

Evidence-Based Interventions for Promoting Adolescent Health

Toumbourou, J.W., Patton, G.C., Sawyer, S.,
Olsson, C., Webb-Pullman, J., Catalano, R.,
& Godfrey, C.

September 2000



Centre for
**ADOLESCENT
HEALTH**

2 Gatehouse St., Parkville, Vic., 3052. Australia
<http://www.rch.unimelb.edu.au/adolescent/>

Copyright

© Centre for Adolescent Health

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced without prior written permission from the Centre for Adolescent Health.

ISBN 1 74056 003 5

Centre for Adolescent Health

The Centre for Adolescent Health was established in 1991 with support from the Victorian Health Promotion Foundation as an affiliate organisation of the Royal Children's Hospital and the University of Melbourne. Its mission is to promote the health and well-being of young people through integrated research, program development, advocacy, education and training and clinical services.

Suggested Citation

Toumbourou, J.W., Patton G.C., Sawyer, S., Olsson, C., Webb-Pullman, J., Catalano, R., and Godfrey, C. (2000). Evidence-Based Interventions for Promoting Adolescent Health. Centre for Adolescent Health: Melbourne.

Acknowledgments

Funding and guidance for the preparation of this report was provided through the Victorian Government, Health Development Section, Public Health Division, Department of Human Services.

We gratefully acknowledge the contributions of Meagan Crawford, Georgina Wilby, Delia O'Donohue, Kim Dunphy and Heidi Terry who assisted with the writing of technical summaries used in this review.

Related Reports

A summary report of this document can be obtained through the Victorian Government Department of Human Services through the citation below.

Evidence-based health promotion: Resources for Planning. No 2 Adolescent Health. Health Development Section, Public Health Division, Department of Human Services

A database relevant to this project can be accessed through the Prometheus website.
<http://www.prometheus.com.au/>

EXECUTIVE SUMMARY	3
1 INTRODUCTION.....	11
1.1 THE IMPORTANCE OF ADOLESCENT HEALTH PROMOTION.....	11
1.2 A RISK FACTOR APPROACH TO ADOLESCENT HEALTH PROMOTION.....	12
1.3 EPIDEMIOLOGICAL TRENDS IN THE SIX HEALTH OUTCOMES IN VICTORIA.....	13
1.4 SCOPE OF THE CURRENT REVIEW.....	15
2 METHODOLOGY.....	17
2.1 PAPER REVIEWING PROCEDURE	17
2.2 INFORMATION SEARCH AND ACQUISITION.....	17
2.3 INFORMATION CLASSIFICATION AND ANALYSIS.....	18
2.4 INTEGRATIVE EVALUATION OF INDIVIDUAL PROGRAM EVALUATIONS	20
3 TOBACCO USE.....	22
3.1 ADOLESCENT TOBACCO USE.....	22
3.2 PARENT TRAINING.....	23
3.3 FAMILY INTERVENTION	23
3.4 SCHOOL BASED HEALTH EDUCATION	23
3.5 SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT	25
3.6 MENTORSHIP	25
3.7 PEER INTERVENTION AND PEER EDUCATION.....	25
3.8 RECREATION PROGRAMS.....	25
3.9 REORIENTATION OF HEALTH SERVICES.....	26
3.10 COMMUNITY BASED HEALTH EDUCATION.....	27
3.11 EMPLOYMENT, AND TRAINING	27
3.12 LAW, REGULATION, POLICING AND ENFORCEMENT	27
3.13 SOCIAL MARKETING INTERVENTIONS	30
3.14 COMMUNITY MOBILISATION	31
3.15 SUMMARY OF FINDINGS ON TOBACCO USE.....	32
4 ALCOHOL AND OTHER DRUG USE.....	34
4.1 ADOLESCENT ALCOHOL USE.....	34
4.2 CANNABIS USE	34
4.3 PARENT TRAINING.....	35
4.4 FAMILY INTERVENTION	38
4.5 SCHOOL BASED DRUG-EDUCATION.....	39
4.6 SCHOOL ORGANISATIONAL AND BEHAVIOUR MANAGEMENT	45
4.7 MENTORSHIP	46
4.8 PEER INTERVENTION AND PEER EDUCATION.....	46
4.9 RECREATION PROGRAMS.....	47
4.10 REORIENTATION OF HEALTH SERVICES.....	47
4.11 COMMUNITY BASED HEALTH EDUCATION.....	49
4.12 EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION.....	49
4.13 LAW, REGULATION, POLICING AND ENFORCEMENT	49
4.14 SOCIAL MARKETING INTERVENTIONS	51
4.15 COMMUNITY MOBILISATION	52
4.16 SUMMARY OF FINDINGS ON ALCOHOL AND DRUG USE	54

5	SEXUAL RISK-TAKING BEHAVIOUR.....	55
5.1	ADOLESCENT SEXUAL RISK-TAKING	55
5.2	PARENT TRAINING.....	55
5.3	FAMILY INTERVENTIONS	56
5.4	SCHOOL BASED HEALTH EDUCATION	56
5.5	SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT	59
5.6	MENTORSHIP	59
5.7	PEER INTERVENTION AND PEER EDUCATION.....	59
5.8	RECREATION PROGRAMS.....	60
5.9	HEALTH SERVICE REORIENTATION.....	60
5.10	COMMUNITY BASED HEALTH EDUCATION	63
5.11	EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION.....	63
5.12	LAW, REGULATION, POLICING AND ENFORCEMENT	63
5.13	SOCIAL MARKETING	63
5.14	COMMUNITY MOBILISATION	63
5.15	SUMMARY	66
6	CRIME AND ANTISOCIAL BEHAVIOUR.....	67
6.1	CRIME AND ANTISOCIAL BEHAVIOUR.....	67
6.2	PARENT TRAINING.....	68
6.3	FAMILY INTERVENTION	70
6.4	CONFLICT RESOLUTION AND VIOLENCE PREVENTION CURRICULA	71
6.5	SCHOOL ORGANISATION.....	74
6.6	SCHOOL BEHAVIOUR MANAGEMENT.....	75
6.7	PEER MEDIATION	76
6.8	PEER EDUCATION	77
6.9	MENTORING	77
6.10	COMMUNITY BASED EDUCATION.....	78
6.11	EMPLOYMENT AND TRAINING.....	78
6.12	LAW, REGULATION, POLICING AND ENFORCEMENT	79
6.13	SOCIAL MARKETING	81
6.14	COMMUNITY MOBILISATION	81
7	ADOLESCENT DEPRESSION.....	82
7.1	ADOLESCENT DEPRESSION	82
7.2	PARENT TRAINING.....	82
7.3	FAMILY INTERVENTION	82
7.4	SCHOOL BASED HEALTH EDUCATION	82
7.5	SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT	84
7.6	MENTORSHIP	84
7.7	PEER INTERVENTION AND PEER EDUCATION.....	84
7.8	RECREATION PROGRAMS.....	84
7.9	REORIENTATION OF HEALTH SERVICES.....	84
7.10	COMMUNITY BASED HEALTH EDUCATION.....	84
7.11	EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION.....	84
7.12	LAW, REGULATION, POLICING AND ENFORCEMENT	85
7.13	SOCIAL MARKETING INTERVENTIONS	85
7.14	COMMUNITY MOBILISATION	85
7.15	SUMMARY.....	ERROR! BOOKMARK NOT DEFINED.
8	ADOLESCENT SUICIDAL BEHAVIOUR	86
8.1	ADOLESCENT SUICIDAL BEHAVIOUR.....	86
8.2	PARENT TRAINING.....	86

8.3	FAMILY INTERVENTION	86
8.4	SCHOOL BASED HEALTH EDUCATION	87
8.5	SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT	89
8.6	MENTORSHIP	89
8.7	PEER INTERVENTION AND PEER EDUCATION.....	91
8.8	RECREATION PROGRAMS.....	91
8.9	REORIENTATION OF HEALTH SERVICES.....	91
8.10	COMMUNITY BASED HEALTH EDUCATION.....	93
8.11	EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION.....	93
8.12	LAW, REGULATION, POLICING AND ENFORCEMENT	93
8.13	SOCIAL MARKETING INTERVENTIONS	96
8.14	COMMUNITY MOBILISATION	98

9 RECOMMENDATIONS AND CONCLUSIONS 99

9.1	GENERAL RECOMMENDATIONS FOR PURCHASING ADOLESCENT HEALTH PROMOTION INTERVENTIONS.....	99
9.1.1	INVEST STRATEGICALLY TO ADVANCE EVIDENCE-BASED PRACTICE.	99
9.1.2	INVEST IN STRONG IMPLEMENTATION	99
9.1.3	REQUEST BEHAVIOURAL OUTCOMES.....	100
9.1.4	TARGET MULTIPLE RISK FACTORS	100
9.1.5	SEEK SUSTAINED INTERVENTION.....	100
9.1.6	IDENTIFY AND REWARD EVIDENCE-BASED PRACTICE	100
9.2	SPECIFIC CONCLUSIONS FOR PURCHASING ADOLESCENT HEALTH PROMOTION INTERVENTIONS.....	100
9.2.1	SCHOOL BASED HEALTH EDUCATION.....	102
9.2.2	PARENT TRAINING AND FAMILY INTERVENTION	104
9.2.3	COMMUNITY MOBILISATION.....	104
9.2.4	LAW, REGULATION, POLICING AND ENFORCEMENT.....	104
9.2.5	SOCIAL MARKETING.....	104
9.2.6	SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT	105
9.2.7	PEER INTERVENTION	105
9.2.8	COMMUNITY BASED HEALTH EDUCATION	106
9.2.9	HEALTH SERVICE REORIENTATION	106
9.2.10	RECREATION	106
9.2.11	MENTORSHIP.....	106
9.2.12	EMPLOYMENT AND TRAINING.....	107

10 REFERENCES..... 144

Executive Summary

The past decade has been an active period in adolescent health research. Research teams internationally have trialed and evaluated a range of strategies aimed at protecting adolescent health and preventing the emergence of problems such as substance abuse, sexually transmitted disease and depression. The present project is a Victorian Department of Human Services initiative. The purpose was to conduct a systematic review of the effectiveness of interventions promoting health in the adolescent population to better inform state investment in evidence-based strategies. Interventions included in the review addressed six indices of adolescent health - depression, suicidal behaviour, alcohol and drug use, tobacco use, antisocial behaviour, and sexual risk-taking behaviour.

The term “health promotion” has been used to describe activities and interventions that reduce risk factors, enhance protective factors, prevent adverse health outcomes and promote positive adjustment and health. The purpose of this literature review was to ascertain the efficacy of health promotion interventions targeted at adolescents (defined as 12-to 18-year-olds). Program evaluations were organised according to the health promotion “strategy” represented. Health promotional strategies identified in this review included parent training, family intervention, school based health education, school organisation and management, mentorship, peer intervention, recreation, health service reorientation, community based education, employment and training, legislative reform and enforcement of legislation, social marketing, and community mobilisation.

Published papers describing program evaluations were identified through electronic abstraction services, through previous review work conducted by the study authors and through consultation with systematic review teams internationally. Articles were initially screened for key details including their adolescent focus, relevance to the outcomes of interest and methodology. Studies were included only if they accorded with the highest level of evaluation evidence (randomised allocation or matching of controls to intervention, and longitudinal outcome evaluation in community settings). A minority of studies were included that did not conform to these standards because they either 1) clearly indicated null-intervention effects and hence did not require more elaborate designs or 2) evaluated Australian intervention data using adequately controlled designs.

The inclusion criteria left 178 studies (presented as “Technical Summaries”) which were each systematically reviewed relevant to three areas of evaluation - process evaluation (practical implementation), intermediary outcomes (impact on risk and protective factors) and health outcomes (effectiveness). Within the body of the report each of the articles was considered with reference to the main health promotion strategy adopted and the adolescent health outcome targeted for prevention. Using the available evidence an integrative review was completed systematically exploring, for each strategy, evidence for implementation, outcome effectiveness and, where possible, evidence for dissemination and cost-effectiveness. In what follows we detail key conclusions and recommendations following from the above process of research review.

Recommendations for purchasing Adolescent Health promotion interventions

There is now a considerable research base relevant to the effectiveness of health promotion intervention as a practical means of improving adolescent health. This report reviews evidence published over the last decade relevant to the effectiveness of thirteen health promotion strategies targeting six adolescent health behaviours. Although Australian dissemination issues are discussed, the present report is biased toward United States program evaluations as the bulk of published evaluation research has come from that country.

General recommendations

Invest strategically to advance evidence-based practice.

- Statewide dissemination is recommended for strategies such as legislative change, and social marketing.
- Regional funding is recommended to increase evidence-based practice through training and targeted funding of programs with evidence for impacts on regionally prioritised risk factors, protective factors and youth health and behaviour outcomes.
- Purchasing contracts for preventive interventions should include evaluation requirements designed to advance the level of evidence for the selected health promotion strategy.

Invest in strong implementation

- Weakly implemented interventions show inconsistent or null effects.
- Check and ensure fidelity in implementation.

Request behavioural outcomes

- Impacts should be expected not just for risk factors, but also for relevant health indices. Funding for longer-term follow-up evaluation may be required to measure these outcomes.

Target multiple risk factors

- Programs that employ more than one health promotion strategy appear to be more consistently effective. Programs that target more than one risk factor may increase the likelihood of an effect.

Seek sustained intervention

- Investment in prevention should aim to maintain a coordinated set of activities over an extended time frame.
- Activities should address the developmental stage of youth and build on earlier components.

Identify and reward evidence-based practice.

- An audit of intervention strategies and program components currently delivered in Victoria is recommended to establish their congruence with an evidence-based approach.
- Evidence-based programs should be acknowledged and rewarded.

General recommendations are outlined in more detail in Section 9.

Specific Recommendations

The conclusions that follow should be accepted cautiously as they are based on review of only the limited sub-set of available articles relevant to the past decade and located within the restricted time available for this project. Identification of programs implemented within Victoria has not been based on a systematic process. The table that follows summarises the identified evidence-base for the thirteen adolescent health promotion strategies examined in this report.

Summary of evidence base for thirteen adolescent health promotion strategies targeting six adolescent health outcomes.

Health Promotion Strategies	Tobacco	Alcohol & Drugs	Sexual Health	Antisocial	Depression	Suicide
Parent Training	⌘	★★	⌘	★★★	⌘	★ ^{1/1}
Family Intervention	⌘	★ ^{2/3}	★ ^{3/3}	★★	⌘	⌘
School Based Health Education	★★	★★★	★★★	★★	★ ^{1/2}	⌘
School Organisation and Behaviour Management	⌘	★ ^{1/1}	⌘	★★	★ ^{0/1}	★ ^{0/1}
Mentorship	⌘	★ ^{1/1}	⌘	★ ^{1/10}	⌘	⌘
Peer Intervention and Peer Education	★ ^{2/2}	⌘	★★	⌘	⌘	⌘
Youth Recreation	★ ^{0/1}	⌘	★ ^{1/1}	⌘	⌘	⌘
Health Service Reorientation	★ ^{1/3}	★ ^{1/1}	★ ^{2/7}	⌘	⌘	⌘
Community Based Health Education	⌘	★ ^{1/2}	★ ^{3/6}	★ ^{2/2}	⌘	⌘
Employment and Training	⌘	⌘	⌘	☒	⌘	⌘
Law, regulation, policing and enforcement	★★★	★ ^{2/2}	⌘	⌘	⌘	★★
Social Marketing	★ ^{1/3}	★ ^{1/1}	⌘	⌘	★ ^{0/1}	★ ^{1/1}
Community Mobilisation	★★	★★	★★	★ ^{0/4}	⌘	⌘

⌘ Limited investigation.

☒ Evidence is contra-indicative.

⌘ Warrants further research.

★^p Evidence for implementation. ^p Proportion of studies with positive effects.

★★ Evidence for outcome effectiveness.

★★★ Evidence for effective dissemination.

For definitions see Section 2.4 - Integrative Evaluation of Individual Program Evaluations.

BEST BUY STRATEGIES

School based health education

- A cost-effective strategy that can reduce alcohol and other drug problems, smoking rates in young people, sexual risk-taking and antisocial behaviour.
- Dissemination with evaluation is recommended to encourage evidence-based health education integrated as a universal component within schools.
- Encouraging innovation could extend the application of this strategy into mental health promotion.

Parent training and family intervention

- US experience suggests promise for this strategy in preventing a variety of adolescent health and behaviour problems. Australian experience is relatively undeveloped.
- Dissemination for early intervention is recommended to prevent crime and alcohol and drug misuse.
- Funding implementation with rigorous evaluation could extend these approaches to other outcomes.

Community mobilisation

- Implementation with rigorous evaluation is recommended to assist prevention of tobacco use, alcohol and drug use, and sexual risk-taking.
- Funding state-wide "demonstration sites" and geographically based teams could coordinate activities within local communities.
- Funding innovation with evaluation may extend to crime prevention and mental health targets.

Law, regulation, policing and enforcement

- Investment in the dissemination of evidence-based tobacco control strategies is recommended to reduce tobacco sales to minors.
- Investment in implementation with rigorous evaluation may encourage programs for reducing alcohol sales to minors, and police diversion of illicit drug users.
- Supporting review and rigorous evaluation of juvenile justice as a system may assist the development of a preventive framework for crime and antisocial behaviour.
- Implementing and evaluating the regulation of access to means may be a useful component within a broader suicide prevention strategy.

Social Marketing

- Little impact, as stand alone programs have a greater potential where they are coordinated with other strategies actively involving school-health education, parents, law etc.
- Implementing with rigorous evaluation may prevent tobacco use, alcohol and other drug problems and suicide.
- Funding innovation and evaluation could extend programs for prevention of sexual risk behaviour, crime prevention and mental health promotion.

School organisation and behaviour management

- School behaviour management strategies can be effective for addressing behaviour problems. However, there may be some difficulties to resolve in their implementation. Prior to investing for dissemination, a systematic audit of existing Australian programs is recommended.
- School organisation strategies could be implemented with rigorous evaluation to better understand their application for prevention of alcohol and drug misuse and mental health promotion.
- Further research investment may be warranted to better understand the potential of these approaches for the prevention of tobacco use and sexual risk-taking.

Peer intervention

- Can be an effective strategy for promoting sexual health / safer sex.
- Could be implemented with rigorous evaluation as a tobacco control strategy.
- Funding innovation and evaluation could further extend this field to other outcomes.
- Peer interventions targeting crime prevention should be carefully conceived and include rigorous evaluation.

LOWER PRIORITIES -

But may be very significant for particular communities and/or targets.

Community based health education

- Funding further implementation with rigorous evaluation may be warranted for the prevention of tobacco use, alcohol and other drug misuse, sexual risk-taking and crime.
- Demand evidence for behavioural change and rigorous evaluation.

Mentorship

- There are promising indications for this strategy as a substance abuse prevention strategy. Funding innovation and evaluation could extend this field.

Health service reorientation

- Funding implementation with rigorous evaluation may prevent tobacco use, alcohol and drug use and sexual risk-taking behaviour.
- Encouraging innovation and evaluation may encourage programs to address mental health promotion and youth suicide prevention.

Recreation

- Funding implementation with rigorous evaluation could assist tobacco control, prevention of alcohol and drug misuse and prevention of sexual risk-taking behaviour.
- Funding innovation and evaluation may extend this field.

Employment and training

- Funding innovation and evaluation could extend this field.
- Employment and Training programs targeting crime prevention should be carefully conceived and include rigorous evaluation.

1 Introduction

1.1 THE IMPORTANCE OF ADOLESCENT HEALTH PROMOTION

The present project is a Victorian Department of Human Services initiative. The purpose was to conduct a systematic review of the effectiveness of interventions promoting health in the adolescent population to better inform state investment in evidence-based strategies. Until recently, emotional and behavioural problems of adolescence have tended to be dismissed as part of the normal turbulence of adolescent development. One reason for an apparent neglect has been that on some measures, young Australians appeared to enjoy good health. Mortality rates have been low in comparison to other age groups. Conspicuous morbidity in routine health statistics has, with a few exceptions (such as injury rates), also been relatively low. In this light, the failure to adopt a comprehensive strategy to the health needs of adolescents was understandable.

Attitudes to adolescent health and health promotion have changed quickly. New epidemiological data have been influential in several respects. First, patterns of health risk in the Australian population have altered. Downward age-trends in tobacco, alcohol and illicit drug use have made adolescents a major target for health promotion. Earlier commencement of sexual activity with high rates of teenage pregnancy and the threat of HIV have similarly focused attention on the teens. Both retrospective studies of adults with continuing health risk behaviours and prospective studies of adolescents followed into adulthood have illustrated the strong continuities in health risk behaviours into young adulthood. This evidence has challenged earlier notions of “maturing out” of health risk behaviours and mental health problems from adolescence to adulthood, making promotion of health in adolescence an imperative.

Secondly, new areas of health priority arise partly through advances in our knowledge and practice. Advances in medical treatment have given rise to health needs in young people with disorders such as cystic fibrosis and childhood malignancy where previously prospects of survival to adulthood were small. Around 10% of adolescents have one or more chronic illnesses (such as asthma or diabetes) and there are particular health issues relevant to these groups. Similarly, changes in family structures and opportunities for education, vocational training and employment have brought the development of other risk groups, such as the young unemployed and homeless, where particular health needs are apparent. These changes also underline the need for developing and implementing effective approaches to health promotion in adolescents.

Third, many adolescent health problems share important *risk factors* (or prospective predictors). Thus academic failure and school dropout are associated with the development of antisocial behaviour, higher rates of substance abuse, tobacco use and emotional problems. Similarly, patterns of family attachment and conflict are associated with both a range of important health outcomes and also to other established risk factors. In this context, there is growing evidence that effective health promotional interventions for a specific risk or *protective factor*

(prospectively identified mediator or moderator of a risk process) are likely to have direct effects on a range of health outcomes.

1.2 A RISK FACTOR APPROACH TO ADOLESCENT HEALTH PROMOTION

This report reviews literature accumulated over the past decade relevant to the effectiveness of adolescent health promotion and prevention interventions. The focus of this review has been to identify the impact of preventive interventions upon adolescent risk factors that, in the absence of intervention, play a causal role in the development of adverse health outcomes and other problems. The definition and identification of risk and protective factors in the present investigation follows earlier work in the areas of Drug Abuse Prevention (Hawkins, Catalano and Miller, 1992; Institute of Medicine, 1996), Antisocial Behaviour (Brewer, Hawkins, Catalano & Neckerman, 1995) and Youth Suicide (Patton & Burns, 1999).

Six key adolescent health outcomes were selected for examination, based on evidence for their emergence or escalation in adolescence (the age period 12-18). These were tobacco use, alcohol and drug use, sexual risk-taking behaviour, crime and antisocial behaviour, depression, and suicidal behaviour.

In the evaluation of program outcomes a distinction has been made between two sets of outcome measures, “early initiation” and “persistence/escalation”. Early initiation refers to the incidence of first time involvement in behaviours, for example the first act of sexual intercourse, the first emergence of suicidal thoughts or self-harm in the trajectory toward suicide, and the first emergence of symptoms for depression. Measurement of initiation in the reviewed research articles was often indirect relying on summary indicators such as any use or a low number of previous lifetime episodes.

The phenomena of persistence and escalation refer to prolonged involvement in problem behaviours of lower severity (e.g., continuation of sub-clinical depressive symptoms) or progression to more frequent, more severe or more problematic development of health and behaviour problems. With reference to sexual risk-taking, progression may refer to the movement from first sexual intercourse to multiple sexual partners, more regular unprotected sex, or pregnancy. In the case of mental health escalation was indicated by more serious symptoms - a suicide attempt or a diagnosed episode of depression. Although it may be desirable to prevent or delay the first initiation of adolescent problem behaviours, it is important to document programs that may reduce the progression or escalation of problem behaviours.

The risk and protective factors identified in the present report followed, as far as possible, the measurement framework developed by Professors Richard Catalano and David Hawkins from the University of Washington. The Catalano and Hawkins measurement framework includes a comprehensive range of risk factors identified from a review of the epidemiological and intervention literature on the determinants of substance abuse (Hawkins, Catalano & Miller, 1992). The measurement framework has been supplemented to incorporate protective factors identified in an integrative theory of resiliency known as the Social Development Model (Catalano & Hawkins, 1996). This framework has been successfully utilised within Victoria to

assess youth perceptions of 23 risk factors and 10 protective factors presented in Table 1 (Bond, Thomas, Toumbourou, Patton & Catalano, 2000).

Ticks in the first two columns in Table 1 indicate a consensus in previous literature suggesting the risk (or protective) factor was predictive of the problem outcome (drug abuse, delinquency/crime). Ticks in the final column (depression) indicate significant cross-sectional relationships amongst Victorian Year 9 students surveyed in 1998. Table 1 demonstrates the range of risk factors and their association with a variety of adolescent health and behaviour problems. Youth face particular risk where they are exposed to a greater number of risks over a longer period of time.

In the development of Technical Summaries for the present report considerable effort has been made to redescribe reported intervention effects in the risk and protective terminology proposed by Professor Catalano and colleagues. The current report is somewhat exploratory in that it represents the first attempt, internationally, to extend the social development risk and protective framework to prevention activities targeting the prevention of sexual risk-taking behaviour, tobacco use, depression and youth suicide.

Social developmental risk and protective factors were further supplemented to incorporate the Australian harm reduction framework relevant to sexual risk-taking behaviours and alcohol and drug use. Harm reduction approaches attempt to reduce the harm associated with potentially health-compromising behaviour, while not necessarily altering the prevalence of the behaviour. Such practices have been listed as protective factors in the present literature review and include the use of condoms to prevent sexually transmitted disease and programs that reduce drink-driving amongst alcohol users. In some cases labelling of risk and protective factors in the present report differs considerably from the wording used by the authors in the original articles we have reviewed.

1.3 EPIDEMIOLOGICAL TRENDS IN THE SIX HEALTH OUTCOMES IN VICTORIA

Australian research examining the epidemiology of adolescent health-compromising behaviours has grown in volume and quality over the last decade. Until the mid-‘90s cross-sectional research examining a single health outcome had been the general rule. It has only been relatively recently that longitudinal research examining a range of health behaviours has emerged.

Time series prevalence data appears to be most well developed in the areas of tobacco use and alcohol and drug use. Regular school surveys have been conducted in these areas for over a decade. The findings of these studies suggest that the prevalence of tobacco use, and more regular tobacco use, decreased until the early 1990s. Through the 1990s rates of tobacco use have appeared to stabilise amongst Victorian youth. There exists some concern that female tobacco use may have risen to approach male rates in recent years (Department of Human Services, 1999).

Table 1
Risk and Protective factors predicting drug abuse, delinquency and depression

<i>Risk & Protective Factors</i>	Drug Abuse	Delinquency/ Crime	Depression
Community			
Low neighbourhood attachment	✓	✓	✓
Community disorganisation	✓	✓	✓
Personal transitions & mobility	✓	✓	
Community transitions & mobility	✓	✓	
Laws & norms favourable to drug use	✓		
Perceived availability of drugs	✓		✓
P Opportunities for prosocial involvement	✓	✓	✓
P Rewards for prosocial involvement	✓	✓	✓
Family			
Poor family management	✓	✓	
Poor discipline	✓	✓	
Family conflict	✓	✓	✓
Family history of antisocial behaviour		✓	✓
Parental attitudes favourable toward drug use	✓		
Parental attitudes favourable to antisocial behaviour	✓	✓	✓
P Attachment	✓	✓	✓
P Opportunities for prosocial involvement	✓	✓	
P Rewards for prosocial involvement	✓	✓	✓
School			
Academic failure	✓	✓	✓
Low commitment to school	✓	✓	✓
P Opportunities for prosocial involvement	✓	✓	
P Rewards for prosocial involvement	✓	✓	✓
Peer /Individual			
Rebelliousness	✓	✓	✓
Early initiation of problem behaviour	✓	✓	✓
Impulsiveness	✓	✓	✓
Antisocial behaviour	✓	✓	✓
Favourable attitudes toward antisocial behaviour		✓	
Favourable attitudes toward drug use	✓		
Perceived risks of drug use	✓		✓
Interaction with antisocial peers	✓	✓	✓
Friends' use of drugs	✓	✓	✓
Sensation seeking	✓	✓	✓
Rewards for antisocial involvement		✓	✓
P Religiosity	✓	✓	
P Social skills	✓	✓	✓
P Belief in moral values	✓	✓	

P = Protective factors

Victorian adolescent rates of binge alcohol consumption and marijuana use appear to have increased in 1996 relative to earlier surveys in 1993 (Department of Human Services, 1999). Commonwealth household surveys have been regularly conducted since the beginning of the National Campaign against Drug Abuse in 1987. Unfortunately these surveys do not cover the early and middle adolescent age groups. Findings from the National Household Surveys do suggest that older adolescents have relatively high rates of both licit and illicit substance use compared to other sections of the Australian population.

Time series data relevant to sexual risk-taking, antisocial behaviours, depression and suicide amongst Victorian adolescents is more difficult to locate. Available figures for completed youth suicide have demonstrated a steady increase for males beginning in the 1960s which appears to have stabilised somewhat over the most recent years. Whilst female youth suicide rates are lower than those for males, recent evidence suggests female suicide rates may be increasing. There are high rates of self-harm amongst females.

Existing information reaffirms a high co-occurrence of the six health outcomes examined in the present study. The Adolescent Health survey conducted by the Centre for Adolescent Health in 1992 was the first study to explicitly examine the co-occurrence of tobacco use, alcohol use, other drug use, antisocial behaviour, sexual risk-taking behaviour, and depression within a representative sample of Victorian youth (Hibbert et al., 1996). A high co-occurrence between each of these behaviours was observed.

1.4 SCOPE OF THE CURRENT REVIEW

The review process adopted for the present project identified and reviewed 178 research articles fitting the review criteria. The number of articles identified for each outcome domain is presented in Table 2 below.

Table 2
Number of papers by outcome domain

Primary Outcome Domain	Number of papers reviewed
Tobacco Use	57
Drug and Alcohol Use	39
Sexual Risk-taking Behaviour	52
Crime & Antisocial Behaviour	16
Depression	2
Suicidal Behaviour	12

A relatively small number of articles were reviewed for depression, suicidal behaviour and antisocial behaviour as for these outcomes good quality reviews had been recently conducted by members of the study team (e.g., Patton & Burns, 1999). Studies were included only if they accorded with the highest level of evaluation evidence (randomised allocation or matching of controls to intervention and longitudinal outcome evaluation in community settings). A minority of studies were included that did not conform to these standards because they either 1) clearly indicated null-intervention effects and hence did not require sophisticated designs or

2) evaluated Australian interventions using adequately controlled designs. In overview there have been a number of randomised controlled trial (RCT) studies published over the last 10 years relevant to the prevention of tobacco, alcohol and drug use, and sexual risk-taking behaviour. In contrast there have been fewer RCT studies published relevant to the prevention of antisocial behaviour, depression and suicidal behaviour. The standard of the best available evidence (e.g., other than RCT) was adopted in the case of studies examining the prevention of antisocial behaviour, depression and suicidal behaviour. Comments on methodology are provided for each of the Technical Summaries.

2 Methodology

2.1 PAPER REVIEWING PROCEDURE

The project was conducted in three main stages:

1. Information Search and Acquisition
2. Information Classification and Analysis
3. Intervention Evaluation

2.2 INFORMATION SEARCH AND ACQUISITION

Information searching aimed to locate published literature of a suitable standard to enable identification of *risk factors* (prospective predictors of outcomes) and *protective factors* (prospective moderators and mediators of risk factors) for each of the six outcomes reviewed - tobacco use, alcohol and drug use, sexual risk-taking behaviour, antisocial behaviour, depression, and suicidal behaviour.

The first phase of this work involved the examination of epidemiological literature relevant to the prevalence of each of the outcomes in the defined population and appropriate sub-groups. Online access services were used to search major sources including *Medline* and *PsychLit*. Within the time-lines available to this project, additional literature was acquired through a process of scanning available secondary sources such as review documents. Where possible contact was also made with *Cochrane International Collaboration Review Sites*, yielding further material of relevance.

Literature acquisition aimed to identify well-controlled intervention studies relevant to the reduction of risk factors, the enhancement of protective factors or the prevention of problematic outcomes. A “levels of evidence” approach was taken in screening research studies for inclusion in the present review. Where possible, interventions using longitudinal designs and randomised allocation to treatment and a control condition were selected for review. This was not always possible and hence different standards of evidence were accepted within particular combinations of the thirteen health promotion strategies and the six outcome domains. For example in the case of studies investigating attempts to regulate tobacco sales to minors some post-test only studies were reviewed as they provided unequivocal evidence that simply amending laws was not an effective method of preventing tobacco sales to minors.

Initial selection of papers and screening was conducted by Julie Webb-Pullman, a researcher with previous experience in epidemiological literature review work. Preliminary reading of articles and assignment of papers into one of the six outcome domain categories was also completed by Ms Webb-Pullman. Over 350 articles were identified on the basis of information from abstraction services and of these 178 articles satisfied inclusion criteria and were retained for more extensive review. A team of graduate level researchers was assembled (see acknowledgments) and provided with training relevant to the literature review task. Reviewers placed summary details for each article into a *Microsoft Access* database comprised of 27

fields. Summary details were provided relevant to the description of the intervention, the resources required to conduct the intervention, the evaluation design and details, the findings of the evaluation and relevant economic aspects of each study.

In line with the brief for this consultancy, reviewers were instructed to summarise each study using non-technical lay language where possible. Sufficient technical detail regarding evaluation design was also summarised to enable informed judgement about the quality of evidence. Regular meetings were held to systematise and standardise review formats. At the completion of the review process, the senior members of the review team checked all reviews for internal consistency. Senior staff also checked a sample of summaries for accuracy against the published research records. Final editing of summaries aimed to ensure consistent application of definitions for health promotion strategies, risk factors, protective factors and health outcomes.

2.3 INFORMATION CLASSIFICATION AND ANALYSIS

It should be noted that the identification of specific behavioural targets in prevention research is somewhat artificial and in conflict with evidence for a generalised behavioural impact through developmental risk exposure. Notwithstanding these difficulties, prevention programs continue to be developed and evaluated with respect to specific behavioural targets. Evidence on specific interventions was classified according to the primary behaviour targeted for prevention within a specific research report (e.g., Tobacco). Where relevant, secondary outcome targets were also identified. Information relevant to the youth population target was also recorded.

The health promotion strategies examined were classified to make explicit the socialisation domain they targeted and the service delivery setting or jurisdiction responsible for their delivery. Thirteen separate health promotion strategies were classified through consideration of the program descriptions provided in the research articles. Table 3 below presents definitions for the thirteen health promotion strategies reviewed for this report. Evaluation of each of the health promotion strategies relied upon integrative review of the separate program evaluation information provided through research articles. Summaries of individual research articles were recorded as “Technical Summaries”. Technical Summaries covered a variety of key details relevant to intervention and evaluation. Key intervention details that were systematically recorded included the target population, target outcomes, intervention strategy, and intervention duration. Evaluation details included process evaluation information, intermediary impacts on risk and protective factors and health outcomes. Technical Summaries also recorded intervention requirements relevant to delivery settings, personnel requirements, and the scale of resource requirements. Technical Summaries are provided as an accompanying volume to the present review. A more detailed record of Technical Summaries is also available as a Microsoft Access database.

Table 3
Definitions for thirteen adolescent health promotion strategies

Health Promotion Strategies (Delivery Settings)	Definitions
<i>Family setting – Family services</i>	
Parent Training	One or more parents receiving information and/or a course of instruction aimed at advancing adolescent health.
Family Intervention	One or more parents, the adolescent and other family members receiving information and/or a course of instruction together aimed at advancing adolescent health.
<i>School setting – School services</i>	
School based Health Education (Curricula)	Delivery of a structured adolescent health education curriculum within the school usually by classroom teachers, but in some cases by visiting outside professionals.
School Organisation and Behaviour Management	Includes school discipline procedures, policies and practices developed to advance adolescent health.
<i>Peer settings – Typically coordinated by non-government organisations</i>	
Peer Intervention and Peer Education	Utilise youth peers of common identity to provide support or deliver a health message.
Youth Recreation Programs	Provision or utilisation of recreational opportunities outside the school setting to advance adolescent health.
Mentorship	Strategies to develop prosocial relationships between youth and functioning adults within the community.
<i>Community setting – Locally coordinated programs</i>	
Community Based Health Education	Adolescent health education curricula or information delivered in a community setting other than in schools.
Community Mobilisation	Campaigns to initiate or strengthen an explicit strategy of coordinated community action aiming to advance adolescent health. Typically community mobilisation involves a number of the adolescent health promotion strategies described above, but almost all campaigns to date have included school based health education as a central component.
<i>Community setting – Regionally or State coordinated programs</i>	
Health Service Reorientation	Includes the extension of existing health services into youth settings or adjustment of services to better incorporate youth needs.
Employment and Training	Includes provision of pre-employment assistance, employment experience, training or intervention in a post-school training setting, with the aim of advancing adolescent health.
Law, regulation, policing and enforcement	Modification to legislation or regulations, enforcement of law or regulations, policing strategies aiming to advance adolescent health.
Social Marketing	Use of the mass media to promote a health message relevant to adolescents.

2.4 INTEGRATIVE EVALUATION OF INDIVIDUAL PROGRAM EVALUATIONS

For each of the thirteen health promotion strategies targeting each of the six health outcomes, an integrative evaluation was completed summarising key features relevant to health promotion. Six mutually exclusive categories were developed to briefly summarise the status of research evidence for each strategy by outcome combinations.

Six evidence categories were used in this report

-  Limited investigation
-  Evidence is contra-indicative
-  Warrants further research
- ★^P Evidence for implementation. ^P Proportion of studies with positive effects
- ★★ Evidence for outcome effectiveness
- ★★★ Evidence for effective dissemination

Definitions

-  Limited investigation. No relevant effectiveness studies were located and there were no empirical or theoretical grounds suggesting the intervention might potentially impact the outcome.
-  Evidence was contra-indicative for the use of this strategy to prevent the targeted outcome. This rating required consistent null or negative findings in well-controlled evaluation studies.
-  Warrants further research. This rating was applied to strategies that appeared theoretically sound or had some promising evidence for their implementation or outcome, but in small scale or inadequately controlled studies. *Programs* utilising these strategies might be considered priority targets for future research funding.
- ★^P Evidence for implementation. This rating was applied where published studies reported a sound theoretical rationale, acceptance within service delivery organisations, target population recruitment on a scale sufficient to usefully contribute to population health impacts, and adequate consumer approval measured using indicators such as program retention.
^P The proportion of positive demonstrations of impacts on risk factors, protective factors or outcome behaviours is reported. *Programs* utilising these strategies might be supported for funding on condition that initial Australian implementation included rigorously controlled outcome evaluation.
- ★★ Evidence for outcomes. This rating was applied where positive outcomes were consistently published in well-controlled interventions. Interventions were required to be of sufficient scale to ensure outcomes within the constraints imposed by large-scale population health frameworks. *Programs* utilising these strategies might be carefully monitored for their impacts while being supported for wide-scale dissemination.

- ★★★ Evidence for dissemination. This rating required published reports of impacts where programs were delivered on a large scale, not by research teams, but rather by government auspice bodies or other service delivery agents. Evidence for dissemination was only sought for strategies demonstrating evidence for outcomes. *Programs* utilising these strategies might be accorded some priority for dissemination in the Australian context. Initial Australian dissemination trials should monitor for impacts. Where possible cost-effectiveness has been considered for programs using these strategies.

It should be noted that the criteria for evidence for outcome is congruent with definitions commonly used by NHMRC, Cochrane's and other review groups (e.g., systematic review of randomised trials). The category "evidence for dissemination" is an innovation developed for the current project by Professor George Patton to address the challenge of system change in the health promotion field.

3 Tobacco Use

3.1 *ADOLESCENT TOBACCO USE*

There now exists extensive prevalence data to explore tobacco use trends. Regular school surveys have been conducted in this area for over a decade. The prevalence of tobacco use, and more regular tobacco use, decreased until the early 1990s. Through the 1990s rates of tobacco use have stabilised amongst Victorian youth. There exists some concern that female tobacco use may have risen to approach male rates in recent years.

Early attempts to influence adolescent smoking were based on improving young people's knowledge about the health consequences of smoking. Programs such as 'My Body' have been widely used (Gillies and Wilcox, 1984) and were commonly based on 'Health Belief Models' of health education, which incorporated a notion that an understanding of consequences of a particular health risk behaviour such as smoking will bring rational choices to avoid tobacco. Such programs appear effective in shifting in both knowledge and attitudes in young people but have not had longer-term effects on smoking uptake.

Social learning perspectives derive from the work of Albert Bandura and others positing a complex and reciprocal relationship between an individual and his/her social environment. This theory has underpinned a range of intervention strategies used in smoking prevention. These include the use of role models, social resistance training and self-efficacy promotion. All have as a focus an attempt to 'socially inoculate' young people in late childhood and early adolescence against smoking uptake during the peak years of onset of tobacco use during the mid-teens.

An early popular example of the application of a social learning approach to tobacco health education was the Minnesota smoking prevention program (Arkin et al, 1981). The program was delivered by teachers and incorporated both a structured series of lessons and development of a teaching strategy that allowed pupil-led discussion. The program content addressed cigarette advertising, the physical effects of smoking and refusal strategies. US findings were positive in bringing short-term reductions in smoking but translation of the program to other settings has not always met with a similar degree of success (Kishchuk et al, 1990). An Australian adaptation of this program with both teacher-led and peer-led components was implemented to over 2,000 Year 7 students in Western Australia in 1981. At seven-year follow-up no persisting effect of the program was found in males but in females there was a 50% lower rate of tobacco use in those who had been non-smokers at the outset. This study was marred by a low response rate at follow-up (55%) but adjusting for differential attrition of smokers, did suggest an ongoing effect in females.

3.2 PARENT TRAINING

Summary: Warrants further research - 📄

There has been little work examining the potential for parent training interventions to modify risk factors for adolescent tobacco use. Parent training programs have been demonstrated to reduce risk factors for youth alcohol use (see section 4.5). As adolescent tobacco and alcohol use share common risk factors, there exist strong theoretical grounds to assume that parent training should prove to be an effective strategy for reducing adolescent tobacco use.

3.3 FAMILY INTERVENTION

Summary: Warrants further research - 📄

There is evidence that family factors influence adolescent tobacco use. There is evidence from one small trial that improving family management of behaviour problems may reduce initiation of tobacco use amongst high-risk youth {303}.

3.4 SCHOOL BASED HEALTH EDUCATION

Summary: Evidence for outcomes - ★★

3.4.1 Life skills training

Botvin et al {316} extended earlier social learning approaches with the incorporation of 'Life Skills Training' into tobacco health education. This strategy brought an emphasis on the personal and social skills that underpin lifestyle and health risk behaviour more generally. In addition to addressing tobacco advertising and social resistance skills, the program deals with managing anxiety, communicating effectively, developing personal relationships and asserting one's individual rights. The program is more elaborate than earlier health educational packages with teacher manuals, ongoing professional development of teachers during implementation, student guides and a relaxation audiotape. It consisted of 15 classes, with 10 booster sessions in Year 8 and 5 in Year 9. It was evaluated in a sample of close to six thousand Year 7 students allocated to three treatment conditions (two active and one control). In the twelve months after completion of the program, life skills training had substantially reduced the prevalence of tobacco use by comparison to controls. Similar shifts were reported in attitudes to personal use and expectations about future use.

Six years later, in 1991, follow-up data was collected from 3,597 students (60% of the original sample of 5,954). Significant reductions were found in the prevalence of smoking (22% versus 33%) and drinking to the point of being drunk (34% versus 40%). Rates of weekly poly-drug use were halved in the intervention sample (3% versus 6%). Reductions in the group who received at least 60% of the intervention program were even more substantial. Despite difficulties in interpretation which arise from a relatively high level of attrition at follow-up, this report is indicative of the substantial reductions in smoking and problematic substance use that can follow more sophisticated approaches to school based health educational interventions {302}.

3.4.2 *European applications of social learning theory*

Two notable European studies have also produced longer-term follow-up findings on the use of interventions based on social learning theory. The Oslo Youth Study {350} was based on the 'Know Your Body' risk factor assessment program. The initial study took place in 827 students in six Oslo schools. The program was in part peer-led and focused on developing social resistance skills, making a public commitment to being a non-smoker and broad discussions on the social, political and health aspects of smoking. The program had a significant effect on smoking in males at twelve-year follow-up but not in females. In general the size of all the short-term health effects in this program diminished over time.

The North Karelia Youth Project {415} focused on social resistance skills in 10 classroom sessions, with assistance from peer leaders. Effects on smoking rates were clearest at follow-up at 2 years where 23% of participants were smokers compared with 38% in controls. At 8-year follow-up rates were 37% and 47% respectively.

3.4.3 *Summary of evidence for school based health education*

Evidence on implementation

There is good evidence that school based health educational programs based on social learning theory can be implemented with booster sessions in subsequent years. More recent programs have successfully incorporated approaches that include peer leadership, small group discussion, student-led participation, homework tasks and role plays.

Evidence on outcomes

There is good evidence that smoking health educational programs produce changes in knowledge about smoking and its consequences. Interventions based purely on providing information (including those based on health belief models) appear ineffective in bringing either attitudinal or behavioural changes. In contrast approaches based on social learning have consistently shown short-term effects on both attitudes to smoking and behaviour. In general the effects of these interventions diminish and even disappear by late secondary school unless supplemented by other strategies. Supplementary strategies include incorporating a community-wide intervention, focusing on a broader range of life skills and use of booster sessions or booster telephone contacts {8, 229} in the years after an initial intervention.

Evidence on cost-effectiveness and broader dissemination

There are reasons to believe that the integrity and effectiveness of programs may be diminished when attempts are made to translate successful experimental programs into more naturalistic and real world settings {352}. No examples of broad scale successful adaptation outside of experimental trials were identified. Murray et al {14} described one attempt to use legislative and financial incentives to schools to encourage dissemination of programs of known effectiveness in prevention of tobacco use. Over a five-year period no discernible effect was evident.

3.5 SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT

Summary: Warrants further research 

The Victorian Gatehouse Project is utilising school organisation and other strategies to promote adolescent mental health (Glover, Burns, Patton & Butler, 1998). Interventions such as Gatehouse have been designed to impact risk factors associated with youth tobacco use, such as school bonding, peer relationships and social skills. No studies were found testing the effect of school organisation and behaviour management strategies on youth tobacco use. As these approaches have evidence for their effectiveness in addressing antisocial behaviour, research is warranted to examine their potential to assist tobacco control.

3.6 MENTORSHIP

Summary: Limited investigation 

No studies were found testing the effect of mentorship programs on youth tobacco use. It is unclear at this stage whether there exists a role for this strategy in tobacco control.

3.7 PEER INTERVENTION AND PEER EDUCATION

Summary: Evidence for implementation  ^{2/2}

Evidence from Botvin's group {31} suggests peer delivery using the structured Life-Skills Training health education curriculum can be an effective strategy for reducing the initiation of tobacco use. One-year follow-up results demonstrated that the peer-led programs were more effective than the teacher-led programs both in terms of substance use behavior and in terms of their effect on the cognitive, attitudinal and personality mediating variables. The peer-led booster condition produced significantly better results in terms of tobacco, alcohol and marijuana use than the control condition and in most cases was superior to the other three intervention conditions.

An innovative approach to health education in schools was described by Wiist & Snider {416}. The project ('KNOW') incorporated the elements of assertive refusal, role-play and analysis of the media. Student teachers, peer leaders chosen on the basis of socio-metric analysis and model students were compared as program leaders. Non-smoking rates in the program run by peer leaders were substantially higher (55%) than in the model student (42%), student teacher (41%) and comparison groups (48%), though these differences were not statistically significant.

3.8 RECREATION PROGRAMS

Summary: Evidence for implementation  ^{0/1}

Participation in health clubs has been a popular approach to smoking prevention in the UK. Typically membership is for younger adolescents who are non-smokers. Activities of the clubs vary but include recreational outings, newsletters, competitions and retail discounts. The clubs have been popular in attracting membership and the Grampian Smokebusters has been the subject of more detailed evaluation {55}. Participation in the Grampian Smokebusters was very high with the club successful in attracting over half the eligible members in the community and over 97% having heard of it. Surveys were conducted over a four-year period

to evaluate the effect of the program. The program produced no discernible effect on smoking rates at the end of four years {55}. The authors commented that the program was set within a community where many other influences came to bear on likelihood of young people smoking. In this context a single approach of this kind appeared unlikely to be effective.

Other initiatives such as the use of local magazines targeting teenagers and the use of other youth clubs as settings for health promotion have not been the subject of rigorous evaluation.

3.9 REORIENTATION OF HEALTH SERVICES

Summary: Evidence for implementation ★^{1/3}

Health professionals, particularly those working at a primary care level, have unique opportunities to advocate in local communities for action in relation to adolescent tobacco use as well as other health risk behaviours in young people. They also appear uniquely placed to play a role with young people with whom they come into contact. Relevant professionals include community and primary care nurses, general practitioners, dentists, pharmacists and school counselling and health personnel.

There have been a number of reports of successful attempts to use the influence of health professionals to modify smoking behaviour in adults (Kottke et al, 1988; Russell et al, 1979). There have recently been some preliminary studies of the potential role of health professionals with youth, both in the prevention of smoking and promoting smoking cessation. Klein et al {131} reported findings from a training program for paediatric residents in the United States. One curriculum element related to tobacco use and was based on receiving and working through smoking cessation guidelines from the National Cancer Institute. Substantial barriers to training were found, including non-attendance at scheduled lectures and failure to work with homework materials. Few differences were found between patients of the intervention group compared to control subjects in relation to smoking uptake or physician practice.

A more recent study of an educational intervention with post-qualification dentists in the United States also had largely negative findings {406}. Seventy-seven dentistry offices received 1.5 hours of training based on smoking cessation guidelines from the National Cancer Institute. Elements included the current profile of youth tobacco use, the role of the clinician and instruction on creating a tobacco-free environment. A strategy of using anti-tobacco prescriptions in non-smokers was also taught and encouraged. A small financial incentive was given for each 'script' administered. 17,925 adolescents were followed up with a 93% completion rate in experimental and control groups. No difference in smoking rates was found between adolescents attending intervention and control practices. It was noted that implementation of the strategy by clinicians was sub-optimal. Only 64% of participating practices issued prescriptions and only 14% reached their target. This was a probable explanation for the disappointing findings.

A more successful attempt to control tobacco use through the reorientation of health services was reported by Lionis and colleagues in Crete {22}. In this intervention

health professional assistance was integrated within schools through the provision of a health examination and a broad-based health education curriculum. The intervention was well received by parents and was associated with reduction in a variety of cardiovascular risk factors including significantly less initiation of tobacco use in the intervention group (6%) compared to the control group (20%) after one year.

3.9.1 Summary of evidence for reorientation of health services

Evidence on implementation

The existing evidence supports the view that it is possible to implement clinician training programs. The few available studies indicate that it is probably necessary to use a variety of strategies to influence clinician behaviour and that ongoing reinforcement may be necessary to continue that influence. Integration of health services within schools appears a feasible strategy.

Evidence on outcomes

There is no evidence available yet that specific training of health professionals can reduce teenage smoking. There is evidence from one study that school based health services can reduce smoking.

3.10 COMMUNITY BASED HEALTH EDUCATION

Summary: Warrants further research 

We are aware that community based health education including circulation of quit smoking information has been a popular approach for tobacco control in Australia in programs such as QUIT. However there were no studies identified evaluating this approach to tobacco control. The effectiveness of this approach as a stand-alone strategy remains questionable. Rigorous evaluation is required to establish conditions whereby this strategy might be effectively utilised.

3.11 EMPLOYMENT AND TRAINING

Summary: Limited investigation 

No studies were located investigating the relationship between employment and/or training and youth tobacco use. We were aware of no evidence to suggest this strategy may be an effective tobacco control strategy.

3.12 LAW, REGULATION, POLICING AND ENFORCEMENT

Summary: Evidence for dissemination **★★★**

3.12.1 Restriction of tobacco advertising and sponsorship

Advertising by tobacco companies has promoted images of smoking likely to appeal to many young people. This has led in many countries to restriction or bans on tobacco advertising and sponsorship. Victoria introduced restriction on tobacco advertising and promotion in 1987. Australia-wide, the Smoking and Tobacco Products Advertisements (Prohibition) Act came into effect in December 1990,

banning advertising in magazines. It was followed by the Tobacco Advertising Prohibition Act 1992, that removed all tobacco advertising by 1995.

Although these measures have met with very strong support, there is relatively little good data on the effect of these initiatives on adolescent smoking. Norway and Finland introduced similar legislation that came into effect in the mid seventies. Rimpel explored the complicated processes by which such legislation may work. In Finland, there was no fall in the prevalence of smoking following the ban on advertising but some change did take place in brands smoked as well as a shift to low tar cigarettes. In Norway there was a reduction in the prevalence of adult smoking and that of young people appeared to follow this trend.

3.12.2 Maintaining price disincentives

There is evidence from adults that price has an inverse relationship with tobacco consumption in young adults.

3.12.3 Health warning and control pack design

Since 1969 state legislation has been in place to require a health warning on cigarette packages. These have been subsequently strengthened in 1985 and 1992 with requirements relating to the size of the warning, explanation of the warning, details of Quitline contacts and information on nicotine, tar and carbon monoxide contents. No outcome studies of health warnings were found.

3.12.4 Enforcing legislation on illegal sales

Legislation restricting tobacco sales to adolescents has been in place since the early part of this century. There is considerable evidence that such legislation has not had high adherence in Australia. Sanson-Fisher et al {121} reported that 38% of 12- to 15-year-old respondents in a New South Wales survey reported illegal purchase of cigarettes. Tests of purchasing by underage youth indicated that 70% of attempts to purchase were unchallenged. A similar study in Western Australia {419} found that adolescents could purchase cigarettes from 89% of 230 outlets visited. In this light it is not surprising that in Victoria as in many other parts of the world {49, 119} the effects of legislation restricting sales to adolescents appears minimal.

There is growing evidence that it is possible to influence individual retailers around sales of cigarettes to young people {200, 407}. Interventions that may be used to ensure enforcement of legislation include media campaigns to inform shopkeepers and their communities of the law and specific legislation enforcing locks on tobacco vending machines {19}. Biglan et al {498}, in a study based in two Oregon communities, demonstrated that it was possible to reduce rates of illegal sales through mobilising community support, education of retailers, introducing rewards for compliance, penalties for non-compliance and feedback to store proprietors about sales to young people. An interrupted time series design was used and demonstrated an over 60% reduction in sales to young people, assessed by tobacco purchase attempts. Jason et al {52} similarly showed substantial reductions in illegal sales by Chicago retailers in a study which employed regular enforcement checks and \$200 penalties on retailers not displaying signs about sales to 'minors' or making illegal sales during compliance checks. In this study the extent of

In another US study, Keay et al {420} examined the effect of retailer education alone on sales to underage smokers. The educational intervention consisted of a ten-minute face to face discussion with non-compliant retailers addressing the Californian state legislation and the results of an initial survey of retailers. Local health officers authorised to issue fines for non-compliance conducted the intervention. There was an over 50% fall in illegal sales a month after the intervention ended. It is not clear whether these benefits persisted. An Australian study {283} found less evidence of effect on retailer sales to under-age smokers. However this study examined a less comprehensive intervention to that used in the American studies. The strongest element was a visit from a local public health officer, with no use of penalties and no random testing of compliance.

The ultimate effect of this strategy of enforcement on smoking in young people is less clear. Forster et al {408} described a randomised controlled trial in 14 Minnesota communities (TPOP study) where a combination of strategies was used to reduce illegal tobacco sales over a 32-month period. The intervention consisted of the creation of a local team staffed by a half-time coordinator. This team conducted community presentations, petition drives, media campaigns and tobacco purchase attempts by underage youth. Local legislation was passed to allow the teams activities to take place and to allow changes in local ordinances. Changes in the intervention communities included the introduction of a graduated system of penalties for retailers who breached guidelines, ban on tobacco vending machines and self-service tobacco displays, fines on salespeople making illegal sales and the introduction of random compliance checks. After 32 months rates of daily smoking in Year 8 to 10 students in the intervention communities were 10% compared with 16%, and 14% compared to 21% for weekly smoking. The effects were similar in males and females. Hinds et al {113} similarly demonstrated some effect of implementing a local ordinance on tobacco use with a 20% fall in reported tobacco use over a twelve-month period. Jason and colleagues {114} also reported a reduction in tobacco use over two years (from 46% to 23%) following an intervention to notify tobacco retailers of laws and penalties.

In contrast to these positive findings Rigotti et al {142} found less support for the strategy of local enforcement of legislation in a sophisticated study in six Massachusetts communities. The intervention was similar to those reported by other researchers and indeed compliance with legislation by the intervention communities improved substantially as in earlier studies and this effect was maintained over a two-year period. However, concurrent surveys of over 22,000 students in these communities found no difference between control and intervention communities in the availability of cigarettes. The findings were partially explained by a shift to purchasing in other communities and to asking others to buy cigarettes for them. Consistent with this finding on the availability of cigarettes, no positive effect on tobacco use rates were found in comparison to the control communities.

3.12.5 Summary of evidence for enforcing legislation on illegal sales

Evidence on implementation.

There is evidence that legislation without local enforcement has little effect on the availability of cigarettes to young people. There is good evidence that it is possible to put in place a range of local strategies which affect retail sales. Two important elements in US studies are random tests of compliance and a capacity to issue fines for illegal sales or other breaches in protocol.

Evidence on outcomes

Though the Rigotti et al {142} findings suggested little effect, the balance of evidence suggests appropriate enforcement of legislation can reduce youth tobacco use. The Minnesota study {408} suggests an effect size at least as high as the best of the health educational approaches. If restricted to one geographic area there is a need to consider the extent to which sales might occur in other communities.

Evidence on dissemination

Enforcement of legislation requires considerable cooperation with responsible authorities and hence successful trials for this strategy provide implicit evidence for dissemination. The report by Jason and colleagues {114} provides an example of researchers being explicitly invited to evaluate an initiative instigated by local authorities.

3.12.6 Working with the tobacco industry

In 1982 a voluntary agreement was reached between the Australian Government and tobacco manufacturers on the levels of tar, nicotine and carbon monoxide permitted in cigarettes. Recently considerable attention has focused on negotiations between the US government and major tobacco companies around the industry giving guarantees ensuring reductions in rates of adolescent smoking. There is little empirical data on this type of strategy as yet.

3.13 SOCIAL MARKETING INTERVENTIONS

Summary: Evidence for implementation ★^{1/3}

The mass media have been commonly used in tobacco prevention approaches. Relevant media include television, radio, movies, internet and teenage magazines. The attractiveness of these approaches lies in their capacity to reach a large teenage audience quickly but there have been considerable doubts expressed about the effectiveness of this strategy.

Murray et al {6} examined the effects of a statewide mass media campaign on smoking attitudes and beliefs in teenagers. The campaign took place in Minnesota over a five-year period in the mid-eighties and used a range of media: - television, radio, newspapers, billboards. Comparison was made with neighbouring Wisconsin where no similar initiative had been taken. Student surveys indicated that the advertisement had great penetration with those aged 10 to 16 and a much greater recall of anti-smoking messages. However, there was little shift in beliefs about smoking and no concomitant shift in smoking prevalence rates.

Bauman et al {28} compared three mass media campaigns: first, eight 30-second radio message focused on the consequences of becoming a regular smoker; second, an additional 60-second radio message inviting 12- to 15-year-olds to join an “I

won't smoke sweepstakes" and recruit friends to the program; and a third, which included a television broadcast of the sweepstakes. A randomised design was used to compare 6 intervention geographic areas with four controls. Radio brought a modest shift on the expected consequences of smoking and proved as effective as television in shifting these views. There was little effect of the peer recruitment strategy. No effect was found on smoking behaviour.

Flynn et al {124, 129, 180, 198, 298} reported a strategy from Vermont and Montana of combining a mass media approach with social learning-based school smoking prevention programs for Years 5 to 10. The mass media intervention used radio and television with spots either 30 or 60 seconds in length placed in programs likely to appeal to 'high-risk girls' and 'high-risk boys'. The content of the mass media campaign was consistent with that of the school based intervention. Two groups were compared: those receiving both mass media and school components (one community in Vermont and one in Montana) and a second group receiving the school intervention only (one in Vermont and Montana). The combined groups showed positive shifts in attitudes to smoking, rates of peer smoking and a 30% reduction in weekly smoking rates in the mass media exposed students compared with those receiving only the school based program. The effects persisted in exposed students two years after completion of the intervention {298}.

3.13.1 Summary of evidence for mass media interventions

Evidence on implementation

There is good evidence that mass media strategies can convey a health promotional message to a high proportion of young people quickly. Radio appears as effective as more expensive media. Less attention has been paid to media such as the internet and teenage magazines.

Evidence on outcomes

There is no good evidence that simple "one off" media campaigns affect smoking rates in the young. There is better support for the use of mass media in combination with other strategies such as school based health education or community mobilisation.

3.14 COMMUNITY MOBILISATION

Summary: Evidence for outcomes ★★

Evidence from two well-conducted programs provide evidence that community mobilisation may hold the potential to impact tobacco use. Perry et al {197} described a quasi-experimental evaluation study of an intervention combining school health educational approaches, based on the Minnesota smoking prevention program, with a community-wide approach to tobacco use and other risk factors for heart disease. The latter included health screening, food labelling, community-wide education including use of the mass media. Annual surveys of smoking prevalence of a 6th grade cohort demonstrated persisting effects through to Year 12 when weekly smoking rates in the intervention group (15%) were compared with the comparison sample (24%). Salivary cotinine analyses confirmed the self-report finding that smoking rates had been reduced by approximately 40%.

Pentz and colleagues {449} reported positive one-year impacts for a community mobilisation program (The Midwest Prevention Program) targeting tobacco and other drug use. The program included school health curriculum, mass media, parents, community organisation, and policy programming components. The social-influences curriculum component was designed to teach young people social skills and create a social environment less receptive to drug use. Risk factors associated with tobacco use norms (including intentions to use tobacco and positive expectations for tobacco use) were impacted by exposure to this intervention.

It is important to note that not all evaluations of community mobilisation programs have reported positive impacts on youth tobacco use. In an evaluation of a heart-health community mobilisation campaign in Rotherham in the UK, Baxter and colleagues {45} reported higher smoking rates amongst students exposed to the programs compared to control communities.

3.14.1 Summary of evidence for community mobilisation interventions

Evidence on implementation

Community mobilisation requires considerable coordination but available evidence suggests the strategy can be carried out.

Evidence for outcomes

Although the balance of recent evidence appears favourable, further research will be required to better establish the conditions whereby community mobilisation can translate to reductions in youth tobacco use. Further work will be required to establish that community mobilisation programs can be effectively disseminated outside of the context of research demonstration programs.

3.15 SUMMARY OF FINDINGS ON TOBACCO USE

There are striking discrepancies in the levels of available evidence for different health promotional approaches in relation to tobacco use in young people.

3.15.1 Health education can be successful

Health education has come a considerable distance since the early work of the 1970s. Reasonable evidence has accumulated that health educational approaches which incorporate life skills approaches can reduce smoking rates in young people with a lowering of risk that persists in those individuals. The training requirements are considerable and the intervention needs to span several of the years of risk for first uptake. This approach appears to require ongoing training and professional development of teachers and is probably not sustainable without this input.

3.15.2 Enforcement of legislation may be successful

In contrast to health education which is concerned with reducing demand there is considerable evidence that restricting availability can be effective. Most work has focussed on the enforcement of legislation on illegal sales. Where reductions have been demonstrated they have been of a similar order of effect (30% reduction) to those achieved with the more successful health educational approaches.

3.15.3 Multifaceted approaches to health promotional interventions for tobacco use appear most promising

Approaches which have combined successful approaches, such as school based health education with mass media intervention, appear consistently more effective than single approaches to tobacco use.

3.15.4 The effectiveness of many commonly-used approaches is unknown

The effects of other approaches to health promotion used in isolation are largely unknown. This includes the effect of social marketing and mass media approaches, further restriction of tobacco advertising and sponsorship, the use of health warnings, and maintaining price disincentives. While some of these approaches have strong intuitive appeal their effectiveness is uncertain.

3.15.5 Many areas of intervention appear relatively unexplored

It is striking that important risk factors, important settings and important health promotional approaches have been neglected. These include

- Interventions targeting families and parents who are smokers
- High risk populations such as young people with a mental disorder, juvenile offenders, youth out of school
- Health care settings and the health promotional role of health care professionals, especially for youth at particular risk of adverse outcomes from tobacco use (e.g., young asthmatics and diabetics).

4 Alcohol and other drug use

4.1 *ADOLESCENT ALCOHOL USE*

The majority of Victorian youth report that they drink alcohol and first experiences with alcohol occur well before the legal age for alcohol purchase. Victorian school survey data collected in 1996 revealed the majority of early secondary school students in Year 7 had tried alcohol. Potentially harmful alcohol use is widespread and increasingly prevalent amongst Victorian youth. In 1996 binge drinking, defined as the consumption of five or more standard alcoholic drinks in one session, was reported by 50% of Victorian Year 11 students within the past two weeks. Comparisons with data collected in 1993 have suggested that more regular (monthly and more frequent) patterns of alcohol use have increased among boys in Years 7-10 across the three years to 1996 (Department of Human Services, 1999).

Binge drinking has been associated with serious injury (especially relating to vehicle accidents), unplanned and unsafe sex, assault and aggressive behaviour, and a range of drinking-related social and psychological problems (e.g., Wechsler, Dowdall, Davenport & Castillo, 1995). Although an increasing number of adolescent alcohol initiatives focus on secondary school populations there may also be opportunities to modify binge drinking patterns through the period from adolescence to adulthood. Individual frequencies of alcohol use demonstrate a steady decline following their peak at age 18-20 (Chen & Kandel, 1995).

Daily consumption of high quantities of alcohol, although less common amongst young people, has been associated with longer-term health consequences (National Health & Medical Research Council, 1992). Such patterns of adult consumption are associated with an earlier age of alcohol use and heavier patterns of alcohol consumption in adolescence (Kandel, Yamaguchi & Chen, 1992). More frequent alcohol use has been associated with concurrent substance use (both legal and illegal) potentially damaging to health in a Victorian sample of secondary school adolescents (Hibbert et al, 1996). For a small group, patterns of heavy adolescent alcohol consumption may progress to syndromes of alcohol abuse and dependence in young adulthood (Chilcoat & Breslau, 1996).

4.2 *CANNABIS USE*

Cannabis use appears to be increasing in prevalence amongst Victorian adolescents. In 1996 the majority of Year 12 students reported having tried cannabis and as early as Year 7 more than one in five students reported having tried cannabis. As youth expectancies regarding the risks and benefits of substance use are important predictors of future use it is of concern that Victorian students appeared to perceive cannabis to be relatively safe in 1996 (Department of Human Services, 1999). There is considerable evidence to suggest that early adolescent substance use increases the risk of later substance abuse (Hawkins, Catalano & Miller, 1992) including use of heroin which is readily available in Victoria.

Regular cannabis use, binge drinking, other substance use and health compromising behaviour demonstrate a considerable co-occurrence. The Adolescent Health

Survey conducted in 1992 demonstrated considerable co-occurrence between more regular marijuana use, binge drinking, regular tobacco use, and other drug use. Youth with elevated levels of depression were shown in this survey to be more likely to engage in more regular cannabis use and binge drinking. Acute harms that are regularly measured in relationship to adolescent alcohol use include sexual risk-taking, antisocial behaviour and injuries (Hibbert et al, 1996).

Most of the published research literature relevant to the prevention of alcohol and drug misuse has been conducted in the United States (US). Due to historical factors there are differences between alcohol and drug prevention efforts in the US relative to those in Australia. Comparisons (e.g., Makkai, 1994), however, typically suggest more similarities than differences in the prevalence and inter-relationships between drug use behaviours in the US and Australia. One important difference between the two countries relates to the more widespread prevalence of alcohol use in Australia.

In Australia substance abuse prevention efforts have focussed on harm reduction whereas in the US abstinence has received more prominence. Despite these differences, the majority of US alcohol and drug prevention research published over the past decade has not limited measurement to drug use abstinence but has also included quantity and frequency of use information and in some cases examined harms related to use. Some of this information appears relevant to the Australian context.

Published evaluations report on a range of strategies aimed at reducing the social and health costs of alcohol and drug use. Intervention strategies reported below include family focussed interventions, school based interventions, university and college interventions, peer strategies, and community change efforts.

4.3 PARENT TRAINING

Summary: Evidence for outcomes - ★★

Though parent training can be an effective strategy for the parents motivated to attend, there can be difficulties reaching the full range of parents. One strategy for involving parents of adolescents involves targeting secondary schools.

An Australian program that is targeted to parents with adolescent children is Parenting Adolescents a Creative Experience (PACE). The PACE program was designed as a universal intervention aiming to support a range of parents. Facilitated groups run on an adult learning model utilising a curriculum that includes modules relevant to adolescent communication, conflict resolution and adolescent development (Jenkin and Bretherton, 1994). The groups typically involve about ten parents and meet for two hours each week for eight weeks. The program was recently evaluated with respect to its impact on a national sample of parents and Year 8 adolescents {502}.

The evaluation design involved the targeting of thirteen secondary schools across Australia for the delivery of PACE. To evaluate impacts a further fifteen schools were observed as control sites. Over two-hundred teachers and family service staff participated in three-day training programs conducted in eighteen regions across Australia teaching how to facilitate PACE groups. These staff then went on to offer PACE groups to 3,000 parents across Australia. Parents were recruited both from

schools and also through advertising within the community. In each of the evaluated target schools PACE was promoted to parents using parent information evenings and school newsletters. Year 8 students completed evaluation surveys in their classrooms. Surveys were completed at the beginning of the intervention in third term 1998 and then again at the end of 1998. Parents were posted questionnaires for mail return.

Evaluation findings demonstrated few differences between families in the target and control schools at the first survey. However, by the second survey there were clear indications suggesting the target school families were experiencing benefits not evident amongst the control school families. The target school parents reported a reduction in conflict with their adolescents and a trend toward increased satisfaction and confidence as parents. Adolescents demonstrated less delinquency, less substance use (the odds of transition to alcohol use were halved), and lower feelings of detachment from their families. Although not a significant difference, the incidence of self-harming behaviours was also lower amongst the target school adolescents at the second survey {502}. The extent to which these positive impacts can translate to long-term reductions in youth substance abuse is a question that will require longer-term follow-up.

Spoth and colleagues {239} evaluated the secondary school targeting of the parent-training program known as Preparing for the Drug Free Years (PDFY). PDFY is a five-session program aimed at enhancing positive parent-child interactions, parent-child bonding and effective child management. Parents are encouraged to provide their children with opportunities for positive family involvement, teach their children skills for such involvement, and reward them for this involvement while providing appropriate consequences for rule-violating behaviour. Of the eligible parents with an early adolescent, 57% were willing to be involved in this parent training evaluation study. For those assigned to intervention the program was demonstrated to be effective in increasing young people's intention to abstain from alcohol and in enhancing family bonding.

Clearly there are questions regarding the cultural fit of programs designed for the abstinence prevention framework in the US given the Australian cultural context of harm reduction. In the case of Preparing for the Drug Free Years, the protective process addressed appears to be enhancement of parent-adolescent attachment. As low parent-adolescent attachment has been shown to predict a range of health-compromising behaviours, it is likely that the positive effects of this intervention would generalise to other health behaviours.

One method utilised to more intensively engage parents has been that of selecting families with at risk children. Dishion and colleagues {303} from the Oregon Social Learning Centre evaluated a 12-week parenting skills program aimed at families where youth had exhibited behavioural problems as children. Evaluation revealed that exposure to a parent group component of this evaluation reduced youth initiation to tobacco use one year later. Reduced parent-adolescent conflict was associated with these positive changes. In alternative intervention conditions involving adolescent groups or both adolescent and parent groups youth tobacco use and other problem behaviours increased. The authors argued the positive benefits of reduced parent-adolescent conflict were challenged in these cases by contrary peer

influence pressures. Findings suggest the importance of strengthening the parental sub-system in family intervention through the adolescent phase.

4.4 FAMILY INTERVENTION

Summary: Evidence for implementation - ★^{2/3}

As distinct from parent training where the parents are the focus of the intervention, family interventions include components for parents and children. The last 10 years have steadily added to an existing knowledge base relevant to involving families in adolescent health promotion. A number of programs incorporate family involvement as a component of prevention programs run in schools or in community settings such as youth groups. Perry and colleagues involved in Project Northland in Minnesota {173} and the Midwest Prevention Program team associated with Mary Ann Pentz {449} have each evaluated school based health education programs that include components aimed at involving families. Each of these evaluations has demonstrated that the incorporation of parent activities into school health education curriculum can be a practical prevention option.

In general, evaluations have not been successful in untangling the specific contribution of family involvement to these prevention initiatives. Evaluation of Project Northland {173} did demonstrate that by Year 8 intervention students exposed to the program from Year 6 showed a small significant tendency to perceive better family communication relating to alcohol use. In the Project Northland evaluation the main module targeting parents was the "Slick Tracy Home Team" program, a set of activity books completed as homework tasks requiring parental assistance over the course of 4 consecutive weeks in Year 6.

Perry and colleagues {466} evaluated the impact of the Slick Tracy Home Team program. The authors noted that the strategy of "seeding" their program into school homework was successful in obtaining high rates of parental participation from a range of cultural backgrounds. At the end of sixth grade families exposed to the intervention demonstrated increased communication regarding alcohol use, lower initiation of youth smoking and less regular youth alcohol use.

Spoth, Redmond and Shin (1998) evaluated the impact of a 7-week universal family intervention known as Strengthening Families directed at preventing alcohol and other drug problems by improving competent parent-adolescent communication. This intervention involved both parents and Year 6 adolescents in a series of meetings which were shown by Spoth and colleagues to increase child involvement in family activities, communication of substance use rules, anger management, and supportive communication. Structural equation modelling was used to demonstrate that these changes impacted parent-child bonding and general family management.

Evidence that peer attachments may be risk factors for youth substance abuse has led to interventions to assist parents to better manage their children's peer relationships. Cohen and Rice {460} evaluated an intervention that attempted to make just this adjustment. The intervention failed to produce changes in adolescent initiation of tobacco or alcohol use. Parent participation was poor and even among those who participated, attempting to influence their child's choice of peer group was not considered a practical target. Parents were unlikely to know whether their children had substance-using friends. Parents for the most part did not believe that their children's friends used substances and so had no motivation to act as gatekeepers. Also parents felt uncomfortable discussing friends' drug use.

Interventions for families with adolescents must be carefully designed as there are many tensions between issues such as youth requirements for autonomy and increasing family cohesion.

4.4.1 Summary of the evidence for parent training and family intervention

Evidence on implementation

Research reported over the last decade has made important progress developing strategies for recruiting parents into intervention activities. Work by Perry and others suggests that inviting parents to participate in student homework may be a promising method for reaching a broader cross-section of parents.

Evidence on outcomes

The existing evidence strongly supports the view that parent and family intervention can be an effective strategy for reducing risk factors for harmful youth substance use. However all the evaluations reviewed above have been restricted to post-program impacts, hence the longer-term impacts on substance abuse are unclear. There are indications that parenting interventions can impact adolescent risk factors both in selected interventions and in universal interventions. In the case of Preparing for the Drug Free Years the Spoth evaluations confirm earlier findings by the original study team and provide some confidence that this programs effectiveness might be robust to implementation differences. Longer-term follow-up will be required to confirm the sustainability of program impacts. The evidence of a positive impact through the Australian implementation of PACE was obtained under naturalistic dissemination conditions. Welfare groups under government contract undertook the implementation of the PACE program.

Evidence on cost-effectiveness and broader dissemination

Attempts to develop and trial family-based programs for the prevention of youth substance abuse are important yet have been relatively undeveloped in Victoria. A report examining parental involvement in youth substance abuse treatment is currently being completed by consultants for the Department of Human Services, Drug Treatment Services Branch.

Implications for Further Research

In general program designers have evaluated their own programs in the studies conducted over the last decade. For this reason evaluations relevant to broader dissemination are required. Further research is required relevant to strategies for engaging parents and families in health promotion activities. The integration of parent education within the formal cycle of school activities (e.g., school enrolment, homework) would appear to be a practical method of disseminating information to parents, worthy of further evaluation. Long-term follow-up studies are required to evaluate whether preventive family interventions can reduce alcohol and drug abuse.

4.5 SCHOOL BASED DRUG EDUCATION

Summary: Evidence for dissemination - ★★★

As has been the case for tobacco use and sexual risk-taking prevention programs, health education has formed the main focus for substance abuse prevention research over the past decade.

4.5.1 Harm minimisation drug education.

Since the mid-1980s, harm minimisation has been the dominant approach for the prevention and management of alcohol and drug abuse in Australia (National Drug Strategy, 1993). In Victoria a large investment has been made in harm minimisation treatment and prevention strategies. School based harm minimisation drug education forms an important component in the Victorian approach. A number of harm minimisation drug education programs have been developed and distributed in Victoria. Current programs include “Rethinking Drinking” - an alcohol education program for high school students focussing on binge drinking situational analysis; “Primary Steps” – a harm minimisation resource aimed at primary school students; and “Next Step” – a harm minimisation resource for secondary school students tackling illicit drug use (see Australian Drug Foundation resource catalogues). These harm minimisation, drug education programs typically begin by acknowledging that drug use has benefits and that abstaining from or ceasing drug use may be an unrealistic objective for many.

Programs typically attempt to engage youth and target safer practices surrounding drug use. Strategies include supporting existing public health messages (e.g., avoidance of drink-driving), analysis of behavioral and situational determinants surrounding high-risk drug use, portraying the drug user in less pejorative terms and teaching strategies for assisting drug using friends to avoid harm.

Recent West Australian research supports the view that school based drug education based on a harm minimisation framework can be an effective strategy for reducing youth alcohol use (McBride, Midford, Farrington, & Phillips, 2000).

Marlatt and others have demonstrated the effectiveness of harm reduction approaches with US College-age youth (see below University and College interventions). Newman and colleagues (1999) evaluated a health education program targeting Year 9 secondary school students aimed at helping students resist pressures to drink and drive, or to ride with a driver who has been drinking. Follow-up a year later suggested the program had been successful in increasing knowledge and in reducing the rate of riding with a drinking driver. Knowledge of the curriculum was also found to correlate with the tendency to avoid riding with a drinking driver. There was also a small positive effect for student ability to resist negative social pressures. Alcohol consumption was unchanged, however. Positive findings from the above programs are encouraging for Victoria where harm minimisation drug education approaches are increasingly being utilised with secondary school populations.

4.5.2 Applying social learning theory to drug education

Over the past decade there has been somewhat of a deluge of studies, emanating from the US, evaluating school based health education targeting alcohol and other drug use. These programs have very consistently incorporated skill development and social influence components and in these areas can be distinguished from earlier

drug education efforts which focussed exclusively on knowledge and attitudes. There is now a consistent body of evidence that school based drug education programs can be effectively implemented to impact both initiation and escalation of use across a variety of substances including tobacco, alcohol, marijuana and, in a smaller number of studies, other illicit drug use. An increasing number of studies have analysed factors influencing program effectiveness. As this evidence is relevant to our understanding of risk focussed prevention, we review this information in what follows.

4.5.3 The cognitive-behavioural approach, Botvin and colleagues

Botvin and colleagues have played a seminal role in the development of school based health education programs targeting alcohol and other drug use. Over the past decade this team has built on their earlier evidence relevant to reduction in tobacco use to demonstrate their cognitive-behavioural Life Skills program can be effectively utilised to prevent other drug use {31}, {175}, {302}, {437}, {454}.

Botvin and colleagues {31} found escalation of tobacco, alcohol and marijuana use was significantly reduced in Year 8 for students exposed to their program through Years 7 and 8. Effects were improved by better implementation and peer delivery. Positive impacts were also reported in a three-year follow-up {454} and a six-year follow-up {302} where implementation was adequate and booster sessions were incorporated in later years. Botvin and colleagues {175}, {437} presented evidence that their program can be successfully implemented as a selective intervention for schools serving predominantly minority youth. Students exposed to their program demonstrated lower behavioural intentions to use hard liquor or take illicit drugs after the 15-week intervention {437}. Further evidence to support the delivery of health education to selective targets is derived from Sussman and colleagues {457}. In their evaluation a health education program delivered in special “alternative” schools was found to be acceptable to students and demonstrated some impact on alcohol and hard drug use.

4.5.4 The search for effective health education components

Despite positive findings for research teams who can provide best practice implementation, drug education often appears a precarious activity with apparently well-designed programs sometimes failing to demonstrate effects. A number of research teams have attempted to identify critical program elements that might explain variation in program effectiveness. Factors that have been demonstrated to moderate program effectiveness include implementation, who delivers the program, the age at which youth receive programs, program length, and program content.

Program effects appear to be influenced by who delivers the intervention. Researchers typically find peer delivery demonstrates greater effects compared to teacher delivery {31}, and that the use of outside experts can be counter-productive {442}. Pentz and colleagues {449} found program impacts on tobacco and alcohol use were mediated by perceived changes in friends’ attitudes. The sex of the program leader may also influence program effectiveness. Graham and colleagues {30} found their Year 8 intervention was more effective for girls. It was suggested that female teachers may have acted as role models for girls in this intervention.

Based on evidence over the past decade it might be cautiously argued that health education curricula initiated in early secondary school (Year 7) and reinforced with additional program provides a sound delivery strategy. In one study drug education was found to be more effective when delivered to Year 7 rather than Year 6 students {201}. Similarly Shope and colleagues {445} found no health behaviour benefits in Year 10 for students exposed to health education in 6th grade. Ringwalt et al, {442} also found no effect for a program delivered in Years 5 and 6.

Follow-up data are making clearer the importance of continuing drug education efforts throughout the secondary school years. In their series of studies examining a social influence drug education curriculum delivered early in Year 7, Ellickson and colleagues noted cognitive improvements at one-year follow-up {311}. However a three-year {463} and a six-year follow-up {134} suggested that once the program stopped the behavioural benefits associated with the program also stopped although some cognitive impacts did appear to persist. The finding that skill benefits deteriorate was also supported by Shope and colleagues {444}. This group found that students receiving skill training in Year 8 demonstrated positive benefits through Year 8 but these dropped of in Year 9 when the program stopped. Perry and colleagues {448} also found effects deteriorated once programs had stopped.

There is consistent evidence that program effects are moderated by the quality of program implementation {31} {302}. Following a relatively specific curriculum appears important. Programs with less structure appear to show little effect and can be counter-productive {eg, 450, 461}. Ensuring implementation is not always more expensive. Botvin and colleagues found a self-paced teacher training video was about as effective as more intensive supervision in achieving implementation {302}.

There is some evidence that teaching social skills specific to the refusal of particular drugs may be more effective than programs that teach more global social skills. Caplan, Weisberg and colleagues {441} evaluated a 20-session program focussing both on general competencies to promote adaptive behaviours and more specific competencies relevant to drug and alcohol prevention. Findings in this evaluation demonstrated increases in students' coping skills including coping with peer drug use situations. The program did not appear to impact experimentation with alcohol but did show a protective effect for engagement in excessive or harmful alcohol use. Earlier evaluation by this group of general competency training had suggested it had no effect as substance use prevention without the specific substance skills components. The authors suggested they might extend the already lengthy program further in an effort to enhance its fairly weak effect on overall student adjustment.

The teaching of specific rather than global skills was also supported by findings from Shope and colleagues' Alcohol Misuse Prevention Program (AMPS) {444} {447}. Shope and colleagues {444} evaluated efforts by a school district in Michigan to disseminate their drug education program developed at the University of Michigan. The program involved seven lessons in Grades 5 and 6, and eight lessons in Grades 7 and 8, and used role plays to teach strategies to resist pressures to use particular drugs. The program was implemented by over eighty percent of teachers. Allocation to condition was not random and classes where teachers taught less than half the curriculum were assigned to the comparison condition. Students in Year 7 demonstrated increases in knowledge and skills and reduced initiation of tobacco, alcohol, marijuana, cocaine and other drug use and alcohol misuse relative

to the comparison group after exposure to the program for one year. Students in Year 8 received the program for only one year as there was no curriculum for Year 9. The program was associated with positive effects through Year 8 but these dropped off in the year after the program stopped. Implementation with the youngest students in Grade 5 resulted in only significant differences in knowledge.

Shope and colleagues {445} evaluated a five-week extension of their curriculum for Year 10 students. The program appeared to impact knowledge and alcohol misuse with a trend toward improved skills. There appeared no additional benefit through earlier sixth grade exposure to the ADM curriculum. One conclusion with the skill programs is that they do not appear to work cumulatively to “inoculate against drug use”. The evidence suggests they act in the present context and appear very specified.

Snow and colleagues {443} evaluated the Adolescent Decision Making Program (ADM) a twelve-session curriculum focussing on social skill development including decision-making, group process skills, and social network utilisation skills. A second curriculum of the same length built on the earlier curriculum and taught more specific skills. Skill acquisition was tested using a social-information-processing paradigm. The program demonstrated significant effects for improving skills, and for reducing escalation to alcohol, marijuana and hard drug use. In this study a key interest was differential effects for students from single parent households.

It would appear plausible that the effects of specific social skill training interventions may be mediated by their impact on peer attitudes and perceived norms toward drug use. Skill programs tend to run in the context of more general message strategies aiming to modify perceived prevalence estimates of drug use and attitudes toward drug use. In an explicit attempt to identify effective program elements Hansen and Graham {462} compared four different health education program intervention conditions. Information only, social resistance skills, a normative education program (attempting to correct perceptions regarding the prevalence and acceptability of alcohol and drug use among peers) and a fourth condition combining the three elements in less detail. Normative education appeared in this intervention to be a particularly effective program strategy. Students exposed to this curriculum demonstrated significantly reduced onset for tobacco, alcohol and marijuana use.

Experience with project DARE provides some important cautions relevant to implementing drug education. In early secondary school youth are still integrating capacities for operational thought. Social concepts tend not to be fully differentiated and hence social identification processes are central to behavioural choices. Youth efforts to reduce ingroup differences and to enhance outgroup distinctions may explain the important impact of program leader on health education program impact. An example of program content being potentially undermined through program delivery personnel occurs in program DARE which is delivered by police in the US. DARE was developed as a method of more widely disseminating project SMART, a program developed by Hansen and Graham with evidence for its effectiveness.

Project DARE is a 17-session health education program, delivered by specially-trained uniformed police officers. DARE was designed to counter knowledge and

attitudes favourable to drug use, to teach affective skills for managing stress and promoting self-esteem and to develop skills for resisting drug use. Ringwalt and colleagues {442} evaluated DARE reporting that Year 5 and 6 students exposed to the curriculum demonstrated increased drug knowledge and improved assertiveness skills. However, findings revealed the program had no effect on either drug use or intended drug use. Examination of mediating effects revealed that changes in students' knowledge and skills did not themselves relate to behavioural outcomes in this project. Affective and skill components were argued to be in potential conflict in the DARE program. Further possible difficulties with this program may have been the targeting, too early in Years 5 and 6, and that it was delivered by the police. Students may have understood the information and gained the skills but resisted behavioural identification with the police – commonly regarded as the “out-group”.

4.5.5 Health education as a component within broader community mobilisation

Mary Ann Pentz and colleagues {449} {201} examined the effects of a school drug education program run in the context of the Midwest Prevention Program, a comprehensive community mobilisation program (see findings below under Community Mobilisation). A 10-session health education program focussing on drug use resistance skills, was delivered to Year 6 and 7 students. Evaluation suggested positive program impacts on mediating factors (attitudes, knowledge, skills and peer influence) and on initiation and escalation in use of tobacco, alcohol and marijuana use after the first year. A three-year follow-up {201} combined the drug education program with a parent organisation program for reviewing school prevention policy and training parents in positive parent-child communication skills in the context of community mobilisation elements. The program appeared to be effective at preventing escalation in tobacco and marijuana use, but not alcohol use. Effects were most prominent when delivery occurred in Year 7.

Research reported by Perry and colleagues provides further insight into the effectiveness of health education delivered within the context of wider community mobilisation efforts. It would appear from the Project Northland research {448} that the common observation that educational impacts decay over time also applies to interventions run in the context of wider community mobilisation. A cohort exposed to a social-influence health education curriculum from Year 6 through to Year 9 demonstrated lower rates of recent alcohol use and alcohol misuse. These effects tended to decline in the years following the intervention such that there were few significant effects by Year 12.

4.5.6 Summary of school based health education

Evidence on implementation

As is the case for tobacco use there is good evidence that school based health education programs targeting alcohol and other drug use and utilising social learning principles can be implemented with booster sessions in subsequent years. More recent programs have successfully incorporated approaches which include peer leadership, small group discussion, student led participation, homework tasks and role plays. Caplan and colleagues {441} noted positive consumer feedback from students regarding their social competence curriculum.

Evidence on outcomes

There is good evidence that substance use health education programs produce changes in knowledge about alcohol and other drug use and the consequences of substance use. Although interventions based purely on providing information appear insufficient to change either intentions to use drugs or actual drug use, provision of information may be a necessary condition for effective alcohol and drug prevention. Health education programs based on social learning principles have consistently shown short-term effects on both intentions and behaviours. In general the effects of these interventions diminish and even disappear by late secondary school unless supplemented by additional program input or supplementary strategies. Successful supplementary strategies have included social marketing, community mobilisation, and parental involvement.

Evidence on cost-effectiveness and broader dissemination

Existing evidence suggests that health education can represent a cost-effective method for reducing initiation and escalation of tobacco, alcohol, marijuana and other drug use. Program implementation costs for each class cohort typically include teacher time for around 8-15 classroom periods in early secondary school with an additional investment of 8-15 classroom periods later in secondary school. When properly implemented this investment can reduce regular alcohol use by 5-10 percentage points. Botvin and colleagues {454} present evidence suggesting their Life Skills Training program can be successfully implemented by schools with minimal involvement of researchers. Shope and colleagues {444} present further evidence supporting a successful program dissemination by educational authorities.

Because there is still much to be integrated regarding drug education, seemingly small adjustments at implementation can have surprising consequences. Project DARE attempted to more widely disseminate findings from previous prevention trials. Police officers were used to deliver this program rather than teachers, and two different curricula were combined. A number of evaluations of this program have now been conducted and suggest the package is ineffective. Kim and colleagues {458} report a failed attempt to disseminate health education in North Carolina. In this case few students could recall receiving the program providing some indication that failed implementation may have explained the absence of effects.

There are some warning signs that the dissemination of effective drug education in the Australian context will not be a simple matter. Perry, Grant, Ernberg et al, (1989) evaluated the effectiveness of drug education in different nations as part of a WHO trial. Evidence from this study demonstrated effectiveness for drug education in many nations including the US, however, an Australian implementation was not effective. It is clear that in attempting to implement evaluated programs further evaluation will be required to ensure successful adaptation to the Australian context.

4.6 SCHOOL ORGANISATIONAL AND BEHAVIOUR MANAGEMENT

Summary: Evidence for implementation

★^{1/1}

The Victorian Gatehouse project is attempting to modify early secondary school environments to promote mental health. The Gatehouse approach aims to increase school bonding and reduce experiences of victimisation. Through these

mechanisms it is plausible that risk factors for youth substance abuse may be reduced. An evaluation of the Gatehouse strategy utilising random assignment of schools is proceeding (Glover, Burns, Patton & Butler, 1998).

A very different intervention strategy to that developed in Gatehouse involves selecting students at risk and offering them special services within schools. Eggert and colleagues {456} evaluated a selective intervention for late secondary school students at high risk of dropout. Staff identified students who were offered placement in “personal growth classes”. The personal growth classes offered group support, friendship development and school bonding through small teacher-student ratios and an emphasis on positive peer relations. A specific skills training course was also offered based on four units: self-esteem enhancement, decision-making, personal control and interpersonal communication. Findings demonstrated those exposed to the groups reported improvements in school bonding, self-esteem and reductions in deviant peer associations. Program participants demonstrated less entry to harmful drug use. Program participation was voluntary and the evaluation was small and weakly controlled, hence more rigorously controlled evaluation of this program may be warranted.

4.7 MENTORSHIP

Summary: Evidence for implementation ★^{1/1}

Mentoring programs typically involve non-professional volunteers spending time with individual youth in a supportive, non-judgemental manner while acting as role models. Tierney, Grossman and Resch {503} evaluated the Big Brothers/Big Sisters program. In a well-controlled evaluation significantly less drug use was observed amongst youth exposed to mentorship compared to youth randomly assigned to a waiting-list control group. Exposure to mentoring also demonstrated a range of positive impacts on risk and protective factors including improved academic performance and family attachment.

4.8 PEER INTERVENTION AND PEER EDUCATION

Summary: Warrants further research - 📄

Peer influence appears to be a pervasive and important factor in the development of youth substance use and other behaviours. Given the importance of peers it would appear a logical step to attempt to modify peer influence through intervention. Intervention experience makes clear, however, that there are many apparently “self-evident” peer strategies that have a track record of exacerbating youth problems.

Evidence collected in the small study by Dishion and colleagues {303} suggested that interventions that increase contact between high-risk youth run the risk of being counter-productive for preventing tobacco use.

Attempts to involve peer leaders in health education can face complications where links to healthy adult norms are compromised. Wilhelmsen and colleagues {461} tested two forms of an alcohol education program one highly structured the other less structured. Both programs attempted to involve peer leaders and teachers in the program delivery. Findings suggested that the more highly structured program was associated with higher student involvement and also significantly decreased alcohol use. Exposure to the less structured program was associated with continual

increases in alcohol use similar to those in the control condition. Students in the less structured program reported decreases in their perception that peers wanted to abstain from alcohol.

Evidence from Botvin's group {31} suggests peer delivery using a structured health education curriculum can be an effective strategy.

The current evidence base suggests the need for some caution in implementing peer-based interventions. The involvement of peer educators within well-structured programs warrants further research investigation. Peer interventions involving at-risk youth has the potential to exacerbate problems. The recent evidence is equivocal and could profit from further research.

Interpretation of the limited research over the past decade should be balanced against earlier research summarised by Tobler (1986) suggesting peer-led intervention components improved the effectiveness of youth substance use prevention programs.

4.9 RECREATION PROGRAMS

Summary: Warrants further research - 

St. Pierre and colleagues {469} reported an evaluation of a 12-session program running within the Boys and Girls Club of America, a voluntary youth recreation organisation. The curriculum targeted a broad spectrum of social and personal competencies including peer resistance strategies to avoid pressures to use alcohol, cigarettes and marijuana and engage in early sexual activity. Evaluation suggested that those exposed to the program demonstrated lower rates of cigarette, alcohol, marijuana and other drug use. These positive findings should be interpreted cautiously as assignment to the intervention was voluntary and weakly controlled. Although after-school programs appear common in Australian primary schools, after-school programs for early secondary school students are rare but may warrant further research attention.

4.10 REORIENTATION OF HEALTH SERVICES

Summary: Evidence for implementation ★^{1/1}

Health services often cater inadequately to young people's needs and hence methods of appropriately reorientating health services are important. In what follows we review a number of programs investigating alcohol and other drug health promotion strategies delivered by health services.

A number of research studies have actively investigated methods of better engaging young people within existing health services. In Australia the major access point for entry into health services occurs through general practice. General practitioners have for some time demonstrated gaps in their knowledge and skills relevant to working with young people, a major barrier to service access.

Rickert and colleagues {136} used random assignment to evaluate two alcohol health promotion strategies for use with young people visiting a primary health clinic. In one condition youth were exposed to a computer-generated instruction

program relevant to alcohol use. In the other condition a physician delivered a participatory guidance program. At post-test both conditions resulted in significant increases in knowledge of alcohol and marijuana relative to a control condition. Female subjects were more satisfied with the computer-assisted instruction, while males preferred participatory guidance from a physician. Individual physician visits appeared to have an advantage over more commonly used forms of passive communication such as printed materials and pamphlets, in that information could be more appropriately geared to adolescents' current behaviour and level of knowledge. The impact of this one-off intervention on subsequent alcohol and drug use was not evaluated.

A further strategy for reorienting health services involves moving the site of service delivery into schools. A health access workshop has been developed by the Centre for Adolescent Health. The aim of this workshop is to facilitate student access to primary health services by providing information and skills. The program appears to be well accepted by students and teachers but has not yet been formally evaluated. Although the health access workshop is not specifically an alcohol and drug intervention, it provides an example of a universal strategy that may improve links between school populations and health services that tackle these issues.

There exists some evidence to support selective interventions within schools. Werch et al {446} evaluated a three-phase intervention selectively targeting schools with high proportions of African-American students. Student volunteers were randomly assigned into the intervention that involved three components, a self-instructional module, a health consultation with a physician or a nurse, and a follow-up consultation with a trained peer health educator (an eighth grade student). Instructional messages were tailored to the stage of alcohol use exhibited by the young person. Relative to the control group receiving only untailored alcohol information, participants in the program demonstrated less favourable attitudes to alcohol at follow-up (including lower estimates of adult drinking rates and a greater sense of personal susceptibility to alcohol problems). Their intentions to stop or reduce drinking increased and there was a small significant effect for reductions in the quantity and frequency of alcohol consumed. Participants evaluated the nurse contact particularly highly.

4.10.1 Summary of evidence for health service reorientation

Evidence on implementation

There is now reasonable evidence that a variety of strategies can be used to improve the accessibility and effectiveness of existing health services relevant to young people. Ensuring existing services maintain a prevention focus and utilise effective methods of engagement would appear a fundamental step in the process of tackling alcohol and other drug issues amongst young people.

Implications for further research

Health service reorientation appears a promising selective intervention strategy. Further research is recommended to establish the impact of universal health service reorientation strategies targeting youth alcohol and drug use.

4.11 COMMUNITY BASED HEALTH EDUCATION

Summary: Evidence for implementation - ★^{1/2}

Fors and Jarvis {438} used a quasi-experimental design to evaluate a community education strategy delivered to a selected population of runaway/homeless youth. A four-session curriculum was delivered alternately by peers or adults. Evaluation suggested that from pre- to post-test those exposed to peer-led instruction were the only ones to show a significant difference relating to drug knowledge taught through the curriculum, and increased likelihood of assisting friends to use community facilities. These findings must be cautiously interpreted as the analysis did not adequately control for pre-program differences or compare effects across conditions.

Palinkas and colleagues {153} reported a selective intervention targeting females aged 14 to 19 who were pregnant or parenting and screened to be at risk of drug use. Recruitment mostly occurred through community health clinics. This report examined a sixteen-week curriculum focussing on social and life skills. The intervention demonstrated no benefit for social skills training and in some cases 3-month follow-up outcomes were worse. Post-hoc analyses suggested the skills group increased their level of socialisation with delinquent and/or drug using peers. It may be that improving global social skills in the context of prevalent drug use may not be a useful prevention strategy.

4.12 EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION

Summary: Warrants further research - ↗

Although a number of adolescent alcohol initiatives focus on secondary school populations there appear to be important opportunities to modify alcohol and other drug use through the period from adolescence to adulthood. Marlatt, Baer and colleagues have demonstrated the effectiveness of harm reduction approaches with US College-age youth. In a series of controlled studies focussing on targeted university populations in Washington State Baer et al (1992) demonstrated that high alcohol consuming college students could be encouraged to moderate their consumption through provision of feedback comparing their drinking behaviour to normative levels. Baer et al utilised cognitive-behavioural strategies to assist students to moderate situational and other influences on their behaviour. Further research examining harm reduction intervention approaches amongst Australian post-secondary school youth should be accorded some priority.

4.13 LAW, REGULATION, POLICING AND ENFORCEMENT

Summary: Evidence for implementation ★^{2/2}

4.13.1 Alcohol Purchasing

Evidence that changes to age of drinking regulations influence adolescent alcohol use and alcohol harm come primarily from studies that have used trend discontinuities to examine the association of state and council regulatory changes with alcohol-related harm indicators. These studies have primarily been conducted in the US. Reviewers of this evidence consistently argue alterations to the drinking age regulations have an influence on adolescents. With reductions of the minimum drinking age from 21 to 18 increasing indicators of adolescent alcohol-related harm have been observed. In their review of the impact of changes in minimum drinking

age laws in the United States and Canada through the 1970s Whitehead and Wechsler (1980) concluded “lowering of the minimum drinking age has been accompanied by an increase in various forms of alcohol-related damage among young people” (p. 179). Based on research with a community in Ontario Whitehead estimated that about 28 collisions per year per 100,000 people would not have taken place if the minimum drinking age had not been lowered from 21 to 18. One of the most meticulous studies was conducted by Douglass and Freedman (Douglass, 1980). They found, using a conservative “three-factor surrogate” measure, that lowering the minimum drinking age in Michigan in 1972 from 21 to 18 resulted in at least 4,600 alcohol-related accidents between 1972 and 1975 with at least 89 of these collisions accounting for one or more fatalities. In their review Hawkins, Catalano and Miller (1992) cite further evidence accumulated through the 1980s associating higher state drinking age with fewer teenage traffic fatalities and drink drive offences. Further evidence reviewed by Hawkins et al suggested that increasing age restrictions on alcohol purchases were associated with reductions in alcohol-related fatalities.

4.13.2 Illicit drug use legislation

In Victoria in 1996 a major report into illicit drug problems advocated amending legislation relevant to the possession of cannabis to permit small quantities to be grown for private use (Premier’s Drug Advisory Council, 1996). The main arguments in support of this change were that cannabis use was widespread and hence criminal sanctions were drawing an unreasonably large cross-section of youth into contact with the law. It was argued that by treating cannabis possession separately to the possession of other illicit drugs the potential for cannabis users to be sold harder drugs in the illicit drug market would be reduced. Any change in legislation needs to be evaluated in the context of its potential impact on youth normative perceptions relevant to cannabis use. A school survey was conducted in 1996 during the Victorian cannabis debate (Department of Human Services, 1999). This study found that Victorian youth tended to have a lower apprehension of the risks of cannabis youth in 1996 relative to earlier years. One interpretation of these findings was that the debate regarding decriminalisation of cannabis use in Victoria served to weaken perceived social norms against the use of cannabis. This is a serious issue relevant to prevention as social norms have been implicated in a number of studies as fundamental factors predicting future drug use of young people (see the sections above relevant to school based drug education). In considering methods of amending legislation relevant to illicit drug use it remains desirable for the purpose of substance abuse prevention to seek models that continue to reinforce a strong anti-drug social norm. It may be possible to achieve this position without victimising drug users where legislation is reframed to enforce treatment.

Evidence on implementation of legislative changes

Within the US political advocacy has led to increases in the legal purchasing age for alcohol. Although the legislation exists across the US, it is inconsistently regulated and enforced at the county level. Work conducted for Project Northland by Perry and colleagues {173} suggested that local activities can be organised to strengthen alcohol regulation. In this intervention local community task force activities included law reform. Local laws and ordinances strengthening control over alcohol sales to minors were successfully passed in each of the Project Northland

intervention communities. Victoria Police have been active trialing and evaluating a program where first-time drug offenders can opt to access treatment to avoid prosecution.

Evidence from the US suggests that in states where legislation relevant to the legal purchasing age for alcohol was increased, harm associated with youth alcohol use was reduced. In the Australian harm reduction context, policy options such as increasing the legal age for alcohol purchasing have not been widely advocated. In the US community mobilisation programs such as Project Northland appear to have successfully implemented activities to raise community awareness of the youth impact of alcohol law and regulation. Further research examining the relationship between community attitudes, alcohol regulation and youth alcohol use may be useful.

4.13.3 Community: alcohol marketing regulation

Advertising is an important method used by the alcohol industry to promote its products. Advocacy work conducted in New Zealand in the 1980s challenged the right of the alcohol industry to unrestricted advertising of its products.

A number of studies have investigated the impact of alcohol marketing and distribution on adolescent health. Professor Tim Stockwell and colleagues from the National Centre for Research into the Prevention of Drug Abuse have conducted a series of studies to demonstrate the practical benefits achievable through modification of youth alcohol drinking and purchasing environments. Stockwell and colleagues have noted in Western Australia that a disproportionate number of youth alcohol offences emanate from a small group of alcohol retailers. Stockwell and colleagues have been investigating a variety of methods to encourage change in alcohol sales and marketing practices.

A minimum requirement for safer alcohol use is that consumers must be able to effectively identify the alcohol content of beverages. There has been some debate on this issue with Stockwell and colleagues presenting evidence in favour of standard drink labelling. One potentially successful harm reduction strategy involves that of encouraging lower alcohol beverages. Consumption of low alcohol beverages may be an effective method of reducing acute harm. In a randomised trial the alcohol content of beverages was varied at parties attended by young people. This study demonstrated that the amount of beverage consumed did not alter in the low alcohol condition and consequently youth BAC was lower upon leaving the party (Geller, Kalsher & Clarke, 1991).

4.14 SOCIAL MARKETING INTERVENTIONS

Summary: Evidence for implementation ★^{1/1}

Donohew and colleagues (1991) reported an evaluation at pre-production of a televised, anti-drug, mass media campaign. An individual-level risk factor for youth substance abuse, sensation seeking, was targeted in this intervention. Donohew and colleagues reasoned that media appeal and motivations for youth substance use would differ for those high and low in sensation seeking. Two television message campaigns were developed for 18- to 22-year-olds one for high sensation seekers, the other for low sensations seekers. Focus groups were used to identify

distinguishing campaign features that would appeal to youth with these characteristics. Youth were exposed to televised messages varying by media and sensation seeking format. Behavioural intention to call a hot-line was found to interact with the type of message presented and high and low sensation seeking. A high sensation message (loud, vivid and changing) led to higher behavioural intention to call the hot-line.

In 1998 the Victorian Department of Human Services conducted a Summer/Autumn events mass media campaign in cinemas promoting harm reduction. A small evaluation suggested this campaign was widely recognised and well received by Victorian youth. Mass media campaigns have been successfully incorporated into wider community mobilisation campaigns but we have not managed to locate studies evaluating their impact on youth. The alcohol industry invests heavily in mass media campaigns that include youth targets. Further research examining the effect of alcohol marketing, mass media representations of alcohol and the effectiveness of preventive mass media campaigns targeting alcohol and other drug use should be accorded some priority.

4.15 COMMUNITY MOBILISATION

Summary: Evidence for outcomes ★★

Evidence reviewed in the present report demonstrates the importance of targeting a range of risk factors influencing youth alcohol and drug use, and other behaviours. Community mobilisation approaches are theoretically important as they hold the prospect of coordinating the modification of risk and protective factors across different socialisation environments (schools, families, community, media, peers), with the prospect of additive and synergistic effects.

Efforts to implement and evaluate ambitious, multi-level community based prevention activities are now being reported. Two programs warranting particular attention are Project Northland organised by Cheryl Perry and colleagues in Minnesota {173} and the Midwest Prevention Program associated with Mary Ann Pentz and her team {449}.

Project Northland {173} aimed to prevent or reduce alcohol and drug use among young adolescents by using a multi-level, community-wide approach. School alcohol education curriculum delivered from Years 6 through 8 attempted to involve parents through the use of homework assignments and other activities. Year 7 components included peer-delivered materials. In Year 8 students were encouraged to participate in community action challenging the marketing and distribution of alcohol to minors. Community activities were supported through community-wide task force activities implemented from the second year of the project. Activities in this area included passage of new laws to prevent illegal alcohol sales to underage youth and intoxicated patrons and the instigation of a gold card program for local businesses to provide discounts to students who pledged to be alcohol and drug free.

Findings from Project Northland provide some early indication that community-level intervention programs can successfully impact a range of risk and protective factors and also behavioural outcomes. It is possible that effects for Project Northland may have been conservative as alcohol and other drug use was higher at baseline in the intervention communities. Despite these difficulties the intervention

communities did change in positive directions in association with exposure to the program. The intervention was associated with changes to local laws and ordinances controlling alcohol sales to minors and students reported better family communication relating to alcohol use and reductions in the perception that young people drank alcohol. Students also demonstrated less favourable beliefs regarding alcohol, lower intentions to use alcohol, and for students who were non-users of alcohol at baseline, a tendency to evaluate themselves as more able to refuse alcohol. The onset of alcohol use was successfully delayed in the intervention school districts both in Year 7 and Year 8. Despite significantly more intervention students reporting past week alcohol use in Year 6, by Year 8 the intervention had kept growth in this index down such that intervention students showed significantly less involvement in this behaviour compared to controls (10.5% vs 14.8%). The program was also associated with benefits in prevention of other drug use. A trend approaching significance was observed toward less onset of cigarette use. Significant reductions in the onset of cigarette use and marijuana use were observed for students who were non-users of alcohol at baseline.

Mary Ann Pentz and colleagues {449} {201} examined the effects of a school drug education program run in the context of a larger more comprehensive community mobilisation program (the Midwest Prevention Program). The intervention group received a 10-session health education program focussing on drug use resistance skills, delivered to Year 6 & 7 students. A one-year follow-up was reported {449} with partial random assignment and matching on pre-test measures. This program demonstrated positive impacts on mediating factors (attitudes, knowledge, skills and peer influence) and on initiation and escalation in use of tobacco, alcohol and marijuana use. Changes in perceptions of friends' reactions was found to mediate program impacts on tobacco and alcohol use.

For their three-year follow-up Pentz and colleagues {201} combined their drug education program with a parent organisation program for reviewing schools' prevention policy, and training parents in positive parent-child communication skills. Intervention students were compared with a control group who did not receive the above components but did receive two other components also offered to the intervention. These were training of community leaders to form a drug abuse prevention task force and a mass media campaign. A three-year follow-up demonstrated the program was effective at preventing escalation (recent use in 30 days) in tobacco and marijuana use, but not for alcohol. Interactions suggested the program was more effective when delivered in Year 7 compared to Year 6.

Cheadle and colleagues {127} report a community mobilisation program targeting adolescents on American Indian reservations through a variety of activities including festivals and parent training. In this study falls in alcohol and marijuana use were observed for youth exposed to the intervention. However similar falls were also observed in control communities, making it difficult to attribute changes to the intervention.

4.15.1 Summary of evidence for community mobilisation interventions

Evidence on implementation

Despite their complexity the Midwest Prevention Program and Project Northland appeared to be implemented with considerable success. Perry and colleagues {173} cited evidence indicating that in each of the years, the project was able to maintain widespread participation and successful implementation of components in schools, involving parents and youth community activities.

Evidence on outcomes

Positive findings have been reported for the Midwest Prevention Program and Project Northland in the US. The acceptability and impact of this type of program in the Australian context is unclear.

Evidence for cost-effectiveness and wider dissemination

Despite greater implementation costs, program effects for community mobilisation are not always superior in size to those achievable through well-implemented school based health education alone. Research is warranted to investigate the feasibility of community mobilisation in the Australian setting.

4.16 SUMMARY OF FINDINGS ON ALCOHOL AND DRUG USE

Considerable progress has been made over the last decade in the identification and evaluation of strategies that can successfully prevent youth alcohol and drug misuse. Although many of the US programs have been formally directed at abstinence, many evaluations have included measures relevant to the Australian harm reduction context including frequency of drug use and drug-related harms. Despite considerable activity, the present review reveals considerable imbalance in research attention. A large investment has been made in evaluating school based drug education, yet a range of other strategies have received relatively little attention.

A number of evaluations have been reported showing promise in engaging parents and families into interventions and in demonstrating outcomes following intervention. Existing studies mainly provide evidence for impacts and longer-term follow-up will be required to establish whether family interventions can reduce drug abuse. Promising progress in this prevention area raises the prospect of similar strategies being used to tackle other outcomes such as tobacco use.

The vast majority of research has focussed on drug education within the school and evidence suggests this approach can be effective where interventions are well conceived and implemented, maintained on a continuing basis through the secondary school years and/or supplemented with additional strategies.

Evidence suggests that there may be particular advantages through the integration of more than one health promotion strategy. Health education campaigns conducted in the context of community mobilisation can be successful, though at this stage the size of effects are not necessarily larger than those achieved through health education alone.

5 Sexual Risk-Taking Behaviour

5.1 *ADOLESCENT SEXUAL RISK-TAKING*

Preventing unwanted pregnancy in teenagers has long been the focus of sexual health education within the community. In Australia, there is a strong history of school based sex education. There appears to be relative acceptance of sex education in schools by the Australian community. This situation contrasts with low levels of acceptance in many communities internationally. There are fears in some quarters that providing adolescents with information about sexuality, reproduction and contraception will increase sexual activity, but there is no consistent evidence to support this (Furstenberg, Moore, Peterson, 1985; Ku, Sonenstein, Pleck, 1992; Stout & Kirby, 1993).

Over the past few decades, the incidence of teenage pregnancy has been relatively stable in Australia when compared to the rising rates in many other communities, such as the USA. However, the teenage birth rate needs to be differentiated from the teenage pregnancy rate. One aim of sexual health promotion is to reduce unwanted teenage pregnancy by promoting delayed sexual debut and the use of contraception when sexual activity commences. However, the availability of termination of pregnancy services is another very important factor that affects the teenage birth rate. Indeed, while countries with the lowest teenage pregnancy rates frequently have comprehensive sexual health education, they generally also have ready access to termination of pregnancy services for teenagers.

Over the past decade, increasing concerns about the high rate of sexually transmitted diseases in young people, especially HIV/AIDS, have led to a range of intervention studies. Many early studies failed to build on knowledge from earlier sex education interventions. However, there is now interest in rigorously investigating the impact of sex education as it relates to initiation of sexual activity and prevention of unwanted pregnancy, in addition to the reduction of sexually transmitted diseases including HIV/AIDS.

To date sexual risk-taking interventions have utilised a relatively limited set of strategies. There is considerable co-occurrence between sexual risk-taking behaviour and other adolescent health compromising behaviours examined in the present report. This situation would suggest underlying risk processes are potentially shared. The implication is that intervention strategies demonstrating success for other adolescent behaviours hold a high chance of success in preventing sexual risk-taking. The present report is the first we are aware of internationally to use the social developmental risk and protective framework to explore programs aiming to prevent sexual risk-taking amongst adolescents.

5.2 *PARENT TRAINING*

Summary: Warrants further research - 

There is evidence that parent behaviours influence a range of adolescent behaviours. There has been little work examining the potential for parent training interventions to modify sexual risk-taking behaviours.

5.3 FAMILY INTERVENTIONS

Summary: Evidence for implementation - ★

School based programs promoting adolescent sexual health are common, but there is little evaluation of interventions that provide information and skills to families. The Family/Media AIDS Prevention Project is a family-centred, home-based HIV video program designed to be viewed by both parent and adolescent. It consists of 2 videotapes lasting 135 minutes, providing a curriculum and parent training involving family problem-solving with the requirement for some additional workbook exercises. There was also a 'booster' workbook mailout after 3 months. The evaluation by Winett et al {366} was not on a randomly selected population, however, participants were randomly assigned to a skills training video or information only video upon enrolment. Parents and adolescents in both the intervention and the control groups showed a significant improvement in HIV knowledge, with participants in the intervention showing a significant improvement in their knowledge of the steps of problem-solving and assertiveness and their connection with HIV prevention. The intervention group also showed a significant improvement in family problem-solving without significant improvement in teen problem-solving. Parents found this program to be highly acceptable but the authors noted that teenagers did not so readily endorse a home-based video program. An earlier evaluation of the same strategy by Winett and colleagues {369} also demonstrated improvements in family communication. Changes in adolescent behaviour were not explored in either study.

Changes in adolescent behaviour were explored in an intervention evaluated by Miller and colleagues {363} using a strategy similar to Winett's. This study involved mailing out to volunteer families a video and information newsletter relevant to sex and relationships. Those receiving the intervention reported a greater increase in family communication compared to randomised controls, but rates of initiation of sexual intercourse were low for the targeted early adolescents and hence there were no difference in initiation rates one year later.

5.4 SCHOOL BASED HEALTH EDUCATION

Summary: Evidence for dissemination - ★★★

There are notable 'generations' of sex education curricula that have evolved over the past decades. A range of curricula are examined below and it will be noted in reading other sections of this report that there are historical similarities in approaches to health education targeting tobacco and substance use.

5.4.1 Programs that focus on increasing knowledge

Many programs were based on the premise that if adolescents had greater knowledge of sexual intercourse, pregnancy and methods of contraception, they would rationally choose to avoid unprotected intercourse.

Few rigorous evaluations of these programs were conducted. However, the evidence suggests that while programs consistently increased knowledge they did not significantly reduce unprotected intercourse or unwanted pregnancy. The failure of greater knowledge to reduce unprotected sexual intercourse is supported by a meta-analysis. Analysis of the results of 134 studies showed that most young people know the basics of sex and that additional knowledge of itself does not measurably change risk behaviour (Whitley & Schofield , 1985-86).

5.4.2 *Programs that aim to increase knowledge but emphasise clarification of values and skills, such as communication*

These programs were based on the premise that if student's values became clearer and their decision-making skills improved they would be more likely to decide to avoid risk-taking behaviour and communicate this to their partners. Disappointingly, these studies failed to consistently show any increase in contraception use or reduce rates of teenage pregnancy. At best, they clearly demonstrated that these early sex education programs did not markedly hasten or delay the onset of sexual intercourse in teenagers.

5.4.3 *Abstinence only programs*

A number of programs were subsequently developed that emphasised the importance of avoiding sexual intercourse until marriage. These programs tried to avoid the potential for existing programs to send a double message to teenagers by discussing delaying sexual intercourse as well as promoting the use of contraception. Evaluations of these abstinence only programs indicated that for some programs, a variety of attitudes about premarital sexual intercourse were altered with participants becoming less accepting of premarital sexual intercourse in the short term. In some cases behavioural changes have been reported {368, 371}.

In what follows an example of one of the less successful programs is presented to clarify the potential risks associated with this type of approach. Success Express was a six-session program for younger teenagers {389} which was designed to reduce premarital sexual intercourse in low income inner-city minority youth by promoting sexual abstinence. Evaluation revealed no positive changes in sexual attitudes or behaviours, and no change in variables that could potentially mediate adolescent decision-making, such as self-esteem. There was evidence, however, that those adolescents who left the program were at greater risk for premarital intercourse and there was evidence of negative effects, especially in males, in whom there was some increase in sexual behaviours during the time of the intervention.

5.4.4 *HIV/AIDS education programs*

Many of the AIDS prevention programs developed independently of the earlier generations of sex education programs. The initial goals focussed on reducing misinformation about HIV infection and transmission, reducing unnecessary fears about the disease, encouraging delayed sexual debut, or encouraging safe sex for those who were sexually active. Many of these curricula, like the early sex education programs, were based on the erroneous notion that improving adolescent knowledge and reducing the myths about HIV/AIDS would change behaviours.

On the assumption that most adolescents would know few people infected with HIV, some curricula focussed on personalising the information by having a person with AIDS, especially a young person speak to students. The programs appear to be effective at improving knowledge and made adolescents more sensitive to the rights of people with HIV/AIDS. However, few studies have rigorously evaluated the effects on sexual behaviour.

5.4.5 *Programs based on theoretical approaches with demonstrated effectiveness*

The majority of these programs were based on a combination of the health belief model and social learning theory. Bandura's social learning theory posits that the likelihood of an action (such as using contraception) is determined by: understanding what must be done to avoid pregnancy; an adolescent's belief that he or she can use the method; the belief that the method will successfully reduce the rate of pregnancy or STDs; and that there is an anticipated benefit for the behaviour. According to Bandura, people learn to estimate these important factors partly by observing the behaviour of others and the rewards and the punishments that the behaviour of others elicits. Through practice, they develop the skills required for the behaviour. Social inoculation theory posits that people develop resistance to social pressures when they can recognise the various forms of pressure, become motivated to resist them and have the capacity to do so. Social learning theory and social inoculation theory are two theoretical underpinnings of the social influence model. Cognitive behaviour theory contains many elements of social influence theory. According to this model, adolescents need specific cognitive and behavioural skills to resist pressures and successfully negotiate interpersonal encounters.

Reducing the Risk {365} is a school based curriculum based upon social learning theory, social inoculation theory and cognitive behaviour theory which aims to prevent teenage pregnancy and reduce STDs by encouraging sexual abstinence. Using social learning theory, teachers and classroom peers model socially desirable behaviour and students practice these behaviours through role play. Using social inoculation theory, the program assists students develop and practice effective strategies and skills to resist social pressures to have sex. Using cognitive behaviour theory, the program uses instruction and practice in applying skills which would be necessary to implement safe sex knowledge and how to avoid high-risk situations. The program is taught by high school teachers and extends over 15 classes. In an evaluation by Kirby et al {365}, the intervention was effective at increasing knowledge and parent-child communication about abstinence and contraception. It was also effective at reducing sexual activity and increasing contraception for those who were not sexually active before they started the intervention, having most effect on those at low risk of engaging in sexual risk-taking behaviour. Participation in the program did not significantly alter frequency of sexual intercourse or use of contraception in those adolescents who were sexually active before the program commenced.

Evidence for Outcomes

The present review identified a total of twenty-four studies using controlled evaluations to examine school based sex education. Of these studies twelve were targeted at early adolescents, school Year 6 and/or 7. Of these nine studies, eight examined behavioural impacts {169, 347, 348, 362, 368, 371, 389, 390}. Of these

eight studies, three {347, 362, 389} found no impact on sexual initiation or risk behaviour while five reported some impact. Behavioural impacts ranged from minor indications of change at post-test {390}, through to lower initiation of sexual behaviours after six months {368, 371}, to less frequent sex and increased condom use after twelve months {169, 348}.

Of the twelve studies targeted to older adolescents (Year 8 and above), nine measured impacts on behaviours {145, 365, 370, 375, 380, 383, 386, 391, 464}. Of these nine studies four reported reductions in initiation of sexual intercourse after twelve months or longer {391, 365, 380, 464}, and four reported reductions in sexual risk-taking behaviours after between two and six months {370, 375, 383, 386}. Only one study reported no impact on sexual initiation after five months {145}.

In addition to demonstrating behavioural impacts, sex education programs also demonstrated positive impacts on a range of protective factors particularly family communication and attachment {365, 368, 376, 383}, skills {360, 370, 375, 387} and school commitment {332}.

Evidence for Dissemination

School based sex education requires considerable collaboration with schools and teachers at implementation. A number of reports demonstrate evidence for effectiveness in sex education programs where implementation did not appear to have been coordinated by research teams {365, 391}. Sex education is delivered widely in Australian schools, however, it is unclear to what extent the models being utilised are evidence-based. In encouraging further dissemination of these programs evaluation of content, and impacts and outcomes should be emphasised.

5.5 SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT

Summary: Warrants further research 

Philliber and colleagues {364} evaluated the impact of a school organisation intervention combining sex-education, support and community volunteering components. The intervention was targeted at adolescents in middle and high schools (aged 11-21 years). An evaluation utilising both randomised controls and matching, revealed a number of positive impacts at the end of this one-year intervention. Students exposed to the intervention demonstrated a decrease in pregnancy rates and improved progress at school (academic achievement and improved conduct). Arrest rates and condom use were also positively impacted. Positive findings from this single study support the importance of further research.

5.6 MENTORSHIP

Summary: Limited investigation 

No studies were found testing the effect of mentorship programs on adolescent sexual behaviour. Mentorship programs targeting sexual behaviour are unlikely to be acceptable.

5.7 PEER INTERVENTION AND PEER EDUCATION

Summary: Evidence for outcomes ★★

In contrast to school based programs, the ‘Mpowerment Project’ is a peer-led community based program that aims to encourage young gay men to encourage each other to promote safe sex {381}. The peer-led program had three components: outreach, small groups (a 3 -hour focus group) and a media campaign and was based on socialising young gay men about safer sex. The results of the intervention in this high-risk group showed that approximately 15% of the young gay men in the community were recruited into a small group discussion. There was a significant reduction in the proportion of men engaging in unprotected anal sexual intercourse from 41 to 30% with no change in the comparison group from another town, after 8 months. The mean age of gay men was 23 years. The program relied on gay volunteers for the peer leaders.

An increasing number of evaluations suggest peer education can be an effective harm reduction strategy in schools. Kvale and colleagues {246} randomised school classrooms in Norway to evaluate the impact of a two-day peer education intervention, involving older peers teaching a formal curriculum. The target for this intervention was upper secondary school students (16-20 years of age). After six months students exposed to this intervention demonstrated no changes in sexual initiation. However, for sexually active participants who received a pre-test questionnaire, condom use increased significantly.

In two studies Stanton and colleagues have studied peer education using natural peer-networks. In one study friendship groups were formed by asking young people aged 9-15 years to identify between four and nine of their same-gender friends, who were within two years of their age {295}. This study targeted African-American, early adolescents (mean age 11.4 years). Friendship groups were randomised either into the intervention or to a control group. After 18 months condom use had increased. A similar study demonstrated impacts on condom use at 6 months, but this wasn’t maintained to 12 months {289}.

Evidence for outcomes

The above studies suggest that peer education programs are being implemented in a variety of settings. Findings suggest positive impacts on intermediary outcomes such as condom use. It remains unclear whether these positive changes translate to longer-term outcomes such as reduction in STDs.

5.8 RECREATION PROGRAMS

Summary: Evidence for implementation ★^{1/1}

Kipke and colleagues {135} evaluated the effect of a sex education curriculum delivered within an after-school recreational setting in New York. The target for this three-session intervention was adolescents aged 12-16 years. Adolescent volunteers were randomly assigned either into the intervention or to a waiting-list. At the 4 week post-test there were no changes in sexual risk-taking behaviours, including condom use. However some positive changes were observed with respect to knowledge and social skills for decision-making, communication and assertiveness.

5.9 HEALTH SERVICE REORIENTATION

Summary: Evidence for implementation ★^{2/7}

5.9.1 School based clinics

School based clinics located on school campuses can provide students with a variety of primary health care services and appear a promising method of reducing adolescent pregnancy and birth rates. Dramatic reductions in birth rates were reported in the early studies from Minneapolis, USA (Edwards et al 1980). More recent reanalysis of the early data suggests that the school based clinics did not significantly reduce birth rate in their respective schools {393}. The low rate of teenage pregnancy in the study area was postulated by the authors as one reason why no significant impact of the clinics was seen. In this context, these clinics may have greater potential in regions with higher teenage pregnancy rates or in more isolated areas. Also, these clinics did not dispense contraception on site, nor did they refer students for terminations of pregnancy.

Other studies confirm that providing contraceptives on site is, of itself, not enough to significantly increase their use or prevent teenage pregnancy {392}; in only 1 of 3 sites were students significantly more likely to use contraception when compared to non-school clinic sites. However condom use rose sharply at one school clinic that had a strong HIV/AIDS program and was located in a community where AIDS was a salient issue.

5.9.2 Condom availability in schools

Other schools have elected to make condoms available even in the absence of a school based clinic. A variety of procedures exist for making condoms more available. Some schools provide condoms through school based clinics, others train teachers, counsellors or peer leaders to provide them, some provide them through dispensing machines. Some schools give parents the option to prevent their son or daughter from receiving condoms while others make condoms available to all without notifying parents. Some schools require students to receive information and counselling before receiving condoms.

Condom availability may increase the use of condoms through a number of mechanisms. First, it may change adolescent norms by increasing their beliefs that other adolescents will use condoms and that using condoms is therefore the right thing to do. It may also improve the availability of condoms for young people. This would require schools to make condoms available with minimal discomfort and embarrassment.

Currently, little evidence exists to support their effectiveness as a sole intervention. As with other sex education, linking condom availability with comprehensive sex education would be likely to increase the effectiveness of condom availability.

5.9.3 Health Service Intervention

A number of evaluations examine modifications to practices within health services. The range of strategies include providing special educational interventions, and outreach to at-risk groups. In general the strategy of brief intervention within health clinics has demonstrated inconsistent impacts on knowledge, and little change in behaviour {137, 290, 373}.

In a more successful intervention, Jemmott and colleagues {271} recruited African-American male adolescents from an outpatient medical clinic in Philadelphia, and other locations. Volunteers were paid to participate one day on a weekend and were randomised to receive either an AIDS prevention program or vocational counselling. After three months participants exposed to the AIDS prevention activities demonstrated less risky sexual behaviour and more condom use.

A nurse outreach program targeting runaway adolescents at risk of contracting HIV/AIDS, demonstrated no effect on sexual abstinence, and no overall impact on risky sexual behaviour 6 months later. Impacts on sexual risk-taking behaviours and condom use were limited to a small select group attending 15 or more sessions {315}.

5.10 COMMUNITY BASED HEALTH EDUCATION

Summary: Evidence for implementation ★^{3/6}

Twelve studies were identified evaluating the use of variants of this strategy. Programs varied in their intensity, ranging from brief information through to the delivery of more structured curricula. In the majority of cases evaluations have been preoccupied with impacts on knowledge and attitudes, but in six cases behavioural outcomes were assessed. Of these six studies, three demonstrated no impacts on sexual risk behaviours or condom use {163, 326, 388}. Three studies demonstrated impacts either increasing abstinence {361}, or decreasing sexual risk behaviours {372, 394}.

5.11 EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION

Summary: Limited investigation 

No studies were found investigating the relationship between employment, and/or training and youth sexual behaviour.

5.12 LAW, REGULATION, POLICING AND ENFORCEMENT

Summary: Limited investigation 

No studies were found investigating the relationship between law, regulation, policing and enforcement and adolescent sexual behaviour. We are aware that law and enforcement are strategies used to prevent sexual exploitation of minors.

5.13 SOCIAL MARKETING

Summary: Warrants further research 

No studies were found investigating the relationship between mass media interventions and adolescent sexual behaviour. We are aware mass media interventions aimed at AIDS prevention have been conducted successfully in Australia. Social marketing combined with alternative health education strategies appear to enhance effectiveness, hence further research would appear warranted.

5.14 COMMUNITY MOBILISATION

Summary: Evidence for outcome ★★

It is likely that no single approach is likely to produce a dramatic impact. However, multiple components in a single school are likely to have a synergistic effect. Various schools have implemented a range of creative schoolwide programs and activities. These include peer counsellors who discuss pregnancy and HIV/AIDS in classrooms with students; dramatic and powerful theatrical presentations; school presentations by young people who are HIV positive or have been pregnant; regular sexual health discussions; surveys on condom availability and ease of purchase at nearby sources; health columns in school newspapers.

In one isolated US community, a comprehensive school and community campaign was implemented and evaluated. Teachers, administrators and community leaders were given training in graduate level sexuality education and sex education was integrated into all school years. Peer counsellors were trained and there was an active school nurse who counselled students, provided condoms and escorted

students to family planning clinics. The local media, churches and other community organisations reinforced the message of avoiding unplanned pregnancy. After the program was implemented, the pregnancy rate for 14- to 17-year-olds declined significantly for several years. During the same period adolescent pregnancy rates rose in three comparison counties that did not receive the program. Later, loss of momentum caused the end of the program: the pregnancy rate then increased {384}.

The program combined many elements theoretically desirable for reducing teenage pregnancy: community outreach and training programs to educate and gain the support of community and religious leaders as well as parents; intensive training courses for teachers and school administrators to prepare them to deal with issues of adolescent sexuality and to incorporate sexuality education into various subject areas; media campaigns to educate and inform the public about the problem, the program and its progress; and training programs to prepare students to be peer counsellors. All this was supplemented by the provision of information, counselling and services from a trusted school nurse.

Teen Outreach {364} is a school based program for adolescents that was originally designed to prevent early pregnancy and to encourage school participation. The program's two main components are a curriculum and the involvement of young people in volunteer community service. The curriculum is not necessarily offered during school hours although is often coordinated through a school. The students meet at least weekly through the school year and engage in small group discussions for at least an hour a week, with the emphasis on developing friendships and connectedness within the group. Volunteer activities vary widely according to each community but students are expected to work a minimum of 1 hour per week.

Evaluation by Philliber, Allen et al {364} of Teen Outreach took place over 5 years at 6 sites. The intervention and comparison samples were not equally matched at the pre-test, and 5 of the 6 sites were not randomly assigned. However, on most years of the study, Teen Outreach students had significantly fewer pregnancies, fewer failed courses, fewer school suspensions and lower rates of drop out than comparison students. The Teen Outreach students also had significantly lower rates than comparison students on half of these negative behaviours when prior risk was controlled. Despite the self-selected samples in all but one year of the study, this is a very positive result. It is however, a very time-intensive intervention to implement.

Sellers et al {385} instituted a community based HIV/AIDS prevention program that aimed to increase the use of condoms among sexually active Latino teenagers. It involved condom distribution in addition to a range of comprehensive school, community and peer interventions over 18 months. The promotion and distribution of condoms did not increase sexual activity. Furthermore, males were less likely to initiate sexual activity during the period of the study.

Evidence for outcomes

Positive evidence for outcomes was obtained for each of the three programs reviewed above. In general there were design problems with each of the studies. However, the studies do provide an indication that effective implementation may be achievable outside a highly controlled research context. Further dissemination of

these approaches will be required in the Australian context to establish their applicability.

5.15 SUMMARY

Despite the limitations in much of the research in this area, evidence exists that some program can reduce unprotected sexual intercourse, either by delaying initiation of intercourse or by increasing use of contraceptives.

- Schools are a promising location in which to reach adolescents.
- There is no single or easy solution.
- Short-term programs are unlikely to impact on adolescent sexual behaviours.

Scarce resources (both curriculum time and money) for programs is a reality. However, spreading resources too thinly by having a broad focus may not be useful. If the primary goal of the program is to reduce teenage pregnancy and STDs, the program should focus on reducing unprotected sexual intercourse. If too many goals are addressed, program effects on unprotected intercourse are likely to be diluted.

- Because of scarce resources (both curriculum time and money), programs to reduce teenage pregnancy and STDs including HIV/AIDS should be integrated into single more comprehensive programs.
- Increasing knowledge, by itself, is not enough. Programs based on social learning theory should involve discussing pressures to engage in unprotected sexual intercourse, model skills and behaviours to resist those pressures, provide practice in those skills and behaviours, and emphasise norms against unprotected sexual intercourse.
- Programs should both encourage adolescents to delay sexual debut while also promoting the use of contraception.
- Programs should be comprehensive. Classroom curriculum needs to be reinforced with school-wide programs such as group discussion, school media, peer programs, and individual counselling as well as strengthening links with community reproductive health services.

6 Crime and Antisocial Behaviour

6.1 CRIME AND ANTISOCIAL BEHAVIOUR

Early adolescence is the age period within which public acts of delinquency and property offending reach a lifetime peak. Statistics for more serious and violent offences reach their lifetime peak shortly later in mid- to late-adolescence (Blumstein and Cohen, 1992). Antisocial behaviour incorporates youth engagement in crime, antisocial acts of violence, vandalism, assaults, bullying, and general patterns of aggressive communication.

Antisocial behaviour has often been examined separately to health compromising behaviours. The tendency to separate these behaviours disguises the extent of common prediction and co-occurrence. Antisocial behaviour imposes social costs in policing, justice, corrections and health costs associated with assaults, accidents, injuries, trauma, and related health compromising behaviours.

Of all the issues examined in the present report, antisocial behaviour demonstrates the strongest link to pre-adolescent predictors. Adolescent antisocial behaviour has been shown to demonstrate a strong continuity with externalising behaviour problems in childhood. There are particularly important opportunities for pre-adolescent intervention in the crime prevention field.

Although many studies have demonstrated a continuity in risk between childhood and adolescence, studies that have longitudinally followed children typically find a large group of youth engaged in antisocial and delinquent behaviour who did not evidence childhood behavioural problems (a key indicator of childhood risk). The risk process underlying this phenomenon of “adolescent onset” offending is not well understood, but is believed to arise through risk factors such as adolescent rebelliousness, parent-adolescent conflict, weak family attachment, and antisocial behaviours amongst peers.

Longitudinal studies provide an opportunity to study a further phenomenon of interest to developmental crime prevention, namely the modification of childhood risk trajectories during adolescence. A number of youth exhibiting stable childhood behaviour problems do not proceed to delinquent adolescent behaviours. The mechanisms underlying these resiliency processes need to be better understood if they are to be applied more widely.

The purpose of the present review is to examine the evidence relevant to the prevention of antisocial behaviour in adolescence. In common with behavioural interventions relevant to substance use, crime prevention aims both to prevent initiation to particular classes of antisocial behaviour and also to prevent escalation from minor delinquency to more serious categories of offending. Prevention activities may also aim to prevent offending becoming criminal justice contact. In what follows evidence relevant to a range of adolescent-focussed intervention strategies is reviewed.

The material presented below borrows heavily from accounts of risk-focussed crime prevention summarised by Brewer, Hawkins, Catalano & Neckerman, (1995). In overview, adolescent crime prevention initiatives have demonstrated a great deal of innovation and have tended to target a broad range of risk and protective factors. In what follows intervention strategies are reviewed according to their placement within the family, school, peer, individual or community.

6.2 *PARENT TRAINING*

Summary: Evidence for dissemination ★ ★ ★

Evidence from large Australian community studies such as the West Australian Child Health Survey and the Australian Temperament Project support the conclusion that the large majority of Australian parents have incorporated positive behavioural principles into their child-rearing practices. The prevalence of physical punishment appears low amongst Australian parents. Despite much promising progress in parenting children there appear to be gaps in support services for parenting adolescents. The Victorian Parenting Centre has recently identified the parenting of adolescents as an area of educational demand.

Through the adolescent period both parents and adolescents are challenged to make changes. Increased choice and responsibility are required of the adolescent while parents must gradually relinquish control. Parents are often challenged in identifying an appropriate balance between maintaining supervision and decreasing direct control. Adequate parental monitoring and supervision through this period appears to be important both for providing access to pro-social activities and also for mediating association with delinquent peers. Skills for communication become increasingly important for parents and adolescents through this period. Where parent-adolescent bonding can be maintained and parent-adolescent conflict decreased adolescent involvement in antisocial behaviour and substance abuse appear to be reduced {502}.

In Australia one of the most widely utilised programs for supporting parents is the Triple-P, Positive Parenting Program. Though the Triple P program has evidence for its effectiveness in reducing childhood behaviour problems (Sanders, 1999), it was not designed to address adolescent behaviour problems.

Evaluation of the delivery of the PACE program (Parenting Adolescents a Creative Experience) within Australian secondary schools revealed the program significantly reduced transition to delinquent behaviours within a national sample of Year 8 adolescents {502}. Evaluation suggested outcomes for this program were associated both with reductions in adolescent-family conflict and with attenuation in feelings of detachment from the family.

In many families adolescence can represent a disjuncture where seemingly adjusted children may demonstrate behaviour problems and difficult child behaviour may escalate to offending and crime. In these cases selected interventions may be required to encourage more assertive limit setting and changes in family management strategies

Tom Dishion and colleagues {303} from the Oregon Social Learning Centre (OSLC) reported a small study evaluating a variety of selected interventions

targeting adolescents who had demonstrated behavioural problems in childhood. Externalising behaviour problems were measured using both videotaped interactions and mother reports on the Child Behaviour Check List. Findings demonstrated that in conditions where parents had participated in the intervention, improvements in adolescent behaviour were observable at the post-test. Improvements in adolescent behaviour were not maintained, however, in cases where adolescents had also been exposed to an adolescent peer group intervention. The adolescent condition was believed to have increased peer association and problem behaviour associated with deviant peer norms.

Much of the research examining parent intervention focuses on efforts to prevent escalation or persistence in problem behaviours. Banks and colleagues {404}, also from the OSLC, utilised official offence and incarceration data to examine the effect of parent training based on social learning principles. Adolescents younger than 16 who had at least two previous convictions were the indicated target for this intervention. Parent training was found to produce quicker reductions in offending and reduced reliance on incarceration compared to standard juvenile justice contact in this small trial.

In another small scale, indicated intervention, Hughes and Wilson {402} used a waiting-list control design to evaluate the impact of two behavioural parent management strategies, contingency management and communication skills training. This was an Australian study. Families referred for childhood conduct problems by the Department of Community Services, local community health centres and the Children's Court of New South Wales received services through a community agency. The average age of the children was 12.1 years. Contingency management appeared superior to other conditions when success was based on clinical criteria for behavioural improvement. The presence versus absence of the child did not appear to impact effectiveness. Findings from this study support other research conducted in schools (see below) suggesting the use of behavioural contingency management can provide an effective strategy for reducing conduct problems in early adolescence.

Evidence on implementation

Universal programs such as PACE directed at supporting the parents of adolescents have been developed and appear to represent practical strategies for implementation in Australia. These programs aim to encourage improvements in parent-adolescent communication and bonding. As conduct problems are known to escalate in adolescence there are opportunities for selected interventions through this period. The paper by Hughes and Wilson {402} demonstrates that behavioural interventions are being effectively implemented in Australia.

Evidence on outcomes

The PACE program appears to be well-designed and receives strong consumer and professional support. Recent evidence also suggests the program can have an impact on the transition into adolescent delinquency {502}. Longer-term outcomes from this program are as yet unknown. There is consistent evidence that adolescent conduct problems can be reduced using behavioural parent management strategies. Though studies to date have been small, there appear to be benefits for these

approaches both applied to selected parents with conduct disordered adolescents and also with convicted youth offenders.

Evidence on dissemination and cost-effectiveness

Within Australia there are a number of professionals trained in the delivery of effective behaviour management techniques and these programs are successfully run in non-research contexts. The national dissemination of the PACE program was coordinated by non-researchers working under a government contract and involved collaboration between Jesuit Social Services, Centacare and Anglicare (Jenkins, 1999). Banks and colleagues {404} present evidence to support the economic advantages of indicated parent training using behavioural techniques. An investment averaging 44 hours of professional contact yielded savings estimated at over \$US100,000 over three years.

6.3 FAMILY INTERVENTION

Summary: Evidence for outcomes ★★

Although there are several kinds of marital and family therapy, the diverse approaches share a focus on changing maladaptive patterns of family interaction and communication. Through the adolescent phase marital and family therapy typically involves a trained therapist working with the adolescent and one or other family members.

Family mediation is a potentially effective family therapy strategy used in Australia to tackle family conflict. No evaluations were located relevant to the use of this strategy for families that include adolescents.

Family therapy is often approached reluctantly by government due to perceptions of undefined length and expense. However, a great deal of work has been done to better quantify the investment and benefits associated with family therapy. Functional Family Therapy (FFT) provides an example of a readily taught family counselling program involving as little as eight hours of therapist contact with good evidence for beneficial reductions in juvenile justice expenditure. Alexander Holtzworth-Munroe and Jameson, (1994) review the evidence for FFT. In brief the program has demonstrated evidence as a strategy for reducing re-offending amongst voluntary and court-mandated adolescent offenders. The program has also been demonstrated to prevent offending amongst the younger siblings of targeted offenders.

Henggeler and colleagues {399} {400} {401} evaluated their Multi-systemic Treatment program (MST), an indicated intervention for serious juvenile offenders. MST attempts to extend family systems principles by combining effective intervention strategies to enhance competence, tackle peer relationship issues and to ensure access to work, education and community resources. Exposure to MST reduced offending and re-arrests {400} relative to usual juvenile justice practices. MST appeared more effective than individual counselling {401} in reducing antisocial behaviour for serious adolescent offenders.

Evidence on implementation

Australia now has an emerging tradition for innovative and egalitarian family therapy. The Narrative Therapy approaches are one of many that have emerged with a strong Australian flavour. There appears to be growing acceptance of the benefits of family therapy interventions in Australia. In the US family therapy approaches have been successfully implemented as selective and indicated interventions for adolescent offenders.

Evidence on outcomes

A relatively large body of research indicates that family therapy is an effective intervention for reducing adolescent antisocial behaviour. Although a variety of innovative family therapy programs operate in Australia, well-controlled evaluations of local innovations are lacking.

Evidence on dissemination and cost-effectiveness

Despite strong consumer and professional endorsement, rigorously controlled evaluations of Australian family therapy interventions are rare. Without this type of information evidence for effectiveness tends to rely on overseas experience. Linking Australian program descriptions to elements that have been demonstrated to be effective in overseas trials is one strategy for ensuring quality in dissemination. Controlled evaluation of particularly innovative Australian programs would contribute to further enhance practice in this area. The evidence for cost-effectiveness of selective programs such as FFT is now substantial. Investment to support the cultural adaptation of this apparently cost-effective strategy would appear warranted.

6.4 CONFLICT RESOLUTION AND VIOLENCE PREVENTION CURRICULA

Summary: Evidence for outcomes ★★

Conflict resolution and violence prevention curricula have the common aim of reducing risk factors for antisocial behaviour by modifying attitudes, skills and relationships.

In their summary Brewer et al (1995) identified a number of violence prevention programs delivered to adolescents, but in no case did evaluations employ randomised allocation of controls. Each of the programs selectively targeted schools in communities with high rates of crime. In two programs early secondary school students were included in programs also targeting primary school students. Programs typically involved between 13 to 18 lessons focussing on active learning of social problem-solving skills. In Second Step improvements were observed in hypothetical conflict resolution. In one case (Positive Adolescents Choices Training) teachers reported behavioural improvements. However, as many of the teachers providing these ratings had also delivered the intervention, the potential for bias was high.

Gainer and colleagues (2000) evaluated a violence prevention curriculum delivered to fifth grade students in two inner-city Washington D.C. elementary schools and three classes of seventh grade students at an inner-city Washington D.C. junior high school. A non-experimental comparison design was used to examine impacts following exposure to the program. By Grade 7 improvements were observed in

skills for hypothetical conflict resolution, however changes in antisocial behaviour were not tested.

Farrell and Meyer {397} evaluated a violence prevention curriculum delivered to schools with a high proportion of African-American students. Sixth-graders in six schools were exposed to an 18-session curriculum that included sessions dealing with building trust, respect for individual differences, the nature of violence and risk factors, anger management, personal values, precipitants and consequences of fighting and non-violent alternatives to fighting. A non-experimental waiting-list design was used to evaluate the program. At six-month post-test boys exposed to the curriculum demonstrated reductions in self-reported frequency of becoming a perpetrator and/or victim of violence. These effects were not observed for girls.

Shechtman and Nachshol {321} evaluated a violence prevention curriculum selectively targeted to students (aged 13-16 years) in special schools. This two year program, based partly on psychodynamic principles, demonstrated some inconsistent evidence for impacts on aggressive behaviour. Reduction in aggressive behaviour were reported at a 4-week post-test as were improvements in skills. The intervention also appeared to positively impact beliefs about violence.

Lochman {139} used a small non-randomised matching design to evaluate the effect of a selective intervention focussing on skills for anger management. This relatively intensive strategy demonstrated some positive outcomes for a population of targeted aggressive male students. Improvements in social, coping, and problem-solving skills were observed following intervention. Initiation to drug and alcohol use also appeared to have been reduced three years later in the group taught anger-coping strategies.

In an Australian study Bretherton, Collins, and Ferretti {499} tested the impact of a conflict resolution curriculum for adolescents called *Dealing with Conflict*. The curriculum consisted of activities to build participants' group cohesion, trust, respect for one another, self-esteem, and self-disclosure. Lessons also reviewed barriers to communication, causes and types of conflict, and ways to resolve conflict, especially by using assertiveness. Trained teachers held weekly 1-hour sessions in the classroom for 10 weeks. Classes were drawn from three Melbourne secondary schools. Evaluation was based on non-experimental matching. One Year 9 and one Year 10 were designated as experimental classes, and one Year 10 was designated as a comparison class. Students in both classes were approximately 15 years old, and most came from working-class, immigrant families. Pre-tests were conducted 3 weeks before the curriculum began, and post-tests were administered 1 week after the curriculum ended. Students' responses at each measurement demonstrated intervention students were less likely to perceive hypothetical social conflict situations in a hostile way or to self-report aggressive behaviour. There were no significant differences between groups, however, in their attitudes toward violence and aggression or on other problem-solving and cognitive measures. Slight age differences between the experimental and comparison students might have contributed to the significant findings.

Magowan {144} reported a program aiming to promote knowledge and attitudes relevant to dating violence in early secondary school students. The evaluation

utilising randomised assignment demonstrated changes in knowledge and attitudes, but did not investigate behaviour.

Evidence on implementation

Violence prevention and conflict management curricula have been successfully developed and trialed in a number of studies including one reported by Bretherton and colleagues in Melbourne. Brewer and colleagues in their review (1995) note that many of these programs have inadequately targeted attitudes to violence that may be of particular importance from a prevention perspective. Although selective interventions have been developed, there appear to have been no evaluations of universal interventions.

Evidence on outcome

Generally the evaluation designs reported to date have not been methodologically strong and hence the outcomes of these programs remain open to question. The weight of evidence does, however, demonstrate a consistent pattern of positive impacts. Impacts include improved skills for tackling hypothetical conflict situations, and in some cases reductions in measures of violent behaviour. Prior to wider dissemination, further investment in rigorously controlled research will be required to better establish effectiveness and longer-term outcomes.

6.5 SCHOOL ORGANISATION

Summary: Evidence for implementation ★^{2/2}

The school policies and practices relevant to discipline and other issues, relationships with families and organisational links with other systems are all important school-level factors influencing adolescent adjustment.

6.5.1 Organisational and classroom changes in secondary schools

One element of school organisation that appears of particular importance for preventing antisocial behaviour are policies and practices relevant to bullying and aggression within the school. Olweus's (1991) evaluation of a multi-component anti-bullying program presented evidence of significant reductions in violent and delinquent behaviour.

An important element of the school environment relates to classroom instructional practices. Efforts to modify classroom practices have been evaluated in the Seattle Social Development Project (SSDP). The SSDP aimed to modify practices in Year 7 classrooms in order to impact risk processes for later youth antisocial behaviour. The evaluation of the SSDP utilised a true experimental design. In three middle schools, entering seventh-grade students, were randomly assigned to experimental and control classrooms. Teachers also were randomly assigned to experimental and control classrooms. Furthermore, one additional middle school was designated as a full experimental school, and another as a full control school. The intervention focussed on training teachers to employ more effective classroom management and instruction program components in combination with a social competence curriculum and parent training.

After one year of exposure to the SSDP, Year 7 experimental students showed significant increases in bonding to school relative to controls. This effect held for low-achieving students as well. In addition, low-achieving experimental students, relative to low-achieving controls, had significantly smaller increases in school suspensions and expulsions. However, there were no significant differences between experimental and control students in academic achievement or delinquent and violent behaviour following the one-year intervention in Year 7.

Evidence on implementation

School organisation interventions are noteworthy for their comprehensiveness and system-oriented prevention approach. Despite the requirement for coordination across a range of sectors there is evidence from Olweus that these programs can be implemented effectively.

The Seattle Social Development Project appears to have been effectively implemented by the original study team. The program is currently being repeated together with an extensive evaluation in Edmonds (a city to the north of Seattle). In common with other family programs, the Seattle project reported relatively low rates of parental participation. Retention of students for post-program evaluation activities has been high, however.

Evidence for outcomes

Evidence is weak for the strategy of modifying secondary school organisations to reduce delinquency and violence. Although Olweus's (1991) evaluation of a multi-component anti-bullying program presented evidence of significant reductions in violent and delinquent behaviour, this study was not well controlled. Further evaluations should use more rigorous designs and include thorough data analysis.

Evidence for dissemination

Olweus's (1991) evaluation was, in fact, an example of a large national dissemination trial. In the presence of more rigorous evidence for outcome there would be some basis to predict that this type of strategy can be disseminated.

6.6 SCHOOL BEHAVIOUR MANAGEMENT

Summary: Evidence for outcomes ★★

Brewer et al (1995) review a range of behaviour management methods that have been evaluated for use with secondary school age students. In general these programs have been targeted at youth demonstrating specific behaviour problems including irregular school attendance and disruptive behaviour. However, some programs have incorporated more universal targets.

Although targeted programs will not be examined in any length in the present document, it is noteworthy that evaluations have demonstrated promising outcomes for a number of these approaches. Two evaluations utilising true experimental designs suggest contingency management approaches can improve outcomes for secondary school students demonstrating specific problem behaviours. Brooks (1975) demonstrated that by supplementing existing school management procedures with a behavioural contracting-reward program significant reductions in school absences were achievable amongst truanting high school students. Bry (1982) demonstrated that a professional assistance program incorporating behavioural feedback and contingent rewards targeted at low-achieving, disruptive, seventh-grade students, evidencing low bonding to their families reduced school behaviour problems, post-school substance abuse and crime. There is also some evidence from a less rigorously controlled intervention (e.g., Trice, Parker, and Safer, 1982) that special education placements incorporating behavioural principles may enhance academic achievement, attendance, and school behaviour among disruptive secondary school students.

Behavioural reinforcement has also been incorporated into more universally focussed programs and these approaches will be examined in more details in what follows. Mayer, Butterworth, Nafpaktitis, and Sulzer-Azaroff {501} evaluated a selectively targeted intervention for Grade 4 to 8 students with below-average

reading ability and above-average disruptive, non-attentive behaviour. The evaluators used a delayed intervention control group design. Eighteen elementary and junior high schools from 12 school districts in Los Angeles County participated in the study, with nine schools randomly assigned to the experimental group (Group 1) and nine schools randomly assigned to the control group (Group 2). Group 1 schools received the program for 3 continuous years and Group 2 schools received the program for the second and third years. In addition to the two teachers in each school who participated in the program teams, two other “barometer” teachers in each study school were selected at random to measure possible “spillover” effects of the program schools. Project staff made no deliberate attempt to consult with these teachers. Six low-achieving and disruptive students in classrooms of each of the team and “barometer” teachers were randomly selected to be observed at regular intervals during the project. Each year, behavioural observations were made in late autumn, winter, and late spring. By the third year, four schools dropped out of the program from Group 1 and three schools dropped out of the program in Group 2. Team teachers and teachers in the same school in non-intervention classrooms significantly increased their use of positive reinforcement in the classroom after the program was in place and maintained these improvements in following years of the project. Following initiation of the program, significantly more experimental (6/9) than control schools (1/9) reduced their vandalism costs in the first project year. A similar decrease appeared when the program began for Group 2 schools in the second project year. In comparison to baseline levels, vandalism costs (adjusted for school size) decreased in project schools by 79% on average during the years that the program was in place. Relative to controls in Group 2 schools, experimental students in Group 1 schools significantly decreased their disruptive and off-task behaviour after the program was in place. Program effects on student behaviour were maintained in following years of the project.

Evidence on implementation

Although behavioural management approaches appear to have been effectively utilised in US schools, these approaches do not appear to be widely utilised within Victoria.

Evidence on outcomes

There is now good evidence that behavioural management is an effective strategy for the management of behaviour problems within the secondary school.

Evidence on cost-effectiveness and dissemination

Mayer et al {501} reported difficulties enlisting schools and there were very high drop-out rates from schools initially agreeing to be involved in the behavioural program. The practical potential for wider dissemination of these strategies remains unclear.

6.7 PEER MEDIATION

Summary: Evidence for implementation ★^{0/2}

Peer mediation programs involve active efforts through counselling and other interventions, to introduce non-violent techniques for the resolution of peer

conflicts. The programs aim to improve peer relationships and to discourage attitudes favourable to aggressive conflict resolution. Existing reports suggest peer mediation programs have been effectively implemented within secondary school environments. These programs appear to be popular on the part of students and teachers. Brewer et al (1995) reviewed evidence from two well-controlled studies examining the implementation of peer mediation programs within secondary schools. In both cases programs were shown to have revealed no significant differences relative to control conditions. One problem with the existing evaluations has been that they have not reported levels of peer conflict and disharmony prior to intervention. It is possible that the lack of effects may have been due to programs having been implemented in relatively harmonious school environments. The available evidence is inconclusive concerning the outcome of peer mediation programs.

6.8 PEER EDUCATION

Summary: Warrants further research



Peer education is an increasingly popular approach in Australia for conveying information amongst students regarding problems such as bullying and harassment. The approach appears to be popular with students, school staff and other members of the school community but there has been little research. Gottfredson (1987) reviewed research relevant to peer counselling, an approach which typically involves an adult guiding group discussions in which youth discuss problems with their attitudes and behaviours. The available evidence suggests this approach has either no impact or negative impact on delinquency or associated risk factors such as school bonding. As used in Australia peer education programs typically involve training for peer leaders who provide support and assistance to students. We were unable to locate research evaluating these approaches. Further research would appear warranted.

6.9 MENTORING

Summary: Evidence for implementation



Mentoring programs typically involve non-professional volunteers spending time with individual youth in a supportive, non-judgemental manner while acting as role models. Brewer and colleagues (1995) report that the evidence from the 10 available evaluations consistently indicates that non-contingent, supportive mentoring relationships do not have desired effects on outcomes such as academic achievement, school attendance, dropout, various aspects of child behaviour (e.g., misconduct), or employment. This lack of demonstrated effects has occurred whether mentors were paid or unpaid and whether mentors were college undergraduates, community volunteers, members of the business community, or school personnel. However, when mentors used behaviour management techniques in one small, short-term study, students' school attendance improved. This is consistent with the earlier reported findings from studies of school behaviour management interventions. In another larger, longer-term experimental evaluation by the same researchers, unspecified mentoring relationships significantly increased delinquency for youths with no prior offenses but significantly decreased recidivism for youths with prior offenses. However, more evaluations with randomised designs are needed to test these preliminary conclusions about mentoring.

6.10 COMMUNITY BASED EDUCATION

Summary: Evidence for implementation ★^{2/2}

Statistics suggest that sexual violence associated with dating is elevated amongst post-secondary school youth. Schewe and O'Donohue {294} evaluated a brief cognitive intervention to prevent rape perpetrated by male undergraduates. Males scoring high on a rape screening questionnaire were selectively exposed to brief cognitive-behavioural interventions. Males randomly assigned to the intervention demonstrated a reduction in rape congruent attitudes and beliefs at the end of this 50-minute intervention.

Graves and colleagues {327} evaluated the impact of an eight-week social skills training program delivered to male sex offenders (aged 12-19 years) referred to a sexual abuse treatment centre in Utah. A small study based on random assignment of 30 offenders demonstrated some improvements in social skills and self-concept. Depressive symptoms and externalising behaviour problems also demonstrated some reduction one week after the intervention.

Indicated interventions are also being reported for other categories of crime. Kooler and Bruvold {330} evaluated outcomes from a community education program run by probation officers targeted to drink-drive offenders aged under 18. The intervention was conducted over three days, and largely involved information dissemination, but did include some teaching around refusal skills. At the end of the intervention participants demonstrated less favourable attitudes to drink-driving and improved knowledge of the law. On the basis of temporal and non-experimental comparisons drink-driving offences appeared to have been reduced amongst participants 1-2 years later.

Evidence for implementation

The available evidence provides some indication that information and education programs can be delivered within a range of settings outside secondary schools. These strategies typically involve targeting particular offences and less often emphasise a more global curriculum.

Evidence for outcomes

The small amount of research in this area provides some promise but has not yet been sufficiently extensive to warrant confident conclusions about outcomes.

6.11 EMPLOYMENT AND TRAINING

Summary: Evidence is contra-indicative ☒

Vocational training and employment programs are primarily intended to increase youth employment and participants' earnings, although secondary program objectives frequently include the improvement of participants' social and educational functioning.

Evidence on implementation

Youth employment and training programs were generally able to recruit participants successfully from hard-to-reach, high-risk populations.

Evidence on outcome

Vocational training and employment programs tend to be large-scale interventions, and evaluation of these programs tend to be of high quality. Of the programs reviewed by Brewer et al, (1995) impacts on employment and earnings outcomes were typically positive, although the effects tended to last only for short-term periods during and immediately after the program. Substantial improvements on educational outcomes appeared only when the program included a significant educational component. However, programs for secondary school students that replaced academic instruction with vocational training did not significantly improve educational outcomes. Available evaluation evidence suggested vocational training and employment programs do not have a large impact on crime prevention (Brewer et al 1995). In support of Brewer and colleagues' conclusion Minor and Elrod {339} found no effect for a vocational training and employment program targeted to youth on probation.

6.12 LAW, REGULATION, POLICING AND ENFORCEMENT

Summary: Warrants further research 

6.12.1 Laws and Policies

A variety of institutions and a range of State and Commonwealth legislation is directed at preventing or limiting the impact of youth crime. Law and procedure relevant to juvenile justice, mandatory reporting of physical and sexual abuse and gun ownership provide three examples with potential impact on youth health and behaviour.

In Victoria special legislation and legal institutions govern the practice of law as it applies to children and youth. A number of aspects of juvenile law and procedure are designed to recognise the vulnerability and particular developmental requirements of youth.

Mandatory reporting laws apply to particular professional groups and demand official registration of particular categories of emotional, physical or sexual abuse. The aim of this legislation is to reduce the victimisation and exploitation of children and young people.

In 1997 Australia enacted national laws with the goal of reducing firearm violence. These laws aimed to restrict the sale, purchase and transfer of guns, regulate the place and manner of carrying firearms and improve firearm training and restrict firearm ownership.

Evidence on implementation

The present review was not able to explore the implementation of juvenile justice or mandatory reporting laws. It remains unclear to what extent national gun ownership laws are complied with.

Evidence on outcome

The present review was not able to establish the impact of Victorian juvenile justice law and procedure. The effect of mandatory reporting on sexual victimisation of young people is unknown. Brewer et al (1995) reviewed evidence suggesting legislative regulation of the availability of guns was associated with reductions in violent crime. Specialised research directed at reviewing and evaluating the relationship between law, legal procedure and adolescent health and behaviour should be accorded some priority.

6.12.2 Policing Strategies

Community policing has emerged as an increasingly important area of activity. These approaches typically involve an explicit focus on enhancing community contact and the aim of introducing community crime prevention initiatives. The sophistication and respect for this area of policing appears to be increasing. For adolescents police play an important role mediating contact with the legal system and playing a potential role in diverting youth from escalating problem behaviours.

Evidence on implementation

Police policies relevant to community policing are often not well-informed and co-ordinated with broader community development themes. Traditional policing cultures have emphasised a punitive attitude toward offenders and hence attempts to reform policing practices sometimes encounter implementation difficulties at the operational level.

Evidence of outcome

Brewer et al (1995) review positive findings for intensified motorised patrols by helicopter and marked cars during high-crime times in high-crime, densely-populated areas. In the US context this strategy appears to be effective in preventing various types of serious crime. The related practice of field interrogation also may be a potentially promising crime prevention tactic. Findings suggest that increased police presence must be judiciously directed at high-risk times, areas, and people to deter crime. Simply increasing the number of police is not likely to prevent crime.

In general, community policing interventions have been associated with decreases in residents' perceived crime and fear of crime and, in many cases, improved evaluations of the police. In spite of these changes in perceptions of crime, the police, and the neighbourhood, community policing evaluations have demonstrated inconsistent preventive effects on crime itself (Brewer et al 1995).

6.13 SOCIAL MARKETING

Summary: Warrants further research



A number of social marketing campaigns have been conducted in Australia aimed at changing community attitudes toward crime and particular categories of offending. Social marketing campaigns have been conducted to encourage reporting of crime (e.g., Crime Stoppers), reporting of sexual abuse, and to encourage compliance with gun control legislation. The Commonwealth is currently conducting a domestic violence prevention campaign. The present study was unable to identify research evaluating the impacts of social marketing campaigns aimed at crime prevention. This area represents an important area of expenditure, and investment in rigorous evaluation would appear warranted.

6.14 COMMUNITY MOBILISATION

Summary: Evidence for implementation



Community mobilisation strategies encompass a diversity of programs that seek to prevent crime and violence by organising grassroots efforts. The Commonwealth Crime Prevention Strategy is currently exploring rural community development initiatives that have as their focus the prevention of violence. The impact of these programs has yet to be evaluated. To date, only two kinds of community mobilisation approaches to crime and violence prevention have been evaluated: Neighbourhood Watch and citizen patrols. Neighbourhood Watch programs are based on the rationale that residents are in the best position to monitor suspicious activities and individuals in their neighbourhood. Social connections among residents made as a result of block watch meetings may also facilitate neighbourhood monitoring and communication about suspicious events.

Evidence on implementation

Neighbourhood Watch programs have been adopted and maintained by Victoria Police for some time. Victoria Police have also trialed programs such as the Police Consultative Committees. In general the extent of community participation in these programs tends not to be high.

Evidence on outcomes

The three controlled evaluations of block watch programs did not produce evidence of significant effects on crime in experimental neighbourhoods. The only available evaluation of a citizen patrol also failed to demonstrate a significant preventive effect on crime (Brewer et al 1995).

6.15 SUMMARY

A wide variety of adolescent health promotion strategies have been utilised to prevent initiation and/or escalation in adolescent antisocial behaviour. The review in this section included targeted strategies but suggests a surprising capacity to prevent long term outcomes particularly through strategies involving families and schools.

7 Adolescent Depression

7.1 *ADOLESCENT DEPRESSION*

Adolescent depressive symptomatology has robust risk relationships with a range of health risk behaviours. These include suicidal behaviour, tobacco use, alcohol abuse and sexual risk-taking behaviour. For the most part these relationships follow a linear trend, with risk increasing progressively with level of depression. This pattern of risk relationship suggests that a preventive/health promotional strategy which reduces depressive symptomatology could have broad benefits on a range of adolescent health outcomes.

The most common strategy for prevention of adolescent depression has been to extend treatment approaches to young people already manifesting some depressive symptomatology (indicated prevention). Typically these programs have entailed questionnaire screening of school students, identification of those reporting higher levels of depressive symptoms and offering an intervention based on cognitive-behavioural principles {e.g., 426}. The evidence for the feasibility and effectiveness of this approach, together with more traditional clinical approaches is currently weak.

7.2 *PARENT TRAINING*

Summary: Warrants further research



No studies were found testing the effect of parent training on youth depression. Work by Lochman and others associated with the emotional competency movement, suggests the existence of a potentially important role for parenting in teaching skills for tackling depression.

7.3 *FAMILY INTERVENTION*

Summary: Warrants further research



No studies were found testing the preventive impact of family intervention on youth depression. Studies such as the West Australian Child Health Study suggest that sole parent family status and family conflict may play an important role in youth mental health. Family intervention programs are being trialed in other areas of adolescent health promotion and warrant further research attention.

7.4 *SCHOOL BASED HEALTH EDUCATION*

Summary: Evidence for implementation - ★^{1/2}

Clarke, Hawkins, Murphy and Sheebet, (1993) described two small universal interventions delivered in one middle school and two suburban high schools. Ninth and Tenth Grade adolescents in both study 1 and study 2 were randomly assigned by health class to either intervention or control. The first intervention delivered in 25 health classes took place over three sessions and consisted of education about depression and encouragement to seek treatment and increase pleasant activities. The intervention group consisted of 361 subjects, while the control group consisted of 261 subjects, although details of initial response rates were not given. The

second intervention examined a behavioural skills training intervention delivered in 14 health classes. A similar design was used with 190 students allocated to either intervention or control groups. The intervention consisted of 5 health classes addressing symptoms of depression, training in increasing pleasant experiences, charting the relationship to mood and strategies to increase the frequency of pleasant experiences. No significant differences were found in depressive symptoms measured on the CES-D scores at 12-week follow-up for either intervention.

Rice and Meyer (1994) examined the feasibility of a psycho-educational intervention for use in younger adolescents. The intervention consisted of 16 small group sessions led by post-graduate students. Delivery rates were high (12/group) and 73% of participating students attended 10 or more sessions. Mental health outcomes were not reported.

Klingman & Hochdorf (1993) similarly examined the feasibility of a cognitively based psycho-educational program in 237 13-year-olds in one US school. The intervention was administered by psychologists/school counsellors after a 3-hour training and was administered over seven sessions. Assessment immediately after completion indicated some positive changes in coping strategies. Perceptions of the program by participants were positive but no other measures of process were reported. No longer-term findings were reported.

Evidence on implementation

No comment was made in Clarke's study (Clarke, Hawkins, Murphy & Sheebet, 1993) on participation or delivery rates in the educational intervention group. Compliance ratings of the teachers' use of a structured manual by observers was 86% suggesting that teachers have the capacity to deliver an intervention of this kind. Together with the evidence from Rice and Meyer's study (1994) it suggests that interventions of this kind, whether delivered by teachers or health professionals may achieve a reasonably high uptake rate. The capacity of teachers to deliver a longer or more complex intervention remains unexplored.

Evidence on outcomes

The available studies were of a small size and as a result were only able to detect extremely strong effects. The possibility of contamination between school classes has been a major flaw in all evaluations. So far there is no evidence of positive effects from school based health educational interventions though there have arguably been no adequate tests of its potential efficacy.

Evidence on cost-effectiveness and broader implementation

No data on cost-effectiveness or broader implementation are available. The use of teachers for implementation raises a possibility of a low-cost intervention but the training requirements and subsequent costs for undertaking this type of intervention are not clear.

Implications for research

There are sound epidemiological reasons for considering universal prevention strategies focusing on depressive symptoms. To date, no adequate universal intervention for depressive symptoms has been implemented and trialed. A successful intervention to reduce the prevalence of depressive symptoms during adolescence should have the capacity to reduce later rates of suicidal behaviour. This stands out as an important area for program development, research and evaluation.

7.5 SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT

Summary: Evidence for implementation - ★^{0/1}

The Victorian Gatehouse Project is examining the effect of school organisational intervention on youth depression and mental health. The study has provided evidence that this strategy can be implemented but early evidence has not yet demonstrated an impact on mental health (Glover, Burns, Butler & Patton, 1998).

7.6 MENTORSHIP

Summary: Limited investigation 

No studies were found testing the effect of mentorship programs on youth depression. It remains unclear what role such programs might play.

7.7 PEER INTERVENTION AND PEER EDUCATION

Summary: Limited investigation 

No studies were found testing the effect of peer education programs on youth depression.

7.8 RECREATION PROGRAMS

Summary: Limited investigation 

No studies were found testing the effect of recreation programs on youth depression.

7.9 REORIENTATION OF HEALTH SERVICES

Summary: Limited investigation 

No studies were located investigating the effect of health service reorientation on youth depression.

7.10 COMMUNITY BASED HEALTH EDUCATION

Summary: Limited investigation 

No studies were found investigating the relationship between community based health education and youth depression.

7.11 EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION

Summary: Warrants further research 

No studies were located investigating the relationship between employment and/or training intervention and youth depression. We are aware of Australian epidemiological data linking youth unemployment with deterioration in mental

health and re-employment with improvement (Morrell, Taylor, Quine, Kerr & Western, 1994). Research in this area would appear warranted.

7.12 LAW, REGULATION, POLICING AND ENFORCEMENT

Summary: Limited investigation 

No studies were found investigating the relationship between law, regulation, policing and enforcement on youth depression.

7.13 SOCIAL MARKETING INTERVENTIONS

Summary: Evidence for implementation ^{0/1}

Media approaches to depression have commonly focused on changing attitudes to mental illness to reduce stigma and produce more positive and tolerant attitudes to those with mental illness. Barker et al (1993) examined the effect of broadcasting seven 10-minute television programs once weekly over a two-month period. Respondents were 1040 adults assessed before the series and twelve months later. Only 5% of young people aged 16-25 viewed the programs. Self-reported reactions included trying new ways of tackling problems (45%), talking to someone new about problems (22%) and trying new ways to cope with someone else's problems (36%). No direct mental health measures or measures of self-harm were included.

7.14 COMMUNITY MOBILISATION

Summary: Warrants further research 

No studies were located investigating the effect of community mobilisation on youth depression. The impact of community mobilisation in other areas relevant to adolescent mental health suggests research is warranted to investigate the application of this strategy to depression.

8 Adolescent Suicidal Behaviour

8.1 *ADOLESCENT SUICIDAL BEHAVIOUR*

Clinical approaches have dominated responses to adolescent suicidal behaviour. Such approaches have included:

- screening programs based on self-report questionnaires where individuals at high risk by virtue of depressive symptomatology and/or suicidal ideation are identified for further intervention
- interventions with suicide attempters to promote cognitive skills relevant to dealing with emotional difficulties (Rudd et al 1996)
- promoting ongoing access to services to youth who have recently engaged in suicidal behaviour {346,167}

The evidence for the effectiveness of clinical approaches to adolescent suicidal behaviour is scant.

8.2 *PARENT TRAINING*

Summary: Evidence for implementation ★^{1/1}

In 1998 the Commonwealth Youth Suicide Prevention Strategy funded a range of demonstration projects directed at preventing youth suicide by reducing parent and family risk factors. In one study funded through this round parent training was targeted to the first two years in secondary schools. An evaluation compared 13 schools targeted for parent education with a matched sample of 15 control schools. After three months evaluation suggested a number of risk factors for youth suicide had been reduced. The target school parents reported a reduction in conflict with their adolescents and a trend toward increased satisfaction and confidence as parents. Adolescents demonstrated less delinquency, less substance use, and lower feelings of detachment from their families. Although not a significant difference, the sixty-day incidence of self-harming behaviours was lower amongst the target school adolescents, at the second survey (5.0%) compared to students in the control schools (8.4%) {502}. This program indicates the potential for well-implemented parent training interventions. The potential to replicate this type of program, and the longer-term impact on youth suicide are unknown.

8.3 *FAMILY INTERVENTION*

Summary: Warrants further research 📄

No studies were found testing the preventive impact of family intervention on youth suicide behaviours. Family factors such as conflict, low parent-adolescent bonding and parental mental health problems are risk factors for youth suicide. Family intervention programs are being successfully trialed in other areas of adolescent health promotion. Research to examine the application of family intervention to youth suicide prevention would appear warranted.

8.4 SCHOOL BASED HEALTH EDUCATION

Summary: Warrants further research



Suicide education programs have been widely employed in secondary schools, where students, teachers or parents learn about suicide, its warning signs and how to seek help (Garland & Zigler, 1993).

Typically the program goals have the following aims:

- raise awareness of the problem of adolescent suicide
- train participants to identify adolescents at risk
- educate participants on community mental health resources.

The typical content of a program includes:

- information on the epidemiology of suicide
- list of warning signs with an emphasis on depression
- information on community health resources
- referral procedures for counselling

Programs of this kind have been criticised on many grounds: misrepresenting the facts on youth suicide by denying a role of mental disorder, normalising deviant behaviour and thereby making it more acceptable, and exaggerating the level of the problem. There is also a concern that those most at risk do not receive the programs as they are not in school (Garland & Zigler, 1993).

Although there have been many curriculum-based programs of this kind operating over the last fifteen years there are few published evaluation studies and most are poorly designed (Abbey, Madsen, & Polland, 1989; Klingman, 1989; Nelson, 1987; Orbach & BarJoseph, 1993). In some cases studies aim only to increase students' "gatekeeper" role, increasing knowledge of possible response options if potential suicide is suspected {430, 431}, including professional support options {424}.

The program of Eggert et al {345} differed from earlier studies by focusing on adolescents at high risk of school dropout by virtue of non-attendance, poor academic performance, previous dropout or referral for being at risk of dropping out. The intervention was more comprehensive in adopting a life skills approach within a small group intervention framework. Attitudes to suicide were the specific focus addressed within the program. The intervention was delivered by school personnel and taught each day as part of the normal class timetable. Three groups were defined, though not clearly, through a randomised procedure. Two groups received different doses of the intervention (two semesters vs one) and a control group was included. The control consisted of a comprehensive assessment, referral to a key worker and parental notification of risk. Non-participation in the intervention was initially 30% and actual delivery of the intervention was not reported. All groups improved over a twelve-month period with no significant difference between the groups on depression, stress, anger or self-esteem. The intervention groups reported higher levels of social support. It is, however, important to note that this study had little power to address the questions of principal concern, particularly as the control group received substantial intervention.

Orbach and Bar-Joseph {425} used random assignment of classrooms to evaluate the impact of a seven-week curriculum focussing on coping and support in six schools in Israel. At post-test there was some inconsistent evidence for impacts on suicidal intentions but less evidence for impacts on hopelessness.

Klingman and Hochdorf {421} evaluated a classroom curriculum delivered by psychology trainees to Year 8 students again in Israel. The 12-week curriculum focussed on rational-emotive, cognitive coping skills. Students were randomised within classrooms into waiting list control groups. At post-test participants demonstrated reductions on an index of potential suicide.

Shaffer et al (1991) conducted a non-randomised controlled study of 2,000 teenagers which examined the impact of 3 different programs on attitudes to suicide and suicidal behaviour. The first was a 4-hour program implemented by health professionals with a particular emphasis on suicide awareness. The other two programs were teacher-administered and emphasised social support and problem-solving respectively. At eighteen-month follow-up the programs produced no significant reductions in suicidal ideation or attempts though most students reported that the program had been helpful. A further 35 students were identified as “previous suicide attempters” and it is important to note possible negative repercussions in that a minority of males came to view suicide as an acceptable solution to their problems (Vieland et al, 1991).

Spirito et al (1988) studied 300 students in a non-randomised controlled trial of a six week curriculum as part of health education classes. Teachers delivered the intervention after 2 days of training by the Samaritans. The curriculum covered attitudes to suicide, suicide awareness, risk factors, identification of risk and referral. Details of implementation were not provided. Little difference was found in knowledge or attitudes to suicide at the end of the program. Following the six-week curriculum boys reported feelings of increased hopelessness and maladaptive coping.

Kalafat and Elias (1995) described a program delivered to students in the Tenth Grade. It consisted of three 45-minute lessons and as in Shaffer’s study students reported that it had been helpful. Ciffone (1993) reported a more positive change in attitudes 30 days after a program focusing on attitudes to suicide evaluated in a non-randomised controlled trial in Chicago. The study design and sampling were weak with no details of non-response or school selection. This program was centred around a 15-minute film strip followed by a 40-minute discussion. Significant differences were found on selected responses such as counselling a friend without help, not telling if a friend was suicidal, ignoring a person talking about suicide, the role of mental illness in suicide. The reporting of findings makes interpretation of these results difficult.

LaFramboise and Howard-Pitney (1995) reported a study of school based suicide prevention in north American Indians, an indigenous group at very high risk of suicide. The study used a pseudo-experimental design with four classes non-randomly allocated to intervention and control status. The curriculum was administered by trained teachers in the language-arts class and emphasised a life skills development approach. This included units on self-esteem, dealing with stress, communication, problem-solving and dealing with difficult emotions. It

incorporated some specific information on suicide risk and intervention. Despite small numbers significant reductions were found in rates of self-reported hopelessness in the intervention group and non-blind observer ratings of suicide intervention and problem-solving skills. Details of implementation were not provided.

Evidence on implementation

Approaches to suicide prevention in schools have ranged from brief intervention in one class to longer interventions spanning multiple classes per week over a period of months. Few studies have reported details on implementation rates either of teacher training or classroom instruction. The extent to which students at highest risk participate is uncertain.

Evidence on outcomes

The evidence from programs focusing on identification of high risk students suggest that these interventions are not effective. Outcomes from interventions focusing on attitudes to suicide are mixed but the larger and better designed studies show little beneficial effect. Interventions in which suicide education is incorporated within a life skills approach show more consistent evidence of effect but the efficacy of the suicide specific element is uncertain.

Evidence on cost-effectiveness and broader dissemination

In the absence of data on effectiveness there is no cost-effectiveness data available. Because brief suicide education interventions are cheap they appear to have been widely disseminated but little data is available on their use in Australia nor on quality assurance monitoring.

Implications for future research

There is a growing consensus that simple brief suicide education is not an appropriate or effective intervention. In this context there has been a move from simple indicated intervention to a universal intervention in which the suicide education component is nested within life skills education. These programs share much in common with universal interventions for depression and are set within the normal secondary curriculum. They deserve further evaluation using experimental designs, perhaps examining the efficacy of life skills interventions with and without a specific suicide education element.

8.5 SCHOOL ORGANISATION AND BEHAVIOUR MANAGEMENT

Summary: Evidence for implementation ★

No studies were found testing the impact of school organisation and behaviour management strategies on youth suicidal behaviours. The Victorian Gatehouse project provides evidence that this strategy can be implemented for mental health promotion (Glover, Burns, Butler & Patton, 1998).

8.6 MENTORSHIP

Summary: Limited investigation 

No studies were found testing the effect of mentorship programs on youth suicidal behaviours.

8.7 PEER INTERVENTION AND PEER EDUCATION

Summary: Limited investigation 

No studies were found testing the effect of peer education programs on youth suicidal behaviours.

8.8 RECREATION PROGRAMS

Summary: Limited investigation 

No studies were found testing the effect of recreation programs on youth suicidal behaviours.

8.9 REORIENTATION OF HEALTH SERVICES

Summary: Warrants further research 

The creation of suicide prevention centres has been a common response to the problem of suicide. In practice the focus of these centres has been on the counselling of young people in distress and therefore terms to describe this response include suicide prevention centres, crisis centres and crisis hotline (Lester, 1972). The centres may use trained volunteers or paid staff to provide telephone or other counselling services for distressed young people. This may extend to face to face counselling or linkage to mental health services. In some instance these services are linked to mobile community assessment for suicide risk and postvention. These services commonly use volunteers and have become widespread in Australia and other western countries since the 1970s.

There have been few quantitative descriptive studies of the work of these centres which clearly draw on a range of approaches to intervention. Daigle and Mishara (1995) described responses to 617 callers in two Canadian centres and found that interventions were far from standardised and could be divided into non-directive and directive styles dependent on the characteristics of the caller.

Dew et al 1987 undertook a meta-analysis involving six studies from the UK, USA and Denmark of the effectiveness of suicide prevention/crisis centres. They suggested that crisis centres did attract a high-risk population in five of the six samples, with suicide rates of 2.5 to 10 times that in reference populations. Their potential for reducing suicide was probably more dependent on an estimate of the proportion of suicide completers and/or serious attempters who had used the services prior to the event. This remains uncertain. Addressing the question as to whether the centres have a positive effect, they reached a conclusion that suicide prevention centres have no overall effect on community suicide rates with only the early British study of Bagley (1968) demonstrating a marginal effect. When this was examined again the subsequent studies of Barraclough (1977) and Jennings et al (1978) using a more sophisticated approach to choice of control boroughs, found no differences in suicide rates in those boroughs where the Samaritans had recently been introduced.

Several studies, using ecological historical comparisons, have examined the association between the introduction of suicide prevention centres and community suicide rates (Miller et al, 1984; Lester, 1974; Weiner, 1969). For example, Miller et al (1984) used an ecologic approach to examine the association between the

availability of crisis centres and suicide mortality rates comparing 28 US city communities with crisis centres with 48 cities without crisis centres. Young white females were the commonest callers to suicide prevention or crisis centres and thus it was assumed that any effect should be most marked in this group. An estimated reduction of 1.75/100,000 was found for young white female (0-24 years) suicides. No reduction was found in young male suicides (0-24 years). No significant reduction was found in any other age group.

Two further studies have examined the effect of suicide prevention centres on attempted suicide rates. Holding (1974), reported one of the few studies to examine rates of parasuicide and its relationship to use of the Samaritans. The design was ecological and examined outcomes before and after a television series portraying suicide. Consultation rates with the Samaritans in Edinburgh increased two-fold but rates of parasuicide attending services increased by 22%. In a more recent study, Jobes et al (1996) examined calls to the Seattle Crisis Clinic in the weeks following the singer Kurt Cobain's suicide and found a significant increase in the number of crisis calls. There was no corresponding increase in suicide in this county in the succeeding weeks. Interpretation of this type of ecological data is difficult but does suggest that the activity of crisis lines is correlated with levels of concern about suicidal behaviour in a community.

Evidence on implementation

There is good evidence that crisis lines can reach a population at high risk although its accessibility to young males appears considerably less than for young females. It is unclear what proportion of victims have used crisis lines in the months preceding a suicide. There is also evidence that responses to calls vary considerably in the form of intervention, but this has not been considered in studies of outcome.

Evidence on outcomes

There is no available evidence to indicate that the introduction of suicide prevention centres and hotlines has affected rates of suicide in any country. The impact on suicidal behaviour and other mental health outcomes has not been examined.

Evidence on cost-effectiveness and broader dissemination

In the absence of data on effectiveness, data on cost-effectiveness is irrelevant. The appeal of suicide centres comes from the low cost of this service provision and this rather than evidence of their effectiveness is one reason why these services have been established broadly. There have been no reports on quality assurance monitoring in relation to suicide prevention centres.

Implications for future research

Given the extent of popular support for suicide prevention centres there is a case for further research into aspects of their functioning and effect. Useful research questions might include: -

- Assessment of the extent to which medically serious suicide attempters had used or knew how to access crisis lines.

- Testing health education on access of crisis lines to serious attempters to evaluate the uptake of use in a group at particularly high risk. Uptake and effectiveness might be assessed in a randomised trial.
- Testing the efficacy of different models of intervention (e.g., telephone counselling alone versus telephone counselling plus follow-up appointment) in bringing engagement with treatment services.

8.10 COMMUNITY BASED HEALTH EDUCATION

Summary: Limited investigation 

No studies were located investigating the relationship between community based health education and youth suicidal behaviours.

8.11 EMPLOYMENT, TRAINING AND POST-SCHOOL INTERVENTION

Summary: Limited investigation 

No studies were located investigating the relationship between employment and/or training and youth suicidal behaviours.

8.12 LAW, REGULATION, POLICING AND ENFORCEMENT

Summary: Evidence for outcomes ★★

Restriction of access to lethal means through legislation has been a widely-used preventive strategy for youth suicide. Evidence for the effectiveness of restricting access to means derives largely from interrupted time series analyses in which a lethal method has been made less available. Notable examples in Australia derive from the phasing out of coal gas and legislation restricting the availability of barbiturates, which had been lethal in overdose. In both instances the longer-term effects have been called into question (Burvill, 1989) as observations indicate only short-term falls in the overall suicide rates. Both events took place before the current rise in youth suicide.

There are difficulties in determining the ultimate effect of legislation restricting access to lethal means. Ethical considerations limit the use of randomised trials thereby making it difficult to exclude the hypothesis of substitution (Gunnell & Frankel, 1994). Ohberg et al (421), for example, in a carefully designed study using archival data in Finland argued that restriction in the availability of parathion led to a sharp and then slower fall in its use as a method of suicide. Its restriction however was accompanied by an increase in the use of other lethal and violent methods such as hanging, drowning and firearms consistent with a substitution in means.

The success of strategies to restrict lethal means is dependent on a clear understanding of the level of availability of that particular means. In the following section the evidence on the effectiveness of restriction of means will be considered separately for each category. For a broader discussion on the theme, readers are referred to the document on Access to Means of Suicide by Young Australians (Cantor, 1996).

8.12.1 Firearms

North American data indicate that availability of firearms is a substantial risk factor for suicide in youth. Extrapolation of these findings to Australia needs to proceed with caution given that firearm ownership is much lower.

Firearm ownership: Snowden and Harris (1992) examine suicide rates in five Australian States following the introduction of more restrictive firearm legislation in 1980 in South Australia. Data collected by the Australian Bureau of Statistics between 1968-1989 indicate a subsequent fall in male suicides from firearms in South Australia but some rise in other methods. Data for young males was not provided. This finding was similar to some earlier reports from Canada (Lester et al, 1993; Carrington & Moyer, 1994) and the USA (Rich et al, 1990; Loftin et al, 1991).

Cantor and Slater (1995) used a similar method to examine the effect of firearm legislation in Queensland. The legislation required that owners of long arms be licensed and 28 days elapse before the purchase of a firearm. The introduction of more extensive firearm legislation was followed by substantial falls in suicide by firearms in provincial and metropolitan regions but not in rural areas. The fall was particularly marked in young males 15-29 years. Overall rates of suicide decreased noticeably in the provincial regions where the legislation had the greatest effect on firearm suicides.

Firearm storage: Cumming et al (1997) examined the effect of legislation to ensure safe storage of firearms in 8 US states. Although a significant reduction was found in unintentional shootings in children no effect on suicide rates was found.

Evidence on implementation

Implementation refers both to the extent to which legislation is followed in practice and the extent to which this in turn leads to a restriction in access. In North American studies this has been operationalised as having a gun loaded and unlocked in the house (Hemenway et al, 1995). Using the available data there is little evidence on the uptake of legislative changes by gun owners nor which elements of legislation are most likely to be effective in restricting access by young people: restriction of ownership, delays in purchase, storage requirements. Similarly the level of enforcement required for implementing aspects of gun legislation is unclear.

Evidence on effectiveness

The evidence on the effectiveness of firearm restriction on reducing overall suicide rates remains controversial because of the possible substitution of other methods. Evidence from Cantor and Slater (1995), Carrington (1994) and Sloan et al (1990) is persuasive in that it may have an important role in the prevention of young male suicides where hitherto gun restrictions have not been in place. The potential for enforcement to make a difference where legislation is already in place or where levels of gun ownership are already low is probably limited.

Implications for research

The introduction of uniform gun legislation in Australia provides an unique opportunity to revisit questions of the overall effect of more restrictive gun

legislation on rates of suicide and its differential effect on the young. There is also potential for clarifying the level of access that young Australians have to firearms, data that in turn may indicate strategies for intervention through further legislation or education of gun owners on storage.

8.12.2 *Self-poisoning*

The rise in episodes of non-fatal and fatal self-poisoning following the increasing availability of sedative and anti-inflammatory drugs has been noted in a number of countries (Oliver & Hetzel, 1973; Hawton et al, 1996; Whitlock, 1975). There have been recent calls for restrictions on the availability of paracetamol but to date no trial has been reported. There is data from France that use of smaller paracetamol pack sizes is associated with lower suicide rates from overdose (Gunnell et al, 1997). Other strategies such as the introduction of methionine and placing warning messages on paracetamol packs have not been evaluated.

Implications for research

Given that self-poisoning is the commonest cause of suicidal death in females it is probably justified to consider trials on a regional basis of restriction of the availability of paracetamol, introducing changes in pack sizes and adding methionine. The impact of these measures on local rates of self-harm and suicide could then be evaluated.

8.12.3 *Motor Vehicle Exhaust Gas*

These methods account for approximately one in eight suicide in young males and one in twelve in young females (Cantor, 1996). Options for intervention include fitting catalytic converters, sensors to detect carbon monoxide in cars and modification of exhausts to ensure that hose pipes cannot easily be fitted. Few data are available on the impact of catalytic converters or these other measures on suicide in the young. Routley and Ozanne-Smith reported that the introduction of catalytic converters to all new Australian cars manufactured since 1986 has not been accompanied by a fall in deaths from motor vehicle exhausts despite these cars being 43% of registered vehicles. In contrast there is some overseas data which indicates an effect (Lester, 1989).

Implications for research

A key question for effectiveness of these strategies concerns the level of penetration needed for a given effect on risk. A further question relates to the extent to which other methods, less easily controlled (e.g., hanging) may be substituted.

8.13 *SOCIAL MARKETING INTERVENTIONS*

Summary: Evidence for implementation

★^{1/1}

Media portrayals of youth suicide have commonly been considered as risk factors for suicidal behaviour both in case-control studies and interrupted time series analyses of suicide data (Collins, 1993). Relatively less evidence is available on the efficacy of interventions targeting the media. Media interventions may take two forms: guidelines on the reporting of suicide or provision of mental health education (see Barker et al, 1993).

The potential for media intervention by restricting coverage was first raised by Motto (1995) who reported a regional fall in suicide rates coinciding with a newspaper strike in Detroit. Etzersdorfer et al (1992) used an interrupted time

series analysis to examine the effect that the introduction of media guidelines had on railway suicides. These suicides had been the subject of much media attention in Vienna until mid-1987 when the guidelines were introduced. Prior to this point the majority of these deaths had been in the 20- to 29-year-old age group. The guidelines were designed to ensure different ways of reporting suicide: provision of few details of the method; elimination of romantic portrayals; removal from the front page; removal of the term 'suicide' from the headline; not including photographs of the victim; description of alternative solutions; and inclusion of reports of a crisis that did not lead to suicide. The reduction in suicides from railway injury was sudden and dramatic at a time when suicide rates were relatively stable. Similarly there was a dramatic fall in subway suicide attempts. There was some evidence of method substitution but overall rates of suicide reduced 20% over a four-year period. Unfortunately age-specific data were not provided.

Evidence on implementation

The limited available evidence suggests that media guidelines can be devised and implemented though probably require constant monitoring. There are few available data on the use and penetration of the mass media to provide mental health educational messages to young people. Similarly the potential benefits and harms that derive from new media such as the Internet has as yet received little scrutiny.

Evidence on effectiveness

The available data on the effectiveness of media guidelines is limited to one study that demonstrated a striking effect on both suicide and suicidal behaviour. This was in a situation where there was evidence of poor media reporting.

Evidence on cost-effectiveness

Data on cost-effectiveness are not available. It is likely that the introduction of media guidelines would be a relatively inexpensive intervention. In contrast mental health education via the mass media is likely to involve considerable expense in program production and purchase of 'air-time'.

Implications for research

There is a need for greater consideration of research into the effectiveness of media guidelines for youth suicide prevention. It is not yet clear whether the further tightening of media guidelines would be effective in reducing suicide in a country such as Australia where guidelines are already in place. The effectiveness of proposed media strategies could be usefully informed by data derived from coronial reviews.

8.14 COMMUNITY MOBILISATION

Summary: Warrants further research



Gatekeeper training is based on the premise that people at risk of suicide come into contact with police, clergy, youth workers and other members of the public who have a capacity to direct that individual towards help. The programs are designed to increase the gatekeepers' sense of confidence and competence in intervening. As with many of the school based programs the aims include:

- enhanced recognition of warning signs
- increase knowledge of referral pathways
- shifting attitudes to accessing the mental health system

Similar programs have been suggested for health professionals such as psychologists with a high likelihood of contact with high-risk individuals (Bongar, 1991).

The Centre for Disease Control and Prevention has described a range of these programs in the United States (O'Carroll et al, 1992). Training typically takes place at one- or two-day workshops and there is some evidence that attitudes towards intervention shift following training. However, there is no evidence either that training increases rates of intervention or that training brings any reduction in suicidal behaviour or fatalities.

Implications for research

Many of the programs described have focused on the relationship between community figures and teenagers rather than young adults. In the development of this approach first steps might be to document which community figures young Australian victims are most likely to have contact with. A subsequent randomised trial of intervention would have the capacity to examine the behaviour of key community figures in relation to high-risk youth.

9 Recommendations and Conclusions

In the preceding sections research findings for a variety of health promotion strategies were examined with respect to evidence for their implementation, outcome effectiveness and, where possible, evidence for dissemination and cost-effectiveness. In what follows we detail key conclusions and recommendations following from this review.

There is now a considerable research base relevant to the effectiveness of intervention strategies for improving adolescent health. The present report identifies the evidence for particular strategies and program components across a range of adolescent health behaviours. Although dissemination issues are discussed, the present report is ad hoc in its exploration of the range of programs currently being implemented in Victoria. As a follow-up to the present report, it is recommended that a more systematic audit of intervention strategies and program components currently being delivered in Victoria be completed to establish the extent of congruence between these programs and an evidence-based approach.

9.1 GENERAL RECOMMENDATIONS FOR PURCHASING ADOLESCENT HEALTH PROMOTION INTERVENTIONS

9.1.1 *Invest strategically to advance evidence-based practice*

The present report provides a basis for the strategic development of evidence-based approaches to adolescent health promotion. Strategic initiatives will need to be balanced and include both support for innovation and evaluation for particular strategies, and also rigorous pilot-testing and evaluation of specific programs. There are roles in such an endeavour for both statewide services and regions. Statewide dissemination may be critical for strategies such as legislative change and social marketing. Regional funding may be most appropriate to increase expertise in programs with evidence for impacts on regionally prioritised risk factors, protective factors and youth health and behaviour problems.

Purchasing contracts for preventive interventions should include evaluation requirements designed to advance the level of evidence for the selected health promotion strategy. To advance evidence for outcome evaluation contracts should be designed to enable randomised allocation to control conditions and longitudinal measurement. Strategies that have evidence for outcome or dissemination should include evaluations to ensure consumer approval and post-program impacts on targeted risk and protective factors.

9.1.2 *Invest in strong implementation*

The evidence is consistent across outcomes. Weakly implemented interventions show inconsistent or null effects. Programs should be implemented with adequate training for those required to deliver them and with observational or other methods to check and ensure fidelity in implementation.

9.1.3 Request behavioural outcomes

Prevention programs are consistently demonstrating persisting behavioural effects. Health promotion investment should be provided on the expectation of positive change in health outcomes. Ideally interventions would have an effect not just on risk factors, but also on relevant health behaviours and mental health indices. Funding for longer-term follow-up evaluation will be required to measure these outcomes.

9.1.4 Target multiple risk factors

Programs that incorporate more than one health promotion strategy appear to be more consistently effective. For example social marketing combined with school based health education. This appears true for tobacco, alcohol, sexual risk-taking, and antisocial behaviour. Programs that target more than one risk factor (e.g., parental bonding and peer influence) may increase the likelihood of an effect and hence result in more consistent impacts.

9.1.5 Seek sustained intervention

One-off sessions or intervention for only one school year are less successful than interventions maintained across multiple years. Investment in prevention should support efforts to maintain a coordinated set of prevention activities through childhood and adolescence. Activities should address the developmental stage of youth and build on earlier components.

9.1.6 Identify and reward evidence-based practice

As a follow-up to the present report, it is recommended that an audit be completed of intervention strategies and program components currently being delivered in Victoria. The focus of this audit would be to establish the extent of congruence of existing programs with an evidence-based approach. Existing evidence-based programs should be acknowledged and rewarded.

9.2 SPECIFIC CONCLUSIONS FOR PURCHASING ADOLESCENT HEALTH PROMOTION INTERVENTIONS

The specific conclusions that follow should be accepted cautiously as they are based on review of only the limited subset of available articles relevant to the past decade and located within the restricted time available for this project. Identification of programs implemented within Victoria has not been based on a systematic process.

The table below summarises the evidence base for thirteen adolescent health promotion strategies examined in this report.

Table 3: Summary of evidence base for thirteen adolescent health promotion strategies targeting six adolescent health outcomes.

Health Promotion Strategies	Tobacco	Alcohol & Drugs	Sexual Health	Antisocial	Depression	Suicide
Parent Training	⌘	★★	⌘	★★★	⌘	★ ^{1/1}
Family Intervention	⌘	★ ^{2/3}	★ ^{3/3}	★★	⌘	⌘
School based Health Education	★★	★★★	★★★	★★	★ ^{1/2}	⌘
School Organisation and Behaviour Management	⌘	★ ^{1/1}	⌘	★★	★ ^{0/1}	★ ^{0/1}
Mentorship	⌘	★ ^{1/1}	⌘	★ ^{1/10}	⌘	⌘
Peer Intervention and Peer Education	★ ^{2/2}	⌘	★★	⌘	⌘	⌘
Youth Recreation	★ ^{0/1}	⌘	★ ^{1/1}	⌘	⌘	⌘
Health Service Reorientation	★ ^{1/3}	★ ^{1/1}	★ ^{2/7}	⌘	⌘	⌘
Community based Health education	⌘	★ ^{1/2}	★ ^{3/6}	★ ^{2/2}	⌘	⌘
Employment and Training	⌘	⌘	⌘	☒	⌘	⌘
Law, regulation, policing and enforcement	★★★	★ ^{2/2}	⌘	⌘	⌘	★★
Social Marketing	★ ^{1/3}	★ ^{1/1}	⌘	⌘	★ ^{0/1}	★ ^{1/1}
Community Mobilisation	★★	★★	★★	★ ^{0/4}	⌘	⌘

- ⌘ Limited investigation.
- ☒ Evidence is contra-indicative.
- ⌘ Warrants further research.
- ★^p Evidence for implementation. ^p Proportion of studies with positive effects.
- ★★ Evidence for outcome effectiveness.
- ★★★ Evidence for effective dissemination.

Definitions

- ⌘ Limited investigation. No relevant effectiveness studies were located and there were no empirical or theoretical grounds suggesting the intervention might potentially impact the outcome.
- ☒ Evidence was contra-indicative for the use of this strategy to prevent the targeted outcome. This rating required consistent null or negative findings in well-controlled evaluation studies.
- ⌘ Warrants further research. This rating was applied to strategies that appeared theoretically sound or had some promising evidence for their implementation or outcome, but in small scale or inadequately controlled

studies. *Programs* utilising these strategies might be considered priority targets for future research funding.

- ★^P Evidence for implementation. This rating was applied where published studies reported a sound theoretical rationale, acceptance within service delivery organisations, target population recruitment on a scale sufficient to usefully contribute to population health impacts, and adequate consumer approval measured using indicators such as program retention.
^P The proportion of positive demonstrations of impacts on risk factors, protective factors or outcome behaviours is reported. *Programs* utilising these strategies might be supported for funding on condition that initial Australian implementation included rigorously-controlled outcome evaluation.
- ★★ Evidence for outcomes. This rating was applied where positive outcomes were consistently published in well-controlled interventions. Interventions were required to be of sufficient scale to ensure outcomes within the constraints imposed by large-scale population health frameworks. *Programs* utilising these strategies might be carefully monitored for their impacts while being supported for wide-scale dissemination.
- ★★★ Evidence for dissemination. This rating required published reports of impacts where programs were delivered on a large scale, not by research teams, but rather by government auspice bodies or other service delivery agents. Evidence for dissemination was only sought for strategies demonstrating evidence for outcomes. *Programs* utilising these strategies might be accorded some priority for dissemination in the Australian context. Initial Australian dissemination trials should monitor for impacts. Where possible cost-effectiveness has been considered for programs using these strategies.

HIGHEST PRIORITY “BEST BUY” STRATEGIES

9.2.1 *School based Health education*

Health education has come a considerable distance since the early work of the 1970s. Reasonable evidence has accumulated to suggest that well-conducted health education programs can reduce alcohol and drug use, smoking, sexual risk-taking and antisocial behaviour. These approaches appear to be cost-effective. An obvious question that arises from the present review is the potential for an integrated school based health education curriculum. There is some evidence that such a curriculum can be effective across a variety of health outcomes. Investment in the dissemination of evidence-based drug education could focus on integrating this strategy as a universal component within school programs. Existing evidence from Botvin’s group suggests that less intensive training may be as effective as intensive training. Interventions need to span several of the early adolescent years. These approaches appear to require ongoing training, professional development of teachers and feedback from evaluation and are probably not sustainable without this input. It is possible that well-conducted health education programs may offer some further advantages relevant to mental health promotion, but the existing evidence does not

enable clear conclusions, hence investment to encourage innovation in this area may be warranted.

9.2.2 *Parent training and family intervention*

There is a growing body of evidence from the US that parent training interventions may be useful either as a component of broader alcohol and drug prevention programs or as discreet drug prevention strategy. Funding to advance these strategies in Australia should be given some priority. Funding should emphasise implementation with rigorous evaluation. Both parent training and more intensive family intervention appear important as a selective intervention strategy for crime prevention through the adolescent years. It is recommended that the dissemination of these programs should be given some priority as an early intervention for crime prevention. To improve understanding evaluations should be requested to investigate potential impacts on other outcomes. Australian experience is relatively undeveloped in adolescent family intervention and hence investment in demonstration projects to encourage innovation, to develop and coordinate expertise and for evaluation should be considered.

9.2.3 *Community mobilisation*

Ambitious, large-scale community mobilisation efforts are now being successfully conducted and evaluated with promising results. It should be noted that not all the evaluation evidence has been positive, hence supporting the development of this area will require coordinated investment. Supporting a limited number of statewide "model demonstration sites" may be one strategy to encourage broader education and training. There may be scope for geographically-based teams to be supported to coordinate community mobilisation activities within local communities. Community mobilisation strategies implemented with rigorous evaluation may be useful for prevention of a range of adolescent health problems including tobacco use, alcohol and drug use, and sexual risk-taking. Funding to support innovation with evaluation should be provided to extend these programs to crime prevention and mental health targets.

9.2.4 *Law, regulation, policing and enforcement*

Evidence supports investment to disseminate evidence-based, tobacco control strategies relevant to the enforcement of laws prohibiting tobacco retailers to sell to minors. Programs using this class of strategy may also be useful for reducing alcohol sales to minors, but would require community readiness. Changes in approach to the policing of illicit drug use have been pioneered in Victoria and rigorous evaluations should be completed and published. The extension of policing strategies to reduce the transition of adolescent delinquency into serious offending could be further implemented with funding to support rigorous evaluation. Regulation of access to the means of suicide may be an important component in suicide prevention strategies, worthy of implementation and evaluation support.

9.2.5 *Social Marketing*

Mass media campaigns alone appear to have little impact, but have a greater potential where they are coordinated with regional components actively involving school health education and parents. Evidence supports the implementation of social

marketing with rigorous evaluation to prevent tobacco use, alcohol and drug use, and suicide. Funding for innovation and evaluation should be considered to extend programs to adolescent sexual risk-taking, crime prevention and mental health promotion.

9.2.6 School Organisation and Behaviour Management

Behaviour management strategies have demonstrated evidence for outcomes and application in wider dissemination where they have been delivered within schools to address behaviour problems. There may be some difficulties to resolve in the implementation of these programs. Investment for wider dissemination in the Australian context would appear useful, but should be preceded by a systematic audit of programs currently delivered within Australia. School organisation strategies could be implemented with rigorous evaluation to better understand their application for the prevention of alcohol and drug misuse and mental health promotion. Further research investment may be warranted to better understand the potential of these approaches for the prevention of tobacco use and sexual risk-taking.

9.2.7 Peer Intervention

Peer education appears to be an increasingly popular strategy in Australia for promoting harm reduction relevant to youth drug use and sexual risk-taking. The available evidence suggests approaches using these strategies can be implemented and there appears to be acceptance from professionals and consumers. Further dissemination of this strategy should be considered for promoting sexual health. Implementation with rigorous evaluation should be considered as a tobacco control strategy. In general, evaluations have produced mixed results for the prevention of alcohol and drug use. A possibly critical ingredient may be the extent to which programs are structured to increase exposure to prosocial adult values and behaviours. Further encouragement of this field might be achieved through funding targeted to innovation and evaluation. A number of negative findings in the application of these strategies to crime prevention suggests further support should be contingent on rigorous evaluation.

LOWER PRIORITY STRATEGIES

9.2.8 *Community based health education*

The distribution of information within a community setting represents one of the most popular health promotion strategies used in Australia. It is perhaps not surprising that community education is being successfully implemented across a variety of outcome domains. Evaluations located through the present review mainly reported findings for the more intensive application of community health education, involving formal curriculum delivered over sequenced sessions. Evaluations have not been particularly strong and are often simply focussed on increasing knowledge. Funding further implementation with rigorous evaluation may be warranted for the prevention of tobacco use, alcohol and other drug misuse, sexual risk-taking and crime. Existing evidence does suggest that behavioural change is not an unreasonable target for these strategies. The further development of this field might be encouraged by demanding evidence for behavioural change in the framing of evaluation requirements.

9.2.9 *Health service reorientation*

There is some evidence suggesting that appropriate reorientation of health services can offer advantages to adolescents in discouraging tobacco use, in encouraging safer sexual behaviour and more moderate alcohol and drug use. Further implementation with rigorous evaluation is recommended. Innovation and evaluation funding might also be used to further examine the potential for these strategies to prevent suicide and promote mental health.

9.2.10 *Recreation*

Given the prominence of sport within Australian society, interventions located within sport and recreation settings may be of particular importance to Australian youth. Funding implementation with rigorous evaluation could assist tobacco control, prevention of alcohol and drug misuse and prevention of sexual risk-taking behaviour. Evaluations have been restricted to date to a limited range of outcomes and there would appear to be room for further innovation in this field. Efforts to extend this field might be encouraged through funding innovation and evaluation.

9.2.11 *Mentorship*

Recent work by Michael Resnick and colleagues suggests that connection with prosocial adults can be important as a protective factor for young people at risk of depression or self-harm. Although there has been some research relevant to crime prevention, we were not able to locate studies that have evaluated the use of mentorship in the prevention of other adolescent outcomes. Efforts to extend this field might be encouraged through funding targeted to innovation and evaluation.

9.2.12 *Employment and training*

Funding innovation and evaluation could extend this field. Employment and Training programs targeting crime prevention should be carefully conceived and include rigorous evaluation.

The findings in Table 4 provide a summary of the evidence reviewed in the present report relevant to the measured impact of adolescent health promotion strategies on a range of risk and protective factors. A range of family and school based interventions demonstrated positive impacts on family-level risk factors. A smaller number of studies have examined impacts on school-level risk factors. School organisation strategies provide some early evidence for impacts on school rewards (opportunities). The evidence suggests school based health education can positively impact a range of risk and protective factors, including attitudes, skills, peer influence, and in some cases harm reduction practices. It is noteworthy that two strategies commonly used to promote harm reduction (community based health education and health service reorientation) do not receive consistent evidence of an impact on harm reduction practices. A salient point emerging from Table 4 is the number of relationships that have not yet been adequately explored.

Table 5 provides summary information for each of the 178 research articles examined in this review. The studies are organised alphabetically according to the intervention strategy utilised. Information on impacts on risk factors, protective factors and outcomes is provided for each study. The information on outcomes is presented under the Risk Factor Impacts column. Outcomes are divided into initiation and persistence/escalation (for definitions see Section 1.2).

Table 4: Summary of intervention strategy impacts on risk and protective factors.

	Parent Training	Family Intervention	School Health Ed. (to Yr 6)	School Health Ed. (Yr 7-8)	School Health Ed. (Yr 9+)	School Organisation	Peer Intervention Peer Education	Health Service Reorientation	Community based Health education	Law, regulation, policing and enforcement	Social Marketing
Family											
Family Attachment	✓ _{2/2}	✓ _{7/7}		☯ _{2/4}	✓ _{2/2}						
Family Conflict	✓ _{2/2}										
School											
School Rewards (Bonding)						✓ _{2/2}					
School Commitment				✗ _{1/3}							
Community											
Availability of Means To Engage In The Problem Behaviour										✓ _{10/14}	
Community Laws And Norms Favourable To The Problem Behaviour			☯ _{1/2}	✓ _{2/3}				☯ _{1/2}			
Community Opportunities For Prosocial Involvement								✓ _{4/4}			
Media Portrayals Favourable To The Problem Behaviour											✓ _{2/2}
Peer											
Perceived Peer Involvement			✓ _{4/5}	✓ _{4/8}	✓ _{3/3}						✓ _{4/4}
Individual											
Favourable Attitudes To The Problem Behaviour			✗ _{3/8}	✓ _{10/16}	✓ _{5/7}			✓ _{2/3}	✓ _{5/7}		✓ _{3/3}
Harm Reduction			☯ _{2/4}	☯ _{1/2}	✓ _{4/4}	✓ _{2/2}	✓ _{3/3}	✗ _{2/5}	✗ _{1/5}		
Social Skills		☯ _{1/2}	✓ _{10/12}	☯ _{8/16}	✓ _{4/5}				✓ _{3/3}		

✓ Two or more studies were conducted and the majority reported a positive impact. ^P Proportion of studies with positive impacts.

✗ Two or more studies and the majority reported a non-significant or negative impact. ^P Proportion of studies with positive impacts.

☯ Proportion of positive findings equally divided. ^P Proportion of studies with positive impacts.

Blank cells - Less than two studies examined the impact.

Table 5: Summary of intervention strategies, outcome targets and impacts on risk and protective factors.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Community Mobilisation – 6th grade	173	Alcohol and Drug	Availability of means/opportunities (N) - no difference in measure of perceived access to alcohol. Favourable community laws & norms (Y) - laws strengthening the control over selling alcohol to minors were passed in each of the intervention communities.	Healthy beliefs (Y) - intervention students demonstrated significantly less favourable beliefs regarding alcohol by the end of Year 8. Skills (N) - no overall significant effects for self-perceived alcohol refusal skills. Family attachment (Y) - by Year 8, intervention students showed a tendency to perceive better family communication relating to alcohol use.
Community Mobilisation – Females, 14 to 17 years.	384	Sexual Risk-taking Behaviour	Persistence/escalation (Y) - reductions in adolescent pregnancy rates.	Community opportunities (Y) - Availability of professional support from nurse and teachers was implicated in the reduction of adolescent pregnancy rates.
Community Mobilisation - Latino adolescents aged 12 to 20 years.	385	Sexual Risk-taking Behaviour	Initiation (Y) - less sexual initiation for males at 18 mths. Persistence/escalation (N) - no consistent evidence of differences in sexual risk behaviours at 18 mths.	
Community Mobilisation - Youth aged 21 and younger	127	Alcohol and Drug	Persistence/escalation (N) - decreases in alcohol and marijuana observed over 2 years regardless of program exposure.	
Community Mobilisation - students 11 to 14 years.	45	Tobacco	Initiation (N) - tobacco use not different 3 years later.	
Community based Health Education - Adolescents aged 15-19 years (mean age not specified)	388	Sexual Risk-taking Behaviour	Persistence/escalation (Not measured).	Healthy beliefs (N) - No differences at 3 months. Harm reduction (N) - No differences in condom use at 3 months.
Community based Health Education - Adolescents Placed in Residential Centres aged 12-18 years	163	Sexual Risk-taking Behaviour	Persistence/escalation (N) - no effective reduction in the number of adolescents who engaged in sexually risky behaviours at the 9-12 month follow-up.	Healthy beliefs (Y) - the discussion group had better knowledge about AIDS at the 9-12 month follow-up. Skills (Y) - increase in ability to resist risky sex behaviours. Harm reduction (N) - no difference in use of condoms.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Community based Health Education - Female students pregnant or parenting who used drugs or who were at risk for drug use aged 14-19 years	153	Alcohol and Drug Sexual risk-taking	Peer influence (N) - intervention increased risk. Initiation (N) - no difference in tobacco, alcohol, marijuana or other drugs 3 months later.	
Community based Health Education - Undergraduate university students at high risk of sexually assaulting.	294	Antisocial Behaviour & Sexual Risk-taking	Favourable attitudes (Y) - rape congruent attitudes were lower at the end of the 50 min interventions.	Healthy beliefs (Y) - reduced belief in exploitative sexual relationships at end of the 50 minute intervention.
Community based Health Education. Adolescents aged 13-19 years (adolescents recruited from agencies in low income inner-city areas).	326	Sexual Risk-taking Behaviour	Initiation (N) - No impact on sexual debut 1 yr later.	Healthy beliefs (Y) - improved knowledge relevant to sex 1 yr later. Harm reduction (N) - Generally use of contraception was not impacted; The exception were males sexually-active prior to the intervention.
Community based Health Education. Adolescents, 17 years and under, found guilty of driving under the influence.	330	Antisocial Behaviour	Favourable attitudes (Y) - less favourable attitudes to drink driving at post-test. Persistence/escalation (Y) - reduced drink-driving offences 1-2 yrs later.	Healthy beliefs (Y) - Improved knowledge of the law at post-test.
Community based Health Education. African American students (aged 14-15 years)	367	Sexual Risk-taking Behaviour	Favourable attitudes (N) - Not impacted at 2 weeks. Persistence/ escalation (Not measured).	Healthy beliefs (Y) - some impacts 2 weeks.
Community based Health Education. Sexually active females, 13 to 21 years.	378	Sexual Risk-taking Behaviour	Favourable attitudes (N) - No differences in AIDS knowledge at post-test. Persistence/escalation (Not assessed).	Healthy beliefs (Y) - superior sexual health knowledge to controls at post-test. Harm reduction (N) - no differences in condom acquisition at post-test.
Community based Health Education. 16- to 19-year-old incarcerated male drug users	394	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - intention to use condoms increased to 10 months. Persistence/escalation (Y) - reduction in some high-risk sexual behaviours to 10 mths.	Harm reduction (Y) - Use of condoms increased to 10 mths.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Community based Health Education. Adolescents aged 13-19 years	361	Sexual Risk-taking Behaviour	Initiation (Y) - Increased sexual abstinence for males maintained to 1 yr.	Healthy beliefs (Y) - improved sexual health knowledge 1 yr later. Skills (N) - Contraception skills enhanced only for sub-groups.
Community based Health Education. Adolescents, aged 13 to 17 years in a residential drug treatment facility.	372	Sexual Risk-taking Behaviour	Persistence/escalation (Y) - a variety of risk behaviours reduced at post-test.	Healthy beliefs (Y) - post-test impact on sexual health knowledge. Skills (Y) - increased safe sex skills.
Community based Health Education. African-American adolescents (age unspecified)	355	Sexual Risk-taking Behaviour	Initiation (Not measured).	Healthy beliefs (N) - No overall impact on HIV knowledge 1 yr later.
Community based Health Education. Including a peer-led component. Adolescents 12 to 18 years.	377	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - less favourable sexual risk attitudes compared to controls immediately after this brief intervention. Early initiation (Not assessed).	Healthy beliefs (Y) - knowledge of AIDS better than controls immediately after this brief intervention.
Community based Health Education. Male sex offenders (aged 12-19 years)	327	Antisocial Behaviour	Initiation (Y) - Depressive somatic symptoms and self-concept 1 week later. Persistence/escalation (Y) - Reduced externalising behavioural problems.	Skills (Y) - improved social skills 1 week later. Health beliefs (Y) - Improved self-concept 1 week later.
Community based Health Education. Runaways/Homeless adolescents in shelters (10-19 years)	438	Alcohol and Drug	Peer influence (Y) - increased intention to encourage a friend with a drug problem to seek help. Initiation (Not measured).	Healthy beliefs (Y) - impact on drug knowledge.
Community based Health Education. Sexually active black female adolescents, aged 15 to 21 years.	382	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - More favourable attitudes to condom use at 3 weeks.	Healthy beliefs (Y) - some improvements in sexual health knowledge at 3 weeks. Skills (Y) - increased self-perceived skills to use condoms at 3 weeks.
Curricula - Israeli high school students (mean age not specified).	425	Suicidal Behaviour	Initiation (Y) - reduced suicide risk factors.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - Special school students at high risk for future drug use (14-19 years)	457	Alcohol and Drug	Persistence/escalation (Y) – reduced regular alcohol and hard drug use to 1 year. (N) Tobacco and marijuana use not impacted.	
Curricula - 4th grade	409	Tobacco	Persistence/escalation (Y) – smoking reductions maintained to Year 10 .	
Curricula - 5th grade and 6th grade.	442	Alcohol and Drug	Favourable attitudes (N) - no impact on intention attitudes to end of semester. Initiation (N) - alcohol, tobacco, or inhalant use.	Skills (Y) - assertiveness. Healthy beliefs (Y) - knowledge.
Curricula - 5th grade and grades 6-8	444	Alcohol and Drug	Peer influence (Y) – increased awareness by Year 7. Initiation (Y) - alcohol, tobacco, marijuana, other drugs in Year 7. Persistence/escalation (Y) - less illicit drug use to Year 7.	Skills (Y). Healthy beliefs (Y) - knowledge.
Curricula - 5th grade students in two inner-city Washington D.C elementary schools and three classes of seventh grade students at an inner-city Washington D.C junior high school.	500	Antisocial behaviour	Initiation (Not tested).	Skills (Y) - increased skills to deal with conflicted social situations for grade 7 students.
Curricula - 5th grade, and grade 6 & 7 students.	350	Tobacco	Initiation (N) - no reduction in tobacco use 12 years later.	
Curricula - 5th grade	166	Tobacco	Favourable community laws & norms (N) - the program was not responsible for the increase in percentages of tobacco free schools. Initiation (N) - the program was not effective in preventing early initiation of tobacco use one year later in grade 6.	
Curricula - 6th grade	447	Alcohol and Drug	Initiation of problem behaviour (N) - overall initiation of alcohol use not impacted to 27 months. Persistence / escalation (Y) - small reduction in the rate of increase in alcohol use amongst unsupervised users to 27 months.	Healthy beliefs (Y) - impact on alcohol knowledge to 27 months.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 6th grade	448	Alcohol and Drug	Initiation (N) - no impact on initiation of alcohol, or marijuana use to Year 9 or Year 12. Persistence/escalation (Y) – reduced regular alcohol use in Year 9, benefit reduced by Year 12; (N) No impact on regular marijuana use.	Harm reduction (Y) - reduced drink-driving in Year 9, benefit reduced by Year 12.
Curricula - 6th grade	451	Alcohol and Drug Tobacco	Initiation (N) - increased smoking and drinking.	
Curricula - 6th grade	397	Antisocial Behaviour	Early and persistent antisocial behaviour (Y) - reduced antisocial behaviour for boys, but not for girls after 6 months.	
Curricula - 6th grade + middle school African-American students	144	Sexual Risk-taking Behaviour Antisocial Behaviour	Initiation (Not measured).	Healthy beliefs (Y) - knowledge and attitudes towards dating violence and relationships was significantly higher at post-test (a few days after intervention).
Curricula - 6th grade	16	Tobacco	Initiation (Not measured).	Healthy beliefs (N) - tobacco post-test.
Curricula - 6th grade	196	Tobacco	Initiation (Y) - male students (but not females) exposed to the intervention demonstrated reduced tobacco use in grades 7, 8 & 9.	
Curricula - 6th grade	353	Tobacco	Initiation (N) - No overall effect 1 yr later.	
Curricula - 6th grade	414	Tobacco	Initiation (Y) - reduced tobacco use, (N) alcohol impact not maintained.	
Curricula - 6th grade	15	Tobacco, Alcohol and Drugs	Initiation (Y) - tobacco in 8th grade, (Negative impact) - alcohol, (N) – cannabis & other drug use.	
Curricula - 6th grade & 7th grade	390	Sexual Risk-taking Behaviour	Favourable attitudes (N) - some impact on evaluated risk of AIDS but inconsistent and only for sub-groups. Persistence and escalation (Y) - more self-reported behaviour change to avoid AIDS at post-test.	Healthy beliefs (N) - No differences in AIDS knowledge.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 6th grade and 7th grade in the context of Community Mobilisation	449	Alcohol and Drugs Tobacco	Favourable attitudes (Y) - reduced intentions 1 yr later. Peer influence (Y) – some impact on peer rewards at 1 year. Initiation (Y) - reduced initiation to tobacco, alcohol and marijuana use to 1 year. Persistence/escalation (Y) – reduced regular tobacco, alcohol and marijuana use to 1 year.	Skills (Y) - communication small improvement, no impact on resistance 1 yr later.
Curricula - 6th grade and 7th grade. Inner-city and suburban	441	Alcohol and Drug	Favourable attitudes (Y) – small impact on intention to use hard liquor, no impact on attitudes and intentions towards tobacco or marijuana. Initiation (N) - No impact on initiation of alcohol. Persistence/escalation (Y) – reduced regular and problem.	Skills (Y) - assertiveness, problem solving, stress management.
Curricula - 6th grade and grades 7, 8	362	Sexual Risk-taking Behaviour	Favourable attitudes (N) – Few effects maintained to 17 mths. Peer influence (N) - effects on peer rewards not maintained at 17 mths. Media portrayals (N) - Early impacts on analytic skills not maintained at 17 mths. Initiation (N) - No impact on abstinence at 17 mths. Persistence/ escalation (N) - pregnancy, STDs not impacted to 17 mths.	Skills (N) - Effects not maintained to 17 mths. Harm reduction (N) - No increase in condom use at 17 mths.
Curricula - 6th grade and grades 7, 8 and 9.	354	Tobacco	Initiation (Y) - reduced smoking uptake 1 yr later.	Skills (Y) - Not directly measured but process evaluation implicated refusal skills as a potentially critical program component.
Curricula - 6th grade and grades 7-10	445	Alcohol and Drug	Initiation (Y) - initiation of alcohol use was reduced, but only for males. Persistence/escalation (Y) - regular alcohol use reduced in Year 12.	Healthy beliefs (Y) - knowledge about the effects of alcohol in Year 12. Skills (Y) - alcohol refusal. Harm reduction (N) – Drink-driving not impacted.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 6th grade, and 7th, selected low-income African-American students	348	Sexual Risk-taking Behaviour	Initiation (N) - Impact on sexual abstinence not maintained to 12 mths. Persistence/escalation (Y) - less frequent sex 12 mths later.	Harm reduction (Y) - More condom use 12 mths later.
Curricula - 6th grade, includes Community Mobilisation, parents also 7th grade students	201	Alcohol and Drug	Initiation (Y) - tobacco, (Y) marijuana, (N) alcohol at 3 year follow-up in grades 9/10.	
Curricula - 6th grade.	8	Tobacco	Initiation (Y) - lower tobacco use at 3rd year.	
Curricula - 6th grade. Also grades 7 and 8. Low-income minority areas.	389	Sexual Risk-taking Behaviour	Favourable attitudes (N) - No impact on attitudes to abstinence at post-test. Initiation (N) - No impact at post-test.	Healthy beliefs (N) - No impact on self-esteem at post-test. Family attachment (N) - No impact on family communication at post-test.
Curricula - 6th grade. Intervention 2 - 8th/9th grade students.	443	Alcohol and Drug	Initiation (Y) - drug use in Year 10.	Skills (Y) - decision making in Year 10.
Curricula - 7th grade	175	Alcohol and Drug	Favourable attitudes (Y) - reduced intentions to use drugs at 3 mths. Peer influence (Y) - reduced perceptions of peer drug use to 3 mths. Favourable community laws & norms (Y) - Reduced perceptions of adult drug use to 3 mths. Persistence / escalation (Y) - reduced poly-drug use, cigarettes, alcohol, marijuana to 3 mths.	Skills (Y) - there was evidence of increased drug refusal skills to 3 mths, a range of other skills not impacted. Healthy beliefs (Y) - there was some evidence for improved normative expectations.
Curricula - 7th grade	134	Alcohol and Drug	Peer influence (Y) - initial impact on peer perceptions, reduced by Year 12. Favourable attitudes (Y) - some effects on perceived consequences and risk were sustained. Initiation (Y) - initially reduced tobacco and marijuana use, but effects not sustained to Year 12. Persistence/escalation (Y) - initially reduced regular tobacco use, but effects not sustained to Year 12.	Healthy beliefs (Y) - initial impact, some small effects sustained to Year 12. Skills (Y) - initial impact on resistance self-efficacy, but not sustained to Year 12.
Curricula - 7th grade	302	Alcohol and Drug	Persistence/escalation (Y) - tobacco, (Y) alcohol, (Y) marijuana, (Y) poly-drug use 6 years later.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 7th grade	311	Alcohol and Drug	Peer influence (Y) – significant changes for the peer-led group after 15 months. Favourable attitudes (Y) - maintained less favourable attitudes toward tobacco and marijuana to 15 months. Initiation (Not measured).	Healthy beliefs (Y) - increase in healthy beliefs maintained after 15 months. Skills (Y) - self-efficacy for refusal improved to 15 months.
Curricula - 7th grade	462	Alcohol and Drug	Initiation (Y) - reduced alcohol, tobacco and marijuana initiation in Year 8. Persistence/escalation (Y) - less regular alcohol use in Year 8.	Skills (N) - no effect for resistance skills training in Year 8.
Curricula - 7th grade	31	Alcohol and Drugs, Tobacco.	Favourable attitudes (Y) – impact to 1 year. Persistence/escalation (Y) - Less regular tobacco use 1 year later, (Y) alcohol, (Y) Cannabis.	Skills (N) - no impact on assertiveness. Healthy beliefs (Y) - tobacco, alcohol, marijuana.
Curricula - 7th grade	371	Sexual Risk-taking Behaviour	Initiation (Y) - Just significant impact was evident at 6 months.	Healthy beliefs (Y) - some impacts on sexual health knowledge at 6 months. School commitment (N) - No impact at 6 months. Family attachment (N) - No impact on communication at 6 months.
Curricula - 7th grade	309	Tobacco	Initiation (Y) - trend for less smoking in girls 7 years later.	
Curricula - 7th grade	39	Tobacco	Initiation (Y) - less tobacco use 15 years later.	
Curricula - 7th grade	187	Tobacco	Initiation (Not measured).	Skills (Y) - a small, but significant improvement in self-perceived tobacco refusal skills was demonstrated in Year 8 for students assessed at risk for tobacco use in Year 7.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 7th grade	191	Tobacco	Initiation (Y) - less tobacco use 1 year later, except for a curriculum emphasising refusal skills. Persistence/escalation (Y) - less weekly tobacco use 1 year later, except for a curriculum emphasising refusal skills.	
Curricula - 7th grade	197	Tobacco	Persistence/escalation (Y) - reduced regular tobacco use in Year 12.	
Curricula - 7th grade	316	Tobacco	Favourable attitudes (Y) - less favourable to smoking 1 yr later. Peer influence (Y) – lower expectations for peers smoking 1 yr later. Favourable community laws & norms (Y) - lower expectations for adults smoking 1 yr later. Persistence/escalation (N) - no overall difference for current smoking at 1 year, except in one of the three regions.	Skills (Y) - Improved social skills but not communication.
Curricula - 7th grade	405	Tobacco	Favourable attitudes (Y) - some modest gains maintained 2 years later. Initiation (Not measured).	
Curricula - 7th grade	30	Tobacco, Alcohol and Drugs.	Persistence/escalation (Y) - Lower tobacco use, (Y) marijuana (particularly for females) 1 year later, (N) alcohol.	Skills (N) - no differential effect for allocation to resistance skills 1 year later.
Curricula - 7th grade - Peer delivered, Rural students.	9	Tobacco	Favourable attitudes (N) - tobacco 1 year later. Initiation (Not measured).	Skills (Y) - refusal skills 1 year later. Healthy beliefs (N) - tobacco.
Curricula - 7th grade & 8th inner-city junior high school	195	Tobacco	Media portrayals (Y) - large incentives (\$30 gift voucher) increased awareness of the seduction of positive images of smoking portrayed in magazines and billboards. Peer influence (N) - No effect on perceived norms was demonstrated. Initiation (Not measured).	Healthy beliefs (Y) - large incentives (\$30 gift voucher) increased knowledge of smoking risks.
Curricula - 7th grade also grade 8, 9 and 11 students.	229	Tobacco	Initiation (Y) - lower tobacco use in Year 11.	
Curricula - 7th grade and 8th and 9th grade high-risk students	470	Tobacco	Initiation (N) - the trend toward reduction of tobacco use to Year 9 was not significant.	Skills (N) - Year 7 impact on refusal skills was not maintained to Year 9.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 7th grade and 8th grade	458	Alcohol and Drug	Rebelliousness (N) - risk-taking not impacted to 1 year. Peer influence (N) - 1 year. Favourable attitudes (N) - 8 mths. School commitment (N) - 8 mths. Persistence/escalation (N) - no significant impact on gateway drugs, smokeless tobacco or hard drug use to 8 mths.	Healthy beliefs (N) - 8 mths. Family attachment (N) - 8 mths.
Curricula - 7th grade students, Included a peer-led component and at risk students.	437	Alcohol and Drug	Favourable attitudes (Y) - increased anti-drug intentions and attitudes at 15 week post-test. Favourable community laws & norms (N) - little impact on perceived adult drug use to 15 weeks. Risk-taking (Y) - small effect on risk-taking. Peer influence (N) - no effect on perceptions of peer drug use. Initiation (Not assessed).	Skills (N) - No effect for assertiveness, decision making, life skills, or self-efficacy to 15 weeks.
Curricula - 7th grade, African-American students, also Year 8	169	Sexual Risk-taking Behaviour	Favourable attitudes (N) - The intervention group were no less likely to report intentions to have sex in the next year. Persistence/escalation (Y) - There was a trend toward less sexual involvement in the intervention group in the month prior to the follow-up	Harm reduction (Y) - Use of condoms and foam together increased.
Curricula - 7th grade, also 8th, 9th and 10th grades	314	Tobacco	Initiation (N) – smoking not impacted 1 year later.	
Curricula - 7th grade, Including a parent component. Also grade 8 students	376	Sexual Risk-taking Behaviour	Early initiation (Not measured).	Healthy beliefs (Y) - increased knowledge maintained at 1 yr. Family attachment (Y) - a trend for increased family communication according to intervention students' perceptions.
Curricula - 7th grade, Including peer-led component	461	Alcohol and Drug	Favourable attitudes (Y) - reduced intention to 2 months. Persistence/escalation (Y) - less alcohol use to 2 months.	Skills (N) - improved self-efficacy regardless of condition to 2 months.
Curricula - 7th grade, Includes peer-led component	351	Tobacco	Initiation (Y) – Maintained for 2 yrs.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 7th grade, peer-led components. Also 8th grade	415	Tobacco	Initiation (Y) - some evidence for impacts on tobacco use, but effects reduced over time.	
Curricula - 7th grade, Peer-Led.	347	Sexual Risk-taking Behaviour	Favourable attitudes (N) - No impact 17 mths later. Peer influence (N) - No impact on perceived peer rewards after 17 mths. Initiation (N) - No impact 17 mths later. Persistence/escalation (N) - No impact 17 mths later.	Healthy beliefs (Y) - More tolerance and increased knowledge of HIV. Skills (N) - No impact after 17 mths.
Curricula - 7th grade, with Family component, Low-income students in areas at high-risk for pregnancy	368	Sexual Risk-taking Behaviour	Initiation (N) – Sexual behaviour not impacted at 6 weeks.	Family attachment (Y) - some inconsistent improvement in communication between fathers and adolescents at 6 weeks. Healthy beliefs (Y) - some impacts at 6 weeks.
Curricula - 7th grade.	14	Tobacco	Initiation (N) – tobacco use 5 years later.	
Curricula - 8th grade	464	Alcohol and Drug Sexual Risk-taking	Favourable attitudes (Y) - less favourable attitudes to smoking and sex at 20 months. Initiation (Y) - lower initiation of smoking and sex at 20 months. Persistence/escalation (N) - regular alcohol and marijuana not impacted at 20 months.	
Curricula - 8th grade, peer-led, from low-income families	391	Sexual Risk-taking Behaviour	Initiation (Y) - delay in the initiation of sexual intercourse maintained to the end of 9th grade. Persistence/escalation (Y) – reduced pregnancies to end of Year 9.	
Curricula - 8th grade	421	Suicidal Behaviour	Initiation (Y) - suicide risk decreased.	Healthy beliefs (Y) - increase in factual knowledge.
Curricula - 8th grade	97	Tobacco	Initiation (Y) - lower tobacco use at post-intervention. Persistence/escalation (Y) - reduced regular tobacco use and increased quitting.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 8th grade, with peer-led component	417	Tobacco	Initiation (Y) - less experimental tobacco use in high schools 9 months later. Persistence/escalation (Y) - less regular tobacco use in vocational schools after 9 months. Favourable attitudes (N) - Few effects noted.	Healthy beliefs (Y) - knowledge of tobacco risks increased at 9 months.
Curricula - 9th grade	459	Alcohol and Drug	Initiation (N) - didn't reduce any alcohol use to 1 year. Persistence/escalation (N) - regular alcohol to 1 year.	Healthy beliefs (Y) - knowledge to 1 year. Skills (N) - but trend to increase perceived ability to resist pressure to drink-drive to 1 year. Harm reduction (Y) - Less riding with a drink-driver to 1 year.
Curricula - 9th grade & grade 10 students	370	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - some impact on perceived risks and intentions to engage in condom use 4-8 weeks post intervention. Persistence/escalation (N) - No impact on overall risk 4-8 weeks post intervention.	Healthy beliefs (Y) - improved knowledge of AIDS/STDs 4-8 weeks post intervention. Skills (Y) - improved self-perceived communication & assertiveness 4-8 weeks post intervention. Harm reduction (Y) - Increased condom use amongst at risk 4-8 weeks post intervention.
Curricula - 9th grade and 10th grade	431	Suicidal Behaviour		Healthy beliefs (N) - No impact on suicide response beliefs.
Curricula - 9th grade and 10th grade students	424	Suicidal Behaviour		Community opportunity (Y) - selected evidence of increased access to professional support at 1 month.
Curricula - 9th grade and 10th. Classes drawn from three disadvantaged, inner-Melbourne secondary schools.	499	Antisocial behaviour	Initiation (Y) - less self-reported aggressive behaviour at post-test.	Skills (Y) - some impact on social skills to manage conflict at post-test.
Curricula - 9th grade and 11th grade students	375	Sexual Risk-taking Behaviour	Peer influence (Y) - reduced perceived peer non-acceptance of safe sex at 3 months. Early initiation (N) - No impact on sexual abstinence at 3 months. Persistence/escalation of the problem behaviour (Y) - sexual risk-taking behaviours reduced at 3 months	Healthy beliefs (Y) - improved AIDS knowledge maintained at 3 months. Skills (Y) - improved self-efficacy to 3 months. Harm reduction (Y) - increased condom use maintained to 3 months.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - 9th grade and grades 10-12	365	Sexual Risk-taking Behaviour	Peer influence (Y) - reduced perceived peer involvement, impact reduced at 18 mths. Favourable attitudes (N) - Not impacted. Initiation (Y) - reduction in initiation maintained to 18 mths. Persistence/ escalation (N) - didn't reduce frequency of sexual encounters or contraceptive use for the sexually active.	Family attachment (Y) - improved communication maintained to 18 mths. Healthy beliefs (Y) - impact maintained to 18 mths.
Curricula - 9th grade, Including a peer-led component. Also grade 10	380	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - less favourable attitudes to teenage sex in Year 11. Peer influence (Y) - reduced peer sex prevalence estimates in Year 11. Initiation (Y) - sexual intercourse less prevalent in Year 11.	Healthy beliefs (Y) - enhanced sexual health knowledge in Year 11.
Curricula - 10th grade	383	Sexual Risk-taking Behaviour	Favourable attitudes (Y) – increased intentions to prevent pregnancy at 6 months. Peer influence (N) - no impact on perceived peer involvement in sex to 6 months. Initiation (N) - there were no differences in initiation at 6 months. Persistence/escalation (N) - there were no differences in frequency of sexual intercourse or pregnancies to 6 months.	Healthy beliefs (Y) - improved birth control knowledge at post-test. Family attachment (Y) – improved communication with parents about sexual health at 6 months. Harm reduction (Y) - Use of condoms increased at 6 months.
Curricula - 11th grade and 12th grade students	374	Sexual Risk-taking Behaviour Alcohol and drug.	Favourable attitudes (N) - No impact on attitude to risk behaviour after 12 weeks. Persistence/escalation (Not measured).	Healthy beliefs (Y) - some impacts on knowledge and beliefs after 12 weeks.
Curricula - Aggressive male students.	139	Antisocial Behaviour	Initiation (Y) - lower drug and alcohol use 3 years later.	Skills (Y) - higher levels of social, coping, and problem solving skills after intervention. Healthy beliefs (Y) - higher levels of self-esteem after intervention.
Curricula - Female students aged 11 to 12 years.	332	Sexual Risk-taking Behaviour	School commitment (Y) - some indicators improved at post-test 1 yr later. Initiation (Not measured).	Healthy beliefs (Y) - improved positive self-concept, knowledge of reproduction improved at post-test 1 yr later.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - High school.	345	Suicidal Behaviour & Depression	Initiation (N) - No impact after 5 mths on suicide risk factors, depression. Favourable attitudes (N) - No impact on suicidal ideation 5 mths later.	
Curricula - Includes family component. 11- to 13-year-old students.	352	Tobacco	Initiation (N) - No impact 1 yr later.	Healthy beliefs (Y) - Some impact on smoking knowledge maintained 1 yr later.
Curricula - Junior high school students	454	Alcohol and Drug	Peer influence (Y) - reduced perceived peer prevalence to Year 9. Favourable community laws & norms (Y) - reduced perceived prevalence of adult drinking. Initiation (Y) - reduced alcohol, tobacco, marijuana initiation to Year 9. Persistence/escalation (Y) - reduced regular alcohol use & getting drunk to Year 9.	Healthy beliefs (Y) - increased knowledge to Year 9. Skills (Y) - enhanced interpersonal and communication skills to Year 9.
Curricula - Junior high school students (Years 7-9)	463	Alcohol and Drug	Favourable attitudes (N) - no sustained changes in perceived consequences to Year 9. Peer influence (Y) - some impact on perceived peer norms to Year 9. Initiation (N) - no sustained effects for initiation to alcohol, tobacco or marijuana to Year 9. Persistence/escalation (N) - no sustained effects for more regular alcohol, tobacco or marijuana to Year 9.	Skills (N) - no overall impact on resistance skills to Year 9, teen-leader impact.
Curricula - Philipino High school students (13-16 years).	304	Alcohol and Drug	Favourable attitudes (Y) - increased intention to abstain from sex. Initiation (Not measured).	Healthy beliefs (Y) - improved knowledge and tolerance 8 weeks later. Harm reduction (N) - no increase in condom use.
Curricula - Secondary school students, 11 to 21 years.	379	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - more favourable attitudes to contraceptives and condoms after 4 months. Initiation (Not measured).	Healthy beliefs (Y) - knowledge of sexuality and knowledge improved after 4 months. Skills (N) - No significant effect on self-efficacy.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Curricula - Secondary school students.	387	Sexual Risk-taking Behaviour	Favourable attitudes (N) - No significant impact on intention to use condoms at 2 weeks. Persistence/escalation (Not measured).	Healthy beliefs (Y) - knowledge of AIDS increased at 2 weeks. Skills (Y) - communication about AIDS increased at 2 weeks.
Curricula - Secondary schools students (grades 9 - 12)	386	Sexual Risk-taking Behaviour	Initiation (N) - No differences in initiation of sexual intercourse at 6 months. Persistence/escalation (Y) - fewer sexual partners at 6 months. Favourable attitudes (Y) - increased intentions to engage in safe sex at 6 mths.	Healthy beliefs (Y) - Enhanced AIDS knowledge at 6 months. Skills (N) - No differences in safe sex communication at 6 months. Harm reduction (Y) - More frequent condom use at 6 months.
Curricula - Sixteen-year-old students.	450	Alcohol and Drug	Favourable attitudes (Y) - some attitudes to alcohol impacted at 1 year. Persistence/escalation (N) - increased regular alcohol use after 1 year.	Healthy beliefs (N) - no clear impact at 1 year.
Curricula - Socially maladjusted male adolescents in special schools (aged 13-16 years)	321	Antisocial Behaviour	Persistence/escalation (Y) - reduction in aggressive behaviour 4 weeks later.	Healthy beliefs (Y) - beliefs about violence. Skills (Y) - improved skills 4 weeks later.
Curricula. Students in junior high school (11-13 years)	360	Sexual Risk-taking Behaviour Alcohol and Drugs	Favourable attitudes (Y) - some impact on intentions to use condoms and foam at 1 yr post-test.	Skills (Y) - self-efficacy, refusal skills and contraception purchasing skills improved at 1 yr post-test.
Curricular - High school students (No age specified except "sophomore level" at school).	430	Suicidal Behaviour		Healthy beliefs (Y) - knowledge of desirable suicide risk responses.
Curricular - Secondary School Students (aged 10-19 years)	145	Sexual Risk-taking Behaviour	Initiation (N) - no significant reduction in sexual behaviour at five month follow-up.	Healthy beliefs (Y) - knowledge about sexual health increased as measured at five month follow-up.
Employment and Training - Juvenile probationers - aged 12-17 years	339	Antisocial Behaviour	Initiation (Not measured)	Healthy beliefs (N) - self-concept not impacted at 3 mths.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Family Intervention - Families with 12- to 14-year-old adolescents	366	Sexual Risk-taking Behaviour	Initiation (Not measured).	Skills (Y) - some improvements to 3 mths. Family attachment (Y) - improved communication & problem solving to 3 mths. Healthy beliefs (N) - No intervention impact on knowledge.
Family Intervention - Families with adolescents 10-14 years	363	Sexual Risk-taking Behaviour	Favourable attitudes (N) - No impact on youth abstinence intentions 1 yr later. Initiation (N) - No impact on sexual initiation.	Healthy beliefs (N) - improvement in knowledge of sexual health was also observed in controls 1 yr later. Family attachment (Y) - Improved communication, but only partially maintained to 1 yr.
Family Intervention - Adolescents, aged 12 to 14 years.	369	Sexual Risk-taking Behaviour	Initiation (Not measured).	Family attachment (Y) - modest improvement in communication & problem solving. Skills (N) - Little impact on adolescent skills problem solving or assertiveness. Healthy beliefs (Y) - increased knowledge of sexual risk-taking behaviour.
Family Intervention – Court-referred 12- to 17-year-olds.	401	Antisocial Behaviour	Early and persistent antisocial behaviour (Y) - reduced antisocial behaviour 4 years later.	Family attachment (Y) - increased family cohesion at post-test.
Family Intervention - Delinquent and normal adolescents.	399	Antisocial Behaviour	Family conflict (N) - reductions observed in mother-adolescent arguments also occurred for the controls at 3 months. Persistence/escalation (Y) - Less antisocial behaviour at 3 months.	Family attachment (Y) - increased mother-adolescent attachment at 3 months.
Family Intervention - Juvenile offenders with mean age 15 years.	400	Antisocial Behaviour	Persistence/escalation (Y) - Less antisocial behaviour at 3 months.	Family attachment (Y) - increased adolescent-parent cohesion at 3 months.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Family Intervention. Sixth grade students (mean age 11.8 years)	466	Alcohol and Drug	Initiation (Y) - reduced tobacco, but no (N) impact on alcohol initiation at the end 6th grade. Persistence/escalation (Y) - less regular alcohol use at the end of grade 6.	Healthy beliefs (Y) - improved knowledge end of grade 6. Family attachment (Y) - improved communication with parents about alcohol at end of grade 6.
Health Service Reorientation - Adolescent patients of orthodontists aged 11 to 18 years.	406	Tobacco	Initiation (N) - No impact on initiation of tobacco use 2 years later. Persistence/escalation (N) - No impact on regular tobacco use 2 years later.	
Health Service Reorientation - In school clinics. Public High Schools.	392	Sexual Risk-taking Behaviour	Initiation (N) - No impact on initiation of sexual intercourse. Persistence/escalation (N) - No impact on adolescent pregnancy	Harm reduction (N) - No impact on condom use or contraception.
Health Service Reorientation - In school clinics. Secondary school students	393	Sexual Risk-taking Behaviour	Persistence/escalation (N) - No impact on adolescent childbirth.	
Health Service Reorientation - Adolescent Deliberate Self-Harm hospital patients	346	Suicidal Behaviour	Persistence/escalation (Y) - 1-2 yr follow-up revealed lower suicide reattempts.	Community opportunities (Y) - increased use of professional community supports.
Health Service Reorientation - Female adolescents, aged 14 to 25 years.	373	Sexual Risk-taking Behaviour	Favourable attitudes (N) - No impact at 1 month. Persistence/escalation (N) - No impact on overall risk behaviours at 1 month.	Healthy beliefs (Y) - increased knowledge of sexual health 1 month later.
Health Service Reorientation - Patients under 16 years of age discharged from hospital following a suicide attempt.	344	Suicidal Behaviour	Persistence/escalation (Y) - reduced suicide reattempts 1 yr later.	Community opportunity (Y) - increased patients' access to hospital support.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Health Service Reorientation -Ten- to 13-year-old students deemed to be at risk for depression (identified as "at risk" based on current depressive symptoms and perception of parental conflict).	426	Depression	Early and persistent behaviour problems (N) - No consistent change in behaviour. Persistence/escalation (Y) - Reduction in depressive symptoms.	Skills (Y) - Improvement in cognitive-attributional skills.
Health Service Reorientation. Adolescents, 13 and 14 years.	22	Tobacco	Initiation (Y) - lower tobacco use 1 year later.	Healthy beliefs (Y).
Health Service Reorientation. African-American male adolescents (age unspecified)	271	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - Intentions to engage in sexual risk-taking and IV drug use were lower 3 months later. Persistence/escalation (Y) - Less risky sexual behaviour 3 months later.	Healthy beliefs (Y) - increased knowledge about HIV/AIDS 3 months later. Harm reduction (Y) - More condom use 3 months later.
Health Service Reorientation. Counselling in schools. Sixth, seventh and eighth grade African-American students in inner-city middle schools (mean age 13.8 years)	446	Alcohol and Drug	Favourable Attitudes (Y) - increased intentions to reduce alcohol use at 10 weeks. Favourable community laws & laws (Y) - reduced perceived prevalence of adult alcohol use at 10 weeks. Persistence/escalation (Y) - reduced amount of alcohol use at 10 weeks; (N) no effects for tobacco, marijuana or cocaine.	
Health Service Reorientation. High-risk sexually active adolescents attending an Adolescent sexual health clinic.	137	Sexual Risk-taking Behaviour Alcohol and Drugs	Persistence/escalation (N) - no difference in number of partners or sexually transmitted disease 2 months later.	Harm reduction (N) - no difference for intervention in use of condoms.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Health Service Reorientation. Hospital Emergency Restructure, including family therapy component. Adolescent Latina suicide attempters (mean age 15.3 years) and their families.	427	Suicidal Behaviour	Family involvement in the problem behaviour (Y) - reduced maternal depression. Persistence/escalation (Y) - reduced depression and suicide ideation.	Community opportunities (Y) - increased use of hospital support.
Health Service Reorientation. Hospital Emergency Restructure, including family therapy component. Adolescent suicide attempters (parasuicides) aged between 15 and 20 years (mean age 17.25 years).	428	Suicidal Behaviour	Persistence/escalation (Y) - reduced suicide risk factors, hopelessness.	
Health Service Reorientation. Pediatric residents seen for well-child examinations	131	Tobacco	Favourable community laws & norms (N) - few doctors challenged patients' smoking practices. Initiation (Not measured).	
Health Service Reorientation. Runaway adolescents who are at risk of contracting HIV/AIDS (aged 11-18 years)	315	Sexual Risk-taking Behaviour	Initiation (N) - No effect on sexual abstinence Persistence/escalation (N) - No overall impact on risky sexual behaviour 6 months later except for a small select group attending 15 or more sessions.	Harm reduction (N) - No overall impact on condom use 6 months later except for a small select group attending 15 or more sessions.
Health Service Reorientation. Sexually active female adolescents with Chlamydia	290	Sexual Risk-taking Behaviour	Persistence/escalation(N) - Chlamydia reinfection was not impacted at 6 months.	Healthy beliefs (N) - Knowledge, attitudes and beliefs were not impacted. Harm reduction (Y) - There was an increase in condoms "sometimes" being used at 6 months.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Health Service Reorientation. Suicide attempters (not adolescent-specific) who did not initially comply with post-discharge appointment.	167	Suicidal Behaviour	Persistence/escalation (Y) - There was a trend for reduction in the frequency of suicide attempts in the Special Care group.	Community opportunities (Y) - initially non-compliant adolescents demonstrated more contact with mental health professionals.
Health Service Reorientation. Young people aged 13 to 18 attending a general medical clinic	136	Alcohol and Drug	Initiation (Not measured).	Healthy beliefs (Y) - drug knowledge increased.
Laws/policies - A law requires retailers to instal a locking device on cigarette vending machines.	119	Tobacco	Availability of means/opportunity (N) - retailers did not seek proof of age from minors. Initiation (Not measured).	
Laws/policies - Retailers who sell cigarettes	113	Tobacco	Availability of means/opportunity (Y) - increased proof of age requests by tobacco retailers. Initiation (Y) - pre-post reduction in tobacco use, for girls 1 year later.	
Laws/policies - Retailers who sell cigarettes.	121	Tobacco	Availability of means/opportunity (Design inadequate to measure an effect) - most minors still able to purchase tobacco. Initiation (Not measured).	
Laws/policies - Retailers who sell cigarettes to minors, Grades 8 - 10.	408	Tobacco	Persistence Escalation (Y) - lower increase in daily smoking rates. Availability of means/opportunity (Y) - reduced tobacco sales to minors.	
Laws/policies - Retailers who sell cigarettes.	142	Tobacco	Availability of means/opportunity (Y) - increase in merchants asking for proof of age from buyers. Adolescents reported only a small drop in their ability to purchase tobacco. Initiation (N) - Adolescents reported no decline in tobacco use.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Laws/policies - Retailers who sell tobacco	114	Tobacco	Availability of means/opportunity (Y) - reduced tobacco sales to minors. Initiation (Y) - reduction in tobacco use. Persistence/escalation (Y) - reduction in regular tobacco use.	
Laws/policies - Retailers who sell tobacco products	111	Tobacco	Availability of means/opportunity (Impact can't be assessed with this design). Initiation (Not measured).	
Laws/policies - Storage of loaded firearms. Children under 15 years of age.	436	Suicidal Behaviour	Persistence/escalation (N) - Safe gun storage law did not reduce suicide by guns.	
Laws/policies - Merchants licensed to sell cigarettes.	200	Tobacco	Availability of means/opportunity (Y) - 1 year after the intervention fewer stores were selling tobacco to minors. Initiation (Not measured).	
Laws/policies - Merchants licensed to sell tobacco.	52	Tobacco	Availability of means/opportunity (Y) - reduced illegal tobacco sales 12 months later. Initiation (Not measured).	
Laws/policies - Retail outlets which sell tobacco.	419	Tobacco	Availability of means/opportunity (N) - despite legislation retailers sell cigarettes to minors	
Laws/policies - Retailers licensed to sell cigarettes.	283	Tobacco	Availability of means/opportunity (N) - the intervention did not improve compliance with tobacco laws 3 months later. Favourable community laws & norms (Y) - intervention retailers were less approving of tobacco sales to minors 3 months later. Initiation (Not measured).	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Laws/policies - Retailers who sell cigarettes	19	Tobacco	Availability of means/opportunity (Y) - lower availability of cigarettes from vending machines 1 year later. Initiation (Not measured).	
Laws/policies - Retailers who sell cigarettes	49	Tobacco	Availability of means/opportunity (N) - retailers continued to sell tobacco to minors. Initiation (Not measured).	
Laws/policies - Tobacco merchants.	498	Tobacco	Availability of means/opportunity (Y) - reduced tobacco sales to minors at post-test. Initiation (Not measured).	
Laws/policies - Tobacco retailers.	420	Tobacco	Availability of means/opportunity (Y) - reduced tobacco sales to minors to 1 year.	
Laws/policies - Tobacco sales to minors. Grades 6 - 12.	407	Tobacco	Availability of means/opportunity (Y) - reduced tobacco sales to minors.	
Mentoring - youth aged 10-14	503	Alcohol and Drug	Academic Failure (Y) - Reduced to 18 months. Initiation (Y) - Drug use reduced to 18 months.	Family Attachment (Y) - Improved to 18 months.
Parent Training - Children & Adolescents with a conduct disorder - aged 6 - 15 years.	402	Antisocial Behaviour	Early and persistent antisocial behaviour (Y) - Improvement at 7 week post-test.	
Parent Training - Chronically offending adolescents, no older than 16 years of age.	404	Antisocial Behaviour	Persistence/escalation (Y) - less incarceration after 5 months	
Parent Training - Fifth to seventh grade students	460	Alcohol and Drug	Peer influence (N) - not directly measured but could not be implemented. Initiation (N) - no impact on tobacco or alcohol initiation.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Parent Training - Parents recruited through worksites.	349	Alcohol and Drugs & Antisocial Behaviour	Family management problems (Y) - improvement maintained to 30 mths. Favourable parental attitudes (Y) - less favourable to substance use. Family Involvement in the problem behaviour (Y) - Less parental depression. Initiation (Y) - Reduced youth antisocial behaviour maintained to 30 mths.	
Parent Training - Sixth and seventh grade students from school districts eligible for the federally funded school lunch program	239	Alcohol and Drug	Favourable attitudes (Y) - intention to abstain from alcohol use approx 3.5 months following in-home assessment. Initiation (Not measured).	Family attachment (Y) - enhanced affectional relationship with parents.
Parent Training - 8th grade	502	Suicidal Behaviour	Family conflict (Y) - reduced 3 months later. Initiation (Y) - less alcohol initiation, trend to less self-harm. Persistence/escalation (Y) - less combined substance use, multiple delinquency.	Family attachment (Y) - improved to 3 months.
Parent Training - with Peer Intervention component. Families with a 10- to 14-year-old adolescents who was at risk for antisocial behaviour	303	Antisocial Behaviour Smoking	Family conflict (Y) - reduced at post-test. Initiation (Y) - less smoking for the parent intervention 1 year later. Persistence/escalation (Y) - less antisocial school behaviour for the parent intervention 1 year later.	
Peer Education - Students in 6th and 7th grade.	416	Tobacco	Initiation (N) - No significant trend for lower tobacco use at 12 months.	
Peer Education - In schools. Upper secondary school students (16-20 years of age) in Norway.	246	Sexual Risk-taking Behaviour	Initiation (N) - No impact on the initiation of sex.	Harm reduction (Y) - For sexually active participants who received the pre-test, condom use increased significantly 6 months later.
Peer Education - In the Community. Natural peer networks of urban, low-income African-American younger adolescents (9-15 years, median age 11.3 years).	289	Sexual Risk-taking Behaviour	Favourable attitudes (Y) - Increased intentions to use condoms were evident 6 months later, but not maintained at 12 months. Initiation (N) - No impact on engagement in sexual activity.	Healthy beliefs (Y) - Improvements in knowledge regarding safe sex were maintained 12 months later. Harm reduction (Y) - Increased use of condoms was evident 6 months later, but not maintained at 12 months.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Peer Education - In the Community. Targets the natural friendship networks of African-American early adolescents (mean age 11.4 years)	295	Sexual Risk-taking Behaviour	Persistence/escalation (Not measured).	Healthy beliefs (Y) - knowledge of contraception improved 18 mths later. Harm reduction (Y) - condom use increased 18 mths later.
Peer Education - Young gay men.	381	Sexual Risk-taking Behaviour	Persistence/escalation (Y) - less unprotected anal intercourse.	Skills (Y) - some inconsistent improvement in ability to resist unsafe sex at 8 mths.
School Organisation - Adolescents in middle and high schools (aged 11-21 years)	364	Sexual Risk-taking Behaviour	School commitment (Y) - A range of impacts 1 yr later Persistence/escalation (Y) - 1 yr later less pregnancy, arrests.	Harm reduction (Y) - 1 yr later more condom use.
School Organisation - Grades 4-8, below average reading ability and above average on disruptive, non-attentive behaviour.	501	Antisocial behaviour	Initiation (Y) - less disruptive classroom behaviour to 1 year. Persistence/escalation (Y) - reduced vandalism to 2 years.	School rewards (bonding) (Y) - increased teachers' use of praise.
School Organisation - High school students (Grades 9-12) at high risk of potential school drop out.	456	Alcohol and Drug	Academic failure (Y) - improved school grades slightly to 5 months. Peer influence (Y) - less negative peer associations to 5 months Persistence/escalation (Y) - curbed transition to illicit drugs to 5 months.	School rewards (bonding) (Y) - improved to 5 months. Healthy beliefs (Y) - enhanced self-esteem 5 months. Harm reduction (Y) - reduced negative drug use consequences to 5 months.
Social Marketing - Adolescents 12-17 years.	28	Tobacco	Peer influence (Y) - perception of friends' approval for smoking. Initiation (N) - tobacco use 11-17 months later.	Healthy beliefs (Y) – tobacco.
Social Marketing - Adolescents aged 12-14 years	6	Tobacco	Media portrayals (Y). Initiation (N) - tobacco use 5 years later.	Healthy beliefs (N) - tobacco.

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Social Marketing - Including Curricula. School students in grades 5 to 7.	298	Tobacco	Favourable attitudes (Y) - less favourable attitudes to smoking amongst girls 2 years later in the school & media condition. Peer influence (Y) - fewer peers perceived to be smoking amongst girls 2 years later in the school & media condition. Persistence/escalation (Y) - less weekly smoking amongst girls 2 years later in the school & media condition.	
Social Marketing - metropolitan area with a population between 50,000 - 400,000. Included Curricula for students in grades 5-10 (11- to 16-years-old)	198	Tobacco	Favourable attitudes (Y) - students exposed to the combined media and school intervention demonstrated less favourable attitudes to tobacco by grades 8-10 compared to students in the school-only condition. Peer influence (Y) - students exposed to the combined media and school intervention demonstrated lower perceived peer smoking by grades 8-10 compared to students in the school-only condition. Persistence/escalation (Y) - students exposed to the combined media and school intervention demonstrated less regular smoking by grades 8-10 compared to students in the school-only condition.	
Social Marketing - metropolitan areas with a population between 50,000 - 400,000. Included curricula for students in grades 5-10 (11- to 16-years-old)	180	Tobacco	Favourable attitudes (Y) - combining media intervention with school elements resulted in less favourable attitudes to smoking compared to school intervention alone to 5 years. Peer influence (Y) - the combined intervention group perceived less peer smoking compared to the school only intervention after 5 years. Favourable community laws & norms (N) - there were no effects for adult smoking to 5 years. Persistence/escalation (Y) - the combined intervention group demonstrated a lower smoking prevalence and less weekly smoking by years 10-12 (7th study year) compared to the school only group.	

Intervention Strategy & Target Group	ID	Outcome Target	Risk Factor Impacts (Y) impact, (N) no impact	Protective Factor Impacts (Y) impact, (N) no impact
Social Marketing - Students grades 5 to 7.	129	Tobacco	Media portrayals (Y) - increased exposure to smoking prevention messages. Persistence/escalation of (Y) 6.5% less weekly smoking 2 years later.	
Social Marketing - Students in years 5 to 7.	124	Tobacco	Persistence/escalation (Y) - lower weekly tobacco use 6 years after study initiation.	
Youth Recreation - Non-smoking adolescents aged 10-13 years	55	Tobacco	Peer influence (N) - immersion in a smoking environment. Initiation (N) - tobacco 4 years later.	
Youth Recreation Program – 13-year-old members of Boys and Girls Clubs of America (non-school atmosphere where boys and girls voluntarily congregate for athletic activities, games and interaction with positive adult role models. Traditionally serves disadvantaged youths)	469	Alcohol and Drug	Persistence/escalation (Y) - lower marijuana, (Y) tobacco but (N) alcohol not impacted at 24 months.	Healthy beliefs (Y) - knowledge increase to 24 months.
Youth Recreation Programs - Adolescents 12-16 years	135	Sexual Risk-taking Behaviour	Persistence/escalation (N) - no change in sexual risk behaviours at 4 week post-test.	Healthy beliefs (Y) – AIDS knowledge. Skills (Y) - decision making, communication, assertiveness. Harm reduction (N) - no change in use of condoms.

REFERENCES CITED IN THE TECHNICAL SUMMARIES

- ID: 6.** - Murray, D.M., Prokhorov, A.V. and Harty, K.C. (1994) Effects of a Statewide Antismoking Campaign on Mass Media Messages and Smoking Beliefs. *Preventive Medicine*, 23, 54-60.
- ID: 8.** - Elder, J., Wildey, M., de Moor, C., Sallis, J., Eckhardt, L., Edwards, C., Erikson, C., Golbeck, A., Hovell, M., Johnston, D., Levitz, M., Molgaard, C., Young, R., Vito, D. and Woodruff, S.I. (1993) The Long-Term Prevention of Tobacco Use Among Junior High School Students: Classroom and Telephone Interventions. *American Journal of Public Health*, 83, 1239-1244.
- ID: 9.** - Doi, S.C. and DiLorenzo, T.M. (1993) An evaluation of a tobacco use education-prevention program: A pilot study. *Journal of Substance Abuse*, 5, 73-78.
- ID: 14.** - Murray, D., Perry, C., Griffin, G., Harty, K., Jacobs, D.R., Schmid, L., Daly, K. and Pallonen, U. (1992) Results From a Statewide Approach to Adolescent Tobacco Use Prevention. *Preventive Medicine*, 21, 449-472.
- ID: 15.** - Snow, D., Tebes, J.K., Arthur, M.W., and Tapasak, R. (1992) Two-Year follow-up of a Social-Cognitive Intervention To Prevent Substance Use. *Journal of Drug Education*, 22, 101-114.
- ID: 16.** - Cella, D.F., Tulsy, D.S., Sarafian, B., Thomas, C.R. Jr., and Thomas, C.R. Sr. (1992) Culturally relevant smoking prevention for minority youth. *Journal of School Health*, 62, 377-380.

- ID: 19.** - Forster, J.L., Hourigan, M.E. and Kelder, S. (1992) Locking Devices on Cigarette Vending Machines: Evaluation of a City Ordinance. American Journal of Public Health, *82*, 1217-1219.
- ID: 22.** - Lionis, C., Kafatos, A., Vlachonikolis, J., Vakaki, M., Tzortzi, M. and Petraki, A. (1991) The Effects of a Health Education Program Among Cretan Adolescents. Preventive Medicine, *20*, 685-699.
- ID: 28.** - Bauman, K.E., LaPrelle, J., Brown, J.D., Koch, G.G. and Padgett, C.A. (1991) The Influence of Three Mass Media Campaigns on Variables Related to Adolescent Cigarette Smoking: Results of a Field Experiment. American Journal of Public Health, *81*, 597-604.
- ID: 30.** - Graham, J.W., Anderson Johnson, C., Hansen, W.B., Flay, B.R. and Gee, M. (1990) Drug Use Prevention Programs, Gender, and Ethnicity: Evaluation of Three Seventh-Grade Project SMART Cohorts. Preventive Medicine, *19*, 305-313.
- ID: 31.** - Botvin, G.J., Baker, E., Filazzola, A.D. and Botvin, E.M. (1990) A Cognitive-Behavioural Approach to Substance Abuse Prevention: One Year Follow-Up. Addictive Behaviors, *15*, 47-63.
- ID: 39.** - Vartiainen, E., Paavola, M., McAlister, A. and Puska, P. (1998) Fifteen-year Follow-up of Smoking Prevention Effects in the North Karelia Youth Project. American Journal of Public Health, *88*, 81-85.
- ID: 45.** - Baxter, A.P., Milner, P.C., Hawkins, S., Leaf, M., Simpson, C., Wilson, K. V., Owen, T., Higginbottom, G., Nicholl, J. and Cooper, N. (1997) The Impact of Heart Health Promotion on Coronary Heart Disease Lifestyle Risk Factors in Schoolchildren: Lessons Learnt from a Community based Project. Public Health, *111*, 231-237.
- ID: 49.** - Suriyawongpaisal, P., Tantiked, N., Mung-Roen, K., Buasai, S. and Suppawong, C. (1996) Retailers' Compliance to the Law Banning Cigarette Sale to Minors. Journal of the Medical Association of Thailand, *79*, 127-131.
- ID: 52.** - Jason, L., Billows, W., Schnopp-Wyatt, D. and King, C. (1996) Reducing The Illegal Sales of Cigarettes to Minors: Analysis of Alternative Enforcement Schedules. Journal of Applied Behavior Analysis, *29*, 333-344.
- ID: 55.** - van Teijlingen, E.R., Friend, J.A.R. and Twine, F. (1996) Evaluation of Grampian Smokebusters; a smoking prevention initiative aimed at young teenagers. Journal of Public Health Medicine, *18*, 13-18.
- ID: 97.** - de Vries, H., Dijkstra, M. and Kok, G. (1992) A Dutch Smoking Prevention Project: An Overview. Hygie, *11*, 14-18.
- ID: 111.** - Anonymous (1993) Minors' Access to Tobacco - Missouri, 1992 and Texas, 1993. Journal of the American Medical Association, *269*, 1362-1364.
- ID: 113.** - Ward Hinds, M. (1992) Impact of Local Ordinance Banning Tobacco Sale to Minors. Public Health Reports, *107*, 355-358.
- ID: 114.** - Jason, L.A., Ji, P.Y., Anes, M.D. and Birkhead, S.H. (1991) Active Enforcement of Cigarette Control Laws in the Prevention of Cigarette Sales to Minors. Journal of the American Medical Association, *266*, 3159-3161.
- ID: 119.** - Anonymous (1994) Minors' Access to Cigarette Vending Machines - Texas. Morbidity & Mortality Weekly Report, *43*, 625-627.
- ID: 121.** - Sanson-Fisher, R.W., Schofield, M.J. and See, M. (1992) Availability of Cigarettes to Minors. Australian Journal of Public Health, *16*, 354-359.
- ID: 124.** - Flynn, B.S., Worden, J.K., Secker-Walker, R.H., Pirie, P.L., Badger, G.J., Carpenter, J.H. and Geller, B.M. (1994) Mass Media and School Interventions for Cigarette Smoking Prevention: Effects 2 Years After Completion. American Journal of Public Health, *84*, 1148-1150.
- ID: 127.** - Cheadle, A., Pearson, D., Wagner, E., Psaty, B., Diehr, P. and Koepsell, T. (1995) A Community based Approach to Preventing Alcohol Use Among Adolescents On An American Indian Reservation. Public Health Reports, *110*, 439-447.
- ID: 129.** - Flynn, B.S., Worden, J.K., Secker-Walker, R.H., Pirie, P.L., Badger, G.J. and Carpenter, J.H. (1997) Long-Term Responses of Higher and Lower Risk Youths to Smoking Prevention Interventions. Preventive Medicine, *26*, 389-394.
- ID: 131.** - Klein, J.D., Portilla, M., Goldstein, A. and Leininger, L. (1995) Training pediatric residents to prevent tobacco use. Pediatrics, *96*, 326-330.

- ID: 134.** - Ellickson, P.L., Bell, R.M. and McGuigan, K. (1993) Preventing Adolescent Drug Use: Long-term Results of a Junior High School Program. American Journal of Public Health, 83, 856-861.
- ID: 135.** - Kipke, M.D., Boyer, C. and Hein, K. (1993) An Evaluation of an AIDS Risk Reduction Education and Skills Training (ARREST) Program. Journal of Adolescent Health, 14, 533-539.
- ID: 136.** - Rickert, V.I., Graham, C.J., Fisher, R., Gottlieb, A., Trosclair, A. and Jay, M.S. (1993) A Comparison of Methods for Alcohol and Marijuana Anticipatory Guidance With Adolescents. Journal of Adolescent Health, 14, 533-539.
- ID: 137.** - Mansfield, C.J., Conroy, M.E., Emans, S.J. and Woods, E.R. (1993) A Pilot Study of AIDS Education and Counselling of High-Risk Adolescents in an Office Setting. Journal of Adolescent Health, 14, 115-119.
- ID: 139.** - Lochman, J.E. (1992) Cognitive-Behavioural Intervention with aggressive boys: Three-year follow-up and preventive effects. Journal of Consulting & Clinical Psychology, 60, 426-432.
- ID: 142.** - Rigotti, N.A., DiFranza, J.R., Chang, Y., Tisdale, T., Kemp, B. and Singer, D.E. (1997) The Effects of Enforcing Tobacco-Sales Laws on Adolescents' Access to Tobacco and Smoking Behaviour. The New England Journal of Medicine, 337, 1044-1051.
- ID: 144.** - Macgowan, M.J. (1997) An Evaluation of a Dating Violence Prevention Program for Middle School Students. Violence & Victims, 12, 223-235.
- ID: 145.** - Mbizvo, M.T., Kasule, J., Gupta, V., Rusakaniko, S., Kinoti, S.N., Mpanju-Shumbushu, W., Sebina-Zziwa, A.J., Mwateba, R. and Padayachy, J. (1997) Effects of a Randomised Health Education Intervention on Aspects of Reproductive Health Knowledge and Reported Behaviour Among Adolescents in Zimbabwe. Social Science & Medicine, 44, 573-577.
- ID: 153.** - Palinkas, L.A., Atkins, C.J., Miller, C. & Ferreira, D. (1996) Social Skills Training for Drug Prevention in High-Risk Female Adolescents. Preventive Medicine, 25, 692-701.
- ID: 163.** - Slonim-Nevo, V., Auslander, W.F., Oxawa, M.N. and Jung, K.G. (1996) The Long-Term Impact of AIDS - Preventive Interventions for Delinquent and Abused Adolescents. Adolescence, 31, 409-421.
- ID: 166.** - Elder, J.P., Perry, C.L., Stone, E.J., Johnson, C.C., Yang, M., Edmundson, E.W., Smyth, M.H., Galati, T., Feldman, H., Cribb, P. and Parcel, G.S. (1996) Tobacco Use Measurement, Prediction, and Intervention in Elementary School in Four States: The CATCH Study. Preventive Medicine, 25, 486-494.
- ID: 167.** - Van Heeringen, C., Jannes, S., Buylaert, W., Henderick, H., De Bacquer, D. and Van Remoortel, J. (1995) The Management of Non-compliance with Referral to Out-patient After-care Among Attempted Suicide Patients: A Controlled Intervention Study. Psychological Medicine, 25, 963-970.
- ID: 169.** - Levy, S.R., Perhats, C., Weeks, K., Handler, A.S., Zhu, C. and Flay, B.R. (1995) Impact of a School based AIDS Prevention Program on Risk and Protective Behaviour for Newly Sexually Active Students. Journal of School Health, 65, 145-151.
- ID: 173.** - Perry, C., Williams, C.L., Veblen-Mortenson, S., Toomey, T., Komro, K., Anstine, P., McGovern, P., Finnegan, J., Forster, J., Wagenaar, A. and Wolfson, M. (1996) Project Northland: Outcomes of a Communitywide Alcohol Use Prevention Program during Early Adolescence. American Journal of Public Health, 86, 956-965.
- ID: 175.** - Botvin, G., Epstein, J., Baker, E., Diaz, T. and Ifill-Williams, M. (1997) School based Drug Abuse Prevention with Inner-City Minority Youth. Journal of Child & Adolescent Substance Abuse, 6, 5-19.
- ID: 180.** - Flynn, B.S., Worden, J.K., Secker-Walker, R.H., Badger, G.J. and Geller, B.M. (1995) Cigarette Smoking Prevention Effects of Mass Media and School Interventions Targeted to Gender and Age Groups. Journal of Health Education, 26, 45-51.
- ID: 187.** - Elder, J.P., Woodruff, S.I., Sallis, J.F. de Moor, C., Edwards, C. and Wildey, M.B. (1994) Effects of health facilitator performance and attendance at training sessions on the acquisition of tobacco refusal skills among multi-ethnic, high-risk adolescents. Health Education Research, 9, 225-233.
- ID: 191.** - Sussman, S., Dent, C.W., Stacy, A.W., Sun, P., Craig, S., Simon, T.R., Burton, D. and Flay, B.R. (1993) Project towards no tobacco use: 1-year behaviour outcomes. American Journal of Public Health, 83, 1245-1250.

- ID: 195.** - Price, J.H., Telljohann, S.K., Roberts, S.M. and Smit, D. (1992) Effects of Incentives in an Inner City Junior High School Smoking Prevention Program. Journal of Health Education, 23, 388-399.
- ID: 196.** - Abernathy, T.J. and Bertrand, L.D. (1992) Preventing cigarette smoking among children: Results of a four-year evaluation of the PAL program. Canadian Journal of Public Health, 83, 226-229.
- ID: 197.** - Perry, C.L., Kelder, S.H., Murray, D.M. and Klepp, K.I. (1992) Communitywide Smoking Prevention: Long-Term Outcomes of the Minnesota Heart Health Program and the Class of 1989 Study. American Journal of Public Health, 82, 1210-1216.
- ID: 198.** - Flynn, B.S., Worden, J.K., Secker-Walker, R.H., Badger, G.J., Geller, B.M. and Costanza, M.C. (1992) Prevention of Cigarette Smoking Through Mass Media Intervention and School Programs. American Journal of Public Health, 82, 827-834.
- ID: 200.** - Altman, D.G., Rasenick-Douss, L., Foster, V. and Tye, J.B. (1991) Sustained Effects of an Educational Program to Reduce Sales of Cigarettes to Minors. American Journal of Public Health, 81, 891-893.
- ID: 201.** - Johnson, C.A., Pentz, M.A., Weber, M.D., Dwyer, J.H., Baer, N., MacKinnon, D.P., Hansen, W.B. and Flay, B.R. (1990) Relative Effectiveness of Comprehensive Community Programming for Drug Abuse Prevention with High-Risk and Low-Risk Adolescents. Journal of Consulting & Clinical Psychology, 58, 447-456.
- ID: 229.** - Eckhardt, L., Woodruff, S.I. and Elder, J.P. (1997) Relative effectiveness of continued, lapsed, and delayed smoking prevention intervention in senior high school students. American Journal of Health Promotion, 11, 418-421.
- ID: 239.** - Spoth, R., Redmond, C., Hockaday, C. and Yoo, S. (1996) Protective Factors and Young Adolescent Tendency to Abstain from Alcohol Use: A Model Using Two Waves of Intervention Study Data. American Journal of Community Psychology, 24, 749-770.
- ID: 246.** - Kvale, I.L., Sundet, J.M., Rivo, K.I., Eilertsen, D.E., and Bakketeig, L.S. (1996) The Effect of Sex Education on Adolescents' Use of Condoms: Applying the Solomon Four-Group Design. Health Education Quarterly, 23, 34-47.
- ID: 271.** - Jemmott, J.B., Jemmott, L.S. and Fong, G.T. (1992) Reductions in HIV Risk-Associated Sexual Behaviours Among Black Male Adolescents: Effects of an AIDS Prevention Intervention. American Journal of Public Health, 82, 372-377.
- ID: 283.** - Schofield, M.J., Sanson-Fisher, R.W. and Gulliver, S. (1997) Interventions with Retailers to Reduce Cigarette Sales to Minors: A Randomized Controlled Trial. Australian and New Zealand Journal of Public Health, 21, 590-596.
- ID: 289.** - Stanton, B.F., Li, X., Ricardo, I., Galbraith, J., Feigelman, S. and Kaljee, L. (1996) A Randomised Controlled Effectiveness Trial of an AIDS Prevention Program for Low-Income African-American Youths. Archives of Pediatrics & Adolescent Medicine, 150, 363-372.
- ID: 290.** - Orr, D.P., Langefeld, C.D., Katz, B.P. and Caine, V.A. (1996) Behavioural intervention to increase condom use among high-risk female adolescents. Journal of Paediatrics, 128, 288-295.
- ID: 294.** - Schewe, P.A. and O'Donohue, W. (1996) Rape Prevention with High-Risk Males: Short-Term Outcome of Two Interventions. Archives of Sexual Behaviour, 25, 455-471.
- ID: 295.** - Stanton, B.F., Li, X., Galbraith, J., Feigelman, S. & Kaljee, L. (1996) Sexually Transmitted Diseases, Human Immunodeficiency Virus, and Pregnancy Prevention: Combined Contraceptive Practices Among Urban African-American Early Adolescents. Archives of Pediatrics & Adolescent Medicine, 150, 17-24.
- ID: 298.** - Worden, J.K., Flynn, B.S., Solomon, L.J., Secker-Walker, R.H., Badger, G.J. and Carpenter, J.H. (1996) Using Mass Media to Prevent Cigarette Smoking Among Adolescent Girls. Health Education Quarterly, 23, 453-468.
- ID: 302.** - Botvin, G.J., Eli, B., Dusenbury, L., Botvin, E.M. and Diaz, T. (1995) Long-Term Follow-Up Results of a Randomized Drug Abuse Prevention Trial in a White Middle-class Population. The Journal of the American Medical Association, 273, 1106-1112.
- ID: 303.** - Dishion T.J. and Andrews D.W. (1995) Preventing Escalation in Problem Behaviours With High-Risk Young Adolescents: Immediate and 1-year Outcomes. Journal of Consulting Clinical Psychology, 63, 538-548.

- ID: 304.** - Ablasca, M.R.A., Siegel, D., Mandel, J.S., Santana-Arciaga, R.T., Paul, J., Hudes, E.S., Monzon, O.T. and Hearst, N. (1995) Results of a model AIDS Prevention Program for High School Students in the Philippines. AIDS, Suppl 1: S7-13.
- ID: 309.** - Shean, R.E., de Klerk, N.H., Armstrong, B. and Walker, N. (1994) Seven-year Follow-Up of a Smoking - Prevention Program for Children. Australian Journal of Public Health, 18, 205-208.
- ID: 311.** - Ellickson, P.L., Bell, R.M. and Harrison, E.R. (1993) Changing Adolescent Propensities to Use Drugs: Results From Project ALERT. Health Education Quarterly, 20, 227-242.
- ID: 314.** - Severson, H., Glasgow, R., Wirt, R., Brozovsky, P., Zoref, L., Black, C., Biglan, A., Ary, D. and Weissman, W. (1991) Preventing the Use of Smokeless Tobacco and Cigarettes By Teens: Results of a Classroom Intervention. Health Education Research, 6, 109-120.
- ID: 315.** - Rotheram-Borus, M.J., Koopman, C., Haignere, C. and Davies, M. (1991) Reducing HIV Sexual Risk Behaviours Among Runaway Adolescents. The Journal of the American Medical Association, 266, 1237-1241.
- ID: 316.** - Botvin, G.J., Tortu, S., Baker, E. and Dusenbury, L. (1990) Preventing adolescent cigarette smoking: Resistance skills training and development of life skills. Special Services in the Schools, 6, 37-61.
- ID: 321.** - Shechtman, Z. and Nachshol, R. (1996) A School based Intervention to Reduce Aggressive Behaviour in Maladjusted Adolescents. Journal of Applied Developmental Psychology, 17, 535-552.
- ID: 326.** - Eisen, M., Zellman, G.L. and McAlister, A.L. (1992) A Health Belief Model-Social Learning Theory Approach to Adolescents' Fertility Control: Findings from a Controlled Field Trial. Health Education Quarterly, 19, 249-262.
- ID: 327.** - Graves, R., Openshaw, D.K. and Adams, G.R. (1992) Adolescent Sex Offenders and Social skills Training. Health Education Quarterly, 19, 249-262.
- ID: 330.** - Kooler, J.M. and Bruvold, W.H. (1992) Evaluation of an Educational Intervention Upon Knowledge, Attitudes, and Behaviour Concerning Drinking/Drugged Driving. Journal of Drug Education, 22, 87-100.
- ID: 332.** - Blinn-Pike, L. (1996) Evaluation of a Program to Delay Sexual Activity Among Female Adolescents in Rural Appalachia. Family Relations, 45, 380-386.
- ID: 339.** - Minor, K.I. and Elrod, P. (1994) The Effects of a Probation Intervention on Juvenile Offenders' Self-Concepts, Loci of Control and Perception of Juvenile Justice. Youth and Society, 25, 490-511.
- ID: 344.** - Cotgrove, A., Zirinsky, L., Black, D. and Weston, D. (1995) Secondary Prevention of Attempted Suicide in Adolescence. Journal of Adolescence, 18, 569-577.
- ID: 345.** - Eggert, L.L., Thompson E.A., Herting, J.R., and Nicholas, L.J. (1995) Reducing Suicide Potential Among High-risk Youth: Tests of a School based Prevention Program. Suicide and Life Threatening Behaviour, 25, 276-296.
- ID: 346.** - Silburn, S.R., Zubrick, S.R. and Acres, J. (1997) Evaluation of an Intervention to Facilitate Better Hospital and Community Management of Teenage Deliberate Self-harm Admissions in Western Australia. Paper presented at the XIX Congress of the International Association for Suicide Prevention, Adelaide, 1997.
- ID: 347.** - Kirby, D., Korpi, M., Adivi, C. and Weissman, J. (1997) An impact Evaluation of Project SNAPP: An AIDS and Pregnancy Prevention Middle School Program. AIDS Education and Prevention, 9, 44-61.
- ID: 348.** - Jemmott, J.B., Jemmott, L.S. and Fong, G.T. (1998) Abstinence and Safer Sex HIV Risk-Reduction Interventions for African American Adolescents: A Randomised Control Trial. The Journal of the American Medical Association, 279, 1529-1536.
- ID: 349.** - Felner, R.D., Brand, S., Mulhall, K. E., Counter, B., Millman, J.B. and Fried, J. (1994) The Parenting Partnership: The Evaluation of a Human Service/Corporate Workplace Collaboration for the Prevention of Substance Abuse and Mental Health Problems, and the Promotion of Family and Work Adjustment. Journal of Primary Prevention, 15, 123-146.
- ID: 350.** - Klepp, K.I., Oygard, L., Tell, G.S. and Vellar, O.D. (1994) Twelve year follow-up of a school based health education program: The Oslo Youth Study. European Journal of Public Health, 4, 195-200.

- ID: 351.** - Armstrong, B.K., de Klerk, N.H., Shean, R.E., Dunn, D.A. and Dolin, P.J. (1990) Influence of Education and Advertising on the Uptake of Smoking by Children. Medical Journal of Australia, 152, 117-124.
- ID: 352.** - Nutbeam, D., Macaskill, P., Smith, C., Simpson, J.M. and Catford, J. (1993) Evaluation of Two School Smoking Education Programs Under Normal Classroom Conditions. The British Medical Journal, 306, 102-107.
- ID: 353.** - Snati, S.M., Cargo, M., Brown, S., Best, J.A. and Cameron, R. (1994) Dispositional Risk Factors for Smoking-Stage Transitions: A Social Influences Program as an Effect Modifier. Addictive Behaviours, 19, 269-285.
- ID: 354.** - Ary, D.V., Biglan, A., Glasgow, R., Zoref, L., Black, C., Ochs, L., Severson, H., Kelly, R., Weissman, W., Lichtenstein, E., Brozovsky, P., Wirt, R. and James, L. (1990) The efficacy of social-influence prevention programs versus "standard care": are new initiatives needed? Journal of Behavioral Medicine, 13, 281-96
- ID: 355.** - Stevenson, H.C., Gay, K.M. and Josar, L. (1995) Culturally Sensitive AIDS Education and Perceived AIDS Risk Knowledge: Reaching the "Know-It-All" Teenager. AIDS Education and Prevention, 7, 134-144.
- ID: 360.** - Weeks, K., Levy, S.R., Zhu, C., Perhats, C., Handler, A. and Flay, B.R. (1995) Impact of a School based AIDS Prevention Program on Young Adolescents' Self-Efficacy Skills. Health Education Research, 10, 329-344.
- ID: 361.** - Eisen, M., Zellman, G.L., and McAlister, A.L. (1990) Evaluating the Impact of a Theory-Based Sexuality and Contraceptive Education Program. Family Planning Perspectives, 22, 261-271.
- ID: 362.** - Kirby, D., Korpi, M., Barth, R.P. and Cagampang, H.H. (1997) The Impact of the Postponing Sexual Involvement Curriculum Among Youths in California. Family Planning Perspectives, 29, 100-108.
- ID: 363.** - Miller, B.C., Norton, M.C., Jenson, G.O., Lee, T.R., Christopherson, C. and King, P.K. (1993) Pregnancy Prevention Programs - Impact Evaluation of Facts and Feelings - A Home-based Video Sex Education Curriculum. Family Relations, 42, 392-400.
- ID: 364.** - Philliber, S., Allen, J.P. Life Options and Community Service Teen Outreach Program. In, B.C. Miller, J.C. Josefina, L.P. Roberta and L.P. James. (Eds) Preventing Adolescent Pregnancy. New York: Sage Publications. Pages 139-155.
- ID: 365.** - Kirby, D., Barth, R.P., Leland, N. and Fetro, J.V. (1991) Reducing the Risk: Impact of a New Curriculum on Sexual Risk-Taking. Family Planning Perspectives, 23, 253-263.
- ID: 366.** - Winett, R.A., Anderson, E.S., Moore, J.F., Taylor, C.D., Hook, R.J., Webster, D.A., Neubauer, T.E., Harden, M.C. and Mundy, L.L. (1993) Efficacy of a Home-Based Human Immunodeficiency Virus Prevention Video Program for Teens and Parents. Health Education Quarterly, 20, 555-567.
- ID: 367.** - Stevenson, H.C. and Davis, G. (1994) Impact of Culturally Sensitive AIDS Video Education on the AIDS Risk Knowledge of African-American Adolescents. AIDS Education and Prevention, 6, 40-52.
- ID: 368.** - Jorgensen, S.R. (1991) Project Taking Charge: An Evaluation of an Adolescent Pregnancy Prevention Program. Family Relations, 40, 373-380.
- ID: 369.** - Winett, R.A., Anderson, E.S., Moore, J.F., Sikkema, K.J., Hook, R.J., Webster, D.A., Taylor, C.D., Dalton, J.E., Ollendick, T.H. and Eisler, R.M. (1992) Family/Media Approach to HIV Prevention: Results With a Home-Based, Parent-Teen Video Program. Health Psychology, 11, 203-206.
- ID: 370.** - Schaalma, H.P., Kok, G., Bosker, R.J., Parcel, G.S., Peters, L., Poelman, J. and Reinders, J. (1996) Planned Development and Evaluation of AIDS/STD Education for Secondary School Students in the Netherlands: Short-Term Effects. Health Education Quarterly, 23, 469-487.
- ID: 371.** - Jorgensen, S.R., Potts, V. and Camp, B. (1993) Project Taking Charge – Six-month Follow-up of a Pregnancy Prevention Program for Early Adolescents. Family Relations, 42, 401-406.
- ID: 372.** - St. Lawrence, J.S., Jefferson, K.W., Alley, E. and Brasfield, T.L. (1995) Comparison of Education Versus Behavioural Skills Training Interventions in Lowering Sexual HIV-Risk Behaviour of Substance -Dependent Adolescents. Journal of Consulting and Clinical Psychology, 63, 154-157.

- ID: 373.** - Quirk, M.E., Godkin, M.A. and Schwenzfeier, E. (1993) Evaluation of Two AIDS Prevention Interventions for Inner-City Adolescent and Young Adult Women. American Journal of Preventive Medicine, 9, 21-26.
- ID: 374.** - Ashworth, C.S., DuRant, R.H., Newman, C. and Gaillard, A.B. (1992) An Evaluation of a School- Based AIDS/HIV Education Program for High School Students. Journal of Adolescent Health, 13, 582-588.
- ID: 375.** - Walter, H.J. and Vaughan, R.D. (1993) AIDS Risk Reduction Among a Multi-ethnic Sample of Urban High School Students. The Journal of the American Medical Association, 270, 725-730.
- ID: 376.** - Levy, S.R., Weeks, K., Handler, A., Perhats, C., Franck, J.A., Hedeker, D., Zhu, C. and Flay, B.R. (1995) A Longitudinal Comparison of the AIDS-Related Attitudes and Knowledge of Parents and Their Children. Family Planning Perspectives, 27, 4-10.
- ID: 377.** - Rickert, V.I., Jay, S. and Gottlieb, A. (1991) Effects of a Peer-Counselled AIDS Education Program on Knowledge, Attitudes and Satisfaction of Adolescents. Journal of Adolescent Health, 12, 38-43.
- ID: 378.** - Rickert, V.I., Gottlieb, A. and Jay, M.S. (1990) A Comparison of Three Clinic-based AIDS Education Programs on Female Adolescents' Knowledge, Attitudes and Behaviour. Journal of Adolescent Health Care, 11, 298-303.
- ID: 379.** - Caceres, C.F., Rosasco, A.M., Mandel, J.S. and Hearst, N. (1994) Evaluating a School based Intervention for STD/AIDS Prevention In Peru. Journal of Adolescent Health, 15, 582-591.
- ID: 380.** - Mellanby, A.R., Phelps, F.A., Crichton, N.J. and Tripp, J.H. (1995) School Sex Education: An Experimental Program with Educational and Medical Benefit. British Medical Journal, 311, 414-417.
- ID: 381.** - Kegeles, S.M., Hays, R.B. and Coates, T J. (1996) The Mpowerment Project: A Community-Level HIV Prevention Intervention for Young Gay Men. American Journal of Public Health, 86, 1129-1136.
- ID: 382.** - Jemmott, J.B., Jemmott, L.S., Spears, H., Hewitt, N. and Cruz-Collins, M. (1992) Self-Efficacy, Hedonistic Expectancies, and Condom-Use Intentions Among Inner-City Black Adolescent Women: A Social Cognitive Approach to AIDS Risk Behaviour. Journal of Adolescent Health, 13, 512-519.
- ID: 383.** - Barth, R.P., Fetro, J.V., Leland, N. and Volkan, K. (1992) Preventing Adolescent Pregnancy With Social And Cognitive Skills. Journal of Adolescent Research, 7, 208-232.
- ID: 384.** - Koo, H.P., Dunteman, G., George, C., Green, Y. and Vincent, M. (1994) Reducing Adolescent Pregnancy Through A School- and Community based Intervention: Denmark, South Carolina, Revisited. Family Planning Perspectives, 26, 206-211 & 217.
- ID: 385.** - Sellers, D.E., McGraw, S.A. and McKinlay, J.B. (1994) Does the Promotion and Distribution of Condoms Increase Teen Sexual Activity? Evidence from an HIV Prevention Program for Latino Youth. American Journal of Public Health, 84, 1952-1959.
- ID: 386.** - Main, D.S., Iverson, D.C., McGloin, J., Banspach, S.W., Collins, J.L., Rugg, D.L. and Kolbe, L.J. (1994) Preventing HIV Infection among Adolescents: Evaluation of a School based Education Program. Preventive Medicine, 23, 409-417.
- ID: 387.** - Kuhn, L., Steinberg, M. and Mathews, C. (1994) Participation of the School Community in AIDS Education: An Evaluation of a High School Program in South Africa. AIDS Care, 6, 161-171.
- ID: 388.** - Michaud, P.A. and Hausser, D. (1992) Swiss Teenagers, AIDS and Sexually Transmitted Diseases: Presentation and Evaluation of a Preventive Exhibition. Health Education Research, 7, 79-86.
- ID: 389.** - Roosa, M.W. and Christopher, F.S. (1990) Evaluation of an Abstinence-Only Adolescent Pregnancy Prevention Program: A Replication. Family Relations, 39, 363-367.
- ID: 390.** - Newman, C., DuRant, R.H., Ashworth, C.S. and Gaillard, G. (1993) An Evaluation of a School based AIDS/HIV Education Program For Young Adolescents. AIDS Education and Prevention, 5, 327-339.
- ID: 391.** - Howard, M. and McCabe, J.B. (1990) Helping Teenagers Postpone Sexual Involvement. Family Planning Perspectives, 22, 1, 21-26

- ID: 392.** - Kirby, D., Waszak, C. and Ziegler, J. (1991) Six School based Clinics: Their Reproductive Health Services and Impact on Sexual Behaviour. Family Planning Perspectives, 23, 6-16.
- ID: 393.** - Kirby, D., Resnick, M.D., Downes, B., Kocher, T., Gunderson, P., Potthoff, S., Zelterman, D. and Blum W. (1993) The Effects of School based Health Clinics In St. Paul on School-Wide Birthrates. Family Planning Perspectives, 25, 1, 12-16
- ID: 394.** - Magura, S., Kang, S. and Shapiro, J.L. (1994) Outcomes of Intensive AIDS Education for Male Adolescent Drug Users in Jail. Journal of Adolescent Health, 15, 457-463
- ID: 397.** - Farrell, A.D. and Meyer, A.L. (1997) The effectiveness of a school based curriculum for reducing violence among Urban sixth-grade students. American Journal of Public Health, 87, 979-984.
- ID: 399.** - Henggeler, S.W., Rodick, J.D., Borduin, C.M., Hanson, C.L., Watson, S.M., and Urey, J.R. (1986) Multisystemic treatment of juvenile offenders: Effects on adolescent behaviour and family interaction. Developmental Psychology, 22, 132-141.
- ID: 400.** - Henggeler, S.W., Melton, G.B. and Smith, L.A. (1992) Family preservation using Multisystemic therapy as an effective alternative to incarcerating serious juvenile offenders. Journal of Consulting and Clinical Psychology, 60, 953-961.
- ID: 401.** - Borduin, C.M., Mann, B.J., Cone, L.T., Henngeler, S.W., Fucci, B.R., Blaske, D.M. and Williams, R.A. (1995) Multisystemic treatment of serious juvenile offenders: Long-term prevention of criminality and violence. Journal of Consulting and Clinical Psychology, 63, 569-578.
- ID: 402.** - Hughes, R.C. and Wilson, P.H. (1988) Behavioural Parent Training Contingency Management versus Communication Skills Training with or without the Participation of the child. Child and Family Behaviour Therapy, 10, 11-23.
- ID: 404.** - Bank, L., Marlowe, J.H., Reid, J.B., Patterson, G.R. and Weinrott, M.R. (1991) A comparative evaluation of parent-training interventions for families of chronic delinquents. Journal of Abnormal Child Psychology, 19, 15-33.
- ID: 405.** - Pfau, M. and Van Bockern, S. (1994) The Persistence of Inoculation in Conferring Resistance to Smoking Initiation Among Adolescents. The Second Year. Human Communication Research, 20, 413-430.
- ID: 406.** - Hovell, M.F., Slymen, D.J., Jones, J.A., Hofstetter, C.R., Burkham-Kreitner, S., Conway, T.L., Rubin, B. and Noel, D. (1996) An Adolescent Tobacco-Use Prevention Trial in Orthodontic Offices. American Journal of Public Health, 86, 1760-1766.
- ID: 407.** - Biglan, A., Henderson, J., Humphrey, D., Yasui, M., Whisman, R., Black, C. and James, L. (1995) Mobilising positive reinforcement to reduce youth access to tobacco. Tobacco Control, 4, 42-48.
- ID: 408.** - Forster, J.L., Murray, D.M., Wolfson, M., Blaine, T.M., Wagenaar, A.C. and Hennrikus, D.J. (1998) The Effects Of Community Policies To Reduce Youth Access To Tobacco. American Journal of Public Health, 88, 1193-1198.
- ID: 409.** - Prokhorov, A.V. and Alexandrov, A.A. (1994) Prevention of Adolescent Smoking in Russia: General Situation and Results from a Moscow randomized trial. European Journal of Public Health, 4, 169-174.
- ID: 414.** - Perry, C.L., Kelder, S.H. and Klepp, K.I. (1994) Community-wide Cardiovascular Disease Prevention in Young People: Long-term Outcomes of the Class of 1989 Study. European Journal of Public Health, 4, 188-194.
- ID: 415.** - Vartiainen, E., Fallonen, U., McAlister, A.L. and Puska, P. (1990) Eight-Year Follow-Up Results of an Adolescent Smoking Prevention Program: The North Karelia Youth Project. American Journal of Public Health, 80, 78-79.
- ID: 416.** - Wiist, W.H. and Snider, G. (1991) Peer Education in Friendship Cliques: Prevention of Adolescent Smoking. Health Education Research, 6, 101-108.
- ID: 417.** - De Vries, H., Backbier, E., Dijkstra, M., Van Breukelen, G., Parcel, G. and Kok, G. (1994) A Dutch Social Influence Smoking Prevention Approach for Vocational School Students. Health Education Research, 9, 365-374.
- ID: 419.** - Carruthers, S. and McDonald, C. (1995) The Availability of Cigarettes to Minors in Perth, Western Australia. Tobacco Control, 4, 49-52.

- ID: 420.** - Keay, K.D., Woodruff, S.I., Wildey, M.B. and Kenney, E.M. (1993) Effect of a Retailer Intervention on Cigarette Sales to Minors in San Diego County, California. Tobacco Control, 2, 145-151
- ID: 421.** - Klingman, A. and Hochdorf, Z. (1993) Coping with Distress and Self Harm: The Impact of a Primary Prevention Program Among Adolescents. Journal of Adolescence, 16, 121-140.
- ID: 424.** - Shaffer, D., Garland, A., Vieland, V., Underwood, M. and Busner, C. (1991) The Impact of Curriculum-based Suicide Prevention Programs for Teenagers. Journal of the American Academy of Child and Adolescent Psychiatry, 30, 588-596.
- ID: 425.** - Orbach, I., and Bar-Joseph, H. (1993) The Impact of a Suicide Prevention Program for Adolescents on Suicidal Tendencies, Hopelessness, Ego Identity, and Coping. Suicide and Life-Threatening Behaviour, 23, 120-129.
- ID: 426.** - Jaycox, L.H., Reivich, K.J., Gillham, J. and Seligman, M.E.P. (1994) Prevention of Depressive Symptoms in School Children. Behaviour Research and Therapy, 32, 801-816.
- ID: 427.** - Rotheram-Borus, M.J., Piacentini, J., Van Rossem, R., Graae, F., Cantwell, C., Castro-Blanco, D., Miller, S., and Feldman, J. (1996) Enhancing Treatment Adherence with a Specialised Emergency Room Program for Adolescent Suicide Attempters. Journal of the American Academy of Child Adolescent Psychiatry, 35, 654-663.
- ID: 428.** - Pillay, A.L. and Wassenar, D.R. (1995) Psychological Intervention, Spontaneous Remission, Hopelessness, and Psychiatric Disturbance in Adolescent Parasuicides. Suicide and Life-Threatening Behaviour, 25, 386-392.
- ID: 430.** - Ciffone, J. (1993) Suicide Prevention: A Classroom Presentation to Adolescents. Social Work, 38, 197-203.
- ID: 431.** - Shaffer, D., Vieland, V., Garland, A., Rojas, M., Underwood, M. and Busner, C. (1990) Adolescent Suicide Attempters: Responses to Suicide-Prevention Programs. Journal of the American Medical Association, 26, 3151-3155.
- ID: 436.** - Cummings, P., Grossman, D.C., Rivara, F.P. and Koepsell, T.D. (1997) State Gun Safe Storage Laws and Child Mortality Due to Firearms. Journal of the American Medical Association, 278, 1084-1086.
- ID: 437.** - Botvin, G.J., Schinke, S.P., Epstein, J.A. and Diaz, T. (1994) Effectiveness of Culturally Focused and Generic Skills Training Approaches to Alcohol and Drug Abuse Prevention Among Minority Youths. Psychology of Addictive Behaviours, 8, 116-127.
- ID: 438.** - Fors, S.W. and Jarvis, S. (1995) Evaluation of a Peer-Led Drug Abuse Risk Reduction Project for Runaway/Homeless Youths. Journal of Drug Education, 25, 321-333.
- ID: 441.** - Caplan, M., Weissberg, R.P., Grober, J.S., Sivo, P.J., Grady, K. and Jacoby, C. (1992) Social Competence Promotion With Inner-City and Suburban Young Adolescents: Effects on Social Adjustment and Alcohol Use. Journal of Consulting and Clinical Psychology, 60, 56-63.
- ID: 442.** - Ringwalt, C., Ennett, S.T. and Holt, K.D. (1991) An Outcome Evaluation of Project DARE (Drug Abuse Resistance Education). Health Education Research, 6, 327-337.
- ID: 443.** - Snow, D.L., Kraemer Tebes, J. and Ayers, T.S. (1997) Impact of Two Social-Cognitive Interventions to Prevent Adolescent Substance Use: Test of an Amenability to Treatment Model. Journal of Drug Education, 27, 1-17.
- ID: 444.** - Shope, J.T., Copeland, L.A., Marcoux, B.C. and Kamp, M.E. (1996) Effectiveness of a School based Substance Abuse Prevention Program. Journal of Drug Education, 26, 323-337.
- ID: 445.** - Shope, J.T., Copeland, L.A., Maharg, R. and Dielman, T.E. (1996) Effectiveness of a High School Alcohol Misuse Prevention Program. Alcoholism: Clinical and Experimental Research, 20, 791-798.
- ID: 446.** - Werch, C., Anzalone, D., Brokiewicz, L., Felker, J., Carlson, J. and Castellon-Vogel, A. (1996) An intervention for preventing alcohol use among inner-city middle school students. Archives of Family Medicine, 5, 3, 146-152.
- ID: 447.** - Shope, J., Kloska, D., Dielman, T. and Maharg, R. (1994) Longitudinal Evaluation of an Enhanced Alcohol Misuse Prevention Study (AMPS) Curriculum for Grades Six-Eight. Journal of School Health, 64, 4, 160-166.

- ID: 448.** - Klepp, K.I., Kelder, S. and Perry, C. (1995) Alcohol and Marijuana Use Among Adolescents: Long-term Outcomes of the Class of 1989 Study. Annals of Behavioural Medicine, 17, 1, 19-24.
- ID: 449.** - MacKinnon, D., Anderson Johnson, C., Pentz, M.A. and Dwyer, J.H. (1991) Mediating Mechanisms in a School based Drug Prevention Program: First-Year Effects of the Midwestern Prevention Project. Health Psychology, 10, 164-172.
- ID: 450.** - Bremberg, S. and Arborelius, E. (1994) Effects on Adolescent Alcohol Consumption of a School Based Student-Centred Health Counselling Program. Scandinavian Journal of Social Medicine, 22, 113-119.
- ID: 451.** - Hawthorne, G. (1996) The social impact of Life Education: estimating drug use prevalence among Victorian primary school students and the statewide effect of the Life Education programme. Addiction, 91, 8, 1151-1159.
- ID: 454.** - Botvin, G., Baker, L., Dusenbury, L., Tortu, S. and Botvin, E. (1990) Preventing Adolescent Drug Abuse Through a Multimodal Cognitive-Behavioural Approach: results of a 3-Year Study. Journal of Consulting and Clinical Psychology, 58, 4, 437-446.
- ID: 456.** - Eggert, L., Thompson, E., Herting, J., Nicholas, L. and Dicker, B. (1994) Preventing Adolescent Drug Abuse and High School Dropout Through an Intensive School based Social Network Development Program. American Journal of Health Promotion, 8, 3, 202-215.
- ID: 457.** - Sussman, S., Dent, C., Stacy, A. and Craig, S. (1998) One Year Outcomes of Project Towards No Drug Abuse. Preventive Medicine, 27, 632-642.
- ID: 458.** - Kim, S., McLeod, J. and Shantzis, C. (1993) An outcome evaluation of Here's Looking at You 2000. Journal of Drug Education, 23, 1, 67-81.
- ID: 459.** - Newman, I., Anderson, C. and Farrell, K. (1992) Role Rehearsal and Efficacy: Two 15 month evaluations of a ninth-grade alcohol education program. Journal of Drug Education, 22 (1) 55-67.
- ID: 460.** - Cohen, D. and Rice, J. (1995) A Parent-Targeted Intervention for Adolescent Substance Use Prevention. Lessons Learned. Evaluation Review, 19, 159-180.
- ID: 461.** - Wilhelmsen, W., Laberg, J. and Klepp, K-I. (1994) Evaluation of two student and teacher involved alcohol prevention programs. Addiction, 89, 1157-1165.
- ID: 462.** - Hansen, W. and Graham, J. (1991) Preventing Alcohol, Marijuana and Cigarette Use among Adolescents: Peer Pressure Resistance Training versus Establishing Conservative Norms. Preventive Medicine, 20, 414-430.
- ID: 463.** - Bell, R., Ellickson, P. and Harrison, E. (1993) Do Drug Prevention Effects Persist into High School? How Project ALERT Did with Ninth Graders. Preventive Medicine, 22, 463-483.
- ID: 464.** - Moberg, D.P. and Piper, D.L. (1990) An Outcome Evaluation of Project Model Health: A Middle School Health Promotion Program. Health Education Quarterly, 17, 37-51.
- ID: 466.** - Perry, C.L., Williams, C.L., Forster, J.L., Wolfson, M., Wagenaar, A.C., Finnegan, J.R., McGovern, P.G., Veblen-Mortensen, S., Komro, K.A. and Anstine, P.S. (1993) Background, conceptualization and design of a community-wide research program on adolescent alcohol use: Project Northland. Health Education Research Theory and Practice, 8, 125-136.
- ID: 469.** - St. Pierre, T.L., Kaltreider, D.L., Mark, M.M. and Aikin, K. (1992) Drug Prevention in a Community Setting: A Longitudinal Study of the Relative Effectiveness of a Three-Year Primary Prevention Program in Boys and Girls Clubs Across the Nation. American Journal of Community Psychology, 20, 6, 673-706.
- ID: 470.** - Elder, J., Sallis, J., Woodruff, S. and Wildey, M.B. (1993) Tobacco-Refusal Skills and Tobacco Use Among High-Risk Adolescents. Tobacco-Refusal Skills in Adolescents, 16, 629-642.
- ID: 498.** - Biglan, A., Ary, D., Koehn, V., Levings, D., Smith, S., Wright, Z., James, L. and Henderson, J. (1996) Mobilising Positive Reinforcement in Communities to Reduce Youth Access to Tobacco. American Journal of Community Psychology, 24, 625-638.
- ID: 499.** - Bretherton, D., Collins, L. and Ferretti, C. (1993) Dealing with Conflict: Assessment of a Course for Secondary School Students. Australian Psychologist, 28, 105-111.
- ID: 500.** - Gainer, P.S., Webster, D.W. and Champion, H.R. (1993) A Youth Violence Prevention Program - Description and Preliminary Evaluation. Archives of Surgery, 128, 303-308.

ID: 501. - Mayer, G.R., Butterworth, T., Nafpakititis, M. and Sulzer-Azaroff, S. (1983) Preventing School Vandalism and Improving Discipline: A three year study. *Journal of Applied Behaviour Analysis*, 16, 355-369.

ID: 502. - Toumbourou, J., and Gregg, E. (1999) *Evaluation of Program for Parents*. Centre for Adolescent Health Report.

ID: 503. - Tierney, J.P., Grossman, J.B., and Resch, N.L. (1995) *Making a difference. An impact study of Big Brothers/Big Sisters*. Philadelphia, PA: Public/Private Ventures.

10 References

Abbey, K.J., Madsen, C.H. & Polland, R. (1989). Short term suicide awareness curriculum. *Suicide and Life Threatening Behaviour*, 19, 216-227.

Alexander, J.F., Holtzworth-Munroe, A. & Jameson, P. (1994). The process and outcome of marital and family therapy: Research review and evaluation. In A. E. Bergin & S. L. Garfield (Eds.) *Handbook of psychotherapy and behavior change (4th ed.)* (pp 595-630), New York: Wiley.

Arkin, R.M., Roemhild, H.F., Johnson, C.A., Luepker, R.V. & Murray, D.M. (1981). The Minnesota smoking prevention program: a seventh-grade health curriculum supplement. *Journal of School Health*, 51, (9), 611-6.

Baer, J.S., Marlatt, G.A., Kivlahan, D.R., Fromme, K., Larimer, M.E. & Williams, E. (1992). An experimental test of three methods of alcohol risk reduction with young adults. *Journal of Consulting and Clinical Psychology*, 60, (6), 974-979.

Bagley, C. (1968). The evaluation of a suicide prevention scheme by an ecological method. *Social Science and Medicine*, 2, 1-14.

Barker, C., Pistrang, N., Shapiro, D.A., Davies, S. & Shaw, I. (1993). You in Mind: A preventive mental health television series. *British Journal of Clinical Psychology*, 32, 281-293.

Barraclough, B.M., Jennings, C. & Moss, J.R. (1977). Suicide Prevention by the Samaritans. A controlled study of effectiveness. *The Lancet*, 2, 237-239.

Blumstein, A & Cohen, J. (1987). Characterising criminal careers. *Science*, 237, 985-991.

Bond, L., Thomas, L., Toumbourou, J., Patton, G. & Catalano, R.F. (2000) *A profile of youth in our community*. Report prepared for the Department of Human Services, Melbourne, Australia: Centre for Adolescent Health.

Bongar, B., & Harmatz, M. (1991). Clinical Psychology graduate education in the study of suicide: availability, resources and importance. *Suicide & Life Threatening Behaviour*, 21, 231-244.

Brent, D.A., Perper, J.A., Moritz, G., Baugher, M., Schweers I.J. & Roth, C. (1994). Suicide in affectively ill adolescents: a case-control study. *Journal of Affective Disorders*, 31, 193-202.

Brewer, D.D., Hawkins, J.D., Catalano, R.F. & Neckerman, H.J. (1995). Preventing serious, violent and chronic juvenile offending: A review of evaluations of selected strategies in childhood, adolescence, and the community. In J.C. Howell, B. Krisberg, J.D. Hawkins and J.J. Wilson. (Eds.) *A Sourcebook: Serious, Violent, & Chronic Juvenile Offenders*. (pp. 61-141). New York: Sage International.

Brooks, B.D. (1975). Contingency management as a means of reducing school truancy. *Education*, 95, 206-211.

Bry, B.H. (1982). Reducing the incidence of adolescent problems through preventive intervention: One- and five-year follow-up. *American Journal of Community Psychology*, 10, 265-276.

Burvill.P.W. (1989). The changing pattern of suicide by gassing in Australia, 1910 - 1987: The role of natural gas and motor vehicles. *Acta Psychiatrica Scandinavica*, 81, 178-184.

Cantor, C., Turrel, G. & Baume, P. (1996). Access to means of suicide by young Australians. Australian Institute for Suicide Research and Prevention. Abstract, 1-76.

Cantor, C.H. & Slater, P.J. (1995). The impact of firearm control legislation on suicide in Queensland: preliminary findings. *Medical Journal of Australia*, 162, 583-585.

Carrington, P.J. & Moyer, S. (1994). Gun control and suicide in Ontario. *American Journal of Psychiatry*, 151, 606-608.

Catalano, R.F. & Hawkins, J.D. (1996). The Social Development Model: A theory of antisocial behavior. In J.D. Hawkins (Ed.), *Delinquency and Crime: Current Theories*. (pp. 149-197). New York: Cambridge.

Chen, K., & Kandel, D.B. (1995). The natural history of drug use from adolescence to the mid-thirties in a general population. *American Journal of Public Health*, 85, 41-47.

Chilcoat, H.D., & Breslau, N. (1996). Alcohol disorders in young adulthood: Effects of transitions into adult roles. *Journal of Health and Social Behavior*, 37, 339-349.

Clarke, G.N., Hawkins, W., Murphy, M. & Sheeber, L.B. (1993). Cognitive behavioural treatment of depressive symptomatology in adolescents. *Journal of Adolescent Research*, 8, 183-204.

Ciffone, J. (1993). Suicide prevention: A classroom presentation to adolescents. *Social Work*, 38, 197-203.

Collins, S. (1993). Health prevention messages may have paradoxical effect (letter). *British Medical Journal*, 306, 926.

Cummings, P., Grossman, D.C., Rivara, F.P. & Koepsell, T.D. (1997). State gun safe storage laws and child mortality due to firearms. *Journal of the American Medical Association*, 278, 1084-1086.

Donohew, L., Lorch, E. & Palmgreen, P. (1991). Sensation seeking and targeting of televised anti-drug PSAs. In L. Donohew, H.E. Sypher, & W.J. Bukoski (Eds.), *Persuasive Communication and Drug Abuse Prevention*. (pp. 209-226). New Jersey: Lawrence Erlbaum Associates Publishers.

Daigle, M.S. & Mishara, B.L. (1995). Intervention styles with suicidal callers at two suicide prevention centers. *Suicide and Life Threatening Behavior*, 25, 261-275.

Department of Human Services (1999) *School students and drug use: 1996 survey of alcohol, tobacco and other drug use among Victorian secondary school students*. Drug Treatment Services Unit, Aged, Community and Mental Health Division, Department of Human Services, Melbourne, Australia.

Dew, M.A., Bromet, E.T., Brent, D. & Greenhouse, J.B. (1987). A quantitative literature review of the effectiveness of suicide prevention centres. *Journal of Consulting & Clinical Psychology*, 55, 239.

Douglass, R.L. (1980). The legal drinking age and traffic casualties: A special case of changing alcohol availability in a public health context. In H. Wechsler (Ed.) *Minimum drinking-age laws: An evaluation*. (pp 93-132) Washington D.C.: Lexington Books, Heath and Company

Edwards LE. Steinman ME. Arnold KA. Hakanson EY. (1980). Adolescent pregnancy prevention services in high school clinics. *Family Planning Perspectives*, 12, 6-7, 11-14.

Etzersdorfer, E., Sonneck, G. & Nagel-Kuess, S. (1992). Newspaper reports and suicide. *New England Journal of Medicine*, 327, 502-503.

Furstenberg F.F. Jr, Moore K.A. & Peterson J.L. (1985). Sex education and sexual experience among adolescents. *American Journal of Public Health*, 75, 1331-1332.

Garland, A.F. & Zigler, E. (1993). Adolescent suicide prevention. Current research and social policy implications. [Review - 95 refs]. *American Psychologist*, 48, 169-182.

Geller, E.S., Kalsher, M.J., & Clarke, S.W. (1991). Beer versus mixed drink consumption at fraternity parties: A time and place for low-alcohol alternatives. *Journal of Studies on Alcohol*, 52, 197-203.

Gillies P.A. & Wilcox B. (1984). Reducing the risk of smoking amongst the young. *Public Health*, 98, (1), 49-54.

Glover, S., Burns, J., Butler, H. & Patton, G. (1998). Social environments and the emotional wellbeing of young people. *Family Matters*, 49, 11-16.

- Gottfredson, G.D. (1987) Peer group interventions to reduce the risk of delinquent behaviour: A selective review and a new evaluation. *Criminology*, 25, 671-714.
- Gunnell, D. & Frankel, S. (1994). Prevention of suicide: aspirations and evidence. *British Medical Journal*, 308, 1227-1233.
- Gunnell, D., Hawton, K., Murray, V., Garnier, R., Bismuth, C., Fagg, J. & Simkin, S. (1997). Use of paracetamol for suicide and non-fatal poisoning in the UK and France: are restrictions on availability justified? *Journal of Epidemiology & Community Health*, 51, 175-179.
- Hawkins, J.D., Catalano, R.F. & Miller, J.Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112, 64-105.
- Hawton, K., Ware, C., Mistry, H., Hewitt, J., Kingsbury, S., Roberts, D. & Weitzel, H. (1996). Paracetamol self-poisoning. Characteristics, prevention and harm reduction. *British Journal of Psychiatry*, 168, 43-48.
- Hemenway, D., Solnick, S.J. & Azrael, D.R. (1995). Firearm Training and Storage. *Journal of the American Medical Association*, 273, 46-50.
- Hibbert, M., Caust, J., Patton, G.C., Rosier, M. & Bowes, G. (1996). *The health of young people in Victoria: Adolescent Health Survey*. Melbourne, Australia: Centre for Adolescent Health Monograph.
- Holding, T.A. (1974). The B.B.C. "Befrienders" series and its effects. *British Journal of Psychiatry*, 124, 470-472.
- Institute of Medicine (1994). *Reducing risks for mental disorders: Frontiers for preventive intervention research*. Washington, D.C.: National Academy Press.
- Jenkin, C. & McGennis, A. (1999). *Program for Parents Final Report*. Report prepared for Department of Health and Aged Care, Canberra, Australia.
- Jenkin, C., & Bretherton, D. (1994). *PACE Parenting Adolescents: A Creative Experience*. Camberwell, Victoria: Australian Council for Educational Research.
- Jennings, C., Barraclough, B.M. & Moss, J.R. (1978). Have the Samaritans lowered the suicide rate? A controlled study. *Psychological Medicine*, 8, 413-422.
- Jobes, D.A., Berman, A.L., O'Carroll, P.W., Eastgard, S. & Knickmeyer, S. (1996). The Kurt Cobain Suicide Crisis: Perspective from Research, Public Health, and the News Media. *Suicide & Life-Threatening Behavior*, 26, 260-271.
- Kalafat, J. & Elias, M.J. (1995). Suicide prevention in an educational context: Broad and narrow foci. Special Issue: Suicide prevention: Toward the year 2000. *Suicide and Life Threatening Behavior*, 25, 123-133.

- Kandel, D.B., Yamaguchi, K. & Chen, K. (1992). Stages of progression in drug involvement from adolescence to adulthood: Further evidence for the gateway theory. *Journal of Studies on Alcohol*, 53, 447-457.
- Kishchuk, N., O'Loughlin, J., Paradis, S., Masson, P. & Sacks-Silver, G. (1990). Illuminating negative results in evaluation of smoking prevention programs. *Journal of School Health*, 60, (9) 448-51.
- Klingman, A. & Hochdorf, Z. (1993). Coping with distress and self-harm: the impact of a primary prevention program among adolescents. *Journal of Adolescence*, 16, 121-140.
- Kottke, T.E., Solberg, L.I., Brekke, M.L. & Maxwell, P. (1988). Smoking cessation strategies and evaluation. *Journal of the American College of Cardiology*, 12, (4), 1105-10.
- Ku, L.C., Sonenstein, F.L. & Pleck, J. (1992). The association of AIDS education and sex education with sexual behaviour and condom use among teenage men. *Family Planning Perspectives*, 24, 100-106.
- LaFromboise, T. & Howard Pitney, B. (1995). The Zuni life skills development curriculum: Description and evaluation of a suicide prevention program. *Journal of Counseling Psychology*, 42, 479-486.
- Lester, D. (1989). Changing rates of suicide by car exhaust in men and women in the US after car exhaust was detoxified. *Crisis*, 10, 164-168.
- Lester, D. (1972). The myth of suicide prevention. *Comprehensive Psychiatry*, 13, 555-560.
- Lester, D. (1974). Effect of suicide prevention centers on suicide rates in the United States. *Health Services Report*, 89, 37-89.
- Lester, D. & Leenaars, A.A. (1993). Suicide rates in Canada before and after tightening Firearm Control Laws. *Psychological Reports*, 72, 787-790.
- Loftin, C., McDowall, D., Wiersema, B. & Cottey, T.J. (1991). Effects of restrictive licensing of handguns on homicide and suicide in the district of Columbia. *New England Journal of Medicine*, 325, 1615-1620.
- Makkai, T. (1994). *Patterns of drug use: Australia and the United States*. Canberra, Australia: Australian Government Publishing Service.
- Marlatt, G.A. (1996). Harm reduction: come as you are. *Addictive Behaviors* 21, (6), 779-788
- McBride, N., Midford, R. Farrington, F. & Phillips, M. (2000). Early results from a school alcohol harm minimization study: the School Health and Alcohol Harm Reduction Project. *Addiction*, 95, 1021-1042.

- Miller, H., Coombs, D., Leeper, J. & Barton, S. (1984). An analysis of the effects of suicide prevention facilities on suicide rates in the US. *American Journal of Public Health*, 74, 340
- Morrell, S., Taylor, R., Quine, S., Kerr, C. & Western, J. (1994). A cohort study of unemployment as a cause of psychological disturbance in Australian youth. *Social Science & Medicine*, 38, 1553-64.
- Motto, J.A. (1970). Newspapers' influence on suicide. A controlled study. *Archives of General Psychiatry*, 23, 143-148.
- National Drug Strategy (1993). *National Drug Strategy 1993-1997*. Canberra, Australia: Australian Government Publishing Service.
- National Health & Medical Research Council (1992). *Is there a safe level of daily consumption of alcohol for men and women? (2nd ed.)* National Health and Medical Research Council Canberra, Australia: Australian Government Publishing Service.
- Nelson, F.L. (1987). Evaluation of a Youth Suicide Prevention School Program. *Adolescence*, 22, 813-825.
- O'Carroll, P.W., Potter, L.B. & Mercy, J.A. (1994). Programs for the prevention of suicide among adolescents and young adults. *Morbidity & Mortality Weekly Reports*, 43, 1-7.
- Ohberg, A., Lonnqvist, J., Sarna, S., Vuori, E. & Penttila, A. (1995). Trends and availability of suicide methods in Finland. Proposals for restrictive measures. *British Journal of Psychiatry*, 166, 35-43.
- Oliver, R.G. & Hetzel, B.S. (1973). An analysis of recent trends of suicide rates in Australia. *International Journal of Epidemiology*, 2, 91-101.
- Olweus, D. (1991) Bully/victim problems among school children: Basic facts and effects of a school based intervention program. In D.J. Pepler & K.H. Rubins (Eds.) *The development and treatment of childhood aggression*. (pp. 411-448). Hillsdale NJ: Lawrence Erlbaum.
- Orbach, I. & Bar Joseph, H. (1993). The impact of a suicide prevention program for adolescents on suicidal tendencies, hopelessness, ego identity, and coping. *Suicide and Life Threatening Behavior*, 23, 120-129.
- Overholster, J.C., Hemstreet, A.H., Spirito, A. & Vyse, S. (1989). Suicide Awareness Programs in the Schools: Effects of Gender and Personal Experience. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 925-930,
- Patton, G.C. & Burns, J. (1999). Preventive Interventions for Youth Suicide: a risk factor based approach. In *Youth suicide literature review: setting the evidence-based research agenda for Australia*. Report prepared for the Strategic Research Development Committee of the National Health and Medical Research Council, Canberra, Australia.

Patton, G.C. (1995). *Risk Factors for Adolescent Depression*. Report for the National Health and Medical Research Council, Canberra, Australia.

Perry, C.L., Grant, M., Ernberg, G., Florenzano, R.U., Langdon, M.C., Myeni, A.D., Waahlberg, R., Berg, S., Andersson, K., Fisher, K.J., Blaze-Temple, D., Cross, D., Saunders, B., Jacobs, D.R. & Schmid, T. (1989). WHO Collaborative Study On Alcohol Education And Young People: Outcomes of a four-country pilot study. *The International Journal of the Addictions*, 24, 1145-1171.

Premier's Drug Advisory Council (1996). *Drugs in our society*. Melbourne, Australia: Department of Premier.

Rice, K.G. & Meyer, A.L. (1994). Preventing Depression among young adolescents: preliminary process results of a psycho-educational intervention program. *Journal of Counseling and Development*, 73, 145-152

Rich, C.L., Young, J.G., Fowler, R.C., Wagner, J. & Black, N.A. (1990). Guns and Suicide: Possible effects of some specific legislation. *American Journal of Psychiatry*, 147, 342-346.

Rudd, M.D., Rajab, M.H., Orman, D.T. & Stulman, D.A. (1996). Effectiveness of an outpatient intervention targeting suicidal young adults: Preliminary results. *Journal of Consulting and Clinical Psychology*, 64, 179-190.

Russell, M.A., Wilson, C., Taylor, C. & Baker, C.D. (1979). Effect of general practitioners' advice against smoking. *British Medical Journal*. 2 (6184), 231-5.

Sanders, M.R. (1999). Triple P-Positive Parenting Program: Towards an empirically validated multilevel parenting and family support strategy for the prevention of behaviour and emotional problems in children. *Clinical Child and Family Psychology Review*, 2, 71-90.

Shaffer, D., Vieland, V., Garland, A., Rojas, M., Underwood, M. & Busner, C. (1990). Adolescent Suicide Attempters: Response to suicide – prevention programs. *Journal of the American Medical Association*, 264, 3151-3155

Shaffer, D., Garland, A., Vieland, V. & Underwood, M. (1991). The impact of curriculum-based suicide prevention programs for teenagers. *Journal of the American Academy of Child and Adolescent Psychiatry*, 30, 588-596.

Sloan, J.H., Rivara, F.P., Reay, D.T., Ferris, J.A. & Kellermann, A.L. (1990). Firearm Regulations and Rates of Suicide: A comparison of two metropolitan areas. *New England Journal of Medicine*, 322, 369-373.

Snowden, J. & Harris, L. (1992). Firearms suicides in Australia. *Medical Journal of Australia*, 156, 79-83.

- Spoth, R., Redmond, C. & Shin, C. (1998). Direct and indirect latent-variable parenting outcomes of two universal family-focused preventive interventions: Extending a public health-oriented research base. *Journal of Consulting and Clinical Psychology*, 66, (2), 385-399.
- Spirito, A., Overholser, J., Ashworth, S., Morgan, J. & Benedict-Drew, C. (1988). Evaluation of a Suicide Awareness Curriculum for High School Students. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 705-711.
- Stout, J.W. & Kirby, D. (1993). The effects of sexuality education on adolescent sexual activity, *Pediatric Annals*, 22, 120-126.
- Tobler, N. (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, (4), 537-567.
- Trice, A.D., Parker, F.C. & Safer, D.J. (1982). A comparison of senior high school interventions for disruptive students. In D.J. Safer (Ed.) *School programs for disruptive adolescents*. (pp. 333-340) Baltimore: University Park Press.
- Vieland, V., Whittle, B., Garland, A., Hicks, R., & Shaffer, D. (1991). The impact of curriculum-based suicide prevention programs for teenagers: An 18-month follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 30, 811-815.
- Wechsler, H., Dowdall, G.D., Davenport, A. & Castillo, S. (1995). Correlates of college student binge drinking. *American Journal of Public Health*, 85, 921-926.
- Weiner, J.W. (1969). The effectiveness of a suicide prevention program. *Mental Hygiene*, 53, 357-363.
- Whitley, B. & Schofield, J. (1985-86). A meta-analysis of research on adolescent contraception use. *Popul Environ*; 8(3&4):173-203.
- Whitehead, P.C. & Wechsler, H. (1980). Implications for future research and public policy. In H. Wechsler (Ed.) *Minimum-drinking-age laws: An evaluation*. (pp. 177-184.) Washington D.C.: Lexington Books, Heath and Company.
- Whitlock, F.A. (1975). Suicide in Brisbane, 1956 to 1973: The Drug-death Epidemic. *Medical Journal of Australia*, 1, 737-743.