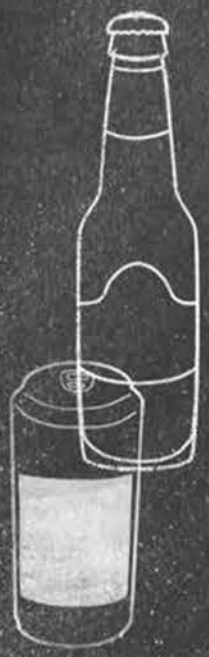

Alcohol education for Australian schools:

What are the most effective programs?

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Australia's National Research Centre on AOD Workforce Development

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Executive Summary

A scientific approach to understanding what works and what does not, by using the best available evidence, can lead to policy and implementation decisions that are more effective in achieving desired outcomes.

A systematic review was undertaken to assist schools to effectively utilise the evidence in order to decide on appropriate school alcohol education programs. A systematic review is a method of assessing whether a program is effective or not by collating all the research on a specific question and looking at the whole body of evidence together.

Within each program type, the available studies were examined in detail by two researchers and assessed for both the quality of the research and the outcomes for students.

Three programs, CLIMATE Schools (Australia), Project ALERT (USA) and All Stars (USA) had enough evidence to support their general use in schools. Four programs showed some evidence of good outcomes and may be suitable for use by some schools where those outcomes are high priority (Life Skills Program, SHAHRP, Unplugged EU-DAP, and Life Skills Training) especially if outcomes are monitored within the school.

One program showed no evidence of positive effect (DARE) and two showed negative outcomes (such as increases in drinking) (Peer Acceleration Social Network (Project TND) and Take Charge of Your Life) and are not recommended for use in Australian schools.

The remaining 29 programs showed inconclusive results (i.e. those with poor quality research, inconsistent effects, or only one available study) and are also not recommended for schools until further research is conducted.

Common elements of effective programs included: accurate evidence based information about alcohol; a focus on social norms; an interactive presentation style; clear, achievable and measureable goals and objectives; teacher training and support; and a whole of school approach.

Evidence of effect of 39 alcohol education programs reviewed

	Effectiveness	Alcohol Education Program
★ ★ ★	***These programs have been shown to have a positive effect in studies that are well conducted and can be trusted to guide practice.***	1. Climate Schools 2. Project ALERT 3. All Stars
★ ★	***These programs have been shown to have some positive effect in studies that were reasonably well conducted.***	1. Life Skills Program (ISPY) 2. Life Skills Training (LST) 3. SHAHRP 4. Unplugged EU-DAP
★	***These programs have little or no evidence of positive effect on alcohol reduction in studies that were well conducted.***	1. Drug Abuse Resistance Education (DARE)
?	***These programs had inconclusive evidence because the research was of poor quality or there were inconsistent effects in multiple studies or there was only one study.***	1. Adolescent Alcohol Prevention Trial (AAPT) 2. Alcohol Misuse Prevention (AMPS) 3. Choice 4. Drugs At Work (DAW) 5. Gatehouse 6. Healthy Schools And Drugs 7. Keeping it REAL 8. Life Education Victoria (LEV) 9. Olweus Prevention 10. Peer Led FAS/FAE 11. Peer Support 12. Personality Risk Factors 13. Positive Adolescent Life Skills 14. Positive Youth Development 15. Prime For Life 16. Project PRIDE 17. Protecting You Protecting Me (PY/PM) 18. Reduce Risk Increase Student Knowledge (RRISK) 19. Reinforcing Alcohol Prevention (RAP) 20. Say Yes First 21. School Based Education 22. School Based Resilience Intervention 23. Skills For Adolescence 24. Social And Emotional Learning (SEL) 25. Social Norms Analysis Project (SNAP) 26. Step II 27. Towards No Drug Abuse (TND) 28. Transtheoretical Model 29. Wise Mind
✕	***These programs have been shown to have a negative effect.***	1. Peer Acceleration Social Network (Project TND) 2. Take Charge Of Your Life (TCYL)

Contents

Background

In recent years, the issue of youth alcohol consumption has received considerable attention, in part driven by the documented harms associated with young peoples' drinking levels and patterns (Livingston 2008, Livingston, Laslett et al. 2008, Roche 2008).

One approach to circumventing excessive alcohol consumption by young people has been to take a primary prevention approach at school. Numerous school based prevention programs and resources have been developed that aim to deter use, delay initial use, or reduce harms associated with alcohol and other drug (AOD) use in young people. However, the wide array of available programs makes it challenging for schools to determine which programs are optimal for their student population.

As part of the Australian Government's National 'Binge Drinking Strategy', the National Centre for Education and Training on Addiction (NCETA) was commissioned by the former Australian Government Department of Education, Employment and Workplace Relations (DEEWR) to undertake a review of school alcohol interventions.

Evidence-based decision-making

A scientific approach to understanding what works and what does not, by using the best available evidence, can lead to policy decisions that are more effective in achieving desired outcomes (Australian Bureau of Statistics 2010).

A systematic and rational approach to researching and analysing available evidence to inform the policy making process is required to help decision-makers make well informed choices about policies, programs and projects (Australian Bureau of Statistics 2010).

When evidence is not used as a basis for decision making, or inaccurate or selective evidence is used, outcomes are likely to be ineffective (Dunworth, Hannaway et al. 2008).

An evidence-based approach to policy making can provide the following advantages (Australian Bureau of Statistics 2010):

- Helps ensure that policies are responding to the real needs of the community they are targeted towards and improve outcomes in the long term

- Can assist in securing funding and resources for the policy to be developed, implemented and maintained
- Can result in more efficient spending by governments because resources are less likely to be directed to ineffective policies or programs which could be costly and time consuming
- Can produce a better return on investment for public programs by improving service delivery and outcomes
- Ensures that decisions are made in a way that is consistent with democratic processes, which emphasise transparency and accountability.

A key policy challenge facing schools is deciding which, if any, alcohol education programs or approaches to adopt. Financial resources and staff time are often in short supply. Evidence that relates to the effectiveness of different programs can be difficult to locate and understand.

The key aim of this report is to provide schools with a clear, up-to-date and accessible summary of the international and national evidence relating to a range of approaches that have been implemented within and beyond the school to improve evidence-based decision making in relation to alcohol education in schools.

Assessing the evidence for school based alcohol education

Understanding systematic reviews

To assess the evidence for school-based alcohol education, a systematic review was undertaken. A systematic review is a method of assessing whether a program is effective or not by collating all the research on a specific question and looking at the whole body of evidence.

A systematic review is different to a general review because of the processes and methods involved, which are systematically carried out and documented, and can be replicated. A systematic review minimises bias, providing more reliable evidence for conclusions to be made.

The key characteristics of systematic reviews are that they contain clear objectives, with pre-defined criteria, a clear methodology, a thorough search that attempts to identify all possible studies, a detailed assessment of the studies and a presentation or synthesis of results (Higgins and Green 2008).

Conducting the systematic review

How the search was undertaken

A systematic and detailed search of the published literature was undertaken. Databases of journal articles as well as the reference lists of key articles were searched to obtain the included studies.

Only studies that measured outcomes of programs were included. Studies that *only* reported satisfaction about the program or other process measures were not included. Articles were selected for review on the basis of:

- *Type of intervention or resource*: education or prevention programs or materials that addressed alcohol use and alcohol-related issues
- *Target population*: secondary school students. Programs that specifically targeted primary school, university (college) students or the general public were excluded
- *Outcomes of interest*: alcohol consumption (e.g., initiation of drinking, quantity and frequency of drinking), alcohol-related behaviours, and other indirect measures associated with alcohol use (e.g., truancy, fighting, aggression and reduced academic performance). Programs that included *only* measures of tobacco use, illicit drug use, or other risky behaviours (e.g., sexual activity) were excluded.

Which studies were included for assesment

Studies were included in the review if they met the following criteria:

- Met the NHMRC criteria for level of evidence I (systematic reviews) to IV (case series or pre-post designs) (see Table 1). No qualitative studies or single case studies were included.
- Published between January 1998 and December 2013
- Evaluated an intervention that was a school-based program that specifically targeted alcohol within a school setting
- Included either validated or self-reported outcome measures with at least one alcohol behaviour change outcome (e.g. changes in drinking frequency, binge drinking, days of alcohol consumed, amount of alcohol consumed and abstinence) and/or alcohol knowledge outcome (such as changes in attitude or knowledge in relation to alcohol)
- Published in English

Table 1: NHMRC Levels of evidence

NHMRC Levels of evidence
Level I - A systematic review of Level II studies.
Level II - A randomised controlled trial.
Level III-1 - A pseudorandomised controlled trial.
Level III-2 - A comparative study with concurrent controls (non-randomised experimental trial, cohort study, case control study, interrupted time series with a control group).
Level III-3 - A comparative study without concurrent controls (historical control study, two or more single arm studies, interrupted time series without a parallel control group).
Level IV - Case series with either post-test or pre-test / post-test outcomes.

How the papers were assessed for quality

First, each *study* was examined to assess its quality. Studies of higher quality can be relied upon and weighted more heavily than studies of poorer quality or those that were not well conducted. The National Health and Medical Research Council (NHMRC 2000) has established guidelines for assessing quality of research studies. Each study was assessed against the NHMRC level of evidence (see Table 1) and given a quality rating. A number of variables can affect the quality of research, including the number of studies and type of design (level of evidence), how scientifically the studies were conducted in order to reduce bias, indicators such as how participants were selected, allocated and followed up, and how many outcomes were measured.

Second, each *program* was examined for overall outcomes:

1) Level of evidence – Programs with a greater number of higher level studies were given more weight
2) Consistency of findings across studies – Programs with more consistent results across studies were given more weight
3) Impact of the findings – Including balance of risks and benefits, ease of implementation
4) Generalisability of the findings – How similar the research participants and settings were to the population in question
5) Applicability of the findings – Whether the findings could be reasonably applied in an Australian schools setting.

Using this assessment of overall program outcomes, the combined body of evidence was then given one of four grades, based on the five criteria (NHMRC 2009):

Grade A: Body of evidence can be trusted to guide practice

Grade B: Body of evidence can be trusted to guide practice in most situations

Grade C: Body of evidence provides some support but care should be taken in its application

Grade D: Body of evidence is weak and should be applied with caution.

Third, to simplify presentation and facilitate translation to practice, a symbol-based rating system was used to indicate overall effect, considering both the grade of evidence and the outcomes.

Three-star programs ('good evidence of positive effect'), were well conducted, received a Grade A, B or C rating, and showed consistently positive outcomes.

Two-star programs ('some evidence of positive effect') were well conducted or reasonably well conducted, received a Grade A, B or C rating and showed some positive outcomes across most studies.

One-star programs (‘little or no evidence of positive outcomes’) were well-conducted studies, received a Grade A, B or C rating, but showed few or no positive outcomes (e.g., no difference between intervention and control groups).

Question-marked programs (‘inconclusive’) received a Grade B**,** C or D rating and were inconclusive because either:

I. The research for that program overall was poorly conducted;

II. Outcomes were inconsistent across studies; or

III. Only one study of the program was available.

X-marked programs (‘evidence of harm’) were well conducted but showed some negative outcomes (i.e. harms), such as increases in risky drinking behaviours following intervention.

Findings

Sixty-eight papers and reports of studies that met the inclusion criteria were reviewed. They examined 39 different school-based alcohol programs. Some of these programs examined other drug use (such as illicit drugs and tobacco) as well as alcohol.

Of the 39 different school based alcohol programs, three had good evidence of a positive effect, four showed some evidence of positive effect, one had little or no evidence of effect, twenty-nine showed inconclusive results and two showed negative outcomes (harms), such as increases in alcohol use. Table 2 below summarises the outcomes of the review. Appendix 1 contains details of each of the reviewed studies in evidence tables.

Previous reviews

There have been 17 previous reviews of school-based alcohol programs, using different inclusion criteria, since 2000. Three recent reviews found generally poor quality studies with small effect sizes.

Foxcroft et al (2012), in a broad based study, reviewed 85 studies of 20 programs, including school-based alcohol and other drug programs (n=53), family based programs (n=12) and multi-component programs (n=20). They reported that overall the study quality was weak, but that family based programs more often had statistically significant results.

Teesson et al. (2012) reviewed Australian school based alcohol and other drug programs, the majority of which were harm reduction focused, consistent with Australia's national policy on alcohol and other drugs. They reviewed 8 studies that looked at alcohol, cannabis and tobacco, primarily targeted at 13-14 year olds. CLIMATE Schools and Gatehouse were among the best evaluated and received the highest rating from these authors.

Champion et al. (2013) reviewed only online, Internet and CD-ROM delivered programs for schools. They reviewed 12 trials of 10 programs. They found that effect sizes were small and study quality weak. Only one alcohol program (CLIMATE Schools) and one tobacco only program (Consider This) had more than one study.

The current review examined international programs focused on, or including, alcohol education in schools. Alcohol is the most commonly used drug in the community and by young people, with 70% of young people aged 12-15 years and 89% of young people aged 16-17 years having tried alcohol, and 11% and 31% respectively reporting current drinking (Bariola and White 2013). This is compared to the next most commonly tried drugs, tobacco (4% of 12-15 year olds and 14% of

16-17 year olds are current smokers) and cannabis (1.5% of 12-15 year olds and 7% of 16-17 year olds are 'regular' users[1] of cannabis) (Bariola and White 2013).

The current review was significantly broader than the Teesson et al. (2012) and Champion et al. (2013) reviews. Unlike Foxcroft et al. (2012), which looked at school based, family based and multi-component programs, this review focused only on school based programs because these are most likely to be implemented by schools. Among school based programs, this review had a broader inclusion criteria than Foxcroft et al. (2012), which was restricted to randomised controlled trials. As a result, an additional 15 studies were included in the review, compared to the Foxcroft et al (2012) review.

[1] Students were considered regular users if they had used 10 or more times in the past year.

Table 2: Rating of overall effect of school-based programs

Program (Origin)	Brief program description	Overall effect rating	Evidence grading	Number of papers
Programs with good evidence of effect on alcohol outcomes				
CLIMATE Schools (Australia)	A computer-focused alcohol prevention program based on a harm minimisation approach.	***	A	4
Project ALERT (USA)	Project Alert aims to motivate students against using drug and give them skills to develop effective resistance behaviours.	***	B	5
All Stars (USA)	The primary focus of All Stars is on reducing adolescent risk behaviour, particularly tobacco, alcohol, marijuana and inhalant use, and sexual activity.	***	B	2
Programs with some evidence of positive effect on alcohol outcomes				
Life Skills Program (ISPY) (Germany)	ISPY is a comprehensive program for the prevention of adolescent misuse of legal substances like alcohol and tobacco.	**	B	2
SHAHRP (Australia)	A classroom-based program with the aim of reducing alcohol related harm.	**	B	3
Unplugged EU-DAP (Europe)	This program targeted students aged 12–14 years and was designed to tackle both experimental and regular use of alcohol, tobacco and illicit drugs.	**	B	2
Life Skills Training (LST) (USA)	This program has a focus on teaching information and skills for resisting social influences to use drugs and generic personal and social skills for increasing overall competence, as well as promoting the development of characteristics associated with decreased risk for using drugs.	**	C	3
Programs with little or no evidence of effect on alcohol outcomes				
Drug Abuse Resistance Education (DARE) (USA)	Focuses on social pressure to use drugs as well as information on drugs, decision-making, self-esteem and healthy alternatives to drug use.	*	A	3

Programs with inconclusive evidence on alcohol outcomes[2]				
Keeping it REAL (USA)	The intervention promotes the knowledge, motivation, and skills needed to resist drug offers.	? _I	C	4
Towards No Drug Abuse (TND) (USA)	This program comprises two theory-based thematic content components: cognitive misperception correction and behavioural skills instruction. Cognitive perception information is used to change youths' attitudes or beliefs regarding their drug use.	? _I	C	3
Skills for Adolescence (USA)	A comprehensive array of strategies to teach social competency and refusal skills.	? _I	C	2
Social and Emotional Learning (SEL) (USA)	The intervention includes classroom instruction and management and child skill development and parent workshops.	? _I	D	2
Positive Adolescent Life Skills (PALS) (USA)	A cognitive behavioural, skill-building intervention that aims to improve social skills in a general population rural environment.	? _I	D	2
Alcohol Misuse Prevention (AMPS) (USA)	This program focused on the immediate effects of alcohol, risks of alcohol misuse, and social pressures to misuse alcohol.	? _II	B	4
Gatehouse (Australia)	A primary prevention program, which includes both institutional and individual focused components to promote the emotional and behavioural wellbeing of young people in secondary schools.	? _II	B	2
Personality Risk Factors (Canada)	A manualised intervention designed to intervene at the level of personality risk and associated maladaptive coping strategies, including alcohol misuse.	? _III	B	1
Adolescent Alcohol Prevention Trial (AAPT) (USA)	Students received either educational information only; education plus resistance training; education plus normative information; or a combination of all three components.	? _III	C	1

[2] ? _I The research for that program overall was poorly conducted;? _II Outcomes were inconsistent across studies; ?_III Only one study of the program was available.

CHOICE (USA)	A voluntary after school program for adolescents to prevent AOD use.	? _III	C	1
Healthy Schools and Drugs (Netherlands)	This program includes a range of intervention components including: a coordinating committee, a classroom based intervention, school regulations on drug use, a system of early detection of students with drug problems and involvement of parents in drug abuse prevention at the school.	? _III	C	1
Life Education Victoria (LEV) (Australia)	This program aims to delay student experimentation with or initiation into smoking, discourages underage drinking, encourages students to avoid drinking and advocates that students avoid analgesics unless for legitimate health reasons.	? _III	C	1
Positive Youth Development (PYD) (USA)	PYD is a comprehensive program to promote well-being and prevent substance use among adolescents. It emphasises a strengths-based approach to the promotion of positive outcomes for adolescents.	? _III	C	2
Olweus Prevention (Norway)	The Olweus prevention program aims to create a school and home environment characterised by positive interest and engagement on the part of adults and firm boundaries between acceptable and unacceptable behaviour.	? _III	C	1
Protecting You Protecting Me (PY/PM) (USA)	An alcohol prevention and vehicle safety program targeting children in school, beginning in first grade.	? _III	C	1
Reduce Risk Increase Student Knowledge (RRISK) (Australia)	RRISK aims to give students skills to make informed decisions about risk taking associated with drug and alcohol use, driving and celebrating.	? _III	C	1
School Based Education (Germany)	The focus of this program was working on beliefs about consequences of alcohol use, media/advertising literacy, resistance skills and alcohol-related normative beliefs.	? _III	C	1
School Based Resilience Intervention (Australia)	This is a resilience theory based school intervention that is curriculum based, and includes modification of policies and programs, and partnerships with local services.	? _III	C	1

Social Norms Analysis Project (SNAP) (Australia)	Using social norms theory the focus of the intervention is on the extent to which young peoples' perceptions of their peers' behaviour and attitudes influences their own drinking behaviours.	? _III	C	1
Drugs At Work (DAW) (USA)	The program aims to reduce alcohol, tobacco, inhalants, marijuana, and other drugs use. It uses a class-based simulation exercise.	? _III	D	1
Peer Led FAS/FAE (USA)	Multimedia presentation by peers and college students about Fetal Alcohol Syndrome and other drug effects on the child during pregnancy.	? _III	D	1
Peer Support (Australia)	The Peer Support program aims to positively influence students' knowledge, attitudes and use of drugs.	? _III	D	1
Prime for Life (Sweden)	An alcohol risk reduction program that has been used and refined in the USA for over 20 years.	? _III	D	1
Project PRIDE (USA)	A primary prevention program intended to intervene at or before the early stages of drug and alcohol abuse.	? _III	D	1
Reinforcing Alcohol Prevention (RAP) (USA)	Based on evidence-based guidelines for effective school based programming, as well as on the needs and desires of the local school system to maximise impact in schools.	? _III	D	1
Say Yes First (USA)	This is a comprehensive, multicomponent approach for the prevention of alcohol and drug use in high-risk youth in rural areas. Includes prevention, parents' education, case management and family involvement.	? _III	D	1
Transtheoretical Model (USA)	An internet-based intervention based on the Transtheoretical Model of Behaviour Change delivered to middle school students to reduce alcohol, tobacco, and other drug use.	? _III	D	1
Wise Mind (USA)	An alcohol, tobacco and other drug prevention program with healthy eating and exercise obesity prevention program.	? _III	D	1
STEP II (India)	A pilot initiative in 25 schools in Mumbai was further expanded by adding an alcohol abuse education component and denoted as STEP II.	? _III	D	1

Programs with evidence of negative effect on alcohol outcomes				
Peer Acceleration Social Network (Project TND) (USA)	This is a modified version of Towards No Drug Abuse with increased group activities and peer leaders.	X	C	1
Take Charge Of Your Life (TCYL) (USA)	Focuses on demonstrating to students that there are personal, social, and legal risks and consequences involved in the use of substances including tobacco, alcohol, and illicit.	X	B	2

Programs with good evidence of effect

There were three programs with evidence of good effect. Each of these programs had multiple peer-reviewed publications and showed consistently good outcomes across the studies. These programs have enough evidence to suggest their use within schools would show good outcomes and are good candidates for further research. Of note for Australian schools is that CLIMATE Schools, an Australian designed program, received the highest grading.

Climate Schools (4 published studies, grade A)

Climate Schools was developed in Australia and is a computer-driven alcohol prevention program that includes two sets of six 40-minute lessons. Each 15-20 minute Internet-based lesson is completed individually. Students follow a cartoon storyline of teenagers experiencing real-life situations and problems with alcohol and cannabis. The second part of each lesson is a predetermined activity delivered by the teacher to reinforce the information taught in the cartoons. Four papers examined the CLIMATE Schools program; three were from the same large-scale study.

In the first paper (Newton, Andrews et al. 2009), a cluster randomised controlled trial was conducted with 764 13-year olds from ten Australian secondary schools. Half the schools were randomly allocated to the computerised prevention program (n = 397), and half to their usual health classes (n = 367). Participants were assessed at baseline, immediately post intervention and at six months following the intervention. Compared to the control group, students in the intervention group showed significant improvements in alcohol and cannabis knowledge at the end of the course and the six-month follow-up, as well as a reduction in average weekly alcohol consumption and frequency of cannabis use at the six-month follow-up. No differences between groups were found on alcohol expectancies, cannabis attitudes, or alcohol and cannabis related harms.

The second analysis of the same study was a cross validation study of the alcohol module only and found similar results. There were significant improvements in knowledge regarding alcohol use at immediate and 6 month follow up, average weekly alcohol consumption was reduced immediately after the intervention and there were no differences in alcohol expectancies, frequency of drinking to excess and harms related to alcohol use over time (Newton, Vogl et al. 2009).

In a report of the final results of the same intervention trial 12 months following the completion of the program, students in the intervention group still showed significant improvements in alcohol and cannabis knowledge, a reduction in average weekly alcohol consumption and a reduction in frequency of drinking to excess. There continued to be

no differences between groups on alcohol expectancies, cannabis attitudes or alcohol- and cannabis-related harms. The course was acceptable to teachers and students (Newton, Teesson et al. 2010).

In a larger study of 1466 year 8 students from 16 high schools in Australia randomly allocated to a computerised prevention program (n = 611, eight schools) or usual classes (n = 855, eight schools), Vogl et al. (2009) found the computerised prevention program was more effective than usual classes in increasing alcohol-related knowledge of safer drinking choices and decreasing the positive social expectations about alcohol. For girls it was effective in decreasing average alcohol consumption, alcohol-related harms and the frequency of drinking to excess (more than four standard drinks). For boys the behavioural effects were not significant.

Project ALERT (5 published studies, Grade B)

Project ALERT aims to motivate students using a social influence model of prevention, and provide them with skills to develop effective resistance behaviours. The original program was based on three theories of behaviour change, including cognitive factors that motivate health behaviour, social learning and self-efficacy. Project ALERT uses interactive teaching methods, such as question and answer techniques and small group activities. The revised program has eleven lessons in the seventh grade and three lessons in the eighth grade. The revised program also focused on smoking cessation and alcohol use as well as involving parents in the program. Parental activities included adolescent interviews with parents about their experiences with and response to peer pressure, knowledge tests and oral reports about drug use consequences.

Project ALERT was examined in five studies (Ellickson, McCaffrey et al. 2003, Ghosh-Dastidar, Longshore et al. 2004, Orlando, Ellickson et al. 2005, Longshore, Ellickson et al. 2007, St Pierre, Osgood et al. 2007).

Ellickson et al (2003) found that intervention schools had significantly lower overall alcohol use scores than the control schools, were significantly less likely to engage in drinking that resulted in negative consequences and (not significantly) less likely to engage in multiple forms of high-risk drinking. There was no impact on alcohol initiation.

Ghosh-Dastidar et al. (2004) evaluated a revised Project ALERT program, which showed significant effects on risk factors for cigarette and marijuana use in adolescents, but had a more modest impact on factors affecting alcohol use. The effects on the alcohol-specific risk factors were more variable than the smoking and cannabis factors.

Orlando et al. (2005) used mediation analyses to examine the mechanisms that effect past month cigarette use and alcohol misuse. Results for alcohol suggest positive beliefs about the consequences of drinking are an important mediator of alcohol misuse.

St Pierre et al. (2007) undertook an implementation study designed to gain a better understanding of the personal characteristics of the adult and teen leaders in Project ALERT that might have influenced program effects. The aim of this study was to explore if specific qualities of the program leaders (adults and teens) impacted on the outcomes. The results indicated that adult leaders who were more conscientious, sociable or individuated were more likely to engender positive effects. The authors suggested that a combination of adult and teen leaders would be a worthwhile investment to increase the likelihood of success.

Longshore et al. (2007) evaluated a modified version of the program, called ALERT Plus, against the original Project ALERT and a control group. The ALERT Plus program included an extension to the following grade and booster sessions to take into account the developmental changes of students. The control groups received any program already in place at their schools with no additional exposure to any ALERT program. Significantly lower rates for ALERT Plus on weekly alcohol use were found for girls only (32% reduction compared to control). Significantly lower scores on alcohol consequences and high-risk alcohol use were found together with significant reductions in positive beliefs about alcohol compared to the control group. There was no impact of ALERT Plus on at-risk boys.

All Stars (2 published studies, Grade B)

The All Stars program is delivered either by program specialists or regular classroom teachers. The curriculum consists of 24 sessions, of which 14 are required and are administered to the entire class during classroom time. The remaining sessions are optional and include additional class lessons, small group meetings with peers, and one-on-one meetings between the All Stars facilitators and students. The program includes interactive and cooperative learning activities such as debates, games, and general discussion. Homework is assigned to increase interaction between students and parents and to allow parents to play an active role in the program. Each session is designed to affect at least one of the programs' mediating variables. These include normative beliefs, lifestyle incongruence, commitment not to use drugs and bonding to school.

Two cluster randomised control studies examined All Stars (McNeal, Hansen et al. 2004, Ringwalt, Pankratz et al. 2007). McNeal and colleagues (2004) examined the program's effects across 14 schools (N=1822 students). All Stars achieved reductions in substance use when the teachers were involved in the delivery of the program and were able to successfully address the identified mediators of substance use including normative beliefs, lifestyle incongruence, and manifest commitment to not use drugs. The program was not as successful when not delivered by teachers.

The Ringwalt et al (2007) study evaluated the additional component of coaching teachers with the usual All Stars program but found no additional positive effect.

Programs with some evidence of effect

There were four programs with evidence of some effect. Each of these programs had more than one peer reviewed publication and showed consistently good outcomes for some (but not all) measured outcomes across the studies. These programs have enough evidence to suggest their use within schools would show good outcomes for specific variables and are good candidates for further research.

Life Skills Program (ISPY): (2 published studies, grade B)

The life skills program known as IPSY is a comprehensive program for the prevention of adolescent misuse of legal substances like alcohol and tobacco. ISPY combines interpersonal life skills (e.g., communication skills, problem solving, coping with anxiety and stress, assertiveness etc.) with training in skills related to substance use (e.g., refusal skills). It has a knowledge component that includes alcohol and tobacco use (e.g., the short-term consequences of substance use or actual prevalence rates), and also includes a focus on students' experiences within, and their attitudes towards, school, positive and negative aspects of school and learning, as well as learning methods and balancing school and leisure. The basic manual was designed for students in grade 5 and consists of 15 lessons of either 90 or 45 minute duration with two booster sessions, each of seven lessons, for grades 6 and 7. The program was implemented by teachers who had participated in a training day prior to implementation of the program. The program uses interactive teaching methods (e.g., role-plays, group discussions) that enable teachers and students to get to know each other and to establish relationships.

There were two studies (Wenzel, Weichold et al. 2009, Spaeth, Weichold et al. 2010) that reported on the ISPY program. Wenzel et al (2009) completed multivariate analysis for the alcohol related variables (n=747) which revealed a significant multivariate main effect of time, $F(10,731)=16.6$, $p < 0.001$, a significant main effect of group, $F(5736)=3.69$; $p < 0.01$, and a significant interaction effect between time and group, $F(10,731)=3.05$, $p < 0.01$), thereby indicating differences in means and in change over time between the intervention and control groups. Univariate tests for each dependent variable showed significant main effects of group for 30-day-frequencies of beer-, $F(1740)=12.14$, $p < 0.01$, wine-, $F(1740)=14.56$, $p < 0.001$, mixed drinks-, $F(1740)=12.83$, $p < 0.001$, and spirits-consumption $F(1740)=4\ 7.6$, $p < 0.01$, as well as for expectations about future regular alcohol use, $F(1740)=11.86$, $p < 0.01$. Significant time-by-group interactions were found for 30-day-frequencies of beer, $F(2,1480)=13.86$, $p < 0.001$, wine, $F(2,1480)=10.19$, $p < 0.001$, and mixed drinks-consumption, $F(2,1480)=10.17$; $p < 0.001$. Alcohol related variables had increased in 30-day-frequencies.

In another study, Spaeth et al (2010) found that the program decreased prevalence and reduced the quantity of drinking per occasion during early adolescence. Concerning quantity of alcohol use, the effect size in terms of a difference in estimated means between intervention and control group at the last measurement point in the normative group was d=0.33 (95% CI [0.21, 0.44]).

SHAHRP: (3 published studies, Grade B)

The School Health and Alcohol Harm Reduction Project (SHAHRP) is a classroom-based program with the aim of reducing alcohol related harm. SHAHRP was the subject of two trials in which randomly selected and allocated intervention and comparison groups were assessed at eight, 20 and 32 months after baseline. The program aims to reduce alcohol related harm by enhancing students' abilities to identify and deal with high-risk drinking situations and issues. The first phase of the SHAHRP program was delivered when the students were 12 to 13 years old and consisted of 17 skill-based activities conducted over eight to ten lessons (depending on lesson length of either 60 or 40 minutes, respectively). The second phase occurred in the following year, when the students were 14 years old and consisted of 12 activities delivered over 5-7 weeks. The activities incorporated various strategies for interactive dissemination including delivery skill rehearsal; individual and small group decision making; and discussions based on scenarios suggested by students, with an emphasis on identifying alcohol-related harm and strategies to reduce harm. Teacher training was included prior to each phase.

The comparison school participated in alcohol education in the later stage of the study (McBride, Farringdon et al. 2003). At baseline n=1111 (intervention) and n=1232 (control) students were recruited with a 75.9% retention rate for both phases of the study (McBride, Farringdon et al. 2003, McBride, Farringdon et al. 2004). The outcome measures included knowledge about alcohol, attitudes towards alcohol, alcohol consumption, partners of alcohol use, context of alcohol use, harm and risk of own and other use. The context of use was based on six items and identified three groups that were compared between the intervention and the control. These included a) non-drinkers, b) supervised drinkers (with adult or parent) and c) unsupervised drinkers (with peers or alone). Overall, there was little behavioural change in intervention group B; however, baseline groups A and B were less likely to consume alcohol in a risky manner than the control group. Group C from the intervention group was also significantly less likely to experience harm associated with their own use of alcohol compared to the group C control group. Group C experienced 18.4% less alcohol-related harm after participating in the program and this difference was maintained (19.4% difference) 17 months after program completion. Group A from the intervention group was significantly less likely to consume alcohol in a risky manner at 8-month after the first phase of the intervention, at

20-month after the second phase of the intervention, and at 32-months. There was no significant difference in any of the behavioural measures between group B students from the intervention or control group. There was no significant difference in the group C total alcohol consumption between intervention and control groups (McBride, Farringdon et al. 2003).

McBride et al. (2004) reported on the final study results. There were some significant knowledge, attitude and behavioural effects early on in the study, of which only some were maintained for the duration of the study and varied over the three time points. The intervention group had converging scores on alcohol related attitudes and knowledge at final follow-up. The intervention group were significantly more likely to be non-drinkers or supervised drinkers than were the comparison group. The intervention group consumed less alcohol (phase one 31.4% and phase two 31.7% but this was converging). Intervention students were less likely to drink to risky levels but this percentage reduced over time. The study reduced the harm associated with students' own use of alcohol for the intervention group but this varied over the three time points (32,7%, 16.7% and 22.9%). There was no impact on the harm that any students reported from other people's use of alcohol.

Another evaluation combined SHARHP and GetWise (Working on Illicits in School Education), the latter of which is a classroom based drug education program, derived from evidence of effective practice and designed to reduce alcohol and other drug harm. As alcohol is the drug that causes the greatest harm to young people in Australia, it received the greatest coverage, followed by tobacco and cannabis. The combined program includes student material, teacher material and teacher training (Midford, Cahill et al. 2012). The program included 12 lesson plans for year eights (13/14 year olds) and ten lesson plans for year nines (14/15 year olds), and addressed issues around the use of alcohol, tobacco, cannabis and other illicit drugs.

There was no significant difference in the increase of risky drinkers (chi squared = 0.939, df = 2, p = 0.625) or in alcohol consumption (chi square = 1.704, df=2, p = 0.426). Drinking to get drunk increased by 133% in the intervention group and 1025% in the control group. The frequency of drinking to get drunk between groups was significant (z =-2.261, p=0.024). The harms experienced by the control group increased by 438% from (mean = 0.96) to (mean = 5.17). The change between them was significant (z=-2.728, p =0.006).

Unplugged-EU: (2 published studies, Grade B)

The Unplugged Program targets students 12-14 years old and is designed to address both experimental and regular use of alcohol, tobacco and illicit drugs. This revised

curriculum is based on a social-influence approach, incorporating components of critical thinking, decision making, problem solving, creative thinking, effective communication, interpersonal relationship skills, self awareness, empathy, coping with emotions and stress, normative beliefs, and knowledge about the harmful health effects of drugs. The curriculum consists of 12 one-hour units taught once a week by class teachers who previously attended a 2.5-day training course. The program is delivered in three formats: basic (alone) or with the addition of peers (peer arm) or with parent activities (parent arm). In the peer arm, two elected student representatives conduct short meetings with their classmates in order to monitor experiences related to the program. Participants in the parent arm participate in three interactive workshops of two to three hours each.

There have been two cluster randomised control studies reporting results from a large scale intervention across seven European countries including Austria, Belgium, Germany, Greece, Italy, Spain and Sweden (Faggiano, Galanti et al. 2008, Caria, Valente et al. 2011). Faggiano et al. (2008) found the program reduced episodes of drunkenness in the past 30 days (OR=0.72; 0.58-0.90 for at least one episode, OR=0.69; 0.48-0.99 for three or more episodes). Unplugged-EU had a beneficial effect on alcohol, tobacco and cannabis use. Caria et al. (2011) found participation in the program did not modify the overall risk of being a current drinker or a frequent current drinker. Program participation was associated with lower prevalence of alcohol-related behavioural problems at follow-up. However, this was significant only among non-drinkers at baseline and students who perceived parents' tolerance concerning alcohol consumption. Among non-drinkers at baseline, intervention students were more likely to remain non-drinkers and less likely to progress toward frequent drinking compared to controls. Among occasional drinkers at baseline, intervention students showed a lower progression toward frequent drinking compared to controls. Among those who did not report alcohol-related problems at baseline, a higher proportion of intervention students remained at the same stage, and a lower proportion reported frequent alcohol-related behavioural problems at follow-up, compared to controls.

Life Skills Training (LST): (3 published studies, Grade C)

The Life Skills Training Program has a focus on teaching information and skills for resisting social influences to use drugs, and generic personal and social skills for increasing overall competence and promoting the development of characteristics associated with decreased risk for using drugs. The program increases knowledge about substance use, correcting cognitive misperceptions that contribute to substance use, and providing coping skills to reduce the likelihood of using drugs to manage stress or anxiety. The program uses a range of techniques including group discussion, demonstration, modelling, behavioural rehearsal, feedback and reinforcement, and

behavioural "homework" assignments for out-of-class practice. Intervention materials including a manual and a pre training day are provided to the teachers.

Botvin et al. (1995) found that that both treatment groups in a three-armed trial had significantly lower prevalence rates for weekly drinking, heavy drinking, and problem drinking. The prevalence of problem drinking was significantly lower for the adolescents in both treatment groups. The second treatment group also had significantly lower monthly drinking rate.

In a follow up study with a block randomisation design, Botvin et al. (2001) found that the intervention had a significant effect on binge drinking at the one year follow up, with an odds ratio of 0.41 and 95% CI of 0.18-0.93. The covariate-adjusted proportions of binge drinkers at the one-year follow up were 4.3% control and 1.8% intervention. The program produced a 57% reduction in binge drinking at the 1-year and at two years, the OR for reduction in binge drinking was 0.40 with a 95% CI of 0.22-0.74. The covariate-adjusted proportion of binge drinkers at the 2-year follow up was 5.2% control and 2.2% intervention. The program maintained a 57% reduction in binge drinking at the two-year follow up.

In 2006, MacKillop et al (2006) compared two modes of delivery. In the first mode the program was administered in class once per week for 15 weeks (spaced administration), while in the second mode the program was administered each day in 15 consecutive class periods (massed administration). Teachers were trained in delivery and checklists provided after each session to ensure fidelity.

The results found in the first mode were statistically significant on the overall knowledge, life skills knowledge, drug knowledge, perceived adult substance use, pro-smoking attitudes, pro-drinking attitudes, assertiveness skills, and anxiety reduction skills subscales. However, McNemar tests revealed no changes in use or intention to use from pretest to posttest for either specific substances ($p > .50$) or aggregate estimates ($p > .30$). In the second mode, statistically significant changes were found on overall knowledge, life skills knowledge, drug knowledge, assertiveness skills, self-control skills, perceived adult substance use, and perceived peer substance use sub–scales. However, McNemar tests detected no changes from pretest to posttest on substance use or intention to use for either specific substances ($p > .30$) or aggregate estimates ($p > .30$). Generally, females showed greater improvement than males.

Programs with little or no evidence of effect

There was one program with little or no evidence of effect. This program had more than one reasonably high quality peer reviewed publication. However, it consistently showed few or no positive effects across the studies. The research into this program was of sufficient quality to suggest that it is unlikely to result in positive outcomes if implemented.

Drug Abuse Resistance Education (DARE): (3 published studies, Grade A)

Project DARE (Drug Abuse Resistance Education) is the most widely used school-based drug use prevention program in the United States. The program includes 17 class based lessons, usually conducted once per week for up to 60 minutes. The focus is on teaching students the skills to recognise and resist social pressure to use drugs, in addition to education, decision making, building esteem and making healthy choices. DARE uses an array of teaching techniques including lectures, discussion, question and answer sessions, audio-visual aids, workbooks and role plays.

In the first study, Ennett used meta-analysis to review the results of eight different DARE evaluations (Ennett, Tobler et al. 1994). The DARE effect size for drug use behaviour ranged from .00 to .11 across the eight studies; the weighted mean for drug use across studies was .06. Lynam and colleagues (1999) also found that DARE's short-term effectiveness for reducing or preventing drug use behaviour was small, and lower than other prevention programs. Similar results were found at the ten year follow up (Lynam, Milich et al. 1999), and few differences were found between groups on any drug use, attitude or other outcome. In the final study (West and O'Neal 2004), a meta-analysis was completed on the DARE studies and again a very small and non-significant overall weighted effect size was found (correlation coefficient = 0.011; Cohen d = 0.023; 95% confidence interval = -0.04, 0.08, z = 0.73, NS). The authors concluded that DARE was ineffective.

Programs that showed inconclusive evidence

There were 29 programs with studies showing inconclusive results. The evidence is unclear on whether these programs are effective or not, due to:

I. Poorly conducted research for that program;

II. Inconsistent outcomes across studies; or

III. Only one evaluation of the program being available.

I. Programs with poorly conducted research

Keeping It Real: (4 published studies, Grade C)

The Keepin' it REAL program utilises drug refusal skills (Refuse, Explain, Avoid, Leave), and was developed by youth for youth, using an action research method to ensure community empowerment. It is a culturally appropriate intervention incorporating traditional ethnic values and practices that promote protection against drug use. The intervention consisted of 10 lessons taught by the classroom teacher that imparted the knowledge, motivation, and skills needed to resist drug offers.

Four studies (Hecht, Graham et al. 2006, Kulis, Nieri et al. 2007, Yabiku, Kulis et al. 2007, Hopson and Holleran Steiker 2010) found non significant results for the White and African American versions of the program when compared with the Mexican version of the program.

Towards No Drug Abuse (TND): (3 published studies, grade C)

Project TND (Towards No Drug Abuse) (Sussman, Sun et al. 2003, Sun, Skara et al. 2006, Sun, Sussman et al. 2008) is a fixed 12-session classroom program specifically targeting the use of cigarettes, alcohol, marijuana, and 'hard drugs' to provide a preventive intervention on drug use among high school youth. The primary outcome measure was substance use in the past 30 days. There were three studies assessing TND, none of which had any effect on alcohol (Sun, Sussman et al. 2008).

In the 2003 study (Sussman, Sun et al. 2003), the difference between self-instruction vs. educator led delivery of the program was explored at follow-up. The effect on alcohol use was in the direction favouring a positive program effect (odds ratio of 0.87), but was not statistically significant ($p = 0.241$, one-tailed). The 2-year follow-up results suggested some program effects on cigarette smoking and drug use in the health educator-led version. However, the authors concluded that more work was needed to learn how to maintain effects across substances.

In the second study, Sun et al (2006) compared three groups of 1) Towards No Drug Abuse, 2) Towards No Drug Abuse plus school involvement (this was a community program component in which students participated in activities sponsored by the school but outside the classroom) and 3) standard care. The primary outcome measure was last 30 days substance use. Of 1578 baseline students, follow-up data were available for 68% (year 1), 66% (years 2 or 3), and 46% (years 4 or 5) of subjects. Results revealed significant positive long-term program effects for hard drug use at years 4 or 5. However, significant reductions were not found for 30-day use of cigarettes, alcohol or cannabis. The hard drug use effect was not found for years 2 and 3, but was found for years 4 and 5 in the intervention groups ($p = 0.02$).

In the final study (Sun, Sussman et al. 2008), 18 schools were allocated to one of three conditions using a variation of TND. Group 1 received TND, Group 2 received TND plus behavioural skills and Group 3 received usual or standard care. The two intervention groups failed to significantly reduce dichotomous measures of substance use (cigarette, alcohol, marijuana, and hard drugs) at one-year follow-up. Both groups has an effect only on the continuous measure of hard drug use, indicating a 42% ($p=0.02$) reduction in the number of times hard drugs were used in the last 30 days in the intervention groups relative to the control.

Skills for Adolescence (SFA): (2 published studies, Grade C)

SFA uses social influence and social cognitive approaches to teach cognitive behavioural skills. A two-stage cluster sampling plan allocated schools to the intervention or control conditions. Before allocation schools had to agree to randomisation as well as delivery of a 40 session program if selected into the intervention group. The 40 sessions were 35 – 40 minutes each and included topics such as self-confidence, communication, managing emotion, peer relationships and living health and drug free. The teacher delivering SFA also attended a workshop.

In the first study there were no intervention effects for any of the alcohol use indicators; nor were there significant differences on either lifetime or recent use of other illicit substances (Eisen, Zellman et al. 2002). In a second study (Eisen, Zellman et al. 2003), there were statistically significant increases in recent frequency of use for alcohol and binge drinking for both intervention and control groups. Baseline binge drinkers in the intervention group were less likely to report recent binge drinking at follow up (27% vs. (37%, p<. 01).

Social and Emotional Learning (SEL): (2 published studies, Grade D)

Social and Emotional Learning includes classroom instruction and management, child skill development and parent workshops. The program is delivered during grades 1 – 6,

and offers 5 days of in-service training for teachers, developmentally appropriate parenting classes for parents in grades 1, 3, 5 and 6, as well as social competence training for children in grades 1 and 6. There were three conditions: a full intervention group, a later intervention group and a control that received no special intervention.

Hawkins et al. (1999, 2008) found that the early intervention group reported less heavy drinking than the control group, but the focus of the outcomes was on delinquent behaviours. In the second study, there were no significant effects on substance use.

Positive Adolescent Life Skills (PALS): (2 published studies, Grade D)

Positive Adolescent Life Skills is a cognitive behavioural, skill-building intervention that has shown promise in improving social skills in a general population rural environment. It contains 25 cognitive behavioural skill-building sessions that are divided into five modules. Whilst the program is run in schools it is run out of school hours. It was compared to the after school teen club.

Two studies (Tuttle, Campbell-Heider et al. 2006, Campbell-Heider, Tuttle et al. 2009) randomly allocated students by gender. Retrospective analyses reviewed the outcome measures that included a global measure known as the Problem Orientated Screening Instrument for Teenagers (POSIT). There were no significant differences on the POSIT.

II. Programs with inconsistent outcomes

Alcohol Misuse Prevention (AMPS): (4 published studies, Grade B)

The AMPS program consisted of four sessions, which focused on the immediate effects of alcohol, risks of alcohol misuse, and social pressures to misuse alcohol. The AMPS program is based on the social influences approach with an emphasis on teaching social skills to resist peer pressure to use or misuse alcohol. The focus was on driving behaviours, alcohol related offences and crashes. The project was designed to a) evaluate the short and long terms effects of a prevention program in schools, and b) examine the aetiology of alcohol misuse from early adolescence into young adulthood in the control group. Students in the intervention groups received AMPS in five sessions; the 45 min sessions were delivered on consecutive days. Audio-visual materials, student activity sheets, and handouts were used to maintain student interest. To ensure program fidelity teachers were hired and trained, and their teaching was monitored. Four AMPS studies were reviewed (Dielman, Shope et al. 1986, Shope, Copeland et al. 1993, Maggs and Schulenberg 1998, Shope, Elliott et al. 2001). Alcohol use and misuse were not significantly different between treatment and control groups. Long terms effects were variable.

Gatehouse: (2 published studies, Grade B)

The Gatehouse Project is a primary prevention program, which included both institutional and individual focused components to promote the emotional and behavioural wellbeing of young people in secondary schools. The program assesses the social climate profile of the participating school and then targets the school with a range of group work, class discussion and other teaching strategies. It uses a whole of school approach and has been reported in the following two evaluation studies (Bond, Patton et al. 2004, Patton, Bond et al. 2006). The individual components of the intervention focus on cognitive and interpersonal skills underlying emotional well-being relevant to the normal developmental experiences of teenagers (Bond, Patton et al. 2004). The classroom and whole school components sought to make changes to the schools' environment to enhance security and trust, communication and social connectedness, and positive regard through valued participation (Bond, Patton et al. 2004).

In the first study, Bond et al (2004) reported on the effect of the Gatehouse Project on mental health and risk behaviours, including substance use. A small 3% to 5% risk reduction was found between intervention and control students for any drinking, any and regular smoking, and friends' alcohol and tobacco use across the three waves of follow up. The largest effect size was in relation to smoking.

In the second study, Patton et al (2006) reported on the school level effects of the intervention on health and behavior measures (including substance use). There was little difference at baseline on key outcome measures between schools in the intervention group and those in the control group. At time 1, non-significant trends were apparent for lower rates of substance use among the intervention group. The estimated difference in the prevalence of any health risk behaviour was 2.8% (95% CI= -4.6, 10) and for marked health risk behaviour 4.3%, (CI=-3.7, 12.2). At Time 2, prevalence estimates were again generally lower for the intervention group. The absolute difference in prevalence of any risky behaviour among the intervention group compared with the control group was 4.9% (CI= -3.1,12.9). The between-group difference for marked risky behaviours was also 4.9% (CI=-0.5, 10.4), which represents a reduction of 25% in schools in the intervention group compared with the control group. Time 1, point estimates of risk for substance use appeared lower in the intervention group, but 95% confidence intervals for odds ratios did not exclude 1.0 in both unadjusted and adjusted models. At time 2, a more consistent pattern of lower risk across all outcomes was found in the intervention group.

III. Programs with only one evaluation

Personality Risk Factors: (1 published study, grade B)

Personality Risk Factors is a manualised intervention delivered by trained therapists, designed to intervene at the level of personality risk and associated maladaptive coping strategies, including alcohol misuse. The three main components of the intervention were (a) psychoeducation, (b) behavioural coping skills training, and (c) cognitive coping skills training. Students were encouraged to discuss the short-term reinforcing properties of a variety of problematic coping strategies (including alcohol use), as an attempt to help them understand their specific motivations for engaging in problematic and risky behaviours. The program included training for the intervention therapists to ensure the manual and exercises were completed consistently. The interventions were administered in a group format over two sessions, with a between-session homework exercise. The control group received no intervention.

Conrod et al (2006) found that the intervention group demonstrated lower levels of alcohol consumption at follow-up relative to the control. The intervention score of 2.0 (unadjusted mean) on the alcohol consumption scale (SD = 1.7), indicated an average of 3 to 4 drinks per drinking occasion, whereas the control scored an average of 2.6 on the drinking quantity measure (SD = 1.7), indicating an average of 5- 6 drinks per drinking occasion. In addition, 37% of the intervention and 22% of the control groups reported an absence of problem drinking symptoms at follow up.

Adolescent Alcohol Prevention Trial: (1 published study, grade C)

Four groups were included in the evaluation of the Adolescent Alcohol Prevention Trial. Students received either educational information only (control); education plus resistance training (RT); education plus normative information (norm); or a combination of all three components (COMB).

Taylor et al. (2000) found that compared to the control group, the norm intervention had a beneficial effect on lifetime alcohol use, recent alcohol use and lifetime drunkenness. The norm intervention also had a beneficial effect on the rate of growth of substance use over the follow-up period, and maintained a lower, more stable rate of change in alcohol use (compared to a rate of change which was initially high and decelerated over time in the control group). Compared to the control group, the norm intervention additionally had a beneficial effect on lifetime smoking and recent smoking.

CHOICE: (1 published study, Grade C)

CHOICE consists of five distinct 30-minute sessions that rotate throughout the school year. The program is based on social learning theory, decision-making theory, and self-

efficacy theory. CHOICE provides normative information and also uses a motivational interviewing approach to present the program curriculum. The program was pilot tested with approximately 500 students to obtain feedback on the style and content to ensure it was developmentally relevant for this age group. Briefly, the CHOICE sessions focus on providing normative feedback on alcohol and marijuana use among middle-school aged youth, challenging unrealistic beliefs about substances, resisting pressure to use substances through the use of role play, discussing potential benefits of both cutting down and stopping use, and discussing risky situations and coping strategies.

In a cluster randomised control trial, D'Amico et al (2012) examined CHOICE in 16 schools that were matched and randomly assigned to the CHOICE program or the control group. This study was based on a smaller previous pilot study. The primary measures were alcohol use, beliefs about alcohol, fidelity and acceptability measures. The follow up was 6 months and results suggested although not statistically significant (p=. 20), past month alcohol use was lower in the intervention schools (OR = 0.81; NNT = 45). There were no individual or school level changes in resistance self-efficacy, perceived prevalence of drinking, or intentions to drink.

Healthy Schools and Drugs: (1 published study, grade C)

This multi component study combined a range of interventions including: a coordinating committee, a classroom based intervention, school regulations on drug use, a system of early detection of students with drug problems; and involvement of parents in drug abuse prevention at the school. The classroom intervention consisted of three lessons about tobacco in the first year, three lessons about alcohol in the first or second year and another three lessons in the second or third year about marijuana, ecstasy and gambling. Nine experiential and three control schools were compared over three years. The control schools had to agree not to conduct the program during the three years.

Significant effects were found for the frequency of alcohol use at year 3 ($p < 0.01$), the number of alcoholic drinks per week at year 3 ($p < 0.01$), and the number of alcoholic drinks per instance at year 1 and year 3 ($p < 0.001$). Results for attitude towards alcohol use were mixed. A significant effect of the intervention on attitude towards alcohol use was found at year 2, but not at years 1 and 3. A significant effect on self-efficacy towards alcohol was found at year 1, but not at years 2 and 3 (Cuijpers, Jonkers et al. 2002).

Life Education Victoria (LEV): (1 non-peer reviewed report, Grade D)

LEV provides a drug education program to primary school children. Educators, operating from mobile units, visit schools and deliver high quality audio-visual/discussion presentations to students. LEV aims to delay student experimentation with or initiation into smoking, discourages underage drinking, encourages students to avoid drinking

during the adolescent years, and advocates that students avoid analgesics unless for legitimate health reasons. The program is structured around individualism and administered across the primary school years in seven modules, each module targeting a different topic concerning body functions, effects of drugs on the body, and managing student pressures. The delivery of the program is fixed and lacks flexibility, thus schools must accept the whole program as it delivered.

In an evaluation of the LEV program, published in a non-peer reviewed report only, Hawthorn et al (1992) found small effects in both student and school level analysis for some, but not all, measures. Indeed, there was some evidence that compared with non-LEV, LEV-students' drug use and misuse were marginally higher.

Positive Youth Development (PYD): (1 published study, Grade C)

Positive Youth Development (PYD) is a comprehensive program to promote well-being and prevent substance use among adolescents. It emphasises a strengths-based approach to the promotion of positive outcomes for adolescents. The program includes 18 sessions and focuses on effective decision making to avoid drug use along with participation in health education and cultural heritage activities. The 18 sessions covered the following topics: (1) program introduction and overview; (2) understanding and coping with stress, and stress-reduction strategies; (3) effective decision-making, (4) information about tobacco, alcohol, and other drug use; (5) applying the decision making process to life through identifying positive personal attributes, dealing with job and school stressors, setting positive goals for healthy living, and enhancing social networks and resources; and (6) program close and review.

There was no significant difference in use at baseline to exit between groups (β11= 0.16, t (704) = 0.36, p = .72). However, at follow up, the change in alcohol use from baseline significantly differed between groups (β21 =-1.01, t (704) =-2.19, p =. 029). The odds of using alcohol at follow up was 0.365 (95% CI = 0.15–0.90) for the intervention vs. control group; that is, the odds of using alcohol was 63% (1 - .365) less for the intervention group (Tebes, Feinn et al. 2007).

Olweus Prevention: (1 published study, grade C)

Olweus combines the settings of school and home, and seeks to create a school and home environment characterised by positive interest and engagement on the part of adults and firm boundaries between acceptable and unacceptable behaviour. The aim of the program is to reduce bullying and as a consequence to have an effect on substance use. There were four schools that implemented the program and two control schools. All schools had previously conducted some form of substance program. The program required an ongoing commitment for two school years and the teachers were provided

with information about reducing bullying and worked in groups to implement plans in their own schools.

Amundsen & Ravndal (2008) found no significance difference in frequency of alcohol use between the intervention and control schools. Significant differences were found at the 5% level for 'have been intoxicated six times or more' (OR 1.503 for fixed and 1.530 for random effects) and 'have been intoxicated 11 times or more' (OR 1.708 for fixed and 1.769 for random). The control schools had higher drunkenness than the intervention schools.

Protecting You/Protecting Me (PY/PM): (1 published study, Grade C)

PY/PM was developed by Mothers Against Drunk Driving. It was one of the first alcohol prevention and vehicle safety programs to target children in school, beginning in first grade. The program consists of 40 lessons (delivered once a week for 8 weeks over 4 years) and covers topics designed to prevent the injury and death of young people from underage alcohol use and driving with impaired drivers. Topics include brain development, vehicle safety and life skills.

The evaluation (Bell, Kelley-Baker et al. 2005) outcome measures include the attitude and behaviour of young people. Regression coefficients testing the intervention at post-test ranged from .10 (decision making skills) to .45 (vehicle safety skills and development) and also include perceived harm of alcohol (.06), drinking and safety intentions (.04), and underage drinking attitudes (.04). Relative to comparison students and schools, the program students increased their knowledge of alcohol's effect on development; gained decision-making, stress-management, and vehicle safety skills; and demonstrated changes in attitudes toward underage alcohol use and its harm (Bell, Kelley-Baker et al. 2005).

Reduce Risk Increase Student Knowledge (RRISK): (1 published study, Grade C)

RRISK aims to give students the skills to make informed decisions about risk-taking associated with drug and alcohol use, driving and celebrating. The RRISK program (Zask, van Beurden et al. 2006) is a combination of activities including a seminar day, preceded and followed by complementary in-school activities. The seminar is standardised across schools, but the in-school activity is up to each school to implement and can include guest speakers, peer education, projects targeting risk taking etc.

The focus of the evaluation measured statements such as "I always check the driver isn't drunk before I get in the car." The intervention group reported significant improvements in behaviour when compared with the comparison group. The older intervention group reported a significant improvement regarding planning a safe return from parties

compared with the comparison group. Adolescents in the intervention demonstrated significant improvements in knowledge, attitudes and behaviour compared with the comparison group.

School Based Education: (1 published study, Grade C)

The focus of this program was beliefs about consequences of alcohol use, media/advertising literacy, resistance skills and alcohol related normative beliefs. The program consisted of four specified class units, a booklet for students and a parent booklet. Each unit had a standard structure that included a schedule, an overarching theme, the main objectives and a list of 'hands-on' materials. Instructions for working interactively were described for each teaching unit. The information targeted students under the age of 16 years. The main message of the materials was 'no alcohol for minors'. The schools were assigned randomly to the experimental (intervention) or the control arm with stratification for type of school. The intervention classes received the intervention and the control classes received 'usual curriculum', which consisted of normal school lessons without any other education on alcohol.

Morgenstern et al (2009) found no statistically significant intervention effect for any of the alcohol use outcomes except for lifetime binge drinking. Intervention students were significantly less likely to report lifetime binge drinking at post-test [adjusted odds ratio (OR) 0.56; 95% confidence interval (CI): 0.41, 0.77] as well as the 12-month follow-up (0.74; 0.57, 0.97). There were no effects found in regard to students' self-reported attitudes, intentions to drink, lifetime alcohol use and past-month alcohol use.

Schools Based Resilience Intervention: (1 published study, Grade D)

This is a resilience theory based program that includes modification of policies and programs to reduce bullying as well as development of partnerships with local services to encourage after school activities. The program uses teaching materials to enhance student communication, connectedness, empathy and self-awareness as well as resilience and protective factors.

At 12 month follow up, the proportion of students that reported substance use for each of the 6 outcome measures was significantly lower than that at baseline. The proportion of those who reported consumption of one or more alcoholic drinks in the last 3 months was lower and consumption of five or more drinks on one or more occasion was 16.4% less ($p<0.01$) (Hodder, Daly et al. 2011).

Social Norms Analysis Project (SNAP): (1 non-peer reviewed report, grade C)

The focus of SNAP is on young peoples' perceptions of their peers' behaviour and attitudes, and how this influences their own drinking behaviour. This evaluation, published in a non-peer reviewed report by Hughes et al (2008) reports on pre-and post-testing results, with the same survey instrument being administered to students at three time points – once prior to the intervention (T1), once during the intervention (T2), and finally, at the end of the project (T3). The research design was quasi-experimental, and involved trial groups (which were involved in the data collection and received the intervention) and a control group (which was involved in the data collection but did not receive the intervention). The evaluation questions were framed around the following: frequency and/or intensity of others' drinking, perceptions of the frequency of others' drinking, perceptions of the frequency of others' drunkenness, self-reported frequency of drinking and drunkenness and use of harm-minimisation strategies.

Comparisons were made between the control and trial schools (n=4). The trial schools exhibited significant decreases in perceived peer drinking rates at T2. However this was followed by an increase at T3. The trial schools exhibited significant decreases in perceived peer drunkenness rates at T2. There was a significant decline in self-reported drunkenness between T1 and T2 in the trial schools. The effect was short-lived, and T3 rates were similar to baseline.

The proportion of students who did not get drunk on their last drinking occasion remained stable over time. Significant results (p=0.057) were found for aggression risk factors including frequency of drunkenness, number of people present, frequency of drinking, not setting limits on the amount of alcohol consumed and drinking duration. There was no significant change regarding the use of the three key harm minimisation strategies.

No behavioural differences (e.g. harm minimisation strategies, alcohol use) were found between groups. In both groups reported rates of alcohol consumption were closer to friends' perceived rates than either same-grade or same- school peers. As is the case for perceptions of drinking, friends appeared to be more potent influences on students than either same-grade or same-school peers with respect to perceptions of frequency of drunkenness. The evaluation concluded that the social norms approach is a theoretically informed and effective model for alcohol health promotion.

Drugs at Work (DAW): (1 published study, grade D)

DAW aimed to reduce the number of students, especially Mexican-Americans, who use alcohol, tobacco, inhalants, marijuana, and other drugs. This revised version of DAW used a class-based simulation exercise, and comprised seven fifth-grade sessions and one sixth-grade, follow-up session. Most of the fifth- grade sessions were designed to be

delivered in a high-energy, multi-media format, supplemented with interactive, hands-on activities.

Wright (2007) measured outcomes using an A-B-A design on a year by year basis with statements such as “I have consumed enough beer or wine to feel drunk” or “Alcohol is very bad for people my age”. The impact of the program was less consistent for alcohol than for cigarettes and cannabis.

Peer Led FAS/FAE: (1 published study, grade D)

Peer Led FAS/FAE prevention emphasises the role of peers in teaching and role modelling. Multimedia presentations by peers and college students were used to increase awareness about Fetal Alcohol Syndrome and other drug effects on the child during pregnancy. Boulter (2007) reported on a peer led intervention study that included 6 weekly, 40 minute sessions. The results were based on ten multiple-choice questions. In general, students’ overall knowledge of presentation content increased from pre-test to post-test and from post-test to follow up. Female students scored significantly higher than male students ($p<0.01$).

Peer Support: (1 published study, grade D)

The Peer Support program aims to positively influence students’ knowledge, attitudes and use of drugs. The program included 10 to 16 sessions, mostly on personal skills training, with two sessions on alcohol and tobacco use. Webster et al (2002) found no significant effects of the program on participants’ knowledge, attitudes and use of alcohol and tobacco.

Prime for Life: (1 published study, grade C)

PRIME for Life is an alcohol risk reduction program that has been used and refined in the USA for over 20 years. A Swedish version of the program has recently been adapted for use among Swedish high-school students (age 18-19). The high-school version used in this study emerged as a translation and cultural adaptation of the US “PRIME for Life under 21” version. This program version targets youth at-risk and/or subjects charged with alcohol and/or drug violations. The most notable differences from the adult version are a smaller exercise book and more emphasis on youth-related issues (Hallgren, Sjolund et al. 2011). The RCT involved 23 schools with n=926 students. The primary outcome measure was on drinking behaviour. Participants were followed up at 5 and 20 months to assess changes in drinking behaviour, knowledge and attitudes towards alcohol.

Mean knowledge scores increased significantly from baseline to follow up with an effect size of 0.81. The perception of risk for developing alcohol problems increased

significantly in the intervention group (0.31). No significant effects on drinking behaviour were found. Knowledge about the effects of alcohol consumption on health increased, as did negative attitudes towards alcohol, but these effects diminished over time. The findings do not support the efficacy of PRIME for life as a risk reduction or behaviour change tool for schools.

Project Pride: (1 published study, Grade D)

Project Pride is a primary prevention program intended to intervene at or before the early stages of drug and alcohol abuse. Project Pride consists of 12 modules, to be administered during one class period per week over a 12-week period. Modules cover different areas such as positive communication, self-control and resistance, drug education, normative education, and stress management.

The evaluation did not measure alcohol behaviour but did measure some alcohol knowledge based on advertising influence and found small to moderate effects on 'drug fact' knowledge (LoSciuto and Steinman 2004).

Reinforcing Alcohol Prevention (RAP): (1 published study, grade C)

The Reinforcing Alcohol Prevention (RAP) program aims to increase the impact of schools to address underage drinking and impaired driving. Social cognitive therapy provided the theory and constructs that shaped the intervention. RAP uses a range of interactive learning, threat-appeal tactics (e.g. photos of crashes) and personal experience to produce a brief program for schools. Specifically, it includes an educational lesson, video, and interactive activities during a 90-minute period.

Will and Sabo (2010) reported on this pilot (no control) study, and found that the program demonstrated significant improvements in students' knowledge and awareness of harm from alcohol. Students' knowledge and awareness of alcohol related risk and consequences increased significantly from pre-test (M=84.96, SD=8.87) to posttest (M=97.25, SD=12.39). There was also an increase in knowledge and awareness of the harmful effects of alcohol in immediate post-test phase.

Say Yes First: (1 published study, Grade D)

This program uses a comprehensive, multicomponent approach for the prevention of ATOD use in high-risk youth in rural areas. It includes a combination of program components including school training, prevention (growing health and teenage health, academic help, sport programs), parental education, case management and family involvement.

A longitudinal study (Zavela, Battistich et al. 1997) found a higher proportion of control than intervention students had ever used alcohol. Participation in the program was

negatively associated with frequency of drug use in the last 30 days among high-risk students. Higher levels of participation in the program were associated with better outcomes for high-risk students.

Transtheoretical Model: (1 published study, Grade D)

This is an Internet-based tailored program based on the Transtheoretical Model of Behaviour Change, which requires very little teacher time. Twenty-two schools were matched on key variables and then randomly allocated to the one of two treatment or control groups. The control received one pre-test assessment and two post-test assessments (3 and 14 months after pre-test, respectively). The treatment groups received 30-minute, internet-based, individualised, interactive intervention sessions, staff and administrator guides, and a parent guide. The first post-test was completed following the final intervention session (3 months after pre-test) and the final post-test was completed approximately one year (14 months) later. The role of the teacher was to allow time for students to complete the online program.

The treatment groups showed a 39.6% and 36.9% cessation rate at two time points. Among those in 'pre action' stages (users), 24.6% of the control had stopped using substances at follow up time 1 and 32.1% had stopped using substances follow up time 2 (compared with 39.6% and 36.9% of the treatment group). The random effects model shows that significantly more students stopped using drugs (i.e. moved into action or maintenance stage) in the intervention group compared to the control group at post-test 1, $t(18) = 3.01$, $p < .001$, OR = 2.2. At follow up time 2, there was a significant interaction, $t(36) = -2.24$, $p < .05$, OR = 2.0 showing that the treatment group and the control group converged somewhat and the two groups were not significantly different from one another (Evers, Paiva et al. 2012).

Wise Mind: (1 published study, grade D)

Wise Mind is a school-based alcohol, tobacco, and drug prevention program for children (Copeland, Williamson et al. 2010). The program was a combined Alcohol/Tobacco/Drug (ATD) prevention program with a Healthy Eating and Exercise (HEE) obesity prevention program. Four Catholic schools (N = 670 students) were randomly assigned to the treatment conditions (2 schools in each condition). Participants were followed over two years.

At an 18-month assessment, the ATD program resulted in healthier alcohol and tobacco expectancies as compared to the HEE program. The program outcomes focused on smoking and alcohol. Significant effects for smoking were associated with treatment conditions for all three subscales of the Smoking Consequences Questionnaire: (1) Positive Consequences of smoking ($p < .03$); (2) Negative Consequences of smoking (p

< .01); and (3) Appetite/ Weight Control of smoking ($p < .05$). Students in the HEE condition reported increased expectancies that alcohol reduces tension [m = 0.26 (.06)], whereas students in the ATD condition reported a non-significant increase in this belief [m = 0.06 (.05)]. No detectable differences were found between the two interventions in terms of prevalence rates for tobacco, alcohol or illicit drug use at 18 months. At an 18-month assessment, the ATD program resulted in healthier alcohol and tobacco expectancies as compared to the HEE program. Children in the ATD program did not differ from those in the HEE program in alcohol, tobacco, or drug use.

STEP II: (1 published study, grade C)

School-based Teenage Education Program (STEP) was an HIV/AIDS and alcohol abuse educational program built with specific cultural, linguistic, and community-specific characteristics. STEP was initially designed and implemented as a pilot initiative for use in 25 schools in Mumbai and was further expanded by adding an alcohol abuse education component and denoted as STEP II. Based on social learning theory, STEP II intended to provide culturally and developmentally appropriate information about alcohol use/abuse and HIV/AIDS in multiple sessions.

In this study, Chhabra et al (2010) report on a pilot 12 session program with three month follow up that recruited 23 schools and n=1421 students. Using a Train-the-Trainer model, instructors (17-21 years) were trained to present the 10 session manualised program to youth aged 13-16 years. Two classes in each school participated, and the school administrator randomly assigned the classes, one to the intervention and the other to the comparison condition. Group allocation was made by toss of coin. Students in the intervention group were exposed to the STEP II, and those in the comparison group were given another health education program focusing on cardiovascular health. Overall the intervention group showed greater mean changes in efficacy, communication skills and reported decreased risk taking behaviour. However, the comparison group evidenced greater mean change in knowledge and confidence. The whole group demonstrated increase in knowledge over time, self-efficacy, increased confidence, better communication skills and decreased risk taking self-reported behaviour style. STEP II had a significant impact on girls, with improved communication skills and improvements in self-efficacy and decreased risk taking behaviour. There were some positive outcomes on alcohol, use, drug use, and cigarette use post the program.

Programs with evidence of harm

There were two programs with some evidence of harm. Both programs were well or reasonably well conducted. However, the results consistently showed a worsening of measures in those that were given the intervention compared to a control group. The results suggest that these programs may increase harms and should be avoided.

Peer Acceleration Social Network (Project TND): (1 published study, grade C)

The Peer Acceleration Social Network involved a classroom RCT examining the adaptation of Project TND. There were eight school districts in the study, one was the pilot and the remaining seven were assigned to three conditions, control (prevention as usual), TND alone and the enhanced TND with the social network (Valente, Ritt-Olson et al. 2007).

Receiving TND (alone) was not associated with changes in any substance use relative to control. Receiving enhanced TND social network was associated with decreased marijuana (b = -0.64; 95% CI, -1.09, -0.19; P < 0.05) and cocaine use (b = -0.37, 95% CI: -0.63, -0.10; P < 0.05) compared to the control and was also associated with decreased composite use relative to the control (b = -0.37; 95% CI: -0.54, -0.20; P < 0.01). However, the interaction of peer use and the enhanced TND social network was also associated with increases in marijuana (b = 0.34; 95% CI, 0.10, 0.58; P < 0.05), cocaine (b = 0.28, 95% CI: 0.05, 0.51; P < 0.05) and composite substance use (b = 0.19; 95% CI, 0.10, 0.28; P < 0.01).

Overall, TND Network was effective in reducing substance use. However, the program effect interacted with peer influence and was only effective for students who had peer networks that did not use substances, whereas those with friends who did use substances were more likely to increase their use.

Take Charge of Your Life (TCYL): (2 published studies, grade B)

Take Charge of Your Life (TCYL) focuses students on the personal, social, and legal risks and consequences involved in the use of substances including tobacco, alcohol, and illicit drugs. In addition, the program provides students with life skills such as communication, decision-making, assertiveness and refusal skills - skills students need in order to act on their desire not to use substances. Two papers (Sloboda, Stephens et al. 2009, Teasdale, Stephens et al. 2009) reporting on the same study presented different

analyses. There were 83 schools involved in the study and outcome measures included substance use, alcohol use, cannabis and cigarette use. DARE trained police officers were used for this program.

Sloboda (2009) found students in the treatment group had significantly higher 30-day alcohol and cigarette use compared to the control group (95% CI for risk ratio [RR] 1.01–1.18 and 95% CI for RR 1.05–1.37, respectively). For the alcohol use measures in the past 30 days, the risk difference was 6.5% for alcohol use, 5.9% for getting drunk, and 6.5% for binging. However, binge drinking (having five or more drinks in a row) in the previous 14 days was different for treatment vs. control (28.1% and 24.7% respectively, 95% CI for RR 1.01–1.27). A higher number of students from treatment vs. control who did not use alcohol at baseline were drunk in the past 30 days or binged in the preceding 14 days at the final follow up (95% CI for RR 1.01–1.27; 95% CI for RR 1.05–1.35, respectively). The authors found that TCYL had an iatrogenic impact on treatment students' use of alcohol and tobacco.

In the second analysis presented by Teasdale (2009), alcohol users in the treatment group were significantly higher than baseline users in the control group on normative beliefs about alcohol use (ES = .226; p = .000) and the perceptions of harm for using alcohol (ES = .140; p = .016).

The negative impact of the program on baseline nonusers for alcohol and tobacco indicates that TCYL should not be delivered as a universal prevention intervention. Specifically, the negative effects of the program on baseline nonusers need to be addressed. The authors concluded that TCYL needed significant revision before being delivered as universal substance program.

Making sense of the evidence

What does the evidence tell us?

The number of school based alcohol education programs available creates a challenge for schools to identify appropriate evidence based programs. Although many programs have been developed and evaluated, very few have sufficient evidence to endorse their implementation.

Sixty-eight studies of 39 different school based programs were reviewed. Only three of the thirty-eight programs included in the review had well-conducted research to support their implementation and had sufficient positive outcomes to be widely used by schools. A number of other programs showed some good outcomes but were either the subject of less stringent research methodologies or more variable outcomes.

Programs with good evidence of effect

The three programs that showed good evidence of effect have been the subject of multiple well-conducted studies that replicated similar positive effects. They included CLIMATE Schools (Newton, Andrews et al. 2009, Newton, Vogl et al. 2009, Vogl, Teesson et al. 2009, Newton, Teesson et al. 2010), Project Alert (Ellickson, McCaffrey et al. 2003, Ghosh-Dastidar, Longshore et al. 2004, Orlando, Ellickson et al. 2005, Longshore, Ellickson et al. 2007, St Pierre, Osgood et al. 2007) and All Stars (McNeal, Hansen et al. 2004, Ringwalt, Pankratz et al. 2007).

These three programs have in common a component of education that is embedded in real life social situations, a social interactive component and some out of classroom tasks. All three are based on social learning principles.

Although they showed consistent evidence of effect from more than one well-conducted study, the number of published research papers was still limited. However, the reasonably robust results from the limited evidence suggests that these programs are most likely to be effective out of the large range of possible programs available, and they are also appropriate targets for further research.

Schools looking for evidence based alcohol interventions could consider these as potential candidates.

Programs with some evidence of effect

Four programs showed some evidence of effect, including Life Skills Program IPSY (Wenzel, Weichold et al. 2009), SHAHRP (McBride, Farringdon et al. 2003, McBride,

Farringdon et al. 2004, Midford, Cahill et al. 2012), Unplugged-EU (Faggiano, Galanti et al. 2008, Caria, Valente et al. 2011), and Life Skills Training (Botvin, Baker et al. 1995, Botvin, Griffin et al. 2001, MacKillop, Ryabchenko et al. 2006).

These programs had more than one well-conducted study that showed variable outcomes. The current weight of evidence for these programs was not sufficient to recommend their widespread or routine implementation but further controlled studies into these programs would help to clarify their potential effectiveness. These studies showed some positive outcomes, which may be useful to some schools.

Schools looking at these programs as potential candidates are advised to examine the positive program outcomes to ensure that they are consistent with the schools' goals, and to monitor outcomes within their school to ensure good effect in specific settings, as the outcomes reported were more variable than for three star programs.

Programs with no evidence of effect

One program showed no evidence of effect: DARE (Ennett, Tobler et al. 1994, Lynam, Milich et al. 1999, West and O'Neal 2004). Results came from several high and moderately high quality studies but showed few or no positive outcomes.

Schools looking for evidence-based alcohol interventions should avoid this program until further program advances are evaluated, as it is unlikely to be effective.

Programs with inconclusive evidence

Research into twenty-nine of the programs was inconclusive. Results were either based on poor quality research; inconsistent across studies; or based on a single evaluation. Schools looking for evidence based alcohol interventions should avoid these programs until further evidence of their effectiveness is produced through high quality, well-controlled research.

Programs with evidence of harm

Two programs showed some evidence of harm: Peer Acceleration Social Network (Project TND) (Valente, Ritt-Olson et al. 2007), and TCYL (Sloboda, Stephens et al. 2009, Teasdale, Stephens et al. 2009) The evaluation studies of these programs were well conducted but demonstrated negative outcomes, such as increases in risky drinking behaviours.

Schools looking for evidence based alcohol interventions should avoid these programs, as they may have the opposite effect to that intended.

What about school based drug education programs?

Many of the programs reviewed included drug education alongside alcohol education and measured drug use outcomes, including the three programs that showed good evidence of effect. These programs concentrated on drugs such as tobacco, cannabis, inhalants and pharmaceutical medicines.

Research into school children's alcohol and drug use shows that the vast majority of school aged children have little or no experience with alcohol, tobacco or other drugs. Alcohol was the most commonly used drug with half having tried alcohol within the last 12 months and 17% having had an alcoholic drink within the preceding 7 days, although more recent research suggests that there is a downward trend in drinking prevalence among teenagers, with a growing number of teens reporting that they do not drink at all (Livingston 2014).

What were the common elements of effective programs?

Based on this review and recommendations in the broader literature, some common elements that can assist schools and researchers to select alcohol education programs for development, research and implementation have been identified.

Accurate evidence based information

Programs should be based on accurate information and supported by empirical research (Nation, Crusto et al. 2003, Wagner, Tubman et al. 2004). In particular, programs should be based on theoretical understandings of adolescent behaviour development and how developmental pathways can be influenced (Wagner, Tubman et al. 2004).

Caution should also be exercised when considering alcohol programs/resources that are based largely on 'factual' aspects of alcohol (such as physical effects), particularly if these are delivered in a didactic manner. They should go beyond providing 'factual' information about alcohol to assist young people to question their assumptions, and develop more sophisticated understandings of the social context of alcohol use.

A focus on social norms

Programs should provide feedback on social acceptability and normative expectations, and demonstrate that alcohol and drug use is not as widespread as young people might think (Cuijpers 2002). The focus should be on skills training related to harm minimisation, rather than on resisting social/peer pressure (Cuijpers 2002, McBride, Farringdon et al. 2004).

Programs that seek primarily to enhance self-esteem, psychological wellbeing and/or social competence (Tobler 1997, Ashton 1999, Scheier, Botvin et al. 1999, Cuijpers

2002), sports participation, or resistance skills without providing normative education do not appear to be as effective and should be avoided.

In addition, programs that rely on the use of 'scare tactics' do not seem to be effective. The evidence about the effectiveness of negative, risk-focused messages is mixed. Images and messages which are too graphic and disturbing can be readily blocked out by target audiences, and those which are at odds with students' own lived experiences can be rejected as unrealistic. Showing students scenarios or the serious harms that may occur from risky use of alcohol does not appear to deter them or result in decreased use (Tobler 1997, Midford 2000).

Interactive presentation style

Programs should use interactive teaching and learning styles and use diverse teaching methods that focus on increasing awareness and understanding of the issues relating to alcohol consumption (Nation, Crusto et al. 2003). It is well established that students will be more receptive to approaches which are active and interactive than those which involve didactic style teaching or learning of facts (White and Pitts 1998, Tobler, Roona et al. 2000, Foxcroft, Ireland et al. 2003).

Students' interest and enthusiasm should be engaged using developmentally appropriate, up-to-date materials based on the experiences, skills, knowledge and cultural norms of the target group (Nation, Crusto et al. 2003, McBride, Farringdon et al. 2004, Wagner, Tubman et al. 2004). They should provide opportunities for students to interact with their peers, and practice new skills.

Clear, achievable and measurable goals and objectives

Programs should have clear, appropriate, achievable goals and objectives so that schools are able to conduct in-school assessments and systematically document their results relative to the stated goals (Nation, Crusto et al. 2003). Wherever possible, schools should endeavour to formally evaluate their alcohol education programs, be involved in large-scale evaluations (such as RCTs) and add to the evidence base by sharing and disseminating their results (Wagner, Tubman et al. 2004).

Teacher training

Programs should be supported by adequate teacher training and support (including relief cover to enable teachers to undertake offsite training), with a focus on ensuring that staff members who implement the program are confident and enthusiastic about their role (McBride 2003, Nation, Crusto et al. 2003). Training should cover not only program content but also delivery/pedagogy (such as peer education and facilitation).

Whole of school approach

Programs should be consistent with a whole-of-school approach that enhances student resilience and social connectedness and promotes strong relationships and effective communication between students, parents and staff (Resnick, Bearman et al. 1997, Flay 2000, Cuijpers 2002, McBride 2003, Nation, Crusto et al. 2003, Ostaszewski and Zimmerman 2006). One-off presentations delivered by experts, media personalities or individuals personally affected by alcohol do not appear to be effective. Despite an inherent appeal in having guest speakers/presenters, there is no evidence to suggest that they influence young people's alcohol-related behaviour.

Limitations of the evidence base

Although there are numerous programs included in this review (N=39), each program has been the subject of relatively little research. The majority of the programs had only one evaluation study, often not conducted using what are considered to be highly scientific methods. This is partly because this type of research is difficult to conduct. This means that it is difficult to draw firm conclusions.

In addition, studies did not conduct economic analyses (which are important in an environment where resources are very limited); school resources and teacher experience and training were usually not clearly defined; and process outcomes (such as the fidelity of program implementation and acceptability of the program to teachers and students) were rarely assessed. Changes in many of the relevant outcomes may also not become apparent for some time after the implementation of a program, yet few studies assessed longer-term outcomes.

Studies used a large range of measures of alcohol-related outcomes that varied widely between studies, presumably depending upon the interest and choice of the researcher. The measures were typically self report and included various forms of consumption (frequency, quantity, pattern of drinking), intentions to drink, attitudes towards drinking, beliefs about negative consequences, normative beliefs about peers' drinking and a range of other behaviours related to alcohol use (such as violence, unprotected sex, aggression, bullying and other socially unacceptable behaviours). Some measures are more sensitive to change and more appropriate for young people than others. For example, most research in this area has been conducted in the USA, where the focus is on abstinence. Other measures of success, such as reduction in harm may not have been measured or reported.

Overall, the establishment of an agreed set of appropriate outcome measures that predict risky alcohol use and alcohol related harms, improved reporting of study methods and

analyses (e.g., attrition rates, intention-to-treat analyses) and the use of well-designed economic analyses of those programs that show evidence of positive effects would be beneficial for evidence-based decision-making (Foxcroft, Ireland et al. 2003).

Given the paucity of good quality evaluation research in this area, an appropriate research framework for evaluating AOD education programs is needed. Such a framework could incorporate different levels of implementation and evaluation that would take into consideration a range of factors, including the existing body of research (to avoid duplicating research on programs that have been established as effective/not effective in other settings), the relevance of a program to the target population (e.g., abstinence vs harm minimisation approach) and the appropriateness of measurable outcomes.

Other issues

There are a number of other issues which schools should keep in mind when implementing school based alcohol education programs.

Unintended consequences

Young people see 'risk' differently to older people. It is implied in much alcohol education that risk is something negative and to be avoided. However, for some students at least, risk is something to be sought out and embraced. In other words, there may be unintended consequences of placing too much emphasis on the ‘danger’ and ‘risk’ associated with certain behaviours. An example is the way in which standard drinks labelling can be used by some young people to determine the most ‘efficient’ beverages to achieve intoxication in the shortest time and/or for the lowest price.

Differential ‘reception’

Information will be received differently depending on past experiences and students’ observations of their friends, peers, and siblings. It will also be influenced by wider familial, media and community contexts. Additionally, students are sensitive to any perceived hypocrisy on the part of teachers, particularly if the ‘dangers of alcohol’ aspect is over-emphasised. This may be of particular concern in small rural/regional communities where teachers’ private lives may be ‘less private’ than is the case in larger communities.

Perpetuation of stereotypes

Educators, teachers and others should be mindful of the language they use when speaking about alcohol consumption. For instance, 'alcohol abuse' should not be used synonymously with ‘alcohol consumption’, and it should not be implied that people who

occasionally consume to excess are 'alcoholics'. It is also important for adults to avoid covertly or overtly stating that ‘all teenagers binge drink’. This can have important implications for the normative climate of the school, and have the unintended consequence of reinforcing inaccurate stereotypes of young people.

Summary and conclusions

This was an extensive review of the literature that showed only three of 39 programs had enough evidence of good outcomes to be widely recommended for general use. These were CLIMATE Schools (Newton, Andrews et al. 2009, Newton, Vogl et al. 2009, Vogl, Teesson et al. 2009, Newton, Teesson et al. 2010), Project ALERT (Ellickson, McCaffrey et al. 2003, Ghosh-Dastidar, Longshore et al. 2004, Orlando, Ellickson et al. 2005, Longshore, Ellickson et al. 2007, St Pierre, Osgood et al. 2007) and All Stars (McNeal, Hansen et al. 2004, Ringwalt, Pankratz et al. 2007). Schools looking for evidence based alcohol interventions could consider these as potential candidates.

In addition, four programs showed some evidence of positive outcomes, including Life Skills Program IPSY (Wenzel, Weichold et al. 2009), SHAHRP (McBride, Farringdon et al. 2003, McBride, Farringdon et al. 2004, Midford, Cahill et al. 2012), Unplugged-EU (Faggiano, Galanti et al. 2008, Caria, Valente et al. 2011), and Life Skills Training (LST) (Botvin, Baker et al. 1995, Botvin, Griffin et al. 2001, MacKillop, Ryabchenko et al. 2006). Schools looking at these programs as potential candidates are advised to review the study outcomes to ensure that the positive effects that can be achieved from these programs are consistent with the goals of the school for alcohol education, and to monitor outcomes during implementation within their school to ensure good effect in specific settings. Other programs should be used with caution.

Even the most effective alcohol education program is only going to be as good as the available resources and support allow, such as ongoing training for staff and accessibility of updates for resources. Economic analyses of effective programs may assist schools in determining the most efficient use of their limited financial resources. Extending supportive networks to include collaboration with families and the local community may help not only to reinforce preventive messages, but also to redistribute responsibility for addressing adolescent alcohol use and support cultural change in drinking more broadly.

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Appendix 1

SCHOOL ALCOHOL PROGRAMS: EVIDENCE TABLE

Appendix 1

PROGRAMS WITH GOOD EVIDENCE OF EFFECT ON ALCOHOL OUTCOMES								
Program Description	Reference	N	Measures	Outcomes			Summary	Strength
				Alcohol Behaviour	Alcohol Knowledge/Attitudes	Other Outcomes		
CLIMATE SCHOOLS CLIMATE is computer-driven alcohol prevention program based on a harm minimisation approach. The Climate Schools: Alcohol and Cannabis course comprises two sets of six 40-minute lessons aimed at decreasing alcohol misuse and cannabis use. Each session includes a 15–20 minute internet based lesson completed individually. Students follow a cartoon storyline of teenagers experiencing real life situations and problems with alcohol and cannabis. The second part of each lesson is a predetermined activity delivered by the teacher to reinforce the information learnt in the cartoons.	Vogl et al., (2009). AUS	1466: I: 611 C: 855	• Alcohol knowledge • Alcohol consumption • Alcohol-related harms • Alcohol-related expectancies	Among females, weekly alcohol consumption at follow-up increased in the control group but remained steady in the intervention group. Increases in binge-drinking and alcohol-related harms were also smaller in the intervention compared to the control group. No significant differences were apparent amongst males.	The program was more effective than usual classes in increasing knowledge of facts that would inform safer drinking choices and decreasing positive social expectations.	NA	CLIMATE is effective in reducing alcohol consumption and related harms among females, and in increasing knowledge and decreasing positive expectancies among males and females.	Evidence Level: II Quality: +
	Newton & Vogl et al., (2009). AUS	764: I: 397 C: 367	• Alcohol knowledge • Alcohol consumption • Alcohol-related expectancies • Alcohol-related harms	Average weekly consumption at immediate follow-up increased in the control group, but decreased in the intervention group. At 6 month follow-up the difference was no longer significant. No significant differences between groups were found for binge-drinking or alcohol-related harms.	Students who undertook the CLIMATE program scored significantly higher on the knowledge scale than students in the control group.	NA	Students who participated in the CLIMATE program had lower levels of weekly alcohol consumption and higher levels of alcohol-related knowledge. However, behavioural changes were not maintained at 6 months.	Evidence Level: II Quality: +
	Newton & Andrews et al., (2009). AUS	764	• Alcohol knowledge • Alcohol consumption • Alcohol-related harms • Alcohol expectancies • Cannabis use • Cannabis-related harms	No significant differences between groups in weekly consumption were apparent at immediate follow-up. However, at 6 month follow-up the control group increased their consumption significantly more than the intervention group. No significant differences were observed for binge-drinking or alcohol-related harms.	Students in the intervention group scored significantly higher on the alcohol knowledge scale than students in the control group.	Students in the intervention group scored significantly higher on the cannabis knowledge scale than students in the control group. No significant differences between groups in frequency of cannabis use were apparent at immediate follow-up. However, at 6 month follow-up the intervention group significantly decreased their use compared to the control group. No significant differences were found between groups for cannabis attitudes or cannabis-related harms.	CLIMATE was effective in increasing alcohol- and cannabis-related knowledge, and decreasing alcohol and cannabis use.	Evidence Level: II Quality: +

Appendix 1

	Newton et al., (2010). AUS	764 I: 397 C: 367	• Alcohol and cannabis knowledge • Alcohol and cannabis use • Alcohol and cannabis harms • Alcohol and cannabis expectancies and attitudes	No significant differences between groups in weekly consumption were apparent at immediate follow-up. However, at 6 and 12 month follow-ups the control group increased their consumption significantly more than the intervention group. No significant differences were observed for binge-drinking at immediate or 6 month follow-ups, but at 12 month follow-up frequency of drinking to excess increased more in the control group than in the intervention group. Intervention was not a predictor of alcohol-related harms.	Students in the intervention group scored significantly higher on the alcohol knowledge scale than students in the control group. Intervention was not a predictor of alcohol-related expectancies.	Students in the intervention group scored significantly higher on the cannabis knowledge scale than students in the control group. No significant differences between groups in frequency of cannabis use were apparent at immediate follow-up. However, at 6 month follow-up the intervention group significantly decreased their use compared to the control group. This difference was no longer significant at 12 months. Intervention was not a predictor of cannabis attitudes or cannabis-related harms.	CLIMATE was effective in increasing alcohol- and cannabis-related knowledge, and decreasing alcohol and cannabis use. Decreased alcohol consumption was maintained at 12 months, but decreased cannabis use was not.	Evidence Level: II Quality: +
PROJECT ALERT Project ALERT uses a social influence model, and seeks to motivate young people to resist pro-drug pressures and to help them identify and combat those pressures. Project ALERT aims to help adolescents recognise that most people do not use drugs or approve of doing so, understand the benefits of not using, develop reasons not to use, and understand the immediate and long-term consequences of drug use. It also seeks to build resistance self-efficacy by helping adolescents identify and resist both internal and external pressures to use	Ellickson et al., (2003). USA	4276	• Alcohol use • Tobacco use • Marijuana use	Compared to the control schools, students in ALERT schools had significantly lower overall alcohol misuse scores and were less likely to engage in drinking that resulted in negative consequences. The program was most successful with the highest-risk students.	NA	The intervention decreased the proportion of new smokers and reduced rates of current and regular smoking. Positive effects were seen for low, moderate and high risk students. The intervention decreased the proportion of new marijuana users, but had no significant effect on current or regular marijuana use. Positive effects were seen for low- and moderate-risk students.	Project ALERT was effective in reducing substance use. For alcohol consumption, the effect was strongest in high-risk students.	Evidence Level: II Quality: +
	Ghosh-Dastidar et al., (2004). USA	4276	• Beliefs about drug use consequences • Normative beliefs • Resistance self-efficacy • Expectations about future use	NA	Project ALERT reduced students' estimates of how many students used each target drug, modified their beliefs that refusing alcohol, cigarettes, and marijuana can bring greater respect from one's friends, and changed beliefs about the consequences of substance use.	NA	Project ALERT had considerable success in reducing risk factors for drug use across four cognitive domains.	Evidence Level: II Quality: ++

drugs, and by providing role models for non-use. Project ALERT can be supplemented by booster lessons in high school ("ALERT Plus").					Perceptions about peer tolerance of use were significantly modified for cigarettes and marijuana, with a smaller change for alcohol. Program effects on resistance self-efficacy and expectations of future use were higher for cigarettes and marijuana than alcohol. Effects were typically greater for low- and moderate-risk students, but some effects were also seen for those at high-risk.			
	Orlando et al., (2005). USA	5412 I: 2554 C: 1723	• Alcohol misuse • Cigarette use • Resistance self-efficacy • Beliefs about consequences of use • Perceived peer influence	The intervention had a significant effect on alcohol misuse. The effect was mediated by positive beliefs about alcohol and perceived peer influence. The intervention did not have a significant effect on alcohol intentions or past month alcohol use.	NA	The intervention had a significant positive effect on cigarette use. The effect was mediated by perceived peer influence, beliefs about consequences of use and resistance self-efficacy.	Beliefs about drug use, perceived peer influence, and resistance self-efficacy are important mediators of Project ALERT's effectiveness.	Evidence Level: II Quality: +
	St Pierre et al., (2007). USA	1649	• Leader characteristics • Substance use	NA	NA	Leader conscientiousness and sociability were associated with beneficial program effects. There was a weaker but still fairly consistent effect of leader individuation, but leader altruism did not influence program effectiveness.	The personal characteristics of program facilitators may influence Project ALERT's effectiveness.	Evidence Level: IV Quality: ++
	Longshore et al., (2007). USA	1383	• Substance use • Use intentions • Resistance self-efficacy • Beliefs about consequences of use • Friends' approval of use • Perceived prevalence of use	Compared to controls, at-risk girls in ALERT Plus schools reported significantly lower rates of weekly alcohol use and lower scores on alcohol consequences and high-risk alcohol use.	ALERT Plus had a beneficial effect on girls' cognitive outcomes for marijuana and alcohol. There were no statistically significant effects for boys in any of the cognitive outcomes. All cognitions mediated the effects of ALERT Plus on drug use.	Compared to controls, at-risk girls in ALERT Plus schools reported significantly lower rates of weekly marijuana use. Differences between groups in tobacco use and marijuana consequences were not significant. There were no significant effects for at-risk boys, and no significant differences between students in the control group and students	Extending the time of exposure to the ALERT program (via ALERT Plus) can have beneficial effects for at-risk girls.	Evidence Level: II Quality: ++

Appendix 1

						in the ALERT group.		
ALL STARS All Stars' primary focus is on reducing adolescent risk behaviour, particularly tobacco, alcohol, marijuana and inhalant use, and sexual activity. The program's goal is to delay the erosion of four key mediators that previous research has shown to be strongly linked to adolescent risk behaviour: • normative beliefs • perceived incongruence between substance use and desired lifestyle • personal commitment not to use substances • bonding to school The All Stars curriculum includes 24 sessions, 14 of which are mandatory and administered during class time. The rest are supplemental and implemented through additional class lessons, small group meetings with peer opinion leaders, and one to one meetings with students. Sessions may be administered by specialists or teachers. They include interactive and cooperative learning strategies, such as debates, games, general discussion, and homework.	McNeal et al., (2004). USA	1822	• Normative beliefs about risky behaviours • Lifestyle incongruence • Manifest commitment to avoid risky behaviours • Bonding to school • Self esteem • Impulsive decision making • Sensation seeking • Use of cigarettes/ alcohol/marijuana/ inhalants	The prevalence of alcohol consumption increased from baseline to follow-up in the control group, and to a lesser extent in the treatment groups. Post-test rates of alcohol use were lower in the group which received All Stars delivered by teachers, compared to delivery by specialists and the control group.	Manifest commitment was the strongest predictor of alcohol use. Lifestyle incongruence was the strongest mediator between program exposure and behavioural outcomes. When teachers delivered the program, it had a significant effect on lifestyle incongruence, commitment, and sensation seeking.	The prevalence of marijuana and cigarette use and sexual activity increased from baseline to follow-up in all groups. Inhalant use declined in all groups. Post-test cigarette and inhalant use were lower in the group which received All Stars delivered by teachers, compared to delivery by specialists and the control group. Effects were not significant for marijuana use or sexual activity.	All Stars modestly slowed the onset of substance use when delivered by teachers. It was less effective when delivered by specialists.	Evidence Level: II Quality: +
	Ringwalt et al., (2007). USA	961	• Lifestyle incongruence • Normative beliefs • Commitment • School bonding • Positive parental attentiveness • Key substances scale	The prevalence of alcohol consumption increased from baseline to follow-up. Delivery by a coached vs non-coached teacher did not influence rates of alcohol use.	The intervention had no significant effect on lifestyle incongruence, normative beliefs, commitment, school bonding or parental attentiveness.	The prevalence of cigarette and marijuana use increased from baseline to follow-up. Students receiving the program from a coached teacher had a lower rate of escalation of cigarette use, compared to those receiving the program from a non-coached teacher. There was no difference for marijuana use. Teachers who delivered the program as visitors had greater success than regular classroom teachers.	Students who received the program from coached teachers had lower rates of cigarette use, however no other differences between coached and non-coached teachers were apparent.	Evidence Level: II Quality: +

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PROGRAMS WITH SOME EVIDENCE OF POSITIVE EFFECT ON ALCOHOL OUTCOMES								
Program Description	Reference	N	Measures	Outcomes			Summary	Strength
				Alcohol Behaviour	Alcohol Knowledge/Attitudes	Other Outcomes		
LIFE SKILLS PROGRAM (ISPY) The life skills program IPSY is a comprehensive program for the prevention of adolescent misuse of legal substances like alcohol and tobacco. It combines training in life skills with substance specific skills and knowledge about alcohol and tobacco use. ISPY consists of 15 basic lessons in grade five, and seven booster lessons in sixth and seventh grade.	Wenzel et al., (2009). Germany	952	• Substance use • School bonding	Compared to the intervention group, the control group had higher levels of alcohol consumption in the past month and higher expectations of future alcohol consumption.	NA	The intervention group had greater school bonding and a smaller decrease in bonding over time, compared to the control group. School bonding partially mediated the relationship between intervention participation and alcohol use.	ISPY was associated with lower rates of alcohol consumption, but this was partially mediated by school bonding.	Evidence Level: II Quality: ++
	Spaeth et al., (2010). Germany	1484	• Alcohol use • Temperament • Problems with peers • Self-worth	Being a member of the control group was associated with a greater likelihood of alcohol use, greater quantity of alcohol use, and greater likelihood of following a problematic trajectory of drinking behaviour. Among those who followed a normative drinking trajectory, ISPY buffered the increase in alcohol use on a typical occasion. Among those who followed a problematic trajectory, IPSY did not have significant effects.	NA	NA	ISPY had a positive overall effect, decreasing the likelihood of consumption and the quantity of consumption.	Evidence Level: III-I Quality: ++
SCHOOL HEALTH AND ALCOHOL HARM REDUCTION PROJECT (SHAHRP) SHAHRP is a classroom-based program that aims to reduce alcohol related harm by enhancing students' abilities to identify and deal with high-risk drinking situations and issues. It	McBride et al., (2003). AUS	2343 I: 1111 C: 1232	• Knowledge about alcohol • Attitudes towards alcohol • Total alcohol consumption • Patterns of alcohol use • Context of alcohol use	Intervention students who were non-drinkers at baseline were significantly less likely to consume alcohol in a risky manner at 8, 20 and 32 month follow-ups. Intervention students who were unsupervised drinkers at baseline were significantly less likely to drink in a risky pattern at first follow-up, but this effect was not maintained. They were also less likely to experience harm	Among intervention students, those who were non-drinkers and those who were supervised drinkers at baseline had greater alcohol-related knowledge than control students at 20 month follow-up, but not at 32 months. Intervention students who were unsupervised drinkers at baseline had greater alcohol-related knowledge than the control group at both 20 and 32-month follow-ups. Baseline non-	NA	The intervention had differential effectiveness according to students' drinking histories. However, it showed some positive effects on alcohol-related knowledge and attitudes, and to a lesser extent on risky/harmful consumption.	Evidence Level: II Quality: ++

comprises eight activity-based lessons in the first year of high school, followed by five booster lessons in the second year. SHAHRP incorporates research evidence to ensure that the opportunity to impact on behaviours is optimised.			• Harm/risk associated with personal alcohol consumption • Harm/risk associated with others' alcohol consumption	associated with the own use of alcohol for the duration of the study. There was no significant effect on the behaviour of intervention students who were supervised drinkers at baseline.	drinkers and baseline unsupervised drinkers had significantly safer alcohol-related attitudes for the duration of the study. Among baseline supervised drinkers, the effect dissipated after phase one of the intervention.			
	McBride et al., (2004). AUS	2300	• Alcohol-related knowledge • Alcohol-related attitudes • Harms/risks associated with personal use of alcohol • Harms/risks associated with others' use of alcohol • Alcohol consumption • Context of alcohol use	The intervention group consumed significantly less alcohol than control students at 20 month follow-up, but groups were beginning to converge at 32 months. Intervention students were less likely than controls to consume alcohol at risky levels once per month or more at 20 month follow-up. The difference between groups was still significant at 32 months, but groups were beginning to converge. Intervention students reported experiencing less harm associated with their own use of alcohol than control students, which was maintained at 32 month follow-up.	The intervention group had significantly greater alcohol-related knowledge than control students at 20 follow-up, but not at 32 month follow-up. The intervention group had significantly safer alcohol-related attitudes, and this was maintained at 32 month follow-up.	The intervention group reported a smaller increase in both supervised and unsupervised drinkers compared to the control group.	The intervention had beneficial effects on students' alcohol-related knowledge, attitudes, and harms, and on consumption.	Evidence Level: II Quality: ++
	Midford (2012). AUS	318 I: 225 C: 93	• Alcohol and drug knowledge • Alcohol and drug attitudes • Communication with parents about alcohol • Alcohol consumption • Alcohol-related harms	There was no significant difference between groups in current drinking or risky drinking. Annual alcohol consumption, drinking to get drunk and alcohol-related harms in the control group had increased significantly more than in the intervention group at follow-up.	Knowledge increased in both the intervention and control groups; however, the increase was significantly greater in the intervention group. There were no significant differences between groups in alcohol and drug attitudes.	There was a significant difference between groups in the number of times students talked to their parents about alcohol. Students in the intervention group demonstrated an increase in communication at follow-up, while the control group showed a decrease.	The intervention students were more knowledgeable about alcohol and drugs, and communicated more with their parents about them. They also had smaller increases in annual alcohol consumption, drinking to get drunk and alcohol-related harms.	Evidence Level: III-3 Quality: –
UNPLUGGED EU-DAP Unplugged is designed to tackle both experimental and regular use of alcohol, tobacco and illicit drugs. This revised curriculum is	Faggiano et al., (2008). Europe	6604	• Alcohol use • Tobacco use • Drug use	The intervention group had a lower increase in the frequency of recent drunkenness episodes, compared to controls.	NA	The intervention group had a lower increase in the prevalence of use of tobacco and (marginally) cannabis, compared to controls. Control students progressed across stages of intensity of	Unplugged had a beneficial effect on alcohol, tobacco and cannabis use.	Evidence Level: II Quality: +

based on a comprehensive social-influence approach, incorporating components of critical thinking, decision-making, problem solving, creative thinking, effective communication, interpersonal relationship skills, self-awareness, empathy, coping with emotions and stress, normative beliefs, and knowledge about the harmful health effects of drugs. It consists of 12 one-hour units taught once per week by class teachers.						cigarette use more often than intervention students. Controls showed a lower tendency to regress from the intermediate stages to non-smoking status.		
	Caria et al., (2011). Europe	5541	• Alcohol use • Alcohol-related problem behaviours	Participation in the program did not modify the overall risk of being a current drinker or a frequent current drinker. Program participation was associated with lower prevalence of alcohol-related behavioural problems at follow-up. However, this was significant only among non-drinkers at baseline and students who perceived parents' tolerance concerning alcohol consumption. Among non-drinkers at baseline, intervention students were more likely to remain non-drinkers and less likely to progress toward frequent drinking compared to controls. Among occasional drinkers at baseline, intervention students showed a lower progression toward frequent drinking compared to controls. Among those who did not report alcohol-related problems at baseline, a higher proportion of intervention students remained at the same stage, and a lower proportion reported frequent alcohol-related behavioural problems at follow-up, compared to controls.		The program effect on alcohol-related problem behaviours was stronger among boys (but was also significant among girls).	Overall frequency of alcohol consumption was not influenced by the intervention. Some beneficial effects were observed among sub-groups of participants.	Evidence Level: II Quality: +
LIFE SKILLS TRAINING (LST) LST was designed to teach students cognitive-behavioural skills for building self-esteem, resisting	Botvin et al., (1995). USA	3597	• Alcohol use • Marijuana use • Cigarette use	The prevalence of problem drinking was significantly lower for adolescents in the intervention groups compared to the control group.	NA	Smoking prevalence was significantly lower in the intervention groups than in the control group. The prevalence of smoking + alcohol use, smoking + marijuana use, and use of all	LST can produce reductions in tobacco, alcohol and marijuana use that are maintained at 6 year follow-up.	Evidence Level: II Quality: –

advertising pressure, managing anxiety, communicating effectively, developing personal relationships, and asserting rights. It also aims to prevent adolescent substance use by increasing adolescents' knowledge about substance use, correcting cognitive misperceptions that contribute to substance use, and providing coping skills to reduce the need likelihood of using to drugs manage stress or anxiety. LST consists of 15 educational sessions.						three drugs was lower in the intervention groups.		
	Botvin et al., (2001). USA	3041	• Alcohol use • Drinking knowledge • Pro-drinking attitudes • Perceived peer alcohol use	LST produced a 57% reduction in binge drinking at the one year follow-up. This was maintained at two year follow-up.	At one year follow-up, the intervention group scored higher than the control group on drinking knowledge, and lower on pro-drinking attitudes and perceived peer consumption. At two year follow-up, effects on perceived peer consumption remained significant, but there was no longer a difference between groups on drinking knowledge and pro-drinking attitudes.	NA	LST produces reductions in binge drinking and perceived peer drinking that are maintained at two year follow-up.	Evidence Level: II Quality: -
	MacKillop et al., (2006). USA	263	• Life Skills Training Questionnaire • Alcohol expectancies • Self-competence	NA	Positive program effects were seen for overall knowledge, life skills knowledge, drug knowledge, perceived adult substance use, and assertiveness skills. There was no significant effect on self-competence. Small differences were observed between the schools delivering LST once per week for 15 weeks, and those delivering it once per day for 15 days.	NA		Evidence Level: IV Quality: –

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PROGRAMS WITH LITTLE OR NO EVIDENCE OF EFFECT ON ALCOHOL OUTCOMES								
Program Description	Reference	N	Measures	Outcomes			Summary	Strength
				Alcohol Behaviour	Alcohol Knowledge/Attitudes	Other Outcomes		
DRUG ABUSE RESISTANCE EDUCATION (DARE) DARE comprises 17 lessons of 45 – 60 minutes duration, usually offered once per week. It focuses on teaching students the skills needed to recognise and resist social pressures to use drugs. DARE also provides information on drugs, teaches decision-making skills, builds self-esteem and promotes healthy alternatives to drug use.	Ennett et al., (1994). USA	8 studies	• Knowledge about drugs • Attitudes about drug use • Social skills • Self-esteem • Attitude toward police • Drug use	The effect size for drug use was not statistically significant. When drugs were considered individually, alcohol use remained non-significant.	The effect sizes for knowledge, social skills, attitude towheads police, attitudes about drug use, and self-esteem were statistically significant.	Mean effect size for marijuana use was not statistically significant. However, mean effect size for tobacco use was significant. In general, the effect of DARE was smaller than the effect of other similar interactive programs. For non-interactive programs, DARE had a slightly smaller effect on drug use, but a larger effect on knowledge, attitudes and social skills.	DARE's impact relative to other drug information provided in schools is slight and (with the exception of tobacco use) not statistically significant.	Evidence Level: I Quality: ++
	Lynam et al., (1999). USA	1002	• Drug use • Drug expectancies • Peer pressure resistance • Self esteem	Lifetime alcohol use at age 20 was not significantly associated with exposure to DARE.	Alcohol expectancies at age 20 were not significantly associated with exposure to DARE.	There was no significant association between exposure to DARE and cigarette or marijuana use and expectancies at age 20. DARE also had no impact on the variety of illicit drugs used or on peer-pressure resistance at age 20. Students exposed to DARE had lower levels of self-esteem at the follow-up, but this is likely to be a chance finding.	There appear to be no reliable short term, long term, early adolescent or young adult positive outcomes associated with DARE.	Evidence Level: IV Quality: –
	West & O'Neal, (2004). USA	11 studies	Meta-analytic measures to create an overall effect size for DARE.	NA	NA	The overall weighted effect size for the included studies was extremely small and non-significant.	Project DARE is ineffective. The behaviours of students exposed to DARE are no different to those of an expected development path for this age group.	Evidence Level: I Quality: ++

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PROGRAMS WITH INCONCLUSIVE EVIDENCE ON ALCOHOL OUTCOMES								
Program Description	Reference	N	Measures	Outcomes			Summary	Strength
				Alcohol Behaviour	Alcohol Knowledge/Attitudes	Other Outcomes		
KEEPING IT REAL Keeping it Real consists of 10 lessons taught by the classroom teacher which impart the knowledge, motivation, and skills needed to resist drug offers. The prevention program was developed as a culturally appropriate intervention, incorporating traditional ethnic values and practices that promote protection against drug use. It is grounded in Communication Theory and the Ecological Risk and Resiliency Perspective, and teaches students four different strategies for resisting drug use: Refuse, Explain, Avoid, and Leave.	Hecht et al., (2006). USA	6298	• Recent alcohol use • Recent cigarette use • Recent cannabis use	Recent alcohol use was lower in the intervention group compared to the control group, with the strongest effect within the multicultural or Mexican American curriculum versions.	NA	The White and African American versions of the program were not significantly related to composite substance use. However, the Mexican and Mexican American versions had a significant effect on substance use compared to the control. Minimal intervention effects were apparent for cigarette use (particularly within the multicultural or Mexican American versions), and for marijuana use (only within the multicultural version).	The multicultural version of Keeping it Real may slow the naturally occurring developmental increases in students' substance use, particularly alcohol use.	Evidence Level: III-I Quality: +
	Kulis et al., (2007). USA	1364	• Reduced or recently discontinued substance use • Time to reduction/recent discontinuation or censoring • Program participation • Substance use severity	Alcohol reduction and discontinuation rates were higher in the intervention group than in the control group. Rates of reduced/discontinued alcohol use were significantly associated with program participation.	NA	The rate of discontinuing all substance use was higher for program participants than for control students. No significant differences were found between groups in rates of marijuana or cigarette reduction/ discontinuation.	Program participation influenced rates of reduced/recently discontinued use of alcohol, but not cigarettes/marijuana.	Evidence Level: III-I Quality: +
	Yabiku et al., (2007). USA	3986	• Recent alcohol use • Neighbourhood characteristics	Among less linguistically-acculturated Latinos, the intervention significantly reduced alcohol use among participants who came from neighbourhoods with fewer single-mother families, high rates of recent immigrants, high crime, and low poverty. For	NA	NA	Keeping it Real has differential effectiveness for different ethnic groups from varying neighbourhood conditions.	Evidence Level: III-I Quality: +

				neighbourhoods with more single-mother families and fewer immigrants, the intervention had no effect. Among more linguistically-acculturated Latinos and White students, neighbourhood condition was not associated with program efficacy.				
	Hopson & Holleran (2010). USA	41	• Alcohol use • Intentions to accept alcohol	Among younger students exposed to the intervention, there was a significant decrease in intentions to accept alcohol and alcohol use. However, no difference was observed among older students.	NA	NA	Keeping it Real has differential effectiveness for different age groups.	Evidence Level: III-I Quality: –
TOWARDS NO DRUG ABUSE (TND) TND was developed as a finite session classroom program to provide preventive intervention on drug use among continuation (alternative) high school youth. It is comprised of two theory-based thematic content components: cognitive misperception correction and behavioural skills instruction. The former is used to change youths' attitudes or beliefs regarding their drug use. The latter provides instruction in social skills and behavioural self-management, which can facilitate the ability of youth to bond flexibly with a variety of peer groups, seek out social support when needed, and minimise stressful, conflict-type interactions. TND may be delivered by trained health	Sussman et al., (2003). USA	575	• Cigarette use • Alcohol use • Marijuana use • Hard drug use	Neither the health educator-led nor the self-instruction condition had a significant effect on alcohol use.	NA	The health educator-led condition significant lowered the probability of 20-day tobacco and hard drug use at 2-year follow-up. It was also effective in reducing marijuana use among male non-users at baseline. The self-instruction condition did not have a significant effect on substance use.	When delivered by health educators, TND reduced tobacco and hard drug use at 2-year follow-up, but not alcohol use.	Evidence Level: II Quality: -
	Sun et al., (2006). USA	725	• Cigarette use • Alcohol use • Marijuana use • Hard drug use	NA	NA	No significant program effects for substance use were observed at middle-term follow-up. At long-term follow-up, there was a significant beneficial program effect for hard drug use only.	TND had positive effects on hard drug use only at long-term follow up. No other positive effects were observed.	Evidence Level: II Quality: –
	Sun et al., (2008). USA	2064	• Cigarette use • Alcohol use • Marijuana use • Hard drug use	NA	NA	Compared to the control group, the intervention failed to significantly reduce the prevalence of all four-substance use outcomes. Compared to the control group, the intervention significantly reduced the frequency of hard drug use.	TND had no impact on the prevalence of substance use, but did reduce frequency of hard drug use.	Evidence Level: II Quality: -

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educators, or via self-instruction.								
SKILLS FOR ADOLESCENCE (SFA) SFA program elements and processes utilise social influence and social cognitive approaches to teach cognitive behavioural skills. SFA seeks to assist students to build self-esteem and personal responsibility, enhance communication strategies, make better decisions, resist social influences and assert rights, and increase drug use knowledge and consequences. It comprises 40 sessions of 35-40 minute duration, of which eight are "key sessions".	Eisen et al., (2002). USA	6239	• Tobacco use • Alcohol use • Illegal drug use	There were no main intervention effects on alcohol use. However, fewer Hispanic students in SFA schools engaged in lifetime, recent and binge drinking than Hispanic students in control schools.	NA	Recent cigarette smoking was significantly lower in SFA schools than control schools, while lifetime marijuana use reached borderline significance. There were no significant differences between groups for illicit drug use. However, baseline drug users in SFA schools relative to those in control schools showed significantly less progression to use of more advanced substances.	SFA can help deter the initiation of regular cigarette smoking and experimental marijuana use among all ethic groups, and alcohol use among Hispanic students.	Evidence Level: II Quality: ++
	Eisen et al., (2003). USA	5694	• Tobacco use • Alcohol use • Illegal drug use • Behavioural intention • Perceived harm • Refusal self-efficacy • Perceived peer use	No main intervention effects were found for lifetime or recent use of alcohol. However, baseline binge drinkers in SFA schools were less likely to report recent binge drinking at follow-up than baseline binge drinkers in control schools.	Students in SFA schools had better refusal self-efficacy for alcohol than students in control schools.	Lifetime and recent marijuana use were lower in SFA schools than in control schools. No intervention effects were found for cigarette or illicit drug use. Students in SFA schools had better refusal self-efficacy for marijuana than students in control schools.	SFA can decrease the prevalence of lifetime and recent marijuana use among all students, and the prevalence of binge drinking among students who were binge drinkers at baseline.	Evidence Level: II Quality: ++
SOCIAL AND EMOTIONAL LEARNING (SEL) SEL is delivered in grades 1-6 and includes classroom instruction and management and child skill development and parent workshops. Teachers receive training in proactive classroom management, interactive teaching, cooperative learning, and the use of a cognitive and social skills training curriculum. Training classes including child	Hawkins et al., (1999). USA	598	• Violent and non-violent crime • Substance use • Sexual activity • Pregnancy • Bonding to school • School achievement • Grade repetition and school dropout • Suspension/expulsion • School misbehaviour • Delinquency • Grade point average	No significant effects were found for any of the lifetime measures of drug use. However, fewer intervention students than control students drank heavily within the past year.	NA	Students in the intervention group showed significantly stronger commitment and attachment to school, less school misbehaviour and violent delinquency, and a significant improvement in self-report achievement. Significantly more controls than intervention students engaged in sexual intercourse and had multiple sex partners.	Participation in the intervention was predictive of enduring positive effects on students' bonds to school, achievement, school behaviour, lifetime violence, sexual behaviour and frequent drinking.	Evidence Level: III-3 Quality: +

behavioural management skills, helping children succeed in school, and drug education are offered on a voluntary basis to parents.	Hawkins et al., (2008). USA	598	• School functioning • Work functioning • Mental health • Sexual behaviour • Substance use • Crime	No effects on substance abuse and dependence were found in young adulthood, and no significant effects were observed for specific measures of substance use.	NA	Across all 22 mental health outcomes examined, reported problems were lower in magnitude in the intervention group compared to the control group. Participants in the intervention group were significantly more likely than those in the control group to be at or above the median socioeconomic status, and to participate in community groups. The intervention group also had significantly lower rates of having ever been diagnosed with a sexually transmitted disease.	The intervention group demonstrated better socioeconomic status, mental health and sexual health at 12-15 year follow-up. However, there was no intervention effect on substance use.	Evidence Level: III-3 Quality: +
POSITIVE ADOLESCENT LIFE SKILLS (PALS) The PALS training program is a cognitive behavioural, skill-building intervention containing 25 sessions that are divided into five modules. The cognitive-behavioural theory that underlies PALS suggests that health risk behaviour can be modified by teaching skills for reducing substance use and initiating behavioural change. PALS training is intended to augment the acquisition of behavioural skills that support adolescents' ability to make positive connections with their social environments and avoid risky behaviours such as substance abuse.	Tuttle et al., (2006). USA	16	• Substance abuse • Physical health • Mental health • Family relationships • Peer relationships • Educational status • Vocational status • Social skills • Leisure/recreation • Aggressive behaviour/ delinquency	NA	NA	No statistically significant differences were found between groups, possibly because of the small sample size.	Sample size was too small to detect significant differences between groups.	Evidence Level: III-2 Quality: -
	Campbell-Heider et al., (2009). USA	14	• Substance abuse • Physical health • Mental health • Family relationships • Peer relationships • Educational status • Vocational status	N	NA	From baseline to 1 year follow-up, there was a trend for boys who participated in the intervention to have fewer problems with physical health, mental health, peer relations and aggression, and more problems with substance use, family relationships,	Sample size was too small to perform inferential tests to confirm trends.	Evidence Level: III-2 Quality: -

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			• Social skills • Leisure/recreation • Aggressive behaviour/ delinquency			vocational status, social skills, and leisure. There was a trend for girls who participated in the intervention to have fewer problems in peer relationship and social skills, and more problems in substance use, mental health, family relationships, education status, vocational status, and aggression.		
ALCOHOL MISUSE PREVENTION (AMPS) AMPS consists of four sessions focusing on the immediate effects of alcohol, risks of alcohol misuse, and social pressures to misuse alcohol. The AMPS curriculum is based on the social influences approach with an emphasis on teaching social skills to resist peer pressure to use or misuse alcohol. The goals of AMPS are to reduce susceptibility to peer pressure, increase internal health locus of control and self-esteem, and teach young people the social skills needed to resist peer pressure to use alcohol.	Dielman et al., (1986). USA.	5635 : I:1407 C: 640	• Frequency of alcohol use • Alcohol misuse (overindulgence) • Alcohol misuse (resulting in trouble with peers) • Alcohol misuse (resulting in trouble with adults) • Awareness of curriculum content	Alcohol use and misuse were not significantly different between intervention and control groups. There were significant main effects of occasions of use for both the alcohol use and the overindulgence index. All groups significantly improved on a measure of 'trouble with adults' but there were no differences between groups.	The intervention group showed significantly greater awareness of the curriculum content than the control group.	NA	The intervention group showed improvements in knowledge but this did not appear to translate into behaviour change.	Evidence Level: II Quality: ++
	Shope et al., (1993). USA	3207	• Refusal skills • Alcohol misuse prevention knowledge • Susceptibility to peer pressure • Self esteem • Internal health locus of control • Quantity and frequency of alcohol use • Alcohol misuse	Adolescents with better refusal skills reported less alcohol use and misuse.	Adolescents with better refusal skills had higher levels of alcohol misuse prevention knowledge, especially regarding resisting pressures to use alcohol and the application of knowledge to typical alcohol-related situations.	Adolescents with better refusal skills reported less susceptibility to peer pressure, greater internal health locus of control and self-esteem.	Teaching refusal skills in substance abuse prevention programs may be useful, but further research is required to understand whether refusal skills can be manipulated to reduce alcohol use outcomes.	Evidence Level: IV Quality: –
	Maggs & Schulenberg (1998). USA	971	• Alcohol misuse • Frequency of consumption • Reasons not to drink	A positive association was found between frequency of alcohol consumption and alcohol misuse, which strengthened with age.	RTD and RND were inversely related, but became increasingly independent as adolescents became older. Among prior	The significant main effect of the AMPS curriculum was moderated by prior drinking experience.	The long-term effectiveness of AMPS was differential. Among prior unsupervised	Evidence Level: II Quality: +

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			(RND) • Reasons to drink (RTD)	Frequency of alcohol consumption and alcohol misuse were positively associated with RTD and negatively associated with RND. Among prior unsupervised drinkers, exposure to AMPS was associated with a smaller increase in alcohol misuse.	unsupervised drinkers, exposure to AMPS was associated with a smaller decrease in RND.		drinkers, AMPS had a significant indirect effect on alcohol misuse via RND.	
	Shope et al., (2001). USA	4635: I:1820 C: 2815	• Alcohol use and misuse • Frequency of consumption • Driver history (incl. offences and crashes) • Family • Parental attitude to alcohol	AMPS was (marginally) significantly associated with a reduced risk of serious offences. However, this effect only lasted for one year. No significant effects were found for crash outcomes.	NA	The program was less beneficial among students whose parents expressed disapproval of young people's drinking. The program was more beneficial among those who drank less than one drink per week.	AMPS reduced the risk of serious offenses during the first year of licensure by an estimated 20%, adjusting for sex, race, alcohol use/misuse, age at time of licensure, family structure, and parental attitudes toward young people's alcohol use.	Evidence Level: II Quality: ++
GATEHOUSE The Gatehouse Project includes both institutional and individual components to promote emotional and behavioural wellbeing, and reduce rates of substance use. The conceptual framework identifies three priority areas for action: • building a sense of security and trust • increasing skills and opportunities for good communication • building a sense of positive regard through valued participation in aspects of school life.	Bond et al., (2004). AUS	2678 I: 1335 C: 1343	• Anxiety/depressive symptoms • Social relations • Victimisation • School engagement • Substance use • Family	The intervention group displayed lower levels of any drinking and friends' drinking than the control group.	NA	The intervention group had lower levels of smoking and friends' smoking than the control group. There was no significant effect of the intervention on depressive symptoms and social and school relationships.	Gatehouse may decrease substance use, but does not appear to influence depression symptoms or social and school relationships.	Evidence Level: II Quality: ++
	Patton et al., (2006). AUS	2545	• Substance use • Antisocial behaviour • Initiation of sexual intercourse • Emotional problems • School commitment	No differences in health risk behaviours were found between groups in the 1999 cohort. However, in the 2001 cohort, students exposed to the intervention displayed fewer risk behaviours than those in the control group.	NA	No differences were found in emotional problems or commitment between groups at baseline, in 1999, or in 2001.	Gatehouse showed some success in reducing rates of substance use, antisocial behaviour, and early initiation of sexual intercourse.	Evidence Level: II Quality: ++
PERSONALITY RISK FACTORS This manualised intervention	Conrod et al., (2006). Canada	266 I: 151 C: 115	• Fear of anxiety symptoms • Intensity seeking	The intervention group had higher rates of abstinence and lower rates of alcohol consumption and binge drinking at follow-up than	NA	NA	The intervention showed promising effects on binge drinking, quantity of consumption, abstinence	Evidence Level: II Quality:

was designed to intervene at the level of personality risk and associated maladaptive coping strategies, including alcohol misuse. The three main components of the intervention are psycho-education; behavioural coping skills training; and cognitive coping skills training. The intervention is delivered in 2, 90 minute sessions conducted by a masters-level counsellor and a co-facilitator.			• Personality risk factors for substance abuse and dependence • Behavioural symptoms of adolescent problem drinking	the control group. An absence of drinking-related problems was reported more frequently within the intervention group than the control group.			and drinking problems.	++
ADOLESCENT ALCOHOL PREVENTION TRIAL (AAPT) Four groups were included in the evaluation of the Adolescent Alcohol Prevention Trial. Students received either educational information only (control); education plus resistance training (RT); education plus normative information (norm); or a combination of all three components (COMB).	Taylor et al., (2000). USA	3027	• Alcohol use • Cigarette use	Compared to the control group, the norm intervention had a beneficial effect on lifetime alcohol use, recent alcohol use and lifetime drunkenness. The norm intervention had a beneficial effect on the rate of growth of substance use over the follow-up period. The norm group also maintained a lower, more stable rate of change in alcohol use (compared to a rate of change which was initially high and decelerated over time in the control group).	NA	Compared to the control group, the norm intervention had a beneficial effect on lifetime smoking and recent smoking.	Providing normative information in addition to educational information is beneficial in reducing drug use.	Evidence Level: II Quality: –
CHOICE CHOICE involves five 30-minute sessions throughout the school year. It is based on social learning theory, decision making theory and self-efficacy theory. CHOICE includes components utilised in other successful programs. For example: • enhancing protective	D'Amico et al., (2012). USA	9528	• Lifetime and past month alcohol use • Intention to drink • Resistance self-efficacy • Perceived alcohol use among peers	Follow-up rates of lifetime alcohol consumption were lower for intervention schools compared to control schools (after controlling for covariates). Past month alcohol use was also lower in CHOICE schools, but did not reach statistical significance.	No school or individual-level changes were observed in resistance self-efficacy, perceived prevalence of drinking, or intentions to drink. However, attending a higher number of CHOICE sessions was associated with higher resistance self-efficacy.	NA	CHOICE schools had lower rates of lifetime alcohol consumption at follow-up, but no differences in past month use or alcohol-related beliefs were observed.	Evidence Level: II Quality: +

factors • reducing risk factors • targeting multiple substances • interactive techniques that allow active involvement in learning • normative feedback • role plays • reinforcing skills • providing information in a nonjudgmental and non-confrontational manner.								
HEALTHY SCHOOLS AND DRUGS The Healthy School and Drugs project is a multicomponent, school-based prevention program for high school students. The theoretical framework is based on the theory of planned behaviour, social cognitive theory, and the model of behavioural change. The program consists of five components which are adopted and implemented over three years: • developing a coordinating committee • delivering 9 educational lessons over 3 years • formulating school regulations on drug use • implementing an early detection system for identifying students with drug problems and providing support and	Cuijpers et al., (2002). Netherlands	1930 I: 1156 C: 774	• Substance use • Attitude towards substance use • Knowledge about substances • Self-efficacy	The intervention had a significant effect on frequency of alcohol use, number of alcoholic drinks per peek, and number of alcoholic drinks per instance at 3 year follow-up.	The intervention had a significant effect on knowledge about alcohol at 2 and 3 year follow-ups. A significant effect on self-efficacy towards alcohol was found at 1 year follow-up, but not at subsequent follow-ups.	The intervention had a significant effect on frequency of smoking at 3 year follow-up and marijuana use at 2 year follow-up. The intervention group had better knowledge of tobacco and marijuana at 3 year follow-up. The intervention had a significant effect on attitude towards use of marijuana at 3 year follow-up. No effects of the intervention were found on self-efficacy towards use of tobacco or marijuana.	The Healthy School and Drugs project may have beneficial effects of substance use and knowledge, particularly regarding alcohol.	Evidence Level: III-2 Quality: -

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counselling • involving parents in drug abuse prevention								
LIFE EDUCATION VICTORIA (LEV) LEV aims to delay student experimentation with or initiation into smoking, discourage underage drinking, encourage students to avoid drinking during the adolescent years, and advocate that students avoid analgesics unless for legitimate health reasons. It is presented in seven modules throughout the seven years of primary school.	Hawthorne et al., (1992). AUS	3019	• Attitudes towards drug use and health • Attitudes towards drug use reward-association • Attitudes towards drug users • Alcohol, cigarette, and analgesic use	Participation in LEV was marginally positively associated with having ever drunk an alcoholic beverage, and usually consuming two or more drinks on a drinking occasion. No association was found between participation in LEV and alcohol consumption in the past month.	Participation in LEV was associated with higher scores in health knowledge, and slightly higher scores in attitudes towards drug use and health. Participation was also associated with lower scores on attitudes towards drug users. No association was found between participation in LEV and attitudes towards drugs use reward-association.	Participation in LEV was marginally positively associated with smoking in the past four weeks, having ever used analgesics, and having used three or more analgesics in the last month.	Although participation in LEV was associated with greater health knowledge, there was no evidence that participation positively affected students' attitudes, or reduced substance use. Indeed, there was some evidence that students who participated in LEV had marginally higher drug use.	Evidence Level: III-3 Quality: ++
POSITIVE YOUTH DEVELOPMENT (PYD) PYD is a comprehensive program to promote well-being and prevent substance use among adolescents. The program teaches substance use prevention skills along with participation in health education and cultural heritage activities. The core substance use prevention component of the program is an 18-session curriculum known as Adolescent Decision-Making for the Positive Youth Development Collaborative (ADM-PYDC).	Tebes et al., (2007). USA	304 I: 149 C: 155	• Perceived risk of harm • Drug beliefs • Substance use behaviour	There was no significant difference in alcohol use from pre-test to exit, but at follow-up the intervention group was significantly less likely to use alcohol than the control group.	Perceived risk of harm significantly increased in the intervention group compared to the control group. There was no significant difference between groups in drug beliefs.	The use of other drugs did not differ between groups at exit. However, at follow-up the intervention group was significantly less likely to use other drugs than the control group.	PYD was effective in decreasing the rate of alcohol and other drug use at follow-up.	Evidence Level: III-2 Quality: +
OLWEUS PREVENTION Olweus aims to create a school and home environment characterised	Amundsen & Ravndal (2008). Norway	1146	• Alcohol use • Tobacco use • Illegal drug use	There were no significant differences in the frequency of alcohol use between the experimental schools and the	NA	There was a stronger rise in cannabis use with increasing grades in the control vs. intervention	The Olweus bullying-prevention program may be effective in reducing excessive alcohol	Evidence Level: III-2 Quality: -

by positive interest and engagement on the part of adults and firm boundaries between acceptable and unacceptable behaviour. It seeks primarily to reduce bullying among students. The program involves teachers learning about bullying and implementing strategies to reduce bullying behaviours. Olweus is integrated within the school's ordinary routine.				control schools. Alcohol intoxication and drunkenness were higher in the control schools than the intervention schools.		schools.	consumption and cannabis use.	
PROTECTING YOU PROTECTING ME (PY/PM) Protecting You/Protecting Me (PY/PM), developed by Mothers Against Drunk Driving, targets children in school, beginning in first grade. The goal of the classroom-based program is to prevent the injury and death of children and youth from underage alcohol use and riding in vehicles with impaired drivers.	Bell et al., (2005). USA	722	• Perceived harm of alcohol • Drinking and safety intentions • Stress-management skills • Decision-making skills • Underage drinking attitudes • Media literacy • Vehicle safety skills • Development	NA	Students who undertook PY/PM demonstrated improvement in all outcome areas except drinking and safety intentions (although media literacy was only marginally significant).	More years of exposure to PY/PM was associated with better outcomes at post-test and follow-up.	PY/PM had positive effects on students' knowledge and attitudes.	Evidence Level: III-3 Quality: +
REDUCE RISK INCREASE STUDENT KNOWLEDGE (RRISK) RRISK aims to give students the skills to make informed decisions about risk-taking associated with drug and alcohol use, driving and celebrating. The RRISK program is a combination of a seminar day preceded and followed by complementary in-school activities.	Zask et al., (2006). AUS	1996	• Knowledge about alcohol and risks • Attitudes about alcohol and risks • Risky behaviours	Intervention students reported significant improvements in behaviour compared to the control group.	Intervention students had significantly higher levels of knowledge about the safety features of a used car than comparison or control students. Older intervention students had higher levels of knowledge regarding assessing whether someone is too drunk to drive. Younger intervention students demonstrated improved attitudes towards risk-taking.	NA	RRISK had some success in improving risky attitudes, knowledge and behaviours.	Evidence Level: III-2 Quality: +

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SCHOOL BASED EDUCATION The focus of this intervention is on addressing social influences, beliefs about consequences of alcohol use, media/advertising literacy, resistance skills and alcohol-related normative beliefs. The central message is "no alcohol for minors". The program consists of four specified class units, a booklet for students and a parent booklet.	Morgenstern et al., (2009). Germany	1433	• Alcohol use • Alcohol-related knowledge • Alcohol attitudes • Alcohol intentions	There was no statistically significant intervention effect for any of the alcohol use outcomes except for lifetime binge drinking; intervention students were significantly less likely to report lifetime binge drinking at post-test and 12 month follow-up.	Students in the intervention group had higher alcohol-related knowledge than students in the control group. This difference was maintained at 12 month follow-up. There was no significant difference between groups on alcohol-related attitudes or intentions.	NA	The intervention had positive effects on alcohol-related knowledge and lifetime binge drinking. Alcohol-related attitudes, expectancies, and other alcohol-use measures were not impacted by the program.	Evidence Level: II Quality: ++
SCHOOL BASED RESILIENCE INTERVENTION A multi-strategic intervention based upon an existing student resilience and protective factors program. It targets three domains: • curriculum, teaching and learning (e.g. implementing materials and programs) • ethos and environment (e.g. increasing school connectedness) • partnerships and services (e.g. formal partnerships with local services)	Hodder et al., (2011). AUS	1205	• Resilience and protective factors • Tobacco, alcohol and marijuana use	At follow-up, the proportion of students who reported drinking one or more alcoholic drinks in the last three months was 19% less than at baseline, and the proportion that reported drinking five or more alcoholic drinks in the last three months was 16% less.	NA	Resilience and protective factors were significantly greater at follow-up than at baseline. The proportion of students who reported ever smoking, smoking in the last three months, and being a current smoker was lower at follow-up than at baseline. The proportion of students who reported marijuana use in the last three months was significantly lower at follow-up than at baseline.	The intervention increased resliance and protective factors, and reduced alcohol, tobacco and marijuana use.	Evidence Level: IV Quality: -
SOCIAL NORMS ANALYSIS PROJECT (SNAP) Using social norms theory the focus of the intervention is the extent to which young peoples' perceptions of their peers' behaviour and	Hughes et al., (2008). AUS	509	• Alcohol-related attitudes • Alcohol-related perceptions • Alcohol-related behaviours	There was little change in the frequency of drinking at the trial schools over the period of the intervention. Frequency of drunkenness had declined in the intervention schools at Time 2, but returned to baseline levels at Time 3.	For intervention students, perceived peer-drinking had declined at Time 2, but in most cased returned to baseline levels by Time 3.	There was no significant effect of the intervention on use of harm-minimisation strategies.	SNAP schools showed some improvement in alcohol-related perceptions and frequency of drunkenness, but changes were not enduring.	Evidence Level: III-3 Quality: –

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attitudes influences their own drinking behaviours. "Key messages" were disseminated during school-based campaigns which were positive and affirming, with no "scare tactics".								
DRUGS AT WORK (DAW) Drugs at Work aims to delay the age of first use of alcohol, tobacco and other drugs by reducing peer pressure and changing local peer group norms. It particularly targets Mexican-American children. DAW comprises seven sessions in grade five and one session in grade six. Sessions are designed to be delivered in a high-energy, multi-media format with interactive activities.	Wright (2007). USA	2691	• Use of alcohol, tobacco, and other drugs (ATOD) • Perceived ATOD use by peers • Knowledge of dangers of ATOD use • Peer pressure to use ATOD	Students who participated in DAW were significantly less likely to drink enough alcohol to feel drunk, compared to the control group. However, reductions in use were not maintained after grade seven.	NA	Students who participated in DAW were significantly less likely to smoke cigarettes, smoke marijuana, or use other drugs, compared to the control group. They also reported lower perceived ATOD use by peers, and reduced peer pressure. Classmates of those who participated in DAW (but did not themselves participate) had similar reductions in ATOD use. However, reductions in use were not maintained after grade seven.	DAW showed some efficacy in reducing rates of ATOD use, but effects were not maintained at follow-up.	Evidence Level: III-3 Quality: -
PEER LED FAS/FAE Peer led FAS prevention emphasises the role of peers in teaching and role modelling. It consists of multimedia presentations by peers and college students about Fetal Alcohol Syndrome and other drug effects on the child during pregnancy.	Boulter. (2007). USA	339	• Knowledge of FAS	NA	In general, students' overall knowledge of presentation content increased from pre-test to post-test and from post-test to follow up.	NA	Multimedia presentations can increase knowledge of Fetal Alcohol Syndrome.	Evidence Level: IV Quality: -
PEER SUPPORT The peer support programme aims to positively influence students' knowledge, attitudes and use of drugs. It involves 10 to 16 sessions, most of	Webster et al., (2002). AUS	428 I:169 C: 157	• Attitudes towards alcohol and drugs • Knowledge of alcohol and drugs • Alcohol and drug use	In general, the peer support program had no effect on participants' drug use behaviour.	The program had no effect on participants' drug-related knowledge or attitudes.	NA	The peer support program was ineffective in changing rates of drug use or drug-related knowledge/attitudes.	Evidence Level: III-2 Quality: +

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which focus on personal skills training. Two sessions explore alcohol and tobacco use.								
PRIME FOR LIFE PRIME for Life is an alcohol risk reduction program that has been used in the USA for over 20 years. A Swedish version of the program has recently been adapted for use among Swedish high-school students. This program version is of 10 hours duration and targets at-risk youth and/or subjects charged with alcohol and/or drug violations.	Hallgren et al., (2011). Sweden	926	• Alcohol use • Knowledge about alcohol • Attitudes towards alcohol • Intentions regarding alcohol use • Perceived risk for alcohol problems	No significant differences between groups were observed for alcohol use.	Alcohol knowledge and perception of risk for developing alcohol problems increased significantly in the intervention group at 5 month follow-up. Increases in alcohol knowledge (but not perception of risk) remained significant at 20 month follow-up. There was no significant change in alcohol attitudes and intentions.	NA	PRIME for Life had a positive short-term impact on knowledge about alcohol and risks concerning heavy consumption, but did not reduce drinking levels.	Evidence Level: II Quality: +
PROJECT PRIDE Project Pride is a primary prevention program intended to intervene at or before the early stages of drug and alcohol abuse. It consists of 12 modules, administered during one class per week over a 12-week period. The modules deal with social competence; resistance skills; drug education; normative education; advertising pressure education; and stress management.	LoSciuto & Steinman (2004). USA	270	• Social image and drug use • Advertising influence • Comfort saying no • Ways to say no • Drug facts • Estimation of peer drug use	NA	Compared to the controls, the intervention students showed positive knowledge and attitudinal changes in advertising influence and drug facts. Smaller (non-significant) effects were found for estimation of peer drug use, resistance skills, ways to say no, and the social status of smokers.	NA	Project PRIDE appears to have some positive effects on student attitudes and knowledge about drug use.	Evidence Level: II Quality: –
REINFORCING ALCOHOL PREVENTION (RAP) The RAP program was developed in accordance with evidence-based guidelines for effective	Will & Sabo (2010). USA	668	• Alcohol-related knowledge	NA	Students' knowledge and awareness of alcohol risks increased significantly from pre-test to post-test. Misapprehensions regarding alcohol and alcohol use had declined at post-test.	NA	RAP successfully educated teens about alcohol laws and penalties.	Evidence Level: V Quality: –

school-based programming to combat underage drinking and impaired driving. Social cognitive therapy provided the theory and constructs that shaped the intervention. RAP includes an educational lesson, video, and interactive activities during a 90-minute period.								
SAY YES FIRST A comprehensive, multicomponent approach for the prevention of ATOD use in high risk youth in rural areas. Say Yes First includes prevention, parental education, case management and family involvement.	Zavela et al., (1997). USA	859	• Substance use • Academic performance • Level of risk	Program participation was associated with the amount of alcohol typically consumed when drinking, with high participation students reporting less of an increase over time. Recent use of alcohol was higher in preceding (control) cohorts than in the intervention cohort.	NA	Program participation was positively associated with achievement test scores in reading and mathematics, and negatively associated with drug use. Recent use of chewing tobacco, crack/cocaine, steroids, prescription drugs, and over-the-counter medications was higher in preceding (control) cohorts than in the intervention cohort.	Greater involvement in the program was associated with reductions in drug-use prevalence over time.	Evidence Level: III-2 Quality: -
TRANSTHEORETICAL MODEL This is an internet-based, tailored intervention based on the Transtheoretical Model of Behaviour Change, which aims to reduce alcohol, tobacco, and other drug use. This internet-based approach requires very little faculty and staff time, and comprises three 30-minute computer sessions over three months.	Evers et al., (2012). USA	1590	• Alcohol use • Tobacco use • Marijuana use • Other drug use • Stage of change	NA	NA	Among baseline ever users, there was an increase in the proportion of TTM participants who were in the Action/Maintenance stages at 3 month follow-up, compared to a decline in the control group. However, the difference between groups was no longer significant at 14 month follow-up. Among baseline current users, significantly more students stopped using drugs (i.e. moved into the action or maintenance stage) in the intervention group compared to the control. At 14 month follow-up this	At the initial 3 month follow-up, TTM produced reductions in drug use among baseline ever users and baseline current users. However, these changes did not persist at 14 month follow-up.	Evidence Level: II Quality: -

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						difference was no longer significant.		
WISE MIND The ‘‘Wise Mind’’ concept represents the idea that with knowledge and environmental changes, students could make ‘‘wise’’ decisions about substance use/abuse, nutrition, and physical activity. The study goal was to modify young children’s beliefs and attitudes regarding the use and abuse of alcohol and tobacco so that they reflected healthier values. An alcohol/tobacco/drug use prevention program (ATD) was compared to an active control condition focussed on obesity prevention (HEE).	Copeland et al., (2010). USA	578	• Tobacco outcome expectancies • Alcohol outcome expectancies • Tobacco use • Alcohol use • Illicit drug use	The ATD and HEE conditions did not significantly differ in 18-month reported use of alcohol.	Students in the HEE condition reported increased expectancies that alcohol reduces tension, whereas students in the ATD condition reported a non-significant increase in this belief.	Students in the ATD condition reported a significant decrease in the perception of positive consequences associated with smoking. No changes were observed for the HEE condition. Students in both conditions reported increased perception of the negative consequences of smoking, with a greater increase in the ATD condition. Students in the ATD condition reported increased expectancy that smoking aids control of appetite and body weight; no changes were observed in HEE condition. The ATD and HEE conditions did not significantly differ in 18-month reported use of tobacco or illicit drugs.	Students in the ATD condition had fewer positive beliefs about smoking and alcohol use, and more negative beliefs about smoking. However, there were no significant differences in levels of substance use.	Evidence Level: III-2 Quality: –
STEP II STEP was initially designed and implemented as a pilot initiative for use in 25 schools in Mumbai and was further expanded by adding an alcohol abuse education component and denoted as STEP II. Based on social learning theory, STEP II provides culturally and developmentally appropriate information about alcohol use/abuse and HIV/AIDS in multiple sessions.	Chhabra et al., (2010). India	1256	• Knowledge of HIV/AIDS • Self-efficacy • Confidence • Risk-taking • Communication skills • Substance use intentions	No significant intervention effects were found for intention to use alcohol in the next three months.	NA	The intervention group showed greater mean changes in self-efficacy, communication skills and risk-taking behaviour than the control group. The control group had greater mean changes in knowledge and confidence. Results were stronger for girls in the program. No significant intervention effects were found for intention to use drugs, steroids and cigarettes in the next three months.	STEP II may have some efficacy in improving self-efficacy, communication and risk-taking behaviours, particularly for girls. However, there was no impact on substance use intentions.	Evidence Level: III-I Quality: –

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PROGRAMS WITH EVIDENCE OF NEGATIVE EFFECT ON ALCOHOL OUTCOMES								
Program Description	Reference	N	Measures	Outcomes			Summary	Strength
				Alcohol Behaviour	Alcohol Knowledge/Attitudes	Other Outcomes		
PEER ACCELERATION SOCIAL NETWORK (PROJECT TND) This program is a modified version of Towards No Drug Abuse, and focuses on motivation, skills and decision making to reduce substance use. It is delivered in 12 sessions over a 3-4 week period. TND was conducted at classroom level and led by a classroom teacher or trained facilitator. By contrast, Peer Acceleration Social Network encourages small group discussion in groups created from naturally occurring friendships led by a student-chosen leader.	Valente et al., (2007). USA	541	• Substance Use • Network size • Social support	Receiving the intervention was associated with decreased use of marijuana, cocaine, and composite substance use relative to control.	NA	For those receiving the intervention, as peer substance use increased, changes in substance use increased. For those in the control group, as peer use increased, changes in substance use declined.	The intervention was most effective for students who nominated as friends other students who reported low levels of substance use. It increased use among some students with existing networks of substance-using peers.	Evidence Level: II Quality: -
TAKE CHARGE OF YOUR LIFE (TCYL) TCYL focuses on demonstrating to students that there are personal, social, and legal risks and consequences involved in tobacco, alcohol, and illicit drug use. In addition, the program provides life skills such as communication, decision-making, assertiveness and refusal skills, which students need in order to act on their desire not to use substances.	Sloboda et al., (2009). USA	10434	• Alcohol use • Cannabis use • Cigarette use	Students in intervention schools reported significantly higher 30-day alcohol use and 14-day binge drinking compared to controls. These effects were stronger in white students and those who did not drink at baseline. No statistically significant differences were found for alcohol use in the past year, or getting drunk within the past month.	NA	Students in intervention schools reported significantly higher 30-day cigarette use compared to controls. Those who used marijuana at baseline showed positive treatment effects for recent marijuana use at follow-up.	The program was not successful, resulting in increased alcohol consumption, particularly among white students and those who did not drink at baseline.	Evidence Level: II Quality: ++
	Teasdale et al., (2009). USA	10434	• Alcohol use • Cannabis use • Cigarette use • Normative use	For baseline non-user groups, there was a negative treatment effect on alcohol use.	Among baseline alcohol users in the treatment group, normative beliefs about alcohol use and perceptions of harm for using alcohol were significantly higher	For baseline non-users, there was a negative treatment effect on cigarette use. However, for baseline users of marijuana, there was a	The findings suggest that TCYL needs significant revision if it is to be delivered as a universal substance abuse	Evidence Level: II Quality: ++

			• Perceptions of harm • Intentions to use		than those in the control group.	positive treatment effect. In the treatment group, baseline non-users had better marijuana refusal skills and marijuana normative beliefs; baseline cigarette users had higher perceptions of harm for cigarette use; and baseline marijuana users had higher intentions not to use marijuana, marijuana refusal skills, and normative beliefs about marijuana use.	prevention program. Specifically, the negative effects of the program on baseline nonusers need to be addressed.	

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KEY

ABBREVIATIONS	
I	Intervention
C	Control
NA	Not applicable
LEVEL OF EVIDENCE	
I	Systematic Review, Meta-Analysis
II	Randomised Controlled Trial
III-1	Pseudo-Randomised Controlled Trials (e.g. Alternate allocate of groups or other method)
III-2	Comparative Studies with Concurrent Controls and Allocation not Randomised (e.g. Cohort Studies)
III-3	Case Control (e.g. Historical Control group, Two or more Single Arm or Time Series without a Control Group)
IV	Case Series (e.g. Pre and Post Test only, No Control Group)
QUALITY	
++	Good
+	Average
-	Low