ul style="list-style-type: none"> <li>The effectiveness of interventions to promote mammography among women with historically lower rates of screening</li> </ul>	2005
<ul style="list-style-type: none"> <li>Effectiveness of strategies to increase cervical cancer screening in clinic-based settings: A systematic review of the literature 1989-1999 *</li> </ul>	2000
<ul style="list-style-type: none"> <li>Effectiveness of strategies to increase cervical screening: A systematic review of the evidence (community-based) *</li> </ul>	2000
<b><i>Injury Prevention Including Substance Abuse Prevention</i></b>	
<ul style="list-style-type: none"> <li>School-based driver education for the prevention of traffic crashes</li> </ul>	2005
<ul style="list-style-type: none"> <li>A systematic review of the effectiveness of the community reinforcement approach in alcohol, cocaine and opioid addiction</li> </ul>	2005
<ul style="list-style-type: none"> <li>A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations</li> </ul>	2005
<ul style="list-style-type: none"> <li>Post-license driver education for the prevention of road traffic crashes</li> </ul>	2004
<ul style="list-style-type: none"> <li>Fall prevention programs for the elderly: How effective are they (meta-analysis)</li> </ul>	2004
<ul style="list-style-type: none"> <li>Interventions to prevent the recurrence of elder abuse</li> </ul>	2003
<ul style="list-style-type: none"> <li>The effectiveness of preventative home visits to elderly people living in the community</li> </ul>	2003
<ul style="list-style-type: none"> <li>Interventions for increasing pedestrian and cyclist visibility</li> </ul>	2003
<ul style="list-style-type: none"> <li>Child pedestrian safety</li> </ul>	2003
<ul style="list-style-type: none"> <li>The effectiveness of physical exercise for sleep problems in adults aged 60+</li> </ul>	2002
<ul style="list-style-type: none"> <li>Effectiveness of a telephone intervention as a delivery strategy within the scope of public health nursing practice</li> </ul>	2000
<ul style="list-style-type: none"> <li>Effectiveness of video for health education</li> </ul>	2000
<ul style="list-style-type: none"> <li>Effectiveness of anticipatory care interventions with community-dwelling elderly persons</li> </ul>	2000

<ul style="list-style-type: none"> <li>Effectiveness of coalitions in heart health promotion, tobacco use reduction and injury prevention: A systematic review of the literature 1990-1998 *</li> </ul>	1999
<ul style="list-style-type: none"> <li>Prevention of unintentional injuries in childhood and young adolescence</li> </ul>	1999
<ul style="list-style-type: none"> <li>Effectiveness of school-based interventions in reducing adolescent risk behaviour: A systematic review of reviews *</li> </ul>	1999
<ul style="list-style-type: none"> <li>The effectiveness of school-based curriculum suicide prevention programs for adolescents *</li> </ul>	1999
<b>FAMILY HEALTH</b>	
<b>Sexual Health</b>	
<ul style="list-style-type: none"> <li>Women, sex and HIV</li> </ul>	2004
<ul style="list-style-type: none"> <li>The effectiveness of public health interventions to reduce or prevent spousal abuse toward women *</li> </ul>	2001
<ul style="list-style-type: none"> <li>The effectiveness of the health promoting schools approach and school-based health promotion interventions</li> </ul>	2001
<ul style="list-style-type: none"> <li>Peer health promotion interventions for youth</li> </ul>	2000
<ul style="list-style-type: none"> <li>Using school-based programs to reduce adolescent risk behaviour *</li> </ul>	1999
<ul style="list-style-type: none"> <li>Primary prevention of adolescent pregnancy *</li> </ul>	1999
<ul style="list-style-type: none"> <li>Preventing sexually transmitted diseases (STDs) in adolescents *</li> </ul>	1999
<b>Reproductive Health</b>	
<ul style="list-style-type: none"> <li>The effectiveness of interventions to prevent excessive weight gain in pregnancy *</li> </ul>	2005
<ul style="list-style-type: none"> <li>The effectiveness of folate supplementation for the prevention of neural tube defects</li> </ul>	2002
<ul style="list-style-type: none"> <li>Antenatal education for childbirth/parenthood</li> </ul>	2001
<ul style="list-style-type: none"> <li>The effectiveness of public health strategies to reduce or prevent the incidence of low birth weight in infants born to adolescents: A systematic review *</li> </ul>	2001
<ul style="list-style-type: none"> <li>Postpartum smoking relapse prevention strategies</li> </ul>	2000
<ul style="list-style-type: none"> <li>Smoking cessation during pregnancy</li> </ul>	1999
<ul style="list-style-type: none"> <li>The effectiveness of home visiting as a delivery strategy for public health nursing interventions to clients in prenatal and postnatal period: A systematic review *</li> </ul>	1999
<b>Child Health</b>	
<ul style="list-style-type: none"> <li>The effectiveness of school-based interventions in reducing adolescent risk behaviours: A systematic review of reviews *</li> </ul>	2005
<ul style="list-style-type: none"> <li>Reviews of evidence on interventions to prevent dental caries, oral and pharyngeal cancers, and sports-related craniofacial injuries</li> </ul>	2005
<ul style="list-style-type: none"> <li>Social deprivation and the prevention of unintentional injury in childhood. A systematic review.</li> </ul>	2005
<ul style="list-style-type: none"> <li>Optimal duration of exclusive breastfeeding</li> </ul>	2002
<ul style="list-style-type: none"> <li>Community based interventions to improve child mental health: Review of reviews</li> </ul>	2002
<ul style="list-style-type: none"> <li>The effectiveness of school social work from a risk and resilience perspective</li> </ul>	2002
<ul style="list-style-type: none"> <li>The effectiveness of school-based violence prevention programs for children at risk</li> </ul>	2002
<ul style="list-style-type: none"> <li>The effectiveness of public health interventions to reduce or prevent spousal abuse toward women *</li> </ul>	2001
<ul style="list-style-type: none"> <li>The effectiveness of the health promoting schools approach and school-based health promotion interventions</li> </ul>	2001

• Support for breastfeeding mothers	2001
• Effectiveness of pre-school screening for hearing, speech, language and vision	2001
• Antenatal education for childbirth/parenthood	2001
• Parent-training programs for improving maternal psychosocial health	2001
• Effectiveness of a telephone intervention as a delivery strategy within the scope of public health nursing practice	2000
• Effectiveness of video for health education	2000
• Effectiveness of postpartum smoking relapse prevention strategies: A systematic review of the evidence 1992-1999 *	2000
• Smoking cessation during pregnancy	1999
• Effectiveness of school-based interventions in reducing adolescent risk behaviour: A systematic review of reviews *	1999
• A systematic review of the effectiveness of peer/paraprofessional 1:1 interventions targeted toward mothers (parents) of 0-6 year old children in promoting positive maternal (parental) and/or child health/development outcomes *	1999
• Effectiveness of parenting groups with professional involvement in improving parent and child health/development outcomes *	1999
• The effectiveness of home visiting as a delivery strategy for public health nursing interventions to clients in prenatal and postnatal period: A systematic review *	1999
• Promotion of healthy feeding in infants under one year of age	1999
• The effectiveness of school-based curriculum suicide prevention programs for adolescents *	1999
<b>INFECTIOUS DISEASES</b>	
• Bioterrorism preparedness	2003
• Needle exchange programs	2000
<b><i>Control of Infectious Diseases</i></b>	
• The Effectiveness of Methoprene for Controlling Mosquito Populations in Ontario That Can Carry West Nile Virus	2004
<b><i>Food Safety</i></b>	
• Effectiveness of food safety interventions *	2001
• Food safety in community-based settings	1999
<b><i>Infection Control</i></b>	
• Effectiveness of day care centre infection control interventions *	1999
<b><i>Rabies Control</i></b>	
<b><i>Safe Water</i></b>	
<b><i>Sexually Transmitted Diseases</i></b>	
• Review and meta-analysis of HIV prevention intervention research for heterosexual adult populations in the United States	2005
• Effectiveness of video for health education	2000
• A systematic review of the effectiveness of primary prevention programs to prevent sexually transmitted diseases (STDs) in adolescents *	1999
• Effectiveness of needle exchange programs in modifying HIV-related outcomes: A systematic review of the evidence 1997-1999 *	1999
<b><i>Tuberculosis Control</i></b>	
• Enhancing adherence to tuberculosis treatment	1999

<b><i>Vaccine Preventable Diseases</i></b>		
	• Effect of patient reminder/recall interventions on immunization rates	2001
	• The effectiveness of the health promoting schools approach and school-based health promotion interventions	2001

\* Indicates a review completed by the Effective Public Health Practice Project

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	2
PREFACE .....	3
SUMMARY STATEMENT .....	4
ABSTRACT .....	7
Objectives .....	7
Methods .....	7
Results .....	7
Conclusions .....	8
INTRODUCTION .....	9
RESEARCH QUESTION .....	12
METHODS .....	12
Search Strategy .....	12
Relevance and Quality Assessment Testing .....	14
Data Extraction and Synthesis .....	14
RESULTS .....	14
Drug Use Prevention .....	15
Sexual Risk Behaviour Prevention .....	16
Behavioural Disorder Prevention .....	17
DISCUSSION .....	19
Implications for Policy and Program Delivery .....	20
Implications for Research .....	21
CONCLUSIONS .....	21
TABLES AND FIGURES	
Table 1: Quality Assessment of Strong, Moderate and Weak Reviews ...	23
Table 2: Results of Strong Reviews .....	48
Figure 1: Search Results .....	77
REFERENCES .....	78
APPENDICES	
Appendix 1: Search Strategy .....	91
Appendix 2: Hand-searched Journals .....	92
Appendix 3: Relevance Tool .....	93
Appendix 4: Quality Assessment Tool .....	94
Appendix 5: Data Extraction Tool .....	95
Appendix 6: Project Account References List .....	96

# ACKNOWLEDGEMENTS

We would like to thank our peer reviewers who responded so quickly to our request for help and for their insightful comments and suggestions. They are:

Brenda Juby, Public Health Nurse, Family Health and Healthy Lifestyles, Toronto Public Health and Marie-Claude Turcotte, Clinical Nurse Specialist, Ottawa Public Health/Santé publique Ottawa.

## PREFACE

Research is one component in evidence-based decision-making, along with past experience, patient preference, and available resources. Making research results available to consumers, practitioners, policy-makers, and other researchers is essential to fostering evidence-based practice and decision-making. In the Ontario Public Health, Health Promotion and Primary Care area, lack of access to research evidence can be a barrier to using research in policy and practice (Ciliska, Hayward, Dobbins, Brunton & Underwood, 1999; Camiletti & Huffman, 1998).

The Public Health Branch of the Ministry of Health and Long-Term Care and the City of Hamilton fund the Public Health Research, Education and Development (PHRED) Program in Hamilton. A similar program is in place in four other health units across the province. One role of the PHRED Program is to conduct and disseminate clinically relevant public health, health promotion and primary care research, and to foster evidence-based practice and policy-making.

The Effective Public Health Practice Project (EPHPP) is one initiative within the PHRED Program. This project involves public health researchers, practitioners, and policy-makers from across the province. The EPHPP project members conduct systematic reviews that evaluate the effectiveness of relevant interventions. This project, co-ordinated from the City of Hamilton PHRED, has produced numerous reviews and summary statements on the effectiveness of interventions for the Ministry of Health and Long-Term Care, Public Health Branch. Work is ongoing.

Professional collaboration ensures high-quality scientific work that is clinically relevant to consumers, practitioners, and policy-makers. Members of the PHRED Program located in each of the health units have links with faculties such as health sciences, dentistry, nursing, nutrition, medicine, environmental health and geography at their local universities. The EPHPP also has links to the Cochrane Collaboration, an international research initiative, committed to summarizing and making the highest quality research available world-wide.

The EPHPP is committed to on-going consultation with health units within the province to define and review appropriate public health topics, and to collaboration with other groups equally committed to evidence-based practice and decision-making. In this way, the EPHPP continues to develop research that is timely, evidence-based, and relevant to the delivery of public health services in Ontario.



## Effective Public Health Practice Project Summary Statement

December 2005

This is a summary statement written to condense the work of the authors of a systematic review. The reference for the full review is below. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

**Reference for Review in APA:** Thomas, H., Micucci, S, Ciliska, D., Mirza, M. (2005)  
**Effectiveness of School-based Interventions in Reducing Adolescent Risk Behaviour: A Systematic Review of Reviews.** Effective Public Health Practice Project

**Issue:** Adolescent risk behaviours (i.e. smoking, alcohol consumption, illicit drug use, unprotected sexual activity and behaviour disorders) result in short and long-term negative health consequences. In Canada in 2003, among grade 10 students, daily smoking was reported among 15% of males and 11% of females. By grade 10, 34% of males and 23% of females reported consuming alcohol at least once a week and about 45% reported being really drunk once or twice. Marijuana use has become more common: 19% of males and 9% of females report frequent use (Health Canada, 2005). Almost 75% of males and females reported experiencing sexual intercourse by grade 10. Of these 17% of males and 7% of females reported using no protection. Tobacco use appears to be a marker for other risk behaviours. Many surveys demonstrate that all of the risk behaviours tend to cluster among certain subgroups of adolescents.

The Mandatory Health Programs and Services Guidelines (1997) include reducing adolescent risk behaviours in the Chronic Disease Prevention, Injury Prevention including Substance Abuse, Sexual Health and Child Health sections.

**Review Content Summary:** There were 33 methodologically strong reviews. Of these, 18 related to drug use prevention including tobacco, alcohol, and other drugs. Some universal programs are effective. The characteristics of successful programs include an interactive format led by trained facilitators, content that is either focused on system-wide change or comprehensive life skills, duration of 11-30 hours and a community-based component. Programs were most effective when delivered immediately before initial drug use/ experimentation. Program objectives (e.g. non-use, delayed use, harm minimization) need to be clear and measured appropriately. Youth at different levels of risk require different interventions. Youth input regarding programming may enhance their participation.

The results of the 8 reviews that related to sexual risk behaviour are not so clear. While some programs were successful in reducing these behaviours, most had little or no impact. One comprehensive school/community program was effective; however, it requires replication. No programs increased sexual activity or led to early initiation of sexual activity. Many of the characteristics of successful programs are similar to those cited for drug use prevention.

City of Hamilton  
Public Health Services

Kingston, Frontenac and Lennox  
& Addington Public Health

Middlesex-London Health Unit

Sudbury District Health Unit

Ottawa People Services

Public Health Branch  
Ministry of Health and Long-Term Care

The 7 reviews related to behavioural disorder prevention contained primary studies with many methodological flaws, so all of the results need to be viewed with caution. Three focused on suicide prevention. All concluded that universal school awareness programs were not effective. They recommended that protocols directed at assuring that teachers and others had standardized procedures to follow when confronted with a suicidal student be put in place. The remaining reviews looked at behavioural disorder prevention or mental health promotion more generally. They found very mixed results.

**Comments on this review's methodology:** The methodology of this review of reviews is strong. A comprehensive literature search included 8 electronic databases (to their inception), hand searching of 7 peer-reviewed journals (for two previous years), and retrieval of all relevant articles from reference lists of retrieved articles. The relevance and methodological quality of the reviews was assessed by two reviewers independently. Differences were resolved through consensus. Only the results from the methodologically strong reviews are presented. Although the methodology in many of the reviews was strong, the primary studies (particularly those related to sexual risk behaviour and behavioural disorders) included often were not. The most frequent flaws were lack of random allocation to groups, lack of controlling for confounders, outcome measures that were not reliable or valid, large numbers of drop-outs (or differences in drop-out rates between high and low risk adolescents), and discordance between units of allocation and analysis. As well, very few studies had follow-up for more than 2 years. Data were extracted from each strong review using a standardized data extraction form. Data were narratively synthesized.

#### Evidence points **ARE NOT** weighted or ranked according to strength

What's the evidence?	Implications for practice and policy:
>Some universal drug use prevention programs are effective.	> Successful programs need to be packaged in a user-friendly format and marketed to schools.
>Interactive programs with trained facilitators and focused on comprehensive life skills are effective	> Teachers need to be trained to be facilitators of small groups. > Public Health personnel could provide this training and assist in delivering programs
>Successful programs were more effective with an additional community-based component.	> Community-wide programs including the school environment, parents and community members could be coordinated by Public Health.
>Although not as strong, the evidence for programs to reduce sexual risk-taking shows that successful programs have similar characteristics.	> See above.
>Didactic programs are not effective in reducing any of the risk behaviours.	> Didactic programs need to be stopped.

City of Hamilton  
Public Health Services

Kingston, Frontenac and Lennox  
& Addington Public Health

Middlesex-London Health Unit

Sudbury District Health Unit

Ottawa People Services

Public Health Branch  
Ministry of Health and Long-Term Care

>The methodology of primary studies in the prevention of behavioural disorders needs to be improved.	> Promising programs need to be replicated and rigorously evaluated.
>Universal suicide prevention programs are not effective.	> Stop such programs. Instead, schools should focus on having a standardized plan in place for teachers when they encounter a suicidal student.
<b>General Implications:</b> Resources need to be made available to deliver successful universal school-based drug use prevention programs. Community-based programs need to be implemented to complement the school-based ones. Further testing of interactive broad-based programs for effectiveness in reducing sexual risk behaviour and behavioural disorders is required.	

**Cost Benefit or Cost-Effectiveness Information:** Not included in review.

**References Used to Outline Issue:**

Ontario Ministry of Health and Long Term Care (1997). Mandatory Health Programs and Services Guidelines. Toronto: Queen's Printer for Ontario

**Summary Statement Author:** Helen Thomas, RN, MSc, Associate Professor, McMaster University, Hamilton, Ontario. Clinical Consultant, PHRED Program, Hamilton Public Health and Community Services

**Contact Information for the Effective Public Health Practice Project (EPHPP):**

Public Health Services  
Effective Public Health Practice Project  
2 King Street West, 3rd Floor  
Dundas, Ontario L9H 6Z1

Phone: 905-546-2424, Ext. 1578  
Fax: 905-628-6465  
Email: [ephpp@hamilton.ca](mailto:ephpp@hamilton.ca)  
Website: <http://www.hamilton.ca/ephpp>



The format of this summary statement has been adapted from [health-evidence.ca](http://health-evidence.ca) ([www.health-evidence.ca](http://www.health-evidence.ca)).

City of Hamilton  
Public Health Services

Kingston, Frontenac and Lennox  
& Addington Public Health

Middlesex-London Health Unit

Sudbury District Health Unit

Ottawa People Services

Public Health Branch  
Ministry of Health and Long-Term Care

# ABSTRACT

## Objective

The objective of this systematic review of reviews was to determine the effectiveness of adolescent risk behaviour prevention programs in which a school-based program was one component. Risk behaviours included tobacco, alcohol and other drug use, sexual risk-taking behaviour and behavioural disorders.

## Methods

A comprehensive literature search included 8 electronic databases (from their inception), hand searching of 7 peer-reviewed journals (for two previous years), and retrieval of all relevant articles from reference lists of retrieved articles. Standardized pre-tested tools were independently used by two reviewers to rate each review for relevance and quality assessment. Disagreements were resolved by consensus. Data were extracted using a standardized form and narratively summarized.

## Results

The results of the 33 methodologically strong reviews are presented. Of these, 18 related to drug use prevention including tobacco, alcohol, and other drugs. Some universal programs are effective. The characteristics of successful programs include interactive format led by trained facilitators, content that is either focused on system-wide change or comprehensive life skills, duration of 11-30 hours and a community-based component. Programs were most effective when delivered immediately before initial drug use/ experimentation. Program objectives (e.g. non-use, delayed use, harm minimization) need to be clear and measured appropriately. Youth at different levels of risk require different interventions. Youth input regarding programming may enhance their participation

The results of the 8 reviews that related to sexual risk behaviour are not so clear. While some programs were successful in reducing these behaviours, most had little or no impact. One comprehensive school/community program was effective; however, it requires replication. No programs increased sexual activity or led to early initiation of sexual activity. Many of the characteristics of successful programs are similar to those cited for drug use prevention.

The 7 reviews related to behavioural disorder prevention contained primary studies with many methodological flaws, so all of the results need to be viewed with caution. Three focused on suicide prevention. All concluded that universal school awareness programs were not effective. They recommended that protocols directed at assuring that teachers and others had standardized procedures to follow when confronted with a suicidal student be put in place. The remaining reviews looked at behavioural disorder prevention or mental health promotion more generally. They concluded that the effectiveness of these programs was inconsistent.

## Conclusions

Successful universal drug use prevention programs are available; however, they need to be packaged in a user-friendly format and marketed to schools. Didactic programs need to be discontinued. Teachers need training in facilitating small groups. Additional personnel and financial resources are needed to implement such programs. Community-based programs that run in parallel with school-based ones should be added and evaluated. The potential roles for Public Health include assisting in facilitating student groups and coordinating school/community initiatives. Comprehensive school/community based programs to reduce adolescent sexual risk behaviour need to be replicated and rigorously evaluated. Because this is a long-term program, appropriate screening tools need to be developed. The methodology in the primary studies related to behavioural disorders needs to be improved.

## INTRODUCTION

The greatest threat to adolescent health results from short or long-term consequences of what have been labelled risk behaviours (e.g. smoking, alcohol abuse, illicit drug use, unprotected sex, and behaviour disorders). There is a growing body of empirical literature indicating that these risk behaviours do not occur independently, but tend to cluster within particular adolescents or groups of adolescents (Adlaf, Paglia, & Centre for Addiction and Mental Health (CAMH), 2003; Department of Health and Human Services, 2004; Galambos & Tilton-Weaver, 1998; DuRant, 1994; Pate, Heath, Dowda, & Trost, 1996; Tubman, Windle, & Windle, 1996). Clustering of risk behaviours was also confirmed by a study of community youth behaviour and potential correlates (Fisher et al., 2000). Use of cigarettes and/or marijuana, abuse of alcohol, sexual activity, serious physical fighting, and suicide ideation or suicide attempts were all highly correlated. Of interest is the fact that they were also statistically significantly correlated with a number of stressors and biological predispositions as well as the presence of psychopathology. Risk behaviours were negatively correlated with resources. Several theoretical frameworks have been developed to explain this clustering phenomena (Arnett, 1992; Graber & Brooks, 1995; Jessor, 1991; Petraitis, Flay, & Miller, 1995).

The extent of adolescent risk behaviours in Ontario, Canada and the United States are noted below. According to the Ontario Student Drug Use Survey (Adlaf et al., 2003), students in grades 7-12 reported the following rates of drug use:

- No drug use was reported by 30% of the students. Overall, 66.2% had used alcohol in the previous year. The rates were similar but statistically significantly higher for males than females (68.3% versus 64.3%). Binge drinking was reported by 26% of the participants. It was statistically significantly higher among males than females (29.4% versus 23.8%). Twenty-four percent reported being drunk in the last month.
- Cannabis was the second most commonly reported drug used (29.6%) Among users, 25% reported weekly use and 14% used cannabis daily. This represents a 2% increase in cannabis use since 1999. There was no reported difference in use between males and females.
- Tobacco use was reported by 19.2% of the students (male 18%, female 20.3 %). This is a reduction from 28% since the 1999 survey. Over 14% of males and females reported daily smoking in the past year.
- All drug use increased with age and grade. Alcohol consumption rates are similar to those reported in 1999. There has been a reduction in tobacco use and an increase in cannabis use in the past four years. Other drugs are used infrequently and their rates have not changed over time.

Students completing the Mental Health and Well-Being of Ontario Students of the OSDUS (Adlaf, Paglia-Boak, Beitchman, & Wolfe, 2005) reported rates of low self-esteem at 10%. It was more frequently reported by females than males (11% versus 7%). There was no grade or regional effect noted. Risk for depression was reported by 6% of the students overall. Again it was more frequent among females than males (8%

versus 3%). Of the students surveyed, 12% (17% female versus 8% male) reported seriously considering committing suicide. About 12% of the students reported assaulting someone at least once in the past year. This was more common among males than females. One third of students report being bullied at school. The most common form is verbal (27%), followed by physical and then theft and vandalism. Students in 7th grade report being bullied more frequently than others. Although rates of bullying are high in all grades, it appears to be more common in junior grades (47%) and reduced by grade 12 (20%).

Canadian data from the Health Behaviour in School Aged Children Study (HBSC) (Health Canada, 2005) report similar rates of risk behaviour among grade 10 students. By grade 10, 34% of males and 23% of females are consuming alcohol at least once a week. Among these same students, 46% of males and 42% of females reported getting really drunk once or twice. Marijuana use is common, with 19% of males and 9% of females reporting using it 20 or more times in the last 12 months. The rates of use have increased from 1998. The rate of daily smokers among males is 15%, similar to 1998. Among females the rate has dropped 10% since 1998 and in 2003 was 11%. Smoking is strongly associated with having parents and friends who smoke. Tobacco use appears to be a marker for other risk behaviours (i.e. alcohol and other substance use, early and unprotected sexual activity).

By grade 10, rates of experiencing sexual intercourse were 27% among males and 26% among females. These rates are lower than those reported in the US. At last intercourse, 17% of males and 7% of females reported using no protection and 69% of males and 67% of females reported using a condom. Birth control pills were used by 37% of males and 49% of females. There is a strong association between unprotected sexual intercourse, binge drinking and daily smoking (Health Canada, 2005).

The 2003 American Youth Risk Behaviour Surveillance Survey results indicate the following rates of risk behaviour among American students in grades nine to 12 (Department of Health and Human Services, 2004). The rates for white, black and Hispanic students are reported separately in the report. The rates below are overall rates, by gender:

- Over 44% of the respondents reported current use of alcohol. Episodic heavy drinking was reported by 28.3% of the population. Rates for males and females were similar for current use and for heavy drinking. Drinking and driving was reported by 12% of the students (predominately male). Over 30% reported riding with a driver who had been drinking (about the same rates for males and females).
- Current marijuana use was reported by 22.4% (more males than females) of the population.
- Over 21% reported smoking cigarettes, with 15.8% reporting daily use in the last 30 days (similar rates for males and females).
- Over 46% reported ever having sexual intercourse. Over 7% reported first intercourse before age 13 years. Over 14% had four or more sexual partners in

their lifetime. Of those who were sexually active, 63 % reported using a condom during last sexual intercourse and 17% reported using birth control pills.

- More males (40.5%) than females (25.1%) reported being in a physical fight. Over 4% reported being injured in a fight. Almost 9% (similar rates for males and females) reported experiencing dating violence. Forced sexual intercourse was reported by 9% of the respondents (predominately female).
- Over 28% of students (predominately female) felt sad or hopeless. Serious thoughts about suicide were reported by 16.9% (predominately female) About equal numbers of females and males reported making a suicide plan (16.5%). Over 8% (predominately female) made a suicide attempt and 2.9% required medical attention.

In summary, risk behaviours among Ontario, Canadian and American youth are common. Although use of cigarettes has decreased over time, the rates of alcohol consumption and other drug use have remained fairly stable. There is a reported increase in the use of cannabis in all of the surveys. Rates of sexual activity are lower in Canada than the United States, but use of condoms and/or birth control pills are similar. Bullying and other forms of violence are frequently reported among students in all of the surveys. Although the analyses used are slightly different, all of the surveys confirm that these behaviours tend to cluster among certain groups of students.

The Mandatory Health Programs and Services Guidelines (Ontario Ministry of Health/Public Health Branch, 1997) includes reducing adolescent risk behaviours in several different sections. In Chronic Disease Prevention, the stated goal is to reduce adolescent tobacco smoking. The Injury Prevention including Substance Abuse Prevention section addresses reducing alcohol and other illicit drug use and drinking and driving. The Sexual Health section has a goal of reducing adolescent pregnancy rates. The Child Health section has a goal of promoting the development and health of children and youth. This would include suicide and violence prevention.

There is a vast peer-reviewed literature about the effectiveness of interventions within the scope of public health practice that addresses adolescent risk behaviour. Public Health Units have tried to incorporate the relevant literature into their practice. However, this is challenging, given the variety of target populations, interventions and outcomes described. Recently a number of systematic reviews and/or meta-analyses of the intervention literature have appeared. Although the methodologies differ somewhat and there is some on-going discussion about the limitations of this type of summary, they have advantages. They employ several strategies to minimize the bias of the results: clearly state the question; report the process used to comprehensively identify the relevant literature; explicitly state the criteria for study inclusion, often including only studies that have comparison groups; assess the validity of the primary studies using preset criteria; analyze the variation in the findings of the relevant studies; combine the findings appropriately; and, assure that the reviewers' conclusions are supported by the data (Oxman & Guyatt, 1988; Robinson, 1995). When the target populations, interventions and outcomes are similar, the results may be combined statistically to produce a single estimate of effectiveness called an effect size. This process is known as a meta-analysis. If combining the results numerically does not seem sensible, or numbers are not available, results are integrated into a systematic review (Sackett & Wennberg, 1997). Because of the number of primary studies and reviews available

related to adolescent risk behaviour, we decided to complete a review of reviews. This current review of reviews incorporates our previous work (Thomas et al., 1999).

## REVIEW QUESTIONS

Through a systematic review of reviews of school-based prevention programs, this paper will answer the following questions:

1. Are school-based prevention programs effective in reducing adolescent risk behaviours (i.e., smoking, alcohol and other drug abuse, sexual risk behaviours and emotional/behavioural problems)?
2. Based on the results of this review, what recommendations can be made for future public health practice?

## METHODS

### Search Strategy

The following computer databases were searched from 1987-April 2005:

Medline  
CINAHL  
EMBASE  
PsychINFO  
BIOSIS  
Sociological Abstracts  
ERIC  
EBM

An example of the terms used in the electronic searching (Medline) is displayed in Table 1. Only English articles were retrieved. Seven relevant peer-reviewed journals were hand-searched (Appendix 2). Reference lists in all retrieved articles were reviewed and the relevant citations retrieved.

### Relevance and Quality Assessment Testing

Four relevance criteria were developed and pre-tested to reflect the topic and the scope of public health practice. They included:

1. The article is a review (narrative, systematic, meta-analysis).
2. School-age youth or adolescents (12-18 years) are the population of the review.
3. Risk behaviours targeted in the review include one or more of:
  - smoking
  - alcohol use/abuse
  - early or unprotected sexual activity
  - drug use/abuse

- suicide attempts
  - depressive behaviour
  - violence/conduct disorder
4. One or more of a number of specific interventions:
- consumer participation
  - community development
  - consumer advocacy
  - use of peer groups led by peers, professionals or trained volunteers, and school health services
  - health promotion
  - primary prevention
  - health education

Articles were considered relevant if they met all four of the criteria.

Following the guidelines set out by Sackett (Sackett, Haynes, & Tugwell, 1991) and others (DuRant, 1994), a quality assessment tool was developed and pre-tested. The seven criteria for quality assessment were:

1. Was the search strategy for primary studies stated?
2. Was the search comprehensive (at least two databases and a reference list)?
3. Were the relevance criteria for the primary studies described? Criteria include:
  - participants
  - interventions
  - outcome
  - design
4. Was the quality (strengths and weaknesses ) of the primary studies assessed?
5. Did the quality assessment include (minimum requirements: 3/6 of the following criteria):
  - study design
  - study sample/population
  - confounders
  - intervention
  - outcome measures
  - follow-up
6. Does the review integrate the findings beyond describing or listing primary study results?
7. Is the reported data from all studies adequate to support the review's conclusions?

All articles were reviewed for relevance and quality assessed by two experienced reviewers independently. Discrepancies in ratings were discussed and resolved by consensus. Relevant articles were assessed for quality assessment and rated strong if they met six or seven of the criteria, moderate if they met four or five, and weak if they scored three or less.

## Data Extraction and Synthesis

A standardized instrument for data extraction was developed and pre-tested. It included the years for which the data were collected, the number of primary studies included, the type of review, the target population, the setting of the interventions, and the outcomes. Theoretical orientation(s) of the programs, which were adapted from the work of several of the authors were also noted (Bruvold, 1990; Tobler & Stratton, 1997a). The program orientations included knowledge (lectures focused on the risk behaviour), social influences/social norms (e.g., peers, family, media, resistance skills, and behavioural norms), social skills programs (e.g., problem solving, anger control, coping skills, social skills, and assertiveness skills), and an 'other' category. The topics included were alcohol use/abuse, drug abuse, smoking, early and/or unprotected sexual activity, suicide attempts/self-harm/depressive behaviours, conduct disorder, and violence. Intervention strategies that reflected those found in the literature and relevant to public health practice were included. Outcome measures included attitudes, behaviour intentions, knowledge, mental health change, risk behaviour change, and social competence. Finally, the data were synthesized into a narrative review.

Data were extracted independently by two people from the strong reviews. The results from the moderate and weak reviews were not included because they had several methodological limitations which cast doubt on their results. The most common weaknesses were incomplete or missing search strategies and failure to assess the quality of the primary studies contained within the reviews.

## RESULTS

The results of the search activities and the relevance and quality assessment are displayed in Figure 1. Two hundred and sixty-nine articles were retrieved. Of these, 188 met the relevance criteria. Results of the quality assessment included 32 strong, 29 moderate, 72 weak and 54 background studies/articles. Results of the quality assessment of all of the relevant reviews are reported in Table 1.

Only the details of the strong reviews are reported here (Table 2). The methodological strength of the studies included in the reviews varied. Stronger studies were included in the reviews after 2000. Of those, 9 included Randomized Controlled Trials (RCTs) only, and 10 included RCTs, cohort and before-after studies. Both meta-analysis (N=13) and systematic reviews (N=20) were included in the strong reviews.

The number of primary studies included in each strong review ranged from 8-207, with an average of 45 per review. The length of time used to identify studies for inclusion in the reviews ranged from 8 to 36 years. Reviews targeted elementary students only (N=1), elementary and secondary students (N=11), secondary students only (N=11), students, the school and the community (N=8), individual counselling, students at school and parents (N=2). School-based program sessions were led by a variety of professionals (e.g. nurses, psychologists, trained graduate nursing or psychology students, and trained teachers) or peers with professional support. The outcomes measured in the reviews varied and included combinations of attitude change, increased knowledge and actual behaviour change related to the target behaviour(s). Behaviour change was measured by self-report.

The report of the reviews is divided into three sections. The first section, drug use prevention, includes all the reviews (N=17) of interventions related to smoking, alcohol use, and other drug use. Most of these reviews included strategies targeted at any kind of drug use. Three focused on smoking tobacco only, and one on alcohol use/abuse. The second section, sexual risk behaviour prevention (N=8), includes reviews of interventions to reduce sexual risk behaviours that lead to unintended pregnancy, sexually transmitted diseases and/or HIV/AIDS. The final section entitled, behavioural disorder prevention (N=7) includes 3 reviews of suicide prevention programs, 2 reviews related to general mental health, one review of strategies to reduce violence, and one targeted at conduct disorder prevention.

## Drug Use Prevention

Among the drug use prevention programs, some consistent results emerged. Although rational programs led to greater increases in knowledge than other types, they had the least impact on attitudes and behaviour change. Eight reviews concluded that interactive programs significantly decreased drug use (Thomas, 2002; Lovato & Shoveller, 2000; Bruvold & Rundall, 1993; Tobler et al., 2000; Tobler, 1994; Tobler & Stratton, 1997b; McBride, 2003; Bangert-Drowns, 1988) compared to non-interactive ones. Although one review concluded that the use of peers as leaders produced better results, others concluded that any gains made by groups with peer leaders dissipated over time. As well, it appeared that although the characteristics of the leader may impact on the outcome, whether or not they were peers was not the crucial issue, but how well they facilitated the group (Cuijpers, 2002(b); Tobler et al., 2000; Bangert-Drowns, 1988). Several reviewers commented that successful programs need to be made available in teacher-friendly formats and marketed (Dusenbury, Falco, & Lake, 1997; Cuijpers, 2002(b); Tobler et al., 2000). DARE, a user-friendly, highly marketed program has been instituted in many schools, although there is no evidence that it changes behaviour (Ennett, Tobler, Ringwalt, & Flewelling, 1994). Several reviewers concluded that youth are not a homogeneous group and that programs should be developed with youth input (Harden, Weston, & Oakley, 1999; White & Pitts, 1998; McBride, 2003). All subgroups of youth need to be included in the program development. Results of the most effective universal school-based programs were improved when a community-based intervention was added (White & Pitts, 1997; Harden et al., 1999).

Tobler et al. (Tobler et al., 2000; Tobler et al., 1997b; Tobler, 1994) have published the results of three meta-analyses of the effectiveness of universal school-based drug use prevention programs. These are the most comprehensive works that were located. They consistently found that interactive programs led to larger effect sizes of reduction in drug use than non-interactive ones, regardless of the quality of the studies. However, the effectiveness was impacted by program size. In schools where over 1,000 students were enrolled in the program, the effectiveness was reduced. The investigators suggested a number of reasons for this, but concluded that this may indicate an implementation problem. Content also impacted on effect size. Emphasis upon system-wide change followed by comprehensive life skills and social influences led to progressively lower effects. System-wide change programs are of two main types: school-based programs supported by the community and families; and, strategies to enhance the support of schools to students by changing the school environment. These investigators also examined the evidence for targeted programs versus general

substance abuse programs. Interactive programs that target tobacco use specifically were more effective than general substance abuse programs in reducing tobacco use. Interactive programs that specifically target alcohol use were as effective as general programs in reducing alcohol use. There were insufficient studies targeting illicit drug use to make a comparison. The decreases in substance use were clinically as well as statistically significant. For example, an interactive program with the highest feasible effect size (0.28) would reduce the prevalence of grade eight smokers from 20% to 13%, a 34% reduction.

Several reviews concluded that the objectives of programs need to be clarified (McBride, 2003; Gottfredson & Wilson, 2003; White et al., 1997). To date most programs have been focused on non-use of drugs. However, delayed use and harm minimisation are also important objectives that are often not stated or measured. Programs with the last two objectives might have larger impacts than using non-use only as an outcome.

Several reviewers examined the characteristics of successful school-based substance abuse prevention programs. Cuijpers (2002(b)) concluded that there was strong evidence of effectiveness of programs with the following criteria: well-designed programs with clear objectives; interactive delivery methods; school-wide/community-based intervention; use of the social influence model as a framework; and, focus on norms, commitment not to use and intention not to use. McBride (2003) added some other features of successful programs. Timing of programs was an important factor. Programs were most effective when they were delivered immediately prior to initial experimentation/initial use. This means programs should focus on students in grades 6 to 8. Programs for those already using drugs require different content. The timing of these programs should be based on demographic data from the area. The programs should be focused on behaviour change and not on knowledge improvement or attitude change. Gottfredson & Wilson (2003) also explored the characteristics of students and programs that were successful. They noted that although the difference did not reach statistical significance, programs targeted at high risk youth had larger effect sizes than universal ones. Programs delivered to middle/junior school students had slightly larger effect sizes than those delivered to either late elementary or senior students. The initial positive impact of peer leaders disappeared over time. The authors caution that there are many potential confounders to these results and further testing is required

Skara & Sussman (2003) assessed the impact of universal programs on tobacco, alcohol and other drug use prevention that followed adolescents over the period from junior high to high school and provided at least 2 years follow-up post-program. Although the results indicated that some programs could be successful for up to 15 years, the methodological problems in the studies mean the results should be viewed with caution. High risk youth dropped out at much higher rates than low risk ones. Also, there was much higher loss in the control groups than in the intervention ones. Less than half of the studies reported on the fidelity of the program implementation or on the amount of exposure students received to the programs. Finally, the units of allocation and analysis were frequently different.

## **Sexual Risk Behaviour Prevention**

Reviews related to sexual risk behaviour reduction focused on either HIV risk behaviours (e.g. condom use, number of partners) or pregnancy prevention (e.g. early unprotected

sexual activity, condom use, and pregnancy and/or Sexually Transmitted Infection rates) or some combination of both. All the reviewers who measured it agreed that there was no evidence that school-based or other programs lead to early initiation of sexual activity or that they increase sexual activity.

Most of the recent reviews commented on the continuing dilemma of methodological flaws within the primary studies. However, the reviews showed that programs focusing on sexual risk behaviour led to mixed/inconsistent results. Knowledge can be improved and attitudes related to sexual risk-taking can be changed, however, changing behaviour has been much more challenging.

In the most recent review by Kirby (2002) four types of programs were included. Most (64.3%) sex education programs in schools had no impact on initiation of sexual activity or on the frequency of sexual intercourse (68.4%). Some improved condom or other methods of contraception use (55.6% and 36.4% respectively). There was insufficient evidence to support abstinence based programs. Four of six clinic-based services (many in schools or related to school programs) improved the use of condoms and or other means of contraception. Most service learning programs (75%) decreased sexual activity and pregnancy rates. One evaluation of the CAS-Carrera comprehensive program, which is a long term program that addressed both sexual and non-sexual antecedents to risk taking behaviour, found decreased onset of sexual activity and increased contraceptive use among girls three years post-program. Unfortunately among boys a decrease in contraceptive use was noted.

In another recent review, Robin et al., (2004) noted inconsistent results in reducing sex risk-taking behaviour. However, successful programs tended to be interactive, focus on required skills, used trained facilitators and were of longer duration. As well, they targeted Africa-American students. Mullen et al., (2002) reviewed studies related to prevention of HIV sex risk-taking among sexually experienced adolescents. Programs were conducted both in the school and in the community. The subjects were overwhelmingly from ethnic minorities. The effect size for condom use was 0.65, however there was no significant impact on the number of partners. In a meta-analysis of studies related to unintended pregnancy prevention, intercourse was not delayed, use of birth control was not improved and pregnancy rates did not change (DiCenso, Guyatt, Willan, & Griffith, 2002).

## **Behavioural Disorder Prevention**

The three reviews addressing adolescent suicide prevention concluded that although the methodology used in the primary studies has improved over time, the results were inconsistent (Breton et al., 2002; Guo & Harstall, 2002; Ploeg et al., 1996). This may be because the programs varied in frequency, duration, length of post-program follow-up, and age of the student participants. The results indicate that there is insufficient evidence to support curriculum-based suicide prevention programs. One review found that such programs may have harmful effects on males (Ploeg et al., 1996).

The remaining reviews looked at behavioural disorders more generally. In a review of programs to reduce anti-social behaviour, Bennett & Gibbons (Bennett & Gibbons, 2000) concluded that cognitive-behavioural therapy interventions have a mild to moderate effect in reducing antisocial behaviour. Another review of programs to prevent mental

disorders included universal, selective and indicated programs with positive outcomes (Greenberg, Domitrovich, & Bumbarger, 2001). Some violence prevention programs and interpersonal cognitive problem-solving programs had positive results in the short term. Programs with both classroom interventions and school wide changes reduced bullying, vandalism, fighting, drunkenness, theft and truancy two years post-program. A third review looked at general mental health, self-esteem development and suicide prevention (Wells, Barlow, & Steward-Brown, 2003). It included universal school-based programs with classroom and/or whole school approach. The results were mixed, with most studies reporting less than 50% of positive outcomes in any area. The final review addressed violence prevention (Mytton, DiGuseppi, Gough, Taylor, & Logan, 2002). Interventions included class-based programs, individual counselling/teaching and parent involvement. In 28 trials, aggressive behaviour was reduced. This effect lasted for up to one year in 21.4% of the trials. Interventions were not as effective for groups of boys only as for groups of girls or boys or girls.

## DISCUSSION

There have been many more reviews of adolescent risk behaviour prevention published in the peer reviewed literature since our first review in 1999 (Thomas et al., 1999). More of the recent reviews focused on drug use prevention than on sexual risk behaviour or behavioural disorder prevention. The most rigorous reviews have concluded that some programs do work. It appears that successful programs targeting tobacco, alcohol and other drug use prevention include the following characteristics. They are interactive programs where students and facilitators of small groups use discussion, videos, role playing and other formats to enhance active student learning/involvement. Although information is necessary, without interaction among students and the group facilitators, programs had no effect on behavioural outcomes. Programs that focus not only on students, but on school-wide changes and community involvement had the largest effects, followed by those that provide comprehensive life skills, and finally social influence programs. Programs with 11-30 hours of delivery were significantly more effective than those with 10 hours or less. Programs specifically targeting tobacco use prevention were more effective than generic ones, although generic ones and specific ones had the same effects on reducing/preventing alcohol intake. Leader characteristics appeared to be related more to skill and training than to age. In other words, groups led by peer leaders were not necessarily more successful than those led by adults. The fact that smaller programs were more effective than larger ones needs to be examined to determine if this is, in fact, an implementation problem or if other factors account for it. It is an additional cautionary note when moving programs from research projects to practice to assure that the implementation is followed with minimal adaptation. As well, booster sessions were a frequent characteristic of successful programs, however because of variation from study to study, the necessary number and duration are unknown.

Although some programs have reported continued reductions in drug use for up to 15 years, there are a number of methodological flaws in the primary studies that require attention in the future. Minimising drop-outs is a critical issue in future studies because in those that reported it, high risk students dropped out at higher rates than low risk ones. There was also a significantly higher drop-out rate among students in comparison groups versus intervention groups. This could also lead to spuriously positive results.

As in the previous review of reviews, units of allocation in primary studies and units of analysis were often not the same. In other words, students were often randomized by school and the outcomes analyzed by individuals. Not accounting for the potential clustering effects of students in a school can also impact on the results either positively or negatively.

Implementation of successful programs holds several challenges. First, successful programs have not been transformed into a user-friendly format for schools or been widely marketed. Second, schools require additional resources to mount such programs and these have not to date, been forthcoming. Third, teachers require additional education to change their role from expert to facilitator. Fourth, school programs that work in conjunction with the wider community have not been thoroughly tested. Coordinating and evaluating such programs could be a role for public health.

The evidence related to successful programs in reducing adolescent sexual risk behaviour has also evolved. Several reviews reported no impact of programs on sexual risk-taking behaviour. However, a more recent review reported some successes. There are many similarities between successful drug prevention and sexual risk-taking prevention programs. Interactive programs that focused on relevant knowledge, skill and social influences and were of longer duration had more success than others. Successful leaders were those with additional training. Again, although only one has been rigorously evaluated, a comprehensive skills program with active community involvement appears to be most effective. Given that this program lasted over several years, was very intensive and therefore expensive, it is critical to develop effective screening methods to assure that the appropriate adolescents receive such a program. As well, this type of program and evaluation need to be replicated.

The more recent reviews related to preventing adolescent suicide provide stronger evidence for the fact that universal curriculum-based programs have no impact on suicide ideation or attempts. The primary studies have many methodological flaws, however, all three reviews reach the same conclusion. This is reflected in current practice where the focus has shifted from student awareness/education to training teachers and others about how to treat a potentially suicidal student. Most school boards in Ontario have guidelines in place for this occurrence.

Reviews that related to more general mental health reached conclusions similar to those for drug use prevention and sexual risk-taking prevention. Programs that addressed not only students in the classroom but also the school as a whole and the wider community were more successful in improving mental health/reducing aggressive behaviour. The fact that there were differences in outcome based on gender means that much more work is required to understand why these occur and to develop and implement programs that work for both genders. One possible reason for this related to implementation of the programs. It appears that boys did not attend the sessions as consistently as girls. Qualitative research might uncover why boys found these programs less engaging than their female counterparts.

Two other reviews that were more general in nature require comment. Lister-Sharp et al. (Lister-Sharp, Chapman, Stewart-Brown, & Sowden, 1999) conducted a review of health promoting schools and health promotion in schools. They located eight studies of health promoting schools that included interventions in three domains: changing the school ethos/environment; curriculum-based activities; and, involving the

families and community. The studies had various foci including cardiovascular disease prevention, dental health and bullying prevention. Although the interventions improved knowledge, their overall impact on risk behaviour (e.g. smoking rates, alcohol consumption) was inconclusive. The successful programs intervened in all three domains. These programs had a number of methodological flaws such as no long-term follow-up, small sample sizes in some of the studies and unreliable/invalid outcome measures. However, given the successes noted above, this type of intervention requires testing through methodologically rigorous trials.

The second review focuses on the impact of after-school programs. These programs were varied in their content and intensity. The most comprehensive provided tutoring/mentoring, recreational activities and enrichment and cultural arts activities. All programs included tutor/mentoring. Intensity ranged from 1.5 hours per week to 20 hours per week. Student participants were elementary school children from low income families at risk for some kind of negative outcome. The results of this review indicated that program attendance was associated with more positive attitudes toward school, lower incidence of aggressive and other risky behaviours and pro-social attitudes. Students who attended after school programs more regularly and for longer periods of time seemed to benefit the most. There were a number of methodological flaws in the primary studies, so these need replication with rigorous evaluation. This is a promising strategy for both reducing risk-taking behaviour and for improving academic performance.

Many reviewers concluded that program planning should start with input from youth. The rationale for this is that youth are not a homogeneous group and that their specific suggestions should be taken into account. A few reviews that included studies in settings other than schools concluded that higher risk youth made greater gains than others. As well, these youth required different interventions.

### **Implications for Policy and Program Delivery**

- Successful universal drug use prevention programs are available. Education and Health Ministries need to decide whether they are prepared to provide the resources required to institute such programs.
- Successful programs need to be transformed into user-friendly packages and marketed to schools.
- Additional resources need to be made available to schools to provide the necessary training and support for teachers and to implement interactive programs.
- Didactic programs for adolescent risk behaviour need to be discontinued
- Schools and communities need to work together to provide broad-based interventions that include students, the school environment, parents and the community.
- Because many successful programs do not focus on the risk-taking behaviour per se, generic programs including drug abuse programs (except tobacco use), sexual risk taking programs and programs to enhance mental health could be developed, delivered (including sections related to specific behaviours) and rigorously evaluated. If successful, these programs would assist in streamlining school programming.

- Adolescents at different levels of risk require different intervention strategies.

### Implications for Research

- Although many school-based drug use prevention programs have been adequately evaluated, the added impact of including the school environment and the wider community needs to be further explored.
- Long-term follow-up of future programs is essential and must implement strategies to reduce drop-out rates.
- Booster sessions were part of many successful programs, however adequate duration and intensity needs to be determined.
- Universal programs focused on reducing all the risk behaviours (except smoking) should be developed and rigorously evaluated.
- Primary studies of the effectiveness of programs to improve mental health need to address the methodological flaws outlined in the reviews. These include: adequate sample sizes; random allocation to groups; analysis by unit of allocation; reliable and valid outcome measures; and, long-term follow-up.

## CONCLUSIONS

This review of reviews of interventions to prevent/reduce adolescent risk-taking behaviours has revealed that progress in these areas has been made since 1999. Some universal drug use prevention programs reduce drug use for up to 15 years. The evidence for reducing sexual risk-taking is not as strong; however, characteristics of successful programs have been identified. The research related to programs for preventing behavioural disorders has a variety of methodological limitations that need to be addressed. The implications for policy, program planning and research provide some guidelines for future work in this area.

## **TABLES AND FIGURES**

**Table 1: Quality Assessment of Strong, Moderate and Weak Reviews**

**Table 2: Results of the Strong Reviews**

**Figure 1: Search Results**

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
Methodologically <b>STRONG</b> articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined									
Author Ref ID	Risk Behaviour	Search Strategy (1)	Comprehensive Search (2)	Relevance Criteria (3)	Primary Studies Assessed (4)	Quality Assessment Inclusion (5)	Integrate Findings (6)	Support Conclusions (7)	Quality Rating (8)
Bangert-Drowns, 1988	Drugs	Y	Y	Y	Y	Y	Y	Y	S
Bennett & Gibbons, 2000	Conduct Disorder	Y	U	Y	Y	Y	Y	Y	S
Breton et al., 2002	Suicide	Y	Y	Y	Y	Y	Y	Y	S
Cuijpers, 2002(a)	Drugs	Y	Y	Y	Y	Y	Y	Y	S
Cuijpers, 2002(b)	Drugs	Y	Y	N	Y	Y	Y	Y	S
DiCenso, Guyatt, Willan, & Griffith, 2002	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Dusenbury, Falco, & Lake, 1997	Drugs	Y	Y	Y	Y	N	Y	Y	S

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically STRONG articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Ennett, Tobler, Ringwalt, & Flewelling, 1994	Drugs	Y	U	Y	Y	Y	Y	Y	S
Foxcroft, 2004 Project Account	Alcohol	Y	Y	Y	Y	Y	Y	Y	S
Franklin, Grant, Corcoran, O'Dell Miller, & Bultman, 1997	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Gottfredson & Wilson, 2003	Alcohol, Drugs	Y	Y	Y	Y	Y	Y	Y	S
Greenberg, Domitrovich, & Bumbarger, 2001	Mental Disorders	Y	Y	Y	Y	Y	Y	Y	S

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically STRONG articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Grunseit, Kippax, Aggleton, Baldo, & Slutkin, 1997	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Guo & Harstall, 2002	Suicide	Y	Y	Y	Y	Y	Y	Y	S
Harden, Weston, & Oakley, 1999	Smoking, Alcohol, Sexual Activity, Drugs, and Conduct Disorders	Y	Y	Y	Y	Y	N	Y	S
Kirby, 2002 Project Account	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Lovato & Shoveller, 2000	Smoking	Y	Y	U	Y	Y	Y	Y	S

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically STRONG articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
McBride, 2003	Drugs	Y	Y	Y	Y	Y	Y	Y	S
Mullen, Ramirez, Strouse, Hedges, & Sogolow, 2002	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Mytton, DiGuseppi, Gough, Taylor, & Logan, 2002	Violence	Y	Y	Y	Y	Y	Y	Y	S
Oakley et al., 1995	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Ploeg et al., 1996	Suicide	Y	Y	Y	Y	Y	Y	Y	S
Robin et al., 2004	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Rooney & Murray, 1996	Smoking	Y	Y	Y	Y	Y	Y	Y	S

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically STRONG articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Skara & Sussman, 2003	Smoking, Drugs	Y	Y	Y	Y	Y	Y	Y	S
Stout & Rivara, 1989	Sexual Activity	Y	Y	Y	Y	Y	Y	Y	S
Thomas, 2002	Smoking	Y	Y	Y	Y	Y	Y	Y	S
Tobler et al., 1999	Drugs	Y	Y	Y	Y	Y	Y	Y	S
Tobler et al., 2000	Drugs	Y	Y	Y	Y	Y	Y	Y	S
(Wells, Barlow, & Steward-Brown, 2003	Mental Health Promotion	Y	Y	Y	Y	Y	Y	Y	S
White & Pitts, 1998	Drugs	Y	Y	Y	Y	Y	Y	Y	S

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically STRONG articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
White & Pitts, 1997	Drugs	Y	Y	Y	Y	Y	Y	Y	S

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically MODERATE articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Bennett & Assefi, 2005	Sexual Activity	Y	Y	Y	N	N	Y	Y	M
Botvin & Wills, 1985	Drugs	N	N	Y	Y	Y	Y	U	M
Bruvold & Rundall, 1993  Project Account	Alcohol, Smoking	N	N	Y	Y	Y	Y	Y	M
Clabby, 2003	Violence	Y	Y	Y	Y	Y	N	N	M
Compas, Connor, & Wadsworth, 1997	Depressive Behaviour	N	U	N	Y	Y	Y	Y	M
DHS (Department of Human Services), 2000	Alcohol, Drugs, Sexual Activity, Smoking	Y	Y	N	N	N	Y	Y	M

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically MODERATE articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Early & Vonk, 2001	Violence, Conduct Disorders, Suicide, Depression	Y	Y	Y	N	N	Y	Y	M
Fichtenberg & Glantz, 2002	Smoking	Y	N	Y	N	N	Y	Y	M
Friend & Levy, 2002	Smoking	Y	Y	N	N	N	Y	Y	M
Flay, 2005 Project Account	Smoking	N	U	Y	Y	Y	Y	Y	M
Frost & Forrest, 1995	Sexual Activity	N	N	Y	Y	Y	Y	Y	M
Gould, Greenberg, Velting, & Shaffer, 2003	Suicide	Y	Y	N	N	N	Y	Y	M

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically MODERATE articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Grunseit, 1997	Sexual Activity	Y	Y	Y	N	N	Y	Y	M
Herrmann & McWhirter, 1997	Smoking, Alcohol, Sexual Activity, and Drugs	Y	Y	Y	N	N	Y	Y	M
Hwang, Yeagley, & Petosa, 2004	Smoking	Y	Y	Y	N	N	Y	Y	M
Meyer & Stein, 1908	Violence	Y	Y	N	N	N	Y	Y	M
Minozzi & Grilli, 1997	Alcohol	Y	N	N	Y	N	Y	Y	M
Posavac, Kattapong, & Dew, 1999	Smoking	Y	Y	Y	U	U	Y	Y	M
Samples & Aber, 1998	Violence	N	N	N	Y	Y	Y	Y	M

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

**TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS**

Methodologically MODERATE articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined

Author Ref ID	Risk Behaviour	Search Strategy (1)	Comprehensive Search (2)	Relevance Criteria (3)	Primary Studies Assessed (4)	Quality Assessment Inclusion (5)	Integrate Findings (6)	Support Conclusions (7)	Quality Rating (8)
Schaps, DiBartolo, Moskowitz, Palley, & Churgin, 1981	Drugs	Y	N	N	Y	N	Y	Y	M
Sherman et al., 1998	Violence	Y	N	N	Y	Y	Y	Y	M
Silva, 2002	Sexual Activity	Y	Y	Y	N	N	Y	Y	M
Stead, Hastings, & Tudor-Smith, 1996	Smoking	Y	Y	N	N	N	Y	Y	M
Thomas, 2000	Sexual Activity	N	U	N	Y	Y	Y	Y	M
Visser & van Bilsen, 1994	Sexual Activity	Y	Y	N	N	N	Y	Y	M
Wekerle & Wolfe, 1999	Violence	Y	U	N	Y	Y	Y	U	M

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically MODERATE articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Werch, 2001	Alcohol	Y	Y	N	N	N	Y	Y	M
Young Song, Pruitt, McNamara, & Colwell, 2000	Sexual Activity	Y	Y	Y	N	N	Y	Y	M

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Andrews & Wilkinson, 2002	Depressive Behaviour	N	N	Y	N	N	Y	Y	W
Austin, 1988	Drugs	N	N	N	N	N	N	U	W
Best, Thomson, Santi, Smith, & Brown, 1988	Smoking	N	N	Y	N	N	Y	Y	W
Botvin & Griffin, 1999	Drugs	N	N	N	N	N	Y	Y	W
Botvin & Epstein, 1999	Smoking	N	N	Y	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Brooks-Gunn & Paikoff, 1991	Sexual Activity	N	N	N	N	N	Y	Y	W
Brown & Fritz, 1988	Drugs, Sexual Activity	N	N	N	N	N	Y	Y	W
Burton, 1993	Smoking	N	N	N	N	N	Y	Y	W
Bushong, Coverdale, & Battaglia, 1992	Depressive Disorders, Drugs, Sexual Activity, Suicide	N	N	N	N	N	Y	Y	W
Chen & Sheu, 1999	Smoking	N	N	N	Y	Y	N	Y	W
Choi & Coates, 1994	Drugs, Sexual Activity	Y	N	N	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Christopher, 1995	Sexual Activity	N	N	N	N	N	Y	Y	W
Christopher, Nangle, & Hansen, 1993	Alcohol, Drugs, Violence	N	N	N	N	N	Y	Y	W
Clarke, Hawkings, Murphy, & Sheeber, 1993	Depressive Behaviour	N	N	Y	N	N	N	N	W
DeLisle & Wasserheit, 1999	Sexual Activity	U	U	N	N	N	N	N	W
Diekstra & Kerkhof, 1994	Suicide	N	N	N	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Drug Strategies, 1996	Drugs	N	N	U	Y	U	N	U	W
Dryfoos, 1990	Sexual Activity	N	N	N	N	N	Y	Y	W
Dusenbury & Falco, 1997	Drugs	N	N	N	N	N	Y	N	W
Falck & Craig, 1988	Drugs	N	N	N	N	N	Y	Y	W
Feldman, Martell, & Dingle, 1994	Sexual Activity	N	N	N	N	N	Y	Y	W
Flay, 2000	Drugs	N	N	N	N	N	Y	U	W
Furlong, Paige, & Osher, 2003	Alcohol, Drugs, Violence	N	N	N	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Goodstadt, 1989	Drugs	N	N	N	N	N	N	N	W
Greytak, 2003	Sexual Abuse	N	N	N	N	N	N	U	W
Guerra, Tolan, & Hammond, 1994	Violence	N	U	Y	N	N	Y	U	W
Hansen, 1993	Alcohol	N	N	N	N	N	N	N	W
Hawkins, Farrington, & Catalano, 1998	Violence	N	U	N	N	N	N	N	W
Hingson, Assailly, & Williams, 2004	Alcohol	N	N	N	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Hittner, Levasseur, & Galante, 1998	Alcohol	Y	Y	Y	N	N	N	N	W
Hofferth, 1991	Sexual Activity	N	N	N	N	N	Y	Y	W
Hofferth, 1987	Sexual Activity	N	N	N	N	N	Y	U	W
Hogan & ERIC (Clearinghouse on Counseling and Student Services), 2003	Conduct Disorder	N	N	N	N	N	N	U	W
Howard et al., 1988	Alcohol, Sexual Activity	N	N	N	N	N	N	N	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Hoyt & Broom, 2002	Sexual Activity	N	N	N	N	N	Y	Y	W
Jacobs & Wolf, 1995	Sexual Activity	N	N	N	N	N	Y	Y	W
Jason et al., 2002	Alcohol, Drugs, Sexual Activity, Smoking	N	N	N	N	N	Y	Y	W
Kalafat, 1997	Suicide	N	N	N	N	N	Y	N	W
Kaplan et al., 2001	Sexual Activity	N	N	N	N	N	Y	U	W
Kirby, 2002	Sexual Activity	N	N	N	N	U	Y	Y	W
Kirby, 1994 Project	Sexual Activity	N	N	N	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Account 2									
Kumpfer, 1989	Alcohol, Drugs	N	N	N	N	N	Y	N	W
Kumpfer & Baxley, 1997	Drugs	N	N	N	N	N	Y	Y	W
Manlove et al., 2002	Sexual Activity	N	U	N	Y	N	Y	U	W
Manlove, Franzetta, McKinney, Papillo, & Terry-Humen, 2004	Sexual Activity	N	N	Y	N	N	Y	U	W
Mazza, 1997	Suicide	N	N	Y	N	Y	Y	U	W
McKay, 2000	Sexual Activity	Y	Y	Y	N	N	N	N	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Milburn, 1995	Sexual Activity	N	N	N	N	N	Y	Y	W
Miller & DuPaul, 1996	Suicide	N	N	N	N	N	Y	U	W
Miller & Slap, 1989	Smoking	N	N	N	U	U	Y	Y	W
Mitchell & Brindis, 1987	Sexual Activity	N	N	N	N	N	Y	Y	W
Montoya, Atkinson, & McFaden, 2003	Drugs	N	U	N	N	N	Y	N	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Moskowitz, 1989	Alcohol	N	N	N	N	N	Y	U	W
Mrazek & Haggerty, 1994	Alcohol, Drugs, Smoking	N	U	N	Y	N	Y	Y	W
Murray, Guerre, & Williams, 1997	Violence	N	N	N	N	N	Y	Y	W
Nastasi & DeZolt, 1994	Alcohol	N	N	N	Y	Y	N	Y	W
Norman & Turner, 1993	Drugs	N	N	N	N	N	Y	Y	W
Oei & Fea, 1987	Smoking	N	N	N	N	N	Y	N	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Paglia & Room, 1999	Alcohol, Drugs, Smoking	N	N	N	N	N	Y	U	W
Parker, 2001	Sexual Activity	N	N	N	N	N	N	N	W
Perry, 1987	Alcohol, Drugs, Smoking	N	N	N	N	N	N	U	W
Rae Grant, 1994	Drugs, Conduct Disorders	N	N	N	N	N	Y	N	W
Rosewater & Burr, 1998	Suicide	N	N	N	N	N	Y	Y	W
Samples, 2004	Violence	N	N	N	N	N	Y	Y	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

<b>TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS</b>									
<b>Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined</b>									
<b>Author Ref ID</b>	<b>Risk Behaviour</b>	<b>Search Strategy (1)</b>	<b>Comprehensive Search (2)</b>	<b>Relevance Criteria (3)</b>	<b>Primary Studies Assessed (4)</b>	<b>Quality Assessment Inclusion (5)</b>	<b>Integrate Findings (6)</b>	<b>Support Conclusions (7)</b>	<b>Quality Rating (8)</b>
Shaffer, Gould, Fisher, Trautman, & Abraham, 1998	Suicide	N	N	N	N	N	Y	Y	W
Smith, Ananiadou, & Cowie, 2003	Violence	N	N	N	N	N	Y	Y	W
Smith & Ananiadou, 2003	Violence	N	N	Y	N	N	Y	Y	W
Sussman, Dent, & Stacy, 2002	Drugs	N	N	N	U	Y	Y	N	W
(Toups & Holmes, 2002	Sexual Activity	N	N	N	N	N	N	N	W

Table 1: Quality Assessment of Strong, Moderate and Weak Reviews

**TABLE 1: QUALITY ASSESSMENT OF STRONG, MODERATE AND WEAK REVIEWS**

Methodologically WEAK articles, alphabetical on first author's surname. Key: Y = Yes, N = No, U = Unknown/Undetermined

Author Ref ID	Risk Behaviour	Search Strategy (1)	Comprehensive Search (2)	Relevance Criteria (3)	Primary Studies Assessed (4)	Quality Assessment Inclusion (5)	Integrate Findings (6)	Support Conclusions (7)	Quality Rating (8)
United States Congress, 1988	Sexual Activity	N	N	N	N	N	Y	U	W
Wassef, Collins, Ingham, & Mason, 1995	Conduct Disorders, Violence	N	N	U	N	N	Y	Y	W
Whaley, 1999	Sexual Activity	N	N	N	N	N	Y	Y	W
Yawn & Yawn, 1993	Sexual Activity	N	N	N	N	N	Y	Y	W

**TABLE 2: RESULTS OF STRONG REVIEWS (32)**

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Smoking Prevention</b>  Thomas, 2002	N=76 RCTs  TS=1974-2000	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• Social influences/social norms</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Comprehensive school health</li> <li>• Group discussion</li> <li>• Interactive approach</li> <li>• Pedagogical/lecture approach</li> <li>• Peer-led interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Risk behaviour change (e.g.) smoking</li> </ul>	<ul style="list-style-type: none"> <li>• There is little support for the effectiveness of solely information-based interventions.</li> <li>• Some studies provided evidence that social influences models used in school programs can have a short-term impact on smoking.</li> <li>• However, one study of particularly good methodological and intervention quality found no evidence that the intervention had an effect on smoking behaviour at the time students left school or later on.</li> <li>• There is not enough data at this time to determine whether incorporating social competence instruction with social influence oriented interventions are effective, or whether or not combining social influence interventions with other multi-modal interventions is effective.</li> </ul>
<b>Smoking Cessation</b>  Lovato & Shoveller, 2000	N=8 TS=1983-1999	<ul style="list-style-type: none"> <li>• Social Learning Theory</li> <li>• Health Belief Model</li> <li>• Cognitive Behavioural Theory</li> </ul>	<ul style="list-style-type: none"> <li>• Social skills/resistance skills</li> <li>• Individual planning for cessation</li> <li>• Knowledge</li> <li>• Decision-making</li> <li>• Nicotine replacement therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Smoking cessation</li> </ul>	<ul style="list-style-type: none"> <li>• Many adolescent smoking cessation programs have not been scientifically evaluated.</li> <li>• Scientific quality of evaluations varies, many have serious flaws.</li> <li>• Insufficient evidence of effectiveness of school-based smoking cessation programs.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Tobacco Use Prevention</b>  Rooney & Murray, 1996	N=90 studies, 131 interventions  TS=up to 1991	<ul style="list-style-type: none"> <li>• Knowledge/ lecture</li> <li>• Social influences/ social norms</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Peer-led interventions</li> <li>• Teacher-led interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Risk behaviour change</li> </ul>	<ul style="list-style-type: none"> <li>• Program inclusion criteria: social influences; resistance skills; generic social skills (i.e. interactive programs).</li> <li>• Re-analyzed other reviews to correct for the “unit of analysis” problem, i.e., schools randomized and results based on individual students.</li> <li>• Post-test: ES=0.11, p&lt;0.001.</li> <li>• Larger treatment effects associated with using random assignment, treatments that had 10 or fewer sessions, treatments with an untrained same-age peer as leader, treatments delivered over a longer period of time, and treatments that had an “other” focus in addition to tobacco.</li> <li>• ES=0.10 is modest, about 5% relative reduction in smoking.</li> <li>• Predicted ES=0.50–0.80 if all optimal factors in place, is equivalent to 19% to 20% reduction in smoking.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Alcohol and Smoking Prevention</b>  McBride, 2003	N=8 reviews 5 primary studies  TS Reviews= 1900-2001 Primary Studies= 1997-2001	Not relevant /can't tell	<ul style="list-style-type: none"> <li>• Can't tell</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in drug use (i.e. alcohol, smoking)</li> </ul>	<ul style="list-style-type: none"> <li>• This paper contains both a review of reviews and a review of recent primary studies.</li> <li>• Goals of programs need to be clear: non-use vs. delayed use vs. harm minimization.</li> <li>• Timing of programs is important (i.e. before initial experimentation, after initial exposure, later relevancy). Different times require different strategies.</li> <li>• Successful programs have a formative phase for youth input. This needs to be guided by local demographics.</li> <li>• Booster sessions appear to assist in long-term behaviour change. The frequency required is unknown.</li> <li>• Interactive programs are successful: non-interactive ones make no difference.</li> <li>• Peer interaction vs. peer leadership is crucial for adequate interaction. The group leader needs adequate facilitation skills.</li> <li>• Research is required to clarify contribution of resistance skills training and to replicate potential of harm reduction skills training.</li> <li>• Successful interactive programs need to be made available to schools in a format that can be easily used.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Alcohol and Other Drugs (Excluding Tobacco)</b>  Gottfredson & Wilson, 2003	N=94 TS=can't tell	<ul style="list-style-type: none"> <li>• varied</li> </ul>	<ul style="list-style-type: none"> <li>• Individual through to changing the way schools are managed</li> </ul>	<ul style="list-style-type: none"> <li>• Alcohol and other drug use</li> </ul>	<ul style="list-style-type: none"> <li>• Although a small number of studies (N=5) were included, programs targeting high-risk youth were more effective than universal ones. This requires more study.</li> <li>• Length of intervention varied from &lt;1 month to &gt;84 months. No significant difference in outcomes.</li> <li>• Programs targeting middle/junior school more effective than later ones, however not statistically significant.</li> <li>• Peer leaders had a positive benefit (ES=0.20 statistically significant) which disappeared when teachers were involved as well.</li> <li>• Target population, age, duration of program and leader are all potential moderators of program effectiveness.</li> <li>• No comment re format of programs (i.e. interactive vs. non-interactive).</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Drug Use Prevention (Tobacco, Alcohol and Other Drugs)</b> Skara & Sussman, 2003	N=25 19 school only, 5 school and community, 1 community only TS=1966-2002	<ul style="list-style-type: none"> <li>• Comprehensive social influences (N=19),</li> <li>• Normative social influences only (N=5)</li> <li>• Informational social influences only (N=1)</li> </ul>	Class series Videos Community involvement 5-384 sessions, most between 6-22 hours Level of student interaction cannot be identified Most programs were teacher-led	<ul style="list-style-type: none"> <li>• Drug use</li> </ul>	<ul style="list-style-type: none"> <li>• Review focused on long-term effectiveness of programs (&gt;2 year follow-up).</li> <li>• Mixed results, but most programs reported reduced rates of initiating smoking and maintenance of reduction in cigarette use that lasted over the 2-year period post-program.</li> <li>• Only 9 studies reported positive program effects for alcohol and marijuana use. Reductions from 6.9-11.7% in weekly alcohol use and 5.7% for 30 day marijuana use were reported.</li> <li>• The remaining programs reported no differences between experimental and control groups of students on alcohol or marijuana use.</li> <li>• A number of serious methodological problems within the included studies mean that all results should be viewed with caution.</li> </ul>
<b>Drug Use Prevention</b> Cuijpers, 2002b	N=12 TS=1983-1995	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• Social influences/social norms</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Peer-led interventions</li> <li>• Expert-led interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Risk behaviour change</li> </ul>	<ul style="list-style-type: none"> <li>• Peer-led interventions were more effective than adult-led interventions at the initial post-test, but were not more effective at either a one year or two year follow-up (ES=0.24, p&lt;0.01; ES=0.16, ns; ES=0.08, ns respectively).</li> <li>• There is no evidence to support the idea that peer-led interventions are superior to teacher-led versus expert-led interventions, or vice versa.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Drug Use Prevention</b>  Cuijpers, 2002a	N=3 meta- analyses  <u>Primary Studies</u> ▪ 6 mediating variables ▪ 21 preven- tion programs with specific character- istics ▪ 4 boosters ▪ 12 peer vs. adult led ▪ 5 adding community interven- tions to school programs  TS=1995-2001  US studies only	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Social norms</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive programs with social skills/ comprehensive life skills focus</li> <li>• Re smoking, programs targeting grade 6 students, concentrated in a short period, offered booster sessions, included a trained teacher with an untrained same-age peer</li> </ul>	Significant mediators included: social influence training, intention/commitmen t not to use, Increasing parent- child communication	Examines characteristics related to effectiveness of : <ul style="list-style-type: none"> <li>• Universal school-based drug prevention programs (tobacco, alcohol, illegal drugs).</li> <li>• Resistance skills training was not a significant mediator.</li> <li>• Effectiveness of booster sessions mixed depending upon other program characteristics.</li> <li>• Effectiveness of peer leaders also mixed and may be dependent upon other program characteristics.</li> <li>• Effects of school programs significantly increased when community components are added.</li> <li>• No evidence re intensity of programs and related effectiveness.</li> <li>• Schools require the resources to implement effective programs (including both access to the actual programs, trained personnel and additional time for interactive programs).</li> <li>• Strong evidence exists for the following criteria for effective school-based drug prevention programs: <ul style="list-style-type: none"> <li>• Well-designed programs can be effective</li> <li>• Interactive delivery methods must be used</li> <li>• Social influence model should be the theoretical basis</li> <li>• Focus on norms, commitment not to use and intention not to use</li> <li>• Add community-based intervention</li> </ul> </li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Tobacco, Alcohol, Marijuana, Other Drug Primary Prevention</b>  Tobler et al., 2000	N=207 programs, 93 high quality  TS=1978-1998	<u>Content Areas:</u> <ul style="list-style-type: none"> <li>• Knowledge</li> <li>• Affective</li> <li>• Refusal skills</li> <li>• Generic skills</li> <li>• Safety skills</li> </ul> <u>Program Types:</u> <p>(1) Non-interactive</p> <ul style="list-style-type: none"> <li>▪ Knowledge only</li> <li>▪ Affective only</li> <li>▪ knowledge and affective</li> <li>▪ Decisions/ values/ attitudes</li> <li>▪ DARE type</li> </ul> <p>(2) Interactive:</p> <ul style="list-style-type: none"> <li>• Social influences</li> <li>• Comprehensive life skills</li> <li>• System-wide change</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Lectures</li> <li>• Group discussion</li> <li>• Peer-led interventions</li> <li>• Teacher-led interventions</li> <li>• Interactive vs. non-interactive (4 types)</li> </ul>	<ul style="list-style-type: none"> <li>• Self-reported substance use</li> </ul>	<ul style="list-style-type: none"> <li>• This meta-analysis is an update of Tobler (1997). Meta-analysis includes variables of content and methods used for delivery, as well as predictors of program effectiveness.</li> <li>• Programs targeted tobacco only (35.7%), alcohol only (25.1%), all drugs (33.8%).</li> <li>• Program intensity: 1-10 hours (71%), 11-30 hours (25.1%), 31-522 hours (3.9%).</li> <li>• 80% of the programs served white populations with no known substance abuse factors (socioeconomic status unknown).</li> <li>• Results regarding content and delivery method similar to the earlier meta-analysis (1997).</li> <li>• Results consistent for content and delivery methods among all studies and high quality studies only.</li> <li>• Interactive programs have a larger effect size than non-interactive ones.</li> <li>• Interactive program effectiveness impacted by program size; large programs (over 1,000 students) have reduced effect size.</li> <li>• Many possible explanations cited, however authors conclude that larger programs “do not truly deliver what they advertise”.</li> <li>• Weighted ES of high quality programs (n=93):</li> <li>• <u>Non-interactive</u> (results not statistically significant): knowledge 0.11; affective -0.04; decision/values/attitudes -0.02; knowledge plus affective 0.07; DARE-type 0.03</li> <li>• <u>Interactive:</u> social influences 0.14; comprehensive life skills 0.17; system-wide change 0.22</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Marijuana Use Prevention</b>  Tobler, Lessard, Marshall, Ochshorn, & Roona, 1999	N=37 TS=1978-1991  Canada and US studies only	<ul style="list-style-type: none"> <li>• Universal school-based programs</li> <li>• Knowledge/lectures</li> <li>• Social influences</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive, non-interactive format</li> <li>• Six areas of content: knowledge, affective, drug related refusal skills, generic skills, safety skills and extracurricular activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Use of marijuana</li> </ul>	<ul style="list-style-type: none"> <li>• This is a sub-analysis of Tobler and Stratton (1997).</li> <li>• Two major variables accounted for program success: interactive format and small program size (ES = 0.46). Interactive format in larger programs had less effect (ES = 0.16). This may result from implementation problems.</li> <li>• Two policy questions arise: are school personnel prepared to shift the teaching format and are they willing to facilitate vs. instructing student groups.</li> <li>• Successful interactive programs need to be converted into a marketable form.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Prevention/ Reduction of Illicit Drug Use</b>  White & Pitts, 1998	N=72 studies of 62 different evaluations; 55 evaluations school-based  TS=not reported	<ul style="list-style-type: none"> <li>• Knowledge/ lecture</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Community-wide interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Attitudes</li> <li>• Knowledge</li> <li>• Risk behaviour change</li> </ul>	<ul style="list-style-type: none"> <li>• Participants ranged in age from 8 to 25 years, and the effects for different age groups cannot be separated; therefore, these results should be used with caution re: their generalizability to adolescents.</li> <li>• Out of all the school-based evaluations included, 64% modified attitudes with success, but only 27% had success in altering risk behaviour (N=55).</li> <li>• Further analysis of methodologically rigorous studies was completed, one meta-analysis for studies following up to one year after completion of the program, and another for programs following up for 2 years or more: Both analyses found little program impact on drug use, with effects decreasing over time.</li> <li>• Interventions that were effective were of both a general and a more specific focus.</li> <li>• Most programs including booster sessions were effective.</li> <li>• Those interventions of greater intensity were more likely to be effective.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Prevention/ Reduction of Illicit Substance Misuse</b>  White & Pitts, 1997	N=62 studies of 53 programs; 47 were school- based  TS=not reported	<ul style="list-style-type: none"> <li>• Knowledge/ lectures</li> <li>• General social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• School-based only</li> <li>• Some had additional elements, e.g. homework, mass media campaigns, teacher and parent training, teen groups, booster sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Attitudes</li> <li>• Knowledge</li> <li>• Risk behaviour change</li> </ul>	<ul style="list-style-type: none"> <li>• 14 methodologically strong studies included.</li> <li>• Most programs effective in changing knowledge and attitudes over the short term (i.e. 1 year).</li> <li>• 8 studies measured behaviour change, of these 1 effective in the short term, 4 marginally effective in the short term, 2 not effective over the long term.</li> <li>• School-based studies targeted tobacco, alcohol and illicit drugs.</li> <li>• Most successful short-term changes dissipate over time.</li> <li>• Objectives of studies need to be clear, i.e. primary prevention vs. risk reduction vs. delayed use.</li> <li>• Long-term follow-up is crucial to determining effectiveness.</li> <li>• Youth are not homogeneous and programs need to be tailored to specific youth based on needs assessment.</li> <li>• Assessment of the effectiveness of certain program elements versus the whole program is required.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Alcohol Misuse</b>  Foxcroft, 2004  Project Account	N=56  TS=1966-2002	<ul style="list-style-type: none"> <li>▪ Knowledge</li> <li>▪ Social skills training</li> </ul>	Class series	Behaviour change related to alcohol use	<ul style="list-style-type: none"> <li>▪ Studies included children, youth and young adults up to 25 years of age.</li> <li>▪ Those with short-term follow-up (less than one year) reported mixed results or non-significant differences between groups.</li> <li>▪ Studies with medium-term follow-up (one to three years) reported partially effective to no evidence of effectiveness.</li> <li>▪ A few studies in the short- and medium-term follow-up reported increases in alcohol use among the intervention groups. This should be interpreted with caution as the poor study design may have caused an artefact.</li> <li>▪ Some studies with long-term (over three year's) follow-up reported modest positive results on a least one alcohol use outcome.</li> <li>▪ Most studies have methodological problems that need to be corrected and then the program evaluations need to be replicated.</li> <li>▪ More work assessing the effective-ness of community interventions needs to be undertaken.</li> <li>▪ Some culturally focused interventions have had modest success. Their evaluation should be replicated.</li> <li>▪ There needs to be consensus regard- important outcome variables related to youth alcohol misuse.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Drug Use Prevention Curricula</b>  Dusenbury, Falco, & Lake, 1997	N=10 prevention curricula that had been rigorously evaluated  TS=can't tell	<ul style="list-style-type: none"> <li>• Programs for different grades, including:</li> <li>• Grades 6-8 = 5</li> <li>• Grades 5-6 = 2</li> <li>• K-6 = 2</li> <li>• Grades 7-12 = 1</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom sessions ranging from 9-15.</li> <li>• One comprehensive health program had 40-70 sessions per year for grades 7-12</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in alcohol, tobacco and other drug use</li> </ul>	<ul style="list-style-type: none"> <li>• Program follow-up varied from immediate post-tests to 6 years.</li> <li>• ES were not calculated.</li> <li>• Most programs were effective in reducing drug use among at least some subgroups.</li> <li>• The best, most thoroughly evaluated are not being aggressively marketed.</li> <li>• Those with little or no effect have been adopted by many schools because they have been developed into easily marketable programs.</li> </ul>
<b>Drug Use Prevention</b>  Ennett, Tobler, Ringwalt, & Flewelling, 1994	N=8  TS=1986-1993	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• Social influences/social norms</li> <li>• General/social skills programs</li> <li>• <b>Note:</b> Comparison of Project DARE (Drug Abuse Resistance Education) studies with other studies in addition to evaluation of DARE</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Group discussion</li> <li>• Interactive approach</li> <li>• Class series</li> <li>• Role playing</li> </ul>	<ul style="list-style-type: none"> <li>• Attitude</li> <li>• Knowledge</li> <li>• Risk behaviour change (e.g. drug use)</li> <li>• Social competence</li> <li>• Self-esteem</li> </ul>	<ul style="list-style-type: none"> <li>• Immediate post-test results used to calculate ES.</li> <li>• Knowledge (ES=0.42), attitude toward drug use (ES=0.11), attitude toward police (ES=0.13), social skills (ES=0.10), and self esteem (ES=0.06) all statistically significant; drug use not significant (ES=0.06).</li> <li>• DARE's ES is smaller than non-interactive approaches for drug use, but is greater for attitude, social skills, and knowledge.</li> <li>• DARE's ES is smaller than interactive approaches for knowledge, attitudes, social skills and drug use.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Alcohol and Drug Use Prevention</b>  Bangert-Drowns, 1988	N=33  TS=1968-1986	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• General/social skills</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Pedagogical/lecture approach</li> <li>• Group discussion</li> <li>• Peer-led programs</li> <li>• Teacher/adult-led programs</li> </ul>	<ul style="list-style-type: none"> <li>• Attitudes (e.g. drug use, drug users)</li> <li>• Knowledge</li> <li>• Risk behaviour change (e.g. drug use)</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge (ES=0.76, p&lt;.001).</li> <li>• Attitude (ES=0.34, p&lt;.001).</li> <li>• Behaviour (drug use) (ES=0.12, p=.24) (not significant).</li> <li>• Peer-led programs led to greatest attitude change, lecture the least.</li> <li>• Peer-led programs were more likely to be associated with decreased drug use, although this result is not statistically significant.</li> <li>• Lecture alone had smaller ES for attitude change than other delivery methods.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>DRUG USE INTERVENTION</b>					
<b>Smoking, Alcohol and Drug Use, Sexual Health</b>  Harden, Weston, & Oakley, 1999	N=49 TS=1965- 1998	<ul style="list-style-type: none"> <li>• Health promotion</li> </ul>	<ul style="list-style-type: none"> <li>• Peer-delivered</li> </ul>	<ul style="list-style-type: none"> <li>• Improved health</li> </ul>	<ul style="list-style-type: none"> <li>• 12/49 evaluations were methodologically sound: 4 targeted those &gt; 16 years, 8 targeted those &lt;16, 10 took place in educational settings.</li> <li>• Results were mixed; however, a number of recommendations for future programs included: <ul style="list-style-type: none"> <li>• No clear relationship between characteristics of the intervention and the effectiveness.</li> <li>• Effectiveness of peer leaders mixed.</li> <li>• Positive effects on the peer leaders themselves.</li> <li>• Importance of assuring that programs are based on youth needs.</li> <li>• Need to include all subgroups of youth in defining needs.</li> <li>• There are a number of challenges in working with youth within the school setting.</li> <li>• Health promotion interventions need to take place within the broader community, social, organizational and cultural context.</li> </ul> </li> <li>• A number of recommendations for future research are made based on these recommendations.</li> </ul>

Table 2: Results of Strong Reviews (Drug Use Intervention)

Topic Author, Date	Number of Studies Included (N) *Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/Comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Sexual Risk Behaviour Prevention</b>  Robin et al., 2004	N=20 9 schools only 2 communities only 2 clinics 2 detention centres 1 home 4 combination of school and community  TS= 1990-2000 US only	<ul style="list-style-type: none"> <li>Based on a number of different theories: social cognitive theories, social learning theory, health belief model.</li> <li>Diverse content: knowledge, skill building activities, general life skills, information related to other topics e.g. drug use, violence</li> </ul>	<ul style="list-style-type: none"> <li>Variety of program strategies: arts and crafts, community service learning, school wide health promotion campaigns</li> <li>Most used interactive strategies</li> </ul>	<ul style="list-style-type: none"> <li>Sexual behaviour or number of partners</li> <li>Risky sexual behaviour</li> <li>Pregnancy</li> <li>Sexually Transmitted Infections</li> </ul>	<ul style="list-style-type: none"> <li>12 studies positive effects on at least one outcome.</li> <li>5 studies no effect on any outcome.</li> <li>3 studies negative effect on at least one outcome.</li> <li>Condom use improved in experimental groups vs. controls in 75% of studies.</li> <li>Most positive effects in school-based studies targeting Africa-American males and females.</li> <li>Longer programs more effective than shorter ones.</li> <li>Effective programs used trained adult facilitators. Training may be more important than how well the demographics of the facilitator and group match.</li> <li>Effective programs were interactive.</li> <li>Effective programs focus on skills that reduce specific sexual risk behaviour.</li> <li>Effectiveness of resiliency programs in reducing risky sexual behaviour needs to be explored.</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) *Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/Comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Sexual Risk Behaviour</b>  Mullen, Ramirez, Strouse, Hedges, & Sogolow, 2002	N= 16 6 school-based 10 community- based	<ul style="list-style-type: none"> <li>• Perceived risk</li> <li>• Technical skills</li> <li>• Social skills</li> </ul>	<ul style="list-style-type: none"> <li>• Most programs were interactive</li> </ul>	<ul style="list-style-type: none"> <li>• Condom use at last sexual intercourse</li> <li>• Number of sexual partners</li> </ul>	<ul style="list-style-type: none"> <li>• Meta-analysis of programs to prevent HIV sex risk behaviours of sexually experienced adolescents.</li> <li>• Overall ES for risk activity = 0.65 (.50-.85), primarily related to condom use. The between group differences for number of partners was not significant.</li> <li>• Samples were overwhelmingly from ethnic minorities</li> <li>• 100% ethnically similar groups reported more positive outcomes, signifying that this may be an important cultural variable to consider in program planning.</li> <li>• Range of age and previous sexual experience among studies.</li> <li>• More research is required regarding the impact of setting on outcomes.</li> <li>• Successful programs should be implemented as designed with minimum adaptation.</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) *Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/Comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Unintended pregnancy prevention</b>  DiCenso, Guyatt, Willan, & Griffith, 2002	N=26 trials in 22 reports  TS=1995-December 2002	<ul style="list-style-type: none"> <li>Knowledge/lecture</li> </ul>	<ul style="list-style-type: none"> <li>School/community-based sex education</li> <li>Abstinence programs</li> <li>Multi-faceted programs</li> <li>Education and counselling in family planning clinics</li> </ul>	<ul style="list-style-type: none"> <li>Behaviour:               <ul style="list-style-type: none"> <li>-initiation of intercourse</li> <li>-use of birth control</li> <li>-pregnancy rates</li> </ul> </li> </ul>	<p><u>Initiation of intercourse:</u></p> <ul style="list-style-type: none"> <li>in 13 studies including females and in 11 studies including males, intercourse was not delayed (female pooled odds ratio=1.12; male pooled odds ratio=0.99)</li> </ul> <p><u>Use of birth control:</u></p> <ul style="list-style-type: none"> <li>in 8 studies including females and in 3 studies including males (all school-based programs for males), the use of birth control for every act of intercourse was not improved (female pooled odds ratio=0.95; male pooled odds ratio=0.90)</li> <li>in 5 studies looking at use of birth control at last intercourse among females and 4 studies looking at use at last intercourse among males, no improvement was noted (female pooled odds ratio=1.05; male pooled odds ratio=1.25)</li> </ul> <p><u>Pregnancy Rates:</u></p> <ul style="list-style-type: none"> <li>in 12 studies including females, pregnancy rates were not reduced (pooled odds ratio=1.04); one study did find improvement (odds ratio=0.41)</li> <li>studies examining the pregnancy rates of the partners of males found estimates indicating an increase in reported pregnancies (pooled odds ratio=1.54)</li> <li>one study including both genders found no significant effects (odds ratio=0.83)</li> </ul> <ul style="list-style-type: none"> <li>the authors state there was overrepresentation of those in lower socioeconomic groups, which may have influenced the results</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) *Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/Comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Sexual Behaviour Related to HIV/AIDS</b>  Grunseit, Kippax, Aggleton, Baldo, & Slutkin, 1997	N=38 11 RCTs 27 before/after  TS=1975-1995	<ul style="list-style-type: none"> <li>• Social influences/ social norms</li> <li>• General social skills programs</li> <li>• Values/attitudes regarding HIV</li> </ul>	<ul style="list-style-type: none"> <li>• A variety of strategies were used, including: class series, group discussion, peer-led interventions, role play and videos</li> </ul>	<ul style="list-style-type: none"> <li>• Early or unprotected sexual activity</li> </ul>	<ul style="list-style-type: none"> <li>• Only results from RCTS and quasi-experimental studies included here</li> <li>• Many methodological limitations in many of the studies, therefore results should be viewed with caution.</li> <li>• Inconsistent results</li> <li>• 5 of 11 studies resulted in decreased initiation of sexual intercourse and decreased pregnancy rates</li> <li>• 10 of 11 programs did not lead to earlier initiation of sexual activity or increased sexual activity.</li> <li>• The investigators suggest that more work focused on the meaning and context of sexual activity for adolescents is needed.</li> </ul>
<b>Pregnancy Prevention</b>  Franklin, Grant, Corcoran, O'Dell Miller, & Bultman, 1997	N=32 TS=1965-1995	<ul style="list-style-type: none"> <li>• Abstinence only</li> <li>• Sex education with and without contraceptive knowledge</li> <li>• Skill building vs no skill building</li> </ul>	<ul style="list-style-type: none"> <li>• Junior high and high school students</li> <li>• Classroom education</li> <li>• School-based clinics</li> <li>• Community-based clinics</li> </ul>	<ul style="list-style-type: none"> <li>• Sexual activity</li> <li>• Contraceptive use</li> <li>• Pregnancy/childbirth rates</li> </ul>	<ul style="list-style-type: none"> <li>• Meta-analysis</li> <li>• No effect on sexual activity</li> <li>• Sufficient evidence for increasing the use of contraceptives (ES = 0.27, SS but small).</li> <li>• Small but significant effect on reducing pregnancy rates (ES = 0.15), however high quality research studies alone showed no effect.</li> <li>• Some outcomes varied by age: older adolescents perform better on contraceptive use than younger, and younger women were more likely to get pregnant</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Sexual Risk Behaviours</b>  Oakley et al., 1995	N=65  TS=1982-1994	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• Social influences/social norms</li> <li>• Social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Use of audiovisual aids</li> <li>• Group discussion</li> <li>• Interactive approach</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge</li> <li>• Attitude</li> <li>• Behaviour</li> </ul>	<ul style="list-style-type: none"> <li>• 12 methodologically sound studies and 53 flawed studies found</li> <li>• 3 effective interventions; 4 partially effective interventions; 2 ineffective interventions; 2 interventions with unclear effects; 1 harmful intervention</li> <li>• Of the two school-based interventions that were effective, both improved knowledge; one enhanced communication about sexual health between the respondents and their parents; one intervention increased acceptance of peers with HIV and AIDS</li> <li>• methodological rigor of studies needs to be improved to determine effectiveness of interventions</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) *Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/Comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Sexual Risk Behaviours</b>  Kirby, 2002  Project Account 1	N=73  TS=1980-2000	<ul style="list-style-type: none"> <li>Sex and STD/HIV education in school including abstinence</li> <li>Clinic-based services</li> <li>Service Learning Programs</li> <li>CAS-Carrera comprehensive program</li> </ul>	<ul style="list-style-type: none"> <li>Class series, small group discussion, role playing</li> <li>Regular classroom education</li> <li>Education, counselling, videos</li> <li>Social/cognitive skills development</li> <li>Modules about sexual behaviours</li> <li>Community placements with agencies</li> <li>Comprehensive multi-year program</li> </ul>	<ul style="list-style-type: none"> <li>Behaviour: Sexual activity</li> <li>Frequency of contraceptive use</li> <li>Pregnancy/ birth rates</li> <li>STD rates</li> </ul>	<p><u>School educational programs:</u></p> <ul style="list-style-type: none"> <li>9/28 programs delayed initiation of sexual activity; 18/28 had no impact on it</li> <li>5/19 programs decreased the frequency of sexual intercourse; 13/19 had no impact on it</li> <li>10/18 programs increased condom use (measures varied); increased use of more general contraception</li> <li>Insufficient evidence for effectiveness of abstinence programs (n = 3)</li> </ul> <p><u>Clinic-based services:</u></p> <ul style="list-style-type: none"> <li>4/6 positive for condom or contraceptive use</li> </ul> <p><u>Service Learning Programs:</u></p> <ul style="list-style-type: none"> <li>3/4 decreased sexual activity and pregnancy rates</li> </ul> <p><u>CAS-Carrera Program (n = 1)</u></p> <ul style="list-style-type: none"> <li>Decreased onset of sexual activity after 3 years post-program and increased contraceptive use among girls</li> <li>Among boys, decreased contraception use</li> <li>First three types of programs are complementary and all reduce sexual risk-taking.</li> <li>The fourth program incorporates all of the first three. It addresses both sexual and non-sexual antecedents of sexual risk-taking. Given that it is expensive and labour intensive, it is important to identify which youth can benefit from it vs. The other less expensive programs.</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) *Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/Comments (ES = Effect Size) (Confidence Intervals not Available)
<b>SEXUAL RISK BEHAVIOUR PREVENTION</b>					
<b>Sexual Risk Behaviours</b>  Stout & Rivara, 1989	N=5  TS=1982-1986	• Not reported	• Not reported	• Behaviour: -sexual activity -contraceptive behaviour -pregnancy rates	<ul style="list-style-type: none"> <li>• All studies contained methodological problems</li> <li>• Includes 3 cross-sectional, 1 longitudinal cohort, 1 case-control</li> <li>• Sexual activity; mixed results: 3 studies, no effect; 1 study, decreased rate; 1 study, increased rate</li> <li>• Contraceptive behaviour: little effect</li> <li>• Pregnancy rates: no effect</li> </ul>

Table 2: Results of Strong Reviews (Sexual Risk Behaviour Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>BEHAVIOURAL DISORDER PREVENTION</b>					
<b>Mental Health Promotion in Schools</b>  Wells, Barlow, & Steward-Brown, 2003	N=16 7 studies elementary students 3 secondary students  TS= 1965-1999	<ul style="list-style-type: none"> <li>• Universal school-based programs including: whole school approach; classroom approach; or elements of both</li> </ul>	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Role-play</li> <li>• Discussion</li> <li>• Training peer mediators</li> <li>• Small groups</li> <li>• Parental Committees</li> </ul>	<ul style="list-style-type: none"> <li>• General mental health</li> <li>• Self-esteem development</li> <li>• Suicide prevention</li> </ul>	<ul style="list-style-type: none"> <li>• Two studies reported positive outcomes for self-concept.</li> <li>• One study reported a decrease in suicidal tendencies.</li> <li>• One study reported a decrease in aggressive tendencies.</li> <li>• Other studies reported less than 50% of positive outcomes in ant area.</li> <li>• A much wider range of classroom-based approaches has been developed but not well evaluated. Rigorous evaluation of these programs is required.</li> <li>• Many components of positive mental health have not been included as outcomes. Further work in this area is necessary.</li> <li>• Whole school approaches involving everyone and aimed at changing the environment and culture of the school are recommended.</li> </ul>

Table 2: Results of the Strong Studies (Behavioural Disorder Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>BEHAVIOURAL DISORDER PREVENTION</b>					
<b>Prevention of Mental Disorders</b>  Greenberg, Domitrovich, & Bumbarger, 2001	N=34: 14 universal programs  10 selected or indicated programs for externalizing behaviour  10 selected or indicated programs for internalizing behaviour (including suicide ideation)	<ul style="list-style-type: none"> <li>• Universal, selective and indicated prevention programs for children 5-18 years included.</li> </ul>	<ul style="list-style-type: none"> <li>• Curriculum-based teaching</li> </ul>	<ul style="list-style-type: none"> <li>• Symptoms of aggression, depression or anxiety</li> <li>• Risk factors for psychopathology i.e. impulsiveness, cognitive deficiencies, antisocial behaviour</li> </ul>	<ul style="list-style-type: none"> <li>• Most programs were conducted in the school setting.</li> <li>• Only primary studies with positive outcomes are included.</li> <li>• Curriculum-based violence prevention programs had mixed results. Promising programs require replication.</li> <li>• Short-term follow-up (1 year) of interpersonal cognitive problem-solving skills programs indicate improved problem-solving and reduce impulsivity among elementary school children.</li> <li>• Programs focused on the classroom as well as changes in school ecology reduced bullying (by more than 50%) two years post-program. They also reduced vandalism, fighting, drunkenness, theft and truancy.</li> </ul> <p><u>Practice and policy recommendations include:</u></p> <ul style="list-style-type: none"> <li>• interventions should be aimed at individuals, institutions and environments</li> <li>• More effective selective or indicated programs focus on the child, the family and the environment.</li> <li>• Prevention programs are best directed at risk and protective factors rather than specific problem behaviours</li> <li>• Prevention of high-risk behaviours requires a multi-component program where the school ecology is a central focus</li> <li>• Selective and indicated programs need to be linked to community treatment programs</li> </ul>

Table 2: Results of the Strong Studies (Behavioural Disorder Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b><i>BEHAVIOURAL DISORDER PREVENTION</i></b>					<p data-bbox="1350 412 1839 435"><u>Recommendations for future research include:</u></p> <ul data-bbox="1350 472 1944 662" style="list-style-type: none"> <li data-bbox="1350 472 1923 526">• Replication of successful programs with long-term follow-up</li> <li data-bbox="1350 529 1944 607">• Because of frequent co-morbidity, outcomes should include both internalizing and externalizing behaviours.</li> <li data-bbox="1350 610 1860 662">• There is a need to identify for whom specific programs are most effective.</li> </ul>

Table 2: Results of the Strong Studies (Behavioural Disorder Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>BEHAVIOURAL DISORDER PREVENTION</b>					
<b>Suicide Prevention</b> Breton et al., 2002	N=15 TS=1970-1996	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Interactive approach</li> <li>• Parent involvement</li> <li>• Pedagogical/lecture approach</li> </ul>	<ul style="list-style-type: none"> <li>• Attitudes</li> <li>• Knowledge (eg of suicide, resources)</li> <li>• Mental health change (eg depression, self-esteem)</li> <li>• Social competence (eg skill level)</li> </ul>	<ul style="list-style-type: none"> <li>• Nine of the programs evaluated were school-based; of these:</li> <li>• Knowledge was in general improved</li> <li>• One resulted in an improvement in attitudes toward suicide</li> <li>• One intervention improved self-esteem, while another had no effect on this variable</li> <li>• Two had no effect on suicidal ideation</li> <li>• Three programs resulted in the enhancement of skills needed to intercede in a suicidal process</li> <li>• None of the programs evaluated explicitly outlined the theory behind the program model</li> </ul>
<b>Suicide Prevention</b> Guo & Harstall, 2002	N=12 10 primary studies 2 reviews TS=1991-2001	<ul style="list-style-type: none"> <li>• Enhance recognition of suicidal youth</li> <li>• Address known or suspected risk factors for youth suicide</li> <li>• Knowledge re pre-suicide behaviour</li> <li>• Knowledge re referral</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Group discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Depression</li> <li>• Suicidal ideation</li> <li>• Stress</li> <li>• Hopelessness</li> <li>• Knowledge</li> <li>• Mental health change</li> <li>• Change in risk behaviour</li> </ul>	<ul style="list-style-type: none"> <li>• Results of primary study review included here.</li> <li>• 6 out of 10 studies were rated methodologically strong or moderate.</li> <li>• Wide variation in frequency and duration of programs and in age of student participants</li> <li>• Different lengths of follow-up post-program</li> <li>• No measure of potential harm of programs</li> <li>• Insufficient evidence to support curriculum-based suicide prevention programs.</li> </ul>

Table 2: Results of the Strong Studies (Behavioural Disorder Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>BEHAVIOURAL DISORDER PREVENTION</b>					
<b>Suicide Prevention</b>  Ploeg et al., 1996	N=11  TS=1980-1995	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Interactive approach</li> <li>• Group discussion</li> <li>• Individual counselling/teaching</li> <li>• Parent involvement</li> <li>• Pedagogical/lecture approach</li> </ul>	<ul style="list-style-type: none"> <li>• Attitudes (eg) toward suicide</li> <li>• Intentions</li> <li>• Knowledge</li> <li>• Mental health status (eg) hopelessness, coping</li> <li>• Suicide risk</li> <li>• Social competence (eg) coping skills awareness</li> </ul>	<ul style="list-style-type: none"> <li>• 2 RCTs, 9 cohort or other designs</li> <li>• All studies rated methodologically weak: results should be viewed with caution</li> <li>• Changes in suicide risk measured in 3 studies; in 2 prevention programs, risk was reduced in the experimental group; in 1 postvention program evaluation, no difference found between groups</li> <li>• Programs increased knowledge related to suicide</li> <li>• Mixed results in changing coping skills; in 1 maladaptive coping</li> <li>• Programs affect males and females differently; some may actually be harmful to males</li> <li>• Insufficient evidence to support curriculum-based suicide prevention programs</li> </ul>

Table 2: Results of the Strong Studies (Behavioural Disorder Prevention)

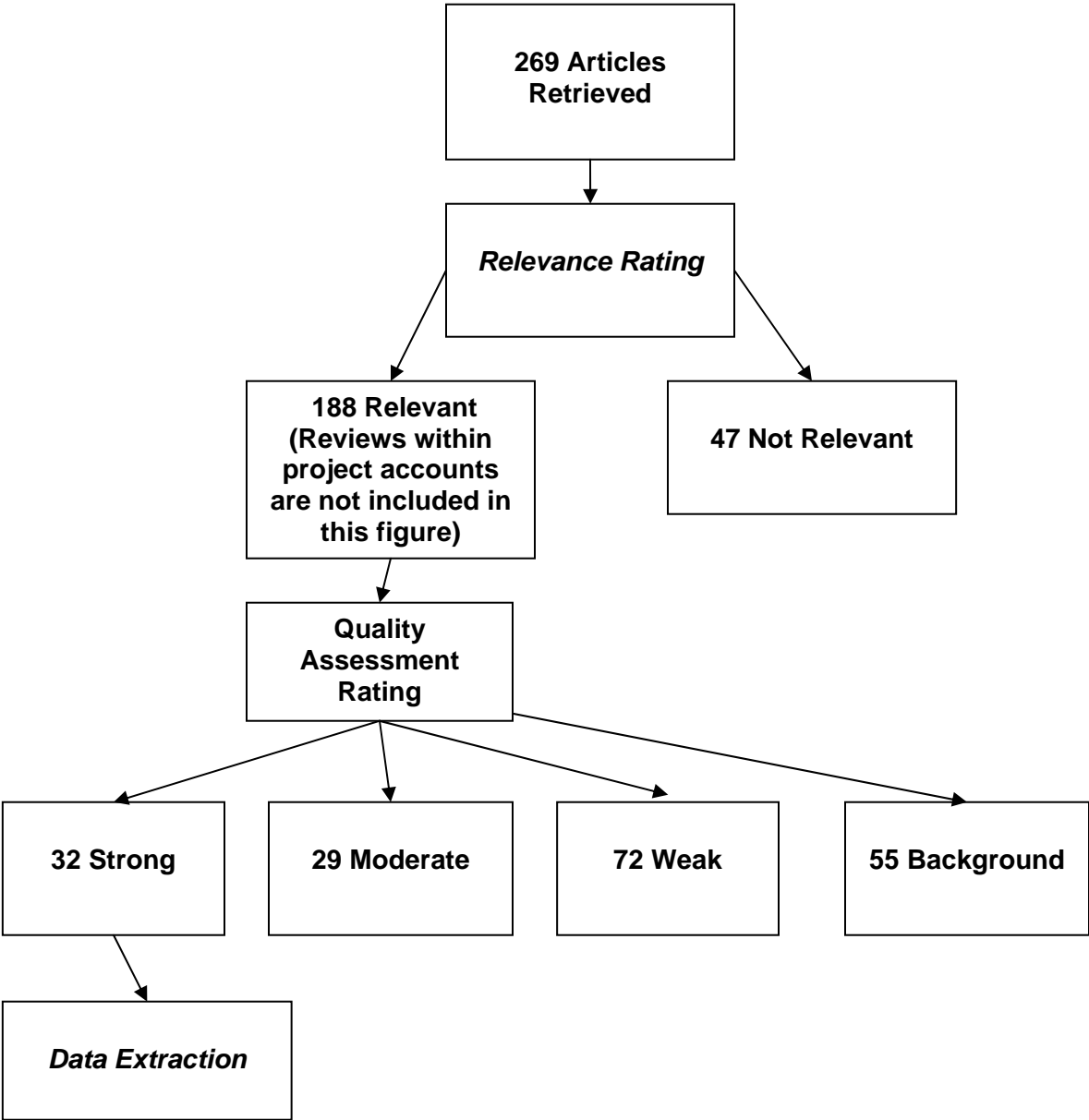
Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>BEHAVIOURAL DISORDER PREVENTION</b>					
<b>Violence Prevention</b>  Mytton, DiGuseppi, Gough, Taylor, & Logan, 2002	N=44  TS=1977-1998	<ul style="list-style-type: none"> <li>• Knowledge/lecture</li> <li>• Social influences/social norms</li> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Class series</li> <li>• Group discussion</li> <li>• Individual counselling/teaching</li> <li>• Parent involvement</li> </ul>	<ul style="list-style-type: none"> <li>• Risk behaviour change (e.g., aggressive behaviour), school intervention/actions</li> </ul>	<ul style="list-style-type: none"> <li>• 28 trials were suited to meta-analysis for aggressive behaviour; ES= -0.36, 95% CI; aggressive behaviour decreased more in the intervention than control groups; this effect was maintained after one year in 6 of the trials</li> <li>• 9 trials were suited to meta-analysis for school or agency responses to violence; ES=-0.59, 95% CI; interventions appeared to reduce school/agency violence</li> <li>• Both training in relationship skills/social context and training in non-response had positive effects, more so for aggressive behaviour than school/agency action</li> <li>• Both primary and secondary school had reductions in aggressive behaviour; only secondary school benefited in terms of school/agency action</li> <li>• Interventions targeting boys only were not as effective as those targeting girls only or both girls and boys (all were high-risk)</li> <li>• Limits to the analysis include the small sample sizes of the trials included in the meta-analysis, and the lack of methodological information reported within the studies</li> </ul>

Table 2: Results of the Strong Studies (Behavioural Disorder Prevention)

Topic Author, Date	Number of Studies Included (N) Time Span (TS)	Orientations of Programs	Intervention Strategies	Outcomes	Results/comments (ES = Effect Size) (Confidence Intervals not Available)
<b>BEHAVIOURAL DISORDER PREVENTION</b>					
<b>Antisocial Behaviour Intervention</b>  Bennett & Gibbons, 2000	N=30  TS=1978-1996	<ul style="list-style-type: none"> <li>• General/social skills programs</li> </ul>	<ul style="list-style-type: none"> <li>• Not reported</li> </ul>	<ul style="list-style-type: none"> <li>• Risk behaviour change (e.g. antisocial behaviour)</li> </ul>	<ul style="list-style-type: none"> <li>• 17 studies of school-based programs</li> <li>• Overall ES=0.23 weighted, 0.48 unweighted; cognitive-behavioural therapy interventions have a mild to moderate effect in reducing antisocial behaviour</li> <li>• Appear to have a greater effect for adolescents and older versus younger elementary students</li> </ul>

\*Note: Time Span (TS) refers to the date of publication for primary studies

Figure 1: Search Results



## REFERENCES

- Adlaf, E. M., Paglia, A., & Centre for Addiction and Mental Health (CAMH) (2003). *Drug use among Ontario students 1977-2003* Toronto, Ontario: CAMH.
- Adlaf, E. M., Paglia-Boak, A., Beitchman, J. H., & Wolfe, D. (2005). *The mental health and well-being of Ontario students (1991-2003)* Toronto, Ontario: CAMH.
- Andrews, G. & Wilkinson, D. D. (2002). The prevention of mental disorders in young people. *Medical Journal of Australia*, 177, S97-S100.
- Arnett, J. (1992). Reckless behaviour in adolescence: A developmental perspective. *Developmental Review*, 12, 339-373.
- Austin, G. A. (1988). *Prevention research update. No. 1.*
- Bangert-Drowns, R. L. (1988). The effects of school-based substance abuse education - A meta-analysis. *Journal of Drug Education*, 18, 243-265.
- Bennett, D. S. & Gibbons, T. A. (2000). Efficacy of child cognitive-behavioral interventions for antisocial behavior: A meta-analysis. *Child and Family Behavior Therapy*, 22, 1-15.
- Bennett, S. E. & Assefi, N. P. (2005). School-based teenage pregnancy prevention programs: A systematic review of randomized controlled trials. *Journal of Adolescent Health*, 36.
- Best, J. A., Thomson, S. J., Santi, S. M., Smith, E. A., & Brown, S. (1988). Preventing cigarette smoking among school children. *Annual Review of Public Health*, 9, 161-201.
- Botvin, G. J. & Epstein, J. A. (1999). Preventing cigarette smoking among children and adolescents. In D.F.Seidman & L. S. Covey (Eds.), *Helping the hard-core smoker: A clinician's guide*. (pp. 51-71). Mahwah: Lawrence Erlbaum Associates.
- Botvin, G. J. & Griffin, K. W. (1999). Preventing Drug Abuse. In *Promoting Positive Outcomes* (pp. 197-228). Washington, D.C.: CWLA Press (Child Welfare League of America, Inc.).
- Botvin, G. J. & Wills, T. A. (1985). Personal and social skills training: Cognitive-behavioral approaches to substance abuse prevention. *NIDA Research Monograph*, 63, 8-49.
- Breton, J. J., Boyer, R., Bilodeau, H., Raymond, S., Joubert, N., & Nantel, M. A. (2002). Is evaluative research on youth suicide programs theory-driven? The Canadian experience. *Suicide and Life-Threatening Behavior*, 32, 176-190.

- Brooks-Gunn, J. & Paikoff, R. L. (1991). Promoting healthy behavior in adolescence: The case of sexuality and pregnancy. *Bulletin of the New York Academy of Medicine*, 67, 527-547.
- Brown, L. K. & Fritz, G. K. (1988). AIDS education in the schools: A literature review as a guide for curriculum planning. *Clinical Pediatrics*, 27, 311-316.
- Bruvold, W. H. (1990). A meta-analysis of the California school-based risk reduction program. *Journal of Drug Education*, 20, 139-152.
- Bruvold, W. H. & Rundall, T. G. (1993). Project Account: Bruvold and Rundall.
- Burton, D. (1993). Tobacco cessation programs for adolescents. In R. Richmond (Ed.), *Interventions for Smokers: An International Perspective*. (pp. 95-105). Baltimore: Williams and Wilkins.
- Bushong, C., Coverdale, J., & Battaglia, J. (1992). Adolescent mental health: A review of preventive interventions. *Texas Medicine*, 88, 62-68.
- Camiletti, Y.A. & Huffman, M.C. (1998). Research utilization: Evaluation of initiatives in a public health nursing division. *Canadian Journal of Nursing Administration*, 11, 59-77.
- Chen, H. & Sheu, J. (1999). Development of an effective smoking prevention program for adolescents in Taiwan: A review of the literature. *Graduate Research Nursing*, 1, 1-7.
- Choi, K. H. & Coates, T. J. (1994). Prevention of HIV infection. *AIDS*, 8, 1371-1389.
- Christopher, F. S. (1995). Adolescent pregnancy prevention. *Family Relations*, 44, 384-391.
- Christopher, J. S., Nangle, D. W., & Hansen, D. J. (1993). Social-skills interventions with adolescents. Current issues and procedures. *Behavior Modification*, 17, 314-338.
- Ciliska, D., Hayward, S., Dobbins, M., Brunton, G., & Underwood, J. (1999). Transferring public-health nursing research to health-system planning: Assessing the relevance and accessibility of systematic reviews. *Canadian Journal of Nursing Research*, 31, 23-36.
- Clabby, J. F. (2003). Evidence-based youth violence prevention: Recommending programs that work. *Clinics in Family Practice*, 5, 73-87.
- Clarke, G. N., Hawkings, W., Murphy, M., & Sheeber, L. (1993). School-based primary prevention of depressive symptomatology in adolescents: Findings from two studies. *Journal of Adolescent Research*, 8, 183-204.
- Compas, B. E., Connor, J., & Wadsworth, M. (1997). Prevention of depression. In R.P. Weissberg, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Enhancing Children's Wellness*. (pp. 129-174). Thousand Oaks: Sage Publications.

- Cuijpers, P. (2002a). Effective ingredients of school-based drug prevention programs. A systematic review. *Addictive Behaviors*, 27, 1009-1023.
- Cuijpers, P. (2002b). Peer-led and adult-led school drug prevention: A meta-analytic comparison. *Journal of Drug Education*, 32, 107-119.
- DeLisle, S. & Wasserheit, J. N. (1999). Accelerated campaign to enhance STD services (ACCESS) for youth: Successes, challenges, and lessons learned. *Sexually Transmitted Diseases*, 26, S 28-S 41.
- Department of Health and Human Services, C. f. D. C. a. P. (2004). Youth risk behavior surveillance: United States, 2003. *Morbidity and Mortality Weekly Report*, 53.
- DHS (Department of Human Services) (2000). *Evidence-based health promotion: Resources for planning. No. 2 Adolescent Health*. Center for Adolescent Health.
- DiCenso, A., Guyatt, G., Willan, A., & Griffith, L. (2002). Interventions to reduce unintended pregnancies among adolescents: Systematic review of randomised controlled trials. *British Medical Journal*, 324, 1426.
- Diekstra, R. & Kerkhof, J. F. M. (1994). The prevention of suicidal behaviour: A review of effectiveness. In S.Maes, H. Leventhal, & et al. (Eds.), *International Review of Health Psychology, Vol. 3*. (pp. 145-165). New York: John Wiley and Sons.
- Drug Strategies (1996). *Making the grade: A guide to school drug prevention programs*.
- Dryfoos, J. G. (1990). A review of interventions to prevent pregnancy. In A.R.Stiffman & R. A. Feldman (Eds.), *Advances in Adolescent Mental Health: Contraception, Pregnancy, and Parenting*. (Vol. 4 ed., pp. 121-135). London: Jessica Kingsley Publishers.
- DuRant, R. H. (1994). Checklist for the evaluation of research articles. *Journal of Adolescent Health*, 15, 4-8.
- Dusenbury, L. & Falco, M. (1997). School-based drug abuse prevention strategies: From research to policy and practice. In R.P.Weissberg, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Enhancing Children's Wellness* (pp. 47-75). Thousand Oaks: Sage Publications.
- Dusenbury, L., Falco, M., & Lake, A. (1997). A review of the evaluation of 47 drug abuse prevention curricula available nationally. *Journal of School Health*, 67, 127-132.
- Early, T. J. & Vonk, M. E. (2001). Effectiveness of school social work from a risk and resilience perspective (Structured abstract). *Social Work in Education*, 23, 9-31.
- Ennett, S. T., Tobler, N. S., Ringwalt, C., & Flewelling, R. L. (1994). How effective is drug abuse resistance education? A meta-analysis of project DARE outcome evaluations. *American Journal of Public Health*, 84, 1394-1401.
- Falck, R. & Craig, R. (1988). Classroom-oriented, primary prevention programming for drug abuse. *Journal of Psychoactive Drugs*, 20, 403-408.

- Feldman, W., Martell, A., & Dingle, J. L. (1994). Prevention of unintended pregnancy and sexually transmitted diseases in adolescents. In The Canadian Task Force on the Periodic Health Examination (Ed.), *The Canadian Guide to Clinical Preventive Health Care*. (pp. 540-559). Ottawa: Canada Communication Group.
- Fichtenberg, M. S. & Glantz, S. A. (2002). Youth access interventions do not affect youth smoking. *Pediatrics*, *109*, 1088-1092.
- Flay, B. R. (2000). Approaches to substance use prevention utilizing school curriculum plus social environment change. *Addictive Behaviors*, *25*, 861-885.
- Flay, B. R. (2005). Project Account: Flay.
- Flisher, A. J., Kramer, R. A., Hoven, C. W., King, R. A., Bird, H. R., Davies, M. et al. (2000). Risk behavior in a community sample of children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*, 881-887.
- Foxcroft, D. R. (2004). Project Account: Foxcroft. See Project Account Reference list for studies included under this PA (Appendix 6).
- Franklin, C., Grant, D., Corcoran, J., O'Dell Miller, P., & Bultman, L. (1997). Effectiveness of prevention programs for adolescent pregnancy: A meta-analysis. *Journal of Marriage and the Family*, *59*, 551-567.
- Friend, K. & Levy, D. T. (2002). Reductions in smoking prevalence and cigarette consumption associated with mass-media campaigns (Structured abstract). *Health Education Research*, *17*, 85-98.
- Frost, J. J. & Forrest, J. D. (1995). Understanding the impact of effective teenage pregnancy prevention programs. *Family Planning Perspectives*, *27*, 188-195.
- Furlong, M., Paige, L. Z., & Osher, D. (2003). The Safe Schools/Healthy Students (SS/HS) Initiative: Lessons Learned from Implementing Comprehensive Youth Development Programs. *Psychology in the Schools*, *40*, 447-456.
- Galambos, N. L. & Tilton-Weaver, L. C. (1998). Multiple-risk behaviour in adolescents and young adults. *Health Reports*, *10*, 9-20.
- Goodstadt, M. S. (1989). Substance abuse curricula vs. school drug policies. *Journal of School Health*, *59*, 246-250.
- Gottfredson, D. C. & Wilson, D. B. (2003). Characteristics of effective school-based substance abuse prevention. *Prevention Science*, *4*, 27-38.
- Gould, M. S., Greenberg, T., Velting, D. M., & Shaffer, D. (2003). Youth suicide risk and preventive interventions: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*, 386-405.
- Graber, J. A. & Brooks, G. (1995). Models of development: Understanding risk in adolescence. *Suicide and Life-Threatening Behavior*, *25*, 18-25.

- Greenberg, M. T., Domitrovich, C., & Bumbarger, B. (2001). The prevention of mental disorders in school-aged children: Current state of the field. *Prevention and Treatment, 4*, 1-59.
- Greytak, E. A. (2003). Educating for the Prevention of Sexual Abuse: An Investigation of School-Based Programs for High School Students and Their Applicability to Urban Schools. *Penn GSE Perspectives on Urban Education 1, 2*, 1-15.
- Grunseit, A. (1997). *Impact of HIV and sexual health education on the sexual behaviour of young people* Geneva: UNAIDS.
- Grunseit, A., Kippax, S., Aggleton, P., Baldo, M., & Slutkin, G. (1997). Sexuality education and young people's sexual behavior: A review of studies. *Journal of Adolescent Research, 12*, 421-453.
- Guerra, N. G., Tolan, P. H., & Hammond, R. (1994). Prevention and treatment of adolescent violence. In L.D.Eron, J. Gentry, & P. Schlegel (Eds.), *Reason to Hope: A Psychological Perspective on Violence and Youth*. ( Washington: American Psychological Association.
- Guo, B. & Harstall, C. (2002). *Efficacy of Suicide Prevention Programs for Children and Youth*. Alberta Heritage Foundation for Medical Research.
- Hansen, W. B. (1993). School-based alcohol prevention programs. *Alcohol Health and Research World, 17*, 54-60.
- Harden, A., Weston, R., & Oakley, A. (1999). *A review of the effectiveness and appropriateness of peer-delivered health promotion interventions for young people (Structured abstract)* London: University of London, Institute of Education, Social Science Research Unit.
- Hawkins, J. D., Farrington, D. P., & Catalano, R. F. (1998). Reducing violence through the schools. In D.S.Elliott, B. A. Hamburg, & K. Williams (Eds.), *Violence in American schools* (pp. 188-216). Cambridge: Cambridge University Press.
- Health Canada (2005). *Young people in Canada: Their health and well-being* Ottawa, Ontario: Health Canada.
- Herrmann, D. S. & McWhirter, J. J. (1997). Refusal and resistance skills for children and adolescents: A selected review. *Journal of Counselling and Development, 75*, 177-187.
- Hingson, R. W., Assailly, J. P., & Williams, A. F. (2004). Underage drinking: Frequency, consequences, and interventions. *Traffic Injury Prevention, 5*.
- Hittner, J. B., Lévasseur, P. W., & Galante, V. (1998). Primary prevention of alcohol misuse: Overview and annotated bibliography. *Substance Use & Misuse, 33*, 2131-2178.
- Hofferth, S. L. (1987). The effects of programs and policies on adolescent pregnancy and childbearing. In S.L.Hofferth & C. D. Hayes (Eds.), *Risking the Future:*

- Adolescent Sexuality, Pregnancy and Childbearing*. (Vol. 2 ed., pp. 207-263). Washington: National Academy Press.
- Hofferth, S. L. (1991). Programs for high risk adolescents: What works? *Evaluation and Program Planning*, 14, 13-16.
- Hogan, E. K. & ERIC (Clearinghouse on Counselling and Student Services) (2003). *Anger Management 3: Structured Programs and Interventions*. ERIC Digest (Rep. No. Clearinghouse: CG032763). U.S.; North Carolina.
- Howard, J., Taylor, J., Ganikos, M. L., Holder, H. D., Godwin, D. F., & Taylor, E. D. (1988). An overview of prevention research: Issues, answers, and new agendas. *Public Health Reports*, 103, 674-683.
- Hoyt, H. H. & Broom, B. L. (2002). School-based teen pregnancy prevention programs: A review of the literature. *Journal of School Nursing*, 18, 11-17.
- Hwang, M. S., Yeagley, K. L., & Petosa, R. (2004). A Meta-Analysis of Adolescent Psychosocial Smoking Prevention Programs Published Between 1978 and 1997 in the United States. [References]. *Health Education & Behavior*, 31, Dec04-719.
- Jacobs, C. D. & Wolf, E. M. (1995). School sexuality education and adolescent risk-taking behavior. *Journal of School Health*, 65, 91-95.
- Jason, L. A., Curie, C. J., Townsend, S. M., Pokorny, S. B., Katz, R. B., & Sherk, J. L. (2002). Health promotion interventions. *Child and Family Behavior Therapy*, 24, 67-82.
- Jessor, R. (1991). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health*, 12, 597-605.
- Kalafat, J. (1997). Prevention of youth suicide. In R.P.Weissberg, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Enhancing Children's Wellness* (pp. 175-213). Thousand Oaks: Sage Publications.
- Kaplan, D. W., Feinstein, R. A., Fisher, M. M., Klein, J. D., Olmedo, L. F., Rome, E. S. et al. (2001). Condom use by adolescents. *Pediatrics*, 107, 1463-1469.
- Kirby, D. (2002a). Project Account: Kirby 1. See Project Account Reference list for studies included under this PA (Appendix 6).
- Kirby, D. (2002b). The impact of schools and school programs upon adolescent sexual behavior. *Journal of Sex Research*, 39, 27-33.
- Kumpfer, K. L. (1989). Prevention of alcohol and drug abuse: a critical review of risk factors and prevention strategies. In D.Shaffer, I. Philips, & N. B. Enzer (Eds.), *Prevention of Mental Disorders, Alcohol and Other Drug Use in Children and Adolescents*. (pp. 309-371). Rockville: US Department of Health and Human Services (Office for Substance Abuse Prevention).

- Kumpfer, K. L. & Baxley, G. B. (1997). *Drug abuse prevention: What works?* Rockville: National Institute on Drug Abuse.
- Lister-Sharp, D., Chapman, S., Stewart-Brown, S., & Sowden, A. (1999). Health promoting schools and health promotion in schools: Two systematic reviews. *Health Technology Assessment, 3*, 1-207.
- Lovato, C. & Shoveller, J. (2000). Youth smoking cessation: school-based approaches. In V.A.Moyer, E. J. Elliot, K. L. Davis, R. Gilbert, T. Klassen, S. Logan, C. Mellis, & K. Williams (Eds.), *Evidence based Pediatrics and Child Health* (pp. 154-161). London: BMJ Books.
- Manlove, J., Franzetta, K., McKinney, K., Papillo, A. R., & Terry-Humen, E. (2004). *No Time to Waste: Programs to Reduce Teen Pregnancy Among Middle School-Aged Youth*. Washington: National Campaign to Prevent Teen Pregnancy.
- Manlove, J., Terry-Humen, E., Papillo, A. R., Franzetta, K., Williams, S., & Ryan, S. (2002). *Preventing Teenage Pregnancy, Childbearing, and Sexually Transmitted Diseases: What the Research Shows. American Teens. Child Trends Research Brief*. District of Columbia: Child Trends, Inc.
- Mazza, J. J. (1997). School-based suicide prevention programs: Are they effective? *School Psychology Review, 26*, 382-396.
- McBride, N. (2003). A systematic review of school drug education. *Health Education Research, 18*, 729-742.
- McKay, A. (2000). Prevention of sexually transmitted infections in different populations: A review of behaviourally effective and cost-effective interventions. *Canadian Journal of Human Sexuality, 9*, 95-120.
- Meyer, H. & Stein, N. (1908). Relationship violence prevention education in schools: What's working, what's getting in the way, and what are some future directions. *American Journal of Health Education, 35*, 8-204.
- Milburn, K. (1995). A critical review of peer education with young people with special reference to sexual health. *Health Education Research, 10*, 407-420.
- Miller, D. N. & DuPaul, G. J. (1996). School-based prevention of adolescent suicide: Issues, obstacles, and recommendations for practice. *Journal of Emotional and Behavioral Disorders, 4*, 221-230.
- Miller, S. K. & Slap, G. B. (1989). Adolescent smoking: A review of prevalence and prevention. *Journal of Adolescent Health Care, 10*, 129-135.
- Minozzi, S. & Grilli, R. (1997). Revisione sistematica degli studi sulla efficacia degli interventi di prevenzione primaria dell'abuso di alcool fra gli adolescenti [The systematic review of studies on the efficacy of interventions for the primary prevention of alcohol abuse among adole (Structured abstract). *Epidemiologia e Prevenzione, 21*, 180-188.

- Mitchell, F. & Brindis, C. (1987). Adolescent pregnancy: The responsibilities of policymakers. *Health Services Research, 22*, 399-437.
- Montoya, I. D., Atkinson, J., & McFaden, W. C. (2003). Best characteristics of adolescent gateway drug prevention programs. *Journal of Addictions Nursing, 14*, 75-83.
- Moskowitz, J. (1989). The primary prevention of alcohol problems: A critical review of the research literature. *Journal of Studies on Alcohol, 50*, 54-88.
- Mrazek, P. J. & Haggerty, R. J. (1994). Illustrative preventive intervention research programs. In P.J.Mrazek & R. J. Haggerty (Eds.), *Reducing Risk for Mental Disorders: Frontiers for Preventive Intervention Research*. (pp. 215-313). Washington: Institute of Medicine, National Academy Press.
- Mullen, P. D., Ramirez, G., Strouse, D., Hedges, L. V., & Sogolow, E. (2002). Meta-analysis of the effects of behavioral HIV prevention interventions on the sexual risk behavior of sexually experienced adolescents in controlled studies in the United States. *Journal of Acquired Immune Deficiency Syndromes, 30*, S 94-S 105.
- Murray, M. E., Guerre, N. G., & Williams, K. (1997). Violence prevention for the 21st century. In R.P.Weissberg, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Enhancing Children's Wellness*. (pp. 105-128). Thousand Oaks: Sage Publications.
- Mytton, J. A., DiGuseppi, C., Gough, D. A., Taylor, R. S., & Logan, S. (2002). School-based violence prevention programs: Systematic review of secondary prevention trials. *Archives of Pediatrics and Adolescent Medicine, 156*, 752-762.
- Nastasi, B. K. & DeZolt, D. M. (1994). *School interventions for children of alcoholics*. Guilford Publications.
- Norman, E. & Turner, S. (1993). Adolescent substance abuse prevention programs: Theories, models, and research in the encouraging 80's. *Journal of Primary Prevention, 14*, 3-20.
- Oakley, A., Fullerton, D., Holland, J., Arnold, S., France-Dawson, M., Kelley, P. et al. (1995). Sexual health education interventions for young people: A methodological review. *British Medical Journal, 310*, 158-162.
- Oei, T. P. & Fea, A. (1987). Smoking prevention program for children: A review. *Journal of Drug Education, 17*, 11-42.
- Ontario Ministry of Health/Public Health Branch. (1997). Mandatory Health Programs and Services Guidelines.
- Oxman, A. D. & Guyatt, G. (1988). Guidelines for reading literature reviews. *Canadian Medical Association Journal, 138*, 697-703.

- Paglia, A. & Room, R. (1999). Preventing substance use problems among youth: A literature review and recommendations. *Journal of Primary Prevention, 20*, 3-50.
- Parker, J. T. (2001). School-based sex education: A new millennium update. *ERIC Digest, ED460130*.
- Pate, R. R., Heath, G. W., Dowda, M., & Trost, S. G. (1996). Associations between physical activity and other health behaviours in a representative sample of US adolescents. *American Journal of Public Health, 86*, 1577-1581.
- Perry, C. L. (1987). Results of prevention programs with adolescents. *Drug and Alcohol Dependence, 20*, 13-19.
- Petratis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin, 117*, 67-86.
- Ploeg, J., Ciliska, D., Dobbins, M., Hayward, S., Thomas, H., & Underwood, J. (1996). A systematic overview of adolescent suicide prevention programs. *Canadian Journal of Public Health, 87*, 319-324.
- Posavac, E. J., Kattapong, K. R., & Dew, D. E. J. (1999). Peer-based interventions to influence health-related behaviors and attitudes: A meta-analysis. *Psychological Reports, 85*, 1179-1194.
- Rae Grant, N. I. (1994). Preventive interventions for children and adolescents: Where are we now and how far have we come? *Canadian Journal of Community Mental Health, 13*, 17-36.
- Robin, L., Dittus, P., Whitaker, D., Crosby, R., Ethier, K., Mezoff, J. et al. (2004). Behavioral interventions to reduce incidence of HIV, STD, and pregnancy among adolescents: A decade in review. *Journal of Adolescent Health, 34*, 3-26.
- Robinson, A. (1995). Research, practice and the Cochrane Collaboration. *Canadian Medical Association Journal, 152*, 883-889.
- Rooney, B. L. & Murray, D. M. (1996). A meta-analysis of smoking prevention programs after adjustment for errors in the unit of analysis. *Health Education Quarterly, 23*, 48-64.
- Rosewater, K. M. & Burr, B. H. (1998). Epidemiology, risk factors, intervention, and prevention of adolescent suicide. *Current Opinion in Pediatrics, 10*, 338-343.
- Sackett, D. L., Haynes, B. J., & Tugwell, P. (1991). How to read reviews. In *Clinical Epidemiology: A Basic Science for Clinical Medicine*. (2 ed., pp. 379-385). Toronto: Little, Brown and Company.
- Sackett, D. L. & Wennberg, J. E. (1997). Choosing the best research design for each question. *BMJ, 315*, 1636.

- Samples, F. L. (2004). Evaluating curriculum-based intervention programs: An examination of preschool, primary, and elementary school intervention programs. In C.E.Sanders & G. D. Phye (Eds.), *Bullying: Implications for the Classroom* (pp. 203-227). San Diego, California: Elsevier/Academic Press.
- Samples, F. L. & Aber, L. (1998). Evaluations of school-based violence prevention programs. In D.S.Elliott, B. A. Hamburg, & K. Williams (Eds.), *Violence in American Schools*. (pp. 217-252). Cambridge: Cambridge University Press.
- Schaps, E., DiBartolo, R., Moskowitz, J., Palley, C. S., & Churgin, S. (1981). A review of 127 drug abuse prevention program evaluations. *Journal of Drug Issues*, 11, 17-43.
- Shaffer, D., Gould, M., Fisher, P., Trautman, P., & Abraham, A. (1998). Preventing teenage suicide: A critical review. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 675-687.
- Sherman, L. W., Gottfredson, D. C., MacKenzie, D. L., Eck, J., Reuter, P., & Bushway, S. D. (1998). *Preventing crime: What works, what doesn't, what's promising. Research in brief*. (Rep. No. ERIC\_NO: ED423321). Washington: National Institute of Justice.
- Silva, M. (2002). The effectiveness of school-based sex education programs in the promotion of abstinent behavior: A meta-analysis. *Health Education Research*, 17, 471-481.
- Skara, S. & Sussman, S. (2003). A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations. *Preventive Medicine*, 37, 451-474.
- Smith, P. K. & Ananiadou, K. (2003). The nature of school bullying and the effectiveness of school-based interventions. *Journal of Applied Psychoanalytic Studies*, 5, 189-209.
- Smith, P. K., Ananiadou, K., & Cowie, H. (2003). Interventions to reduce school bullying. *Canadian Journal of Psychiatry*, 48, 591-599.
- Stead, M., Hastings, G., & Tudor-Smith, C. (1996). Preventing adolescent smoking: A review of options. *Health Education Journal*, 55, 31-54.
- Stout, J. W. & Rivara, F. P. (1989). Schools and sex education: Does it work? *Pediatrics*, 83, 375-379.
- Sussman, S., Dent, C. W., & Stacy, A. W. (2002). Project Towards No Drug Abuse: A review of the findings and future directions. *American Journal of Health Behavior*, 26, 354-365.
- Thomas, H., Siracusa, L., Ross, G., Beath, L., Hanna, L., Michaud, M. et al. (1999). *Effectiveness of school-based interventions in reducing adolescent risk behaviour: A systematic review of reviews* Hamilton, Canada: Effective Public Health Practice Project (EPHPP).

- Thomas, M. H. (2000). Abstinence-based programs for prevention of adolescent pregnancies. *Journal of Adolescent Health, 26*, 5-17.
- Thomas, R. (2002). School-based programmes for preventing smoking. *The Cochrane Library*, 1-183.
- Tobler, N. S. (1994). Project Account: Tobler 1. See Project Account Reference list for studies included under this PA (Appendix 6).
- Tobler, N. S., Lessard, T., Marshall, D., Ochshorn, P., & Roona, M. (1999). Effectiveness of school-based drug prevention programs for marijuana use. *School Psychology International, 20*, 105-137.
- Tobler, N. S., Roona, M. R., Oshshorn, P., Marshall, D. G., Streke, A. V., & Stackpole, K. M. (2000). School-based adolescent drug prevention programs: 1998 meta-analysis. *Journal of Primary Prevention, 20*, 275-376.
- Tobler, N. S. & Stratton, H. H. (1997a). Effectiveness of school based drug prevention programs: A meta-analysis of the research. *Journal of Primary Prevention, 18*, 71-129.
- Toups, M. L. & Holmes, W. R. (2002). Effectiveness of abstinence-based sex education curricula: A review. *Counselling and Values, 46*, 237-240.
- Tubman, J. G., Windle, M., & Windle, R. C. (1996). Cumulative sexual intercourse patterns among middle adolescents: Problem behaviour precursors and concurrent health risk behaviours. *Journal of Adolescent Health, 18*, 182-191.
- United States Congress, Office of Technology Assessment (1988). *How Effective is AIDS Education?* Washington, D.C.
- Visser, A. P. & van Bilsen, P. (1994). Effectiveness of sex education provided to adolescents. *Patient Education and Counseling, 23*, 147-160.
- Wassef, A., Collins, M. L., Ingham, D., & Mason, G. (1995). In search of effective programs to address students' emotional distress and behavioral problems. Part II: Critique of school- and community-based programs. *Adolescence, 30*, 757-777.
- Wekerle, C. & Wolfe, D. A. (1999). Dating violence in mid-adolescence: Theory, significance, and emerging prevention initiatives. *Clinical Psychology Review, 19*, 435-456.
- Wells, J., Barlow, J., & Steward-Brown, S. (2003). A systematic review of universal approaches to mental health promotion in schools. *Health Education, 103*, 197-220.
- Werch, C. E. (2001). Preventive alcohol interventions based on a stages of acquisition model. *American Journal of Health Behavior, 25*, 206-216.

- Whaley, A. L. (1999). Preventing the high-risk sexual behavior of adolescents: focus on HIV/AIDS transmission, unintended pregnancy, or both? *Journal of Adolescent Health, 24*, 376-382.
- White, D. & Pitts, M. (1997). *Health promotion with young people for the prevention of substance misuse*. Health Education Authority.
- White, D. & Pitts, M. (1998). Educating young people about drugs: A systematic review. *Addiction, 93*, 1475-1487.
- Yawn, B. P. & Yawn, R. A. (1993). Adolescent pregnancies in rural America: A review of the literature and strategies for primary prevention. *Family and Community Health, 16*, 36-45.
- Young Song, E., Pruitt, B. E., McNamara, J., & Colwell, B. (2000). A meta-analysis examining effects of school sexuality education programs on adolescents' sexual knowledge, 1960-1997. *Journal of School Health, 70*, 413-416.

## **APPENDICES**

**Appendix 1: Search Strategy**

**Appendix 2: Hand-searched Journals**

**Appendix 3: Relevance Tool**

**Appendix 4: Quality Assessment Tool**

**Appendix 5: Data Extraction Tool**

**Appendix 6: Project Account References List**

## Appendix 1: Search Strategy

Review	Effectiveness	School-based	Interventions	Reduce	Adolescent	Risk Behaviour
review meta analysis metanalysis metaanalysis pooled overview	effect: efficacy evidence evaluat: impact outcome:	school: curriculum	consumer communit: health education health promotion program: education peer: intervent: strateg: outreach: curriculum project: advocacy professional: volunteer:	prevent: reduc: decreas: chang: declin: drop	adolescen: teen: youth child	tobacco smoking alcohol drug: substance sex: delinquen: risk factor: risk behavio: risk taking violence bully: suicide self harm emotional behavioral behavioural mental health

### Databases:

Medline  
CINAHL  
EMBASE  
PsychINFO  
BIOSIS  
Sociological Abstracts  
ERIC  
EBM

### Dates:

1987 to April 2005

### Language:

English

## Appendix 2: Hand-searched Journals

Searched from January 1999 to April 2005:

- American Journal of Public Health
- Canadian Journal of Public Health
- Health Education
- Journal of Adolescence
- Journal of Adolescent Health
- Journal of Adolescent Research
- Journal of School Health

# Appendix 3: Relevance Tool

Effective Public Health Practice Project

## ADOLESCENT RISK REVIEW Relevance Tool

Ref ID: _____
Author: _____
Year: _____
Reviewer: _____

Review Tool - INSTRUCTIONS FOR COMPLETETION

1. Circle Y or N for each relevance criterion  
Inclusion criteria: Yes to 1 and 2 and 3 and 4
2. Record inclusion decision
3. Record if additional reference are to be retrieved
4. Complete validity form for articles to be included (on reverse)

### RELEVANCE CRITERIA:

- |  |   |   |
|--|---|---|
| 1. This article is a review (narrative, systematic, meta-analysis)   | Y | N |
| 2. School-age adolescents (12-18 years) are the population of the review                                     | Y | N |
| 3. One of the following risk behaviours is one subject of the review   | Y | N |
| Smoking  |   |   |
| Alcohol use/abuse  |   |   |
| Early or unprotected sexual activity   |   |   |
| Drug use/abuse   |   |   |
| Suicide attempts   |   |   |
| Depressive behaviour   |   |   |
| Violence/conduct disorder  |   |   |
| 4. One or more of the following school-based interventions are also addressed<br>(Circle all interventions): | Y | N |
| Consumer participation   |   |   |
| Community development  |   |   |
| Consumer advocacy  |   |   |
| Use of peer groups led by peers, professionals or trained volunteers,<br>and school health services          |   |   |
| Health promotion   |   |   |
| Primary prevention   |   |   |
| Health education   |   |   |

### REVIEWER DECISION:

- |   |   |   |
|---|---|---|
| 1. Include in critical appraisal<br>If yes: Please complete Validity Form   | Y | N |
| 2. Additional references<br>If yes: Mark items on reference list of article | Y | N |

### IF DISCEPANCY IN INCLUSION DECISION:

Reason for discrepancy:  
     Oversight                      Difference in interpretation of criteria                      Difference in interpretation of study

FINAL DECISION:                      INCLUDE IN STUDY                      Y                      N

## APPENDIX 4: Quality Assessment Tool

### Effective Public Health Project Quality Assessment Tool for Reviews Adolescent Risk Review

Ref ID \_\_\_\_\_

Author \_\_\_\_\_

- |   |                  |              |                         |                  |             |           |  |  |  |
|---|------------------|--------------|-------------------------|------------------|-------------|-----------|--|--|--|
| 1. Was the search strategy for primary studies stated?  | Y                | N            | U                       |                  |             |           |  |  |  |
| 2. Was the search comprehensive?<br>(Score Yes if 2 different databases e.g. social science, medical were searched)<br>Electronic databases: nursing, medical, social science (English only or other languages)<br>Other sources: key informants, reference lists | Y                | N            | U                       |                  |             |           |  |  |  |
| 3. Were the relevance criteria for the primary studies described?<br>Criteria include: participants, interventions, outcome, design   | Y                | N            | U                       |                  |             |           |  |  |  |
| 4. Was the quality (strengths and weaknesses) of the primary studies assessed?  | Y                | N            | U                       |                  |             |           |  |  |  |
| 5. Did the quality assessment include:<br>(Minimum requirement: 3/6 of the following criteria)  | Y                | N            | U                       |                  |             |           |  |  |  |
| <table border="0"> <tr> <td>study design</td> <td>intervention</td> </tr> <tr> <td>study sample/population</td> <td>outcome measures</td> </tr> <tr> <td>confounders</td> <td>follow up</td> </tr> </table>   | study design     | intervention | study sample/population | outcome measures | confounders | follow up |  |  |  |
| study design  | intervention     |              |                         |                  |             |           |  |  |  |
| study sample/population   | outcome measures |              |                         |                  |             |           |  |  |  |
| confounders   | follow up        |              |                         |                  |             |           |  |  |  |
| 6. Does the review integrate the findings beyond describing or listing primary study results?   | Y                | N            | U                       |                  |             |           |  |  |  |
| 6. Is the reported data from all studies adequate to support the review's conclusions?  | Y                | N            | U                       |                  |             |           |  |  |  |

TOTAL SCORE \_\_\_\_\_

QUALITY RATING:      **STRONG**                      **MODERATE**                      **WEAK**  
    (total score 6-7)                      (total score 4-5)                      (total score 3 or less)



## STRONG PROJECT ACCOUNTS REFERENCE LIST

### Foxcroft Project Account

Foxcroft, D. R., Lister-Sharp, D., & Lowe, G. (1997). Alcohol misuse prevention for young people: A systematic review reveals methodological concerns and lack of reliable evidence of effectiveness. *Addiction, 92*, 531-537.

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G., & Breen, R. (2003). Longer-term primary prevention for alcohol misuse in young people: A systematic review. *Addiction, 98*, 397-411.

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G., & Breen, R. (2004). Primary prevention for alcohol misuse in young people. *Cochrane Database of Systematic Reviews*.

### Kirby 1 Project Account

Kirby, D., Short, L., Collins, J., Rugg, D., Kolbe, L., Howard, M. et al. (1994). School based programs to reduce sexual risk behaviours: A review of effectiveness. *Public Health Reports, 109*, 339-360.

Kirby, D. (1997). *No easy answers: Research findings on programs to reduce teen pregnancy*. Washington.

Kirby, D. & Coyle, K. (1997). School-based programs to reduce sexual risk-taking behavior. *Children and Youth Services Review, 19*, 415-436.

Kirby, D. (2001). *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy*. Washington: National Campaign to Prevent Teen Pregnancy.

Kirby, D. (2002). Effective approaches to reducing adolescent unprotected sex, pregnancy, and childbearing. *Journal of Sex Research, 39*, 51-57.

### Tobler 1 Project Account

Tobler, N. S. (1986). Meta-analysis of 143 adolescent drug prevention programs: Quantitative outcome results of program participants compared to a control or comparison group. *Journal of Drug Issues, 16*, 537-567.

Tobler, N. S. (1992). Drug prevention programs can work: Research findings. *Journal of Addictive Diseases, 11*, 1-28.

Tobler, N. S. (1993). Updated meta-analysis of adolescent drug prevention programs. In C. Montoya, C. Ringwalt, M. B. Ryan, & R. Zimmerman (Eds.), *Evaluating School-linked Prevention Strategies: Alcohol, Tobacco and Other Drugs*. (pp. 71-86). San Diego: University of California.

Tobler, N. S. (1994). Meta-analytical issues for prevention intervention research. In L.M.Collins & L. A. Seitz (Eds.), *Advances in Data Analysis for Prevention Intervention Research: NIDA research monograph 142*. (pp. 342-403). Rockville: National Institute of Health.