

**A review of the effectiveness and cost-effectiveness  
of interventions delivered in primary and secondary  
schools to prevent and/or reduce alcohol use by  
young people under 18 years old**

**FINAL REPORT**

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## GLOSSARY

<b>American school grades</b>	<p>Education is divided into 3 levels: elementary school, junior high (or middle) school and high school</p> <p>Grade 1 to 5 Elementary School (6-11 years)</p> <p>Grade 6 to 8 Middle School (11-14 years)</p> <p>Grade 9 to 12 High School (14-18 years)</p> <p>See Appendix 5 for a conversion table showing English key stages and the US grade equivalents.</p>
<b>Bias</b>	Deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.
<b>Cluster randomisation</b>	A trial where the unit of randomisation is a cluster of participants (e.g. a school).
<b>Completeness of delivery</b>	Refers to the degree to which a replicated programme model or strategy was implemented in its entirety according to the specifications of the original.
<b>Confidence interval</b>	A measure of precision of a statistical estimate
<b>Controlled Before and After study</b>	Intervention and control groups are tested and data collected before and after the intervention has been administered. They differ from controlled non-randomised trials in that participants are not allocated to intervention or control groups, but rather a 'convenience' control sample is used.
<b>Controlled non-Randomised Trial</b>	These are trials where participants or clusters are allocated between intervention and control groups but the allocation is not randomised or quasi-randomised (e.g. alternate allocation).
<b>Cost-benefit analysis</b>	Relies on the conversion of all consequences into monetary values to identify whether an intervention's benefits exceed its costs.
<b>Cost-effectiveness analysis</b>	The consequences of the alternatives are measured in natural units, such as years of life gained. The consequences are not given a monetary value.
<b>Effect size</b>	A term used for a family of indices that measure the magnitude of the relationship between variables or intervention effect. Effect sizes are commonly used in meta-analyses as unlike significance tests these indices are independent of sample size.
<b>Fidelity</b>	Refers to the degree to which a replicated programme model or strategy was implemented as planned according to the specifications of the original. See also Completeness of delivery.
<b>Forest plot</b>	Common method of displaying the results from a meta-analysis. The results of each study are displayed graphically as squares centred on each study's point estimate of the intervention effect with horizontal lines representing confidence intervals (usually a 95% confidence interval) of the effect.

<b>Intention to treat analysis</b>	A method of data analysis in which all participants are analysed in the group they were assigned to at randomisation regardless of treatment adherence.
<b>Key stage</b>	<p>Pupils' progress through school is measured in key stages. Each key stage covers a number of school years. Starting at key stage 1 and finishing at key stage 4.</p> <ul style="list-style-type: none"> <li>• Key stage 1 Infant School (3-7 years)</li> <li>• Key stage 2 Junior School (7-11 years)</li> <li>• Key stage 3 Lower Secondary School (12-13 years)</li> <li>• Key stage 4 Upper Secondary School (14-16 years)</li> </ul>
<b>Meta-analysis</b>	The combination of quantitative evidence from a number of studies.
<b>Odds ratio</b>	The odds of the event occurring in one group (e.g. intervention) divided by the odds of the event occurring in the other group (e.g. control).
<b>Randomised Controlled Trial (RCT)</b>	Individuals or, defined groups of individuals (clusters) are randomised to either an intervention or a control group. If well implemented, randomisation should ensure that intervention and control groups only differ in their exposure to treatment.
<b>Relative risk</b>	The risk of the event in the one group (e.g. intervention) divided by the risk of the event in the other group (e.g. control).
<b>Social influences model</b>	A model based on the belief that use of alcohol and other drugs by young people are primarily social behaviours. Intervention approaches based on the model typically include the following four components: information on the negative social effects and short term physiological effects of alcohol and other drug use; information on the social influences that encourage alcohol and other drug use, particularly peer, parent and media influences; correction of normative expectations; and resistance training.
<b>Systematic review</b>	A method of locating, appraising and synthesising evidence from primary studies, which adheres to a scientific methodology.
<b>Young people</b>	People under the age of 18 as defined in the scope.

**ABBREVIATIONS**

<b>AAPT</b>	Adolescent Alcohol Prevention Trial
<b>AMPS</b>	Alcohol Misuse Prevention Study
<b>CBA</b>	Cost-Benefit Analysis
<b>CEA</b>	Cost-Effectiveness Analysis
<b>CFI</b>	Culturally Focused Intervention
<b>CI</b>	Confidence Interval
<b>CNRT</b>	Controlled Non-Randomised Trial
<b>CSAP</b>	Centre for Substance Abuse Prevention
<b>DAAT</b>	Drug and Alcohol Action Team
<b>DARE</b>	Drug Abuse Resistance Education
<b>DfES</b>	Department for Education And Skills
<b>DH</b>	Department of Health
<b>ES</b>	Effect Size
<b>ESPAD</b>	European School Survey Project on Alcohol and Other Drugs
<b>ICC</b>	Intraclass correlation coefficient
<b>ICER</b>	Incremental Cost-Effectiveness Ratio
<b>ITT</b>	Intention to treat
<b>LIFT</b>	Linking the Interests of Families and Teachers
<b>LST</b>	Life Skills Training
<b>MPP</b>	Midwest Prevention Programme
<b>NIAAA</b>	National Institute on Alcohol Abuse and Alcoholism
<b>NICE</b>	National Institute for Health and Clinical Excellence
<b>NIDA</b>	National Institute On Drug Abuse
<b>NR</b>	Not reported
<b>OR</b>	Odds Ratio
<b>PSA</b>	Public Service Announcement
<b>PSHE</b>	Personal Social and Health Education
<b>PT</b>	Posttest
<b>PY/PM</b>	Protecting You/Protecting Me
<b>RBS</b>	Responsible Beverage Service
<b>RCT</b>	Randomised Controlled Trial
<b>RR</b>	Relative Risk
<b>RSTP</b>	Risk Skills Training Programme
<b>SADD</b>	Students Against Drink Driving
<b>SD</b>	Standard Deviation
<b>SE</b>	Standard Error
<b>SFA</b>	Skills for Adolescence
<b>SHAHRP</b>	School Health and Harm Reduction Project
<b>SMART</b>	Self-Management and Resistance Training
<b>SFP</b>	Strengthening Families Programme
<b>SR</b>	Systematic Review
<b>SSDP</b>	Seattle Social Development Project
<b>STARS</b>	Start Taking Alcohol Risks Seriously
<b>TND</b>	Towards No Drug abuse
<b>WHO</b>	World Health Organisation
<b>WMD</b>	Weighted Mean Difference

## EXECUTIVE SUMMARY

### Background

Data from national surveys of drinking behaviour in young people indicate that by the age of 15-16 years, the vast majority of young people have tried their first alcoholic drink. In addition, at age 15-16 nearly half of young people are consuming alcohol on a weekly basis and around a quarter report drinking to intoxication regularly. Binge drinking habits continue into young adulthood, with more than a third of 16-24 year olds reporting that they drink over the sensible drinking daily limits.

### Objectives

This review sought to determine which interventions delivered in primary and secondary schools are effective and cost-effective for preventing or reducing alcohol use in young people under the age of 18 years.

### Methods

The methods for the review of effectiveness and cost-effectiveness followed NICE protocols for the development of NICE public health guidance<sup>1</sup>. Twenty databases were searched for systematic reviews and meta-analyses, randomised controlled trials, controlled non-randomised trials, controlled before and after studies and economic evaluation studies published since 1990. Two reviewers independently screened all titles and abstracts. Data extraction and quality assessment of individual studies was undertaken independently by one reviewer and checked for accuracy by a second reviewer. Each study was also graded (++, +, or -) based on the extent to which the design and execution of the study minimised the potential sources of bias. Results of the data extraction and quality assessment for each study of effectiveness and cost-effectiveness were presented in structured tables and as a narrative summary. Further cost-effectiveness analyses were undertaken to determine a 'cost per case of hazardous/harmful drinking averted' for programmes identified in the effectiveness review.

### Review of effectiveness

The review of the effectiveness included a total of 14 systematic reviews and meta-analyses, and 134 primary studies, which evaluated 52 programmes. A broad range of programmes were identified including classroom-based programmes delivered by

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<sup>1</sup>See <http://www.nice.org.uk/page.aspx?o=phmethods>

teachers or other professionals, multicomponent programmes that combined classroom-based intervention components with family-based and/or community-based components, and other approaches delivered outside of lesson time including brief interventions and peer support programmes. Results were summarised in terms of short (<6 months), medium (up to 1 year) and long (>1 year) term outcomes.

**Systematic reviews and meta-analyses:** Fourteen systematic reviews were identified that examined the effectiveness of school-based interventions aimed at the prevention or reduction of alcohol use. However, the majority of the reviews identified examined the effectiveness of substance use prevention programmes and only one review specifically examined the effectiveness of programmes that aimed to prevent alcohol use. This systematic review found that there was no consistent evidence to determine which programmes were effective over the short to medium term, but highlighted three programmes which were effective over the longer term. These included the family-based, Strengthening Families programme, Botvin’s Life Skills Training (LST) and a culturally focused curriculum for Native American students. The authors of the review reported that the Strengthening Families programme showed particular promise as an effective intervention.

**Evidence statement 1**

There is evidence from a high-quality systematic review that three programmes, Strengthening Families, Botvin’s LST and a culturally focused curriculum for Native Americans students, can produce long term reductions (greater than 3 years) in alcohol use.

**Classroom-based programmes led by teachers:** Nineteen classroom-based programmes led by teachers were identified. Three programmes SHAHRP, Botvin’s LST and the PY/PM programme demonstrated evidence of reducing alcohol use in the short-term. Botvin’s LST and SHAHRP also produced reductions in alcohol use and particularly, heavy alcohol use in the medium-term, but only Botvin’s LST demonstrated evidence of long-term effects on alcohol use.

**Evidence statement 2**

There is evidence from two classroom-based, teacher-led programmes that targeted children between the ages of 12 and 13 years, to suggest that interventions using the

life skills approach (LST) or focusing on harm reduction through skills-based activities (SHAHRP) can produce medium to long-term reductions in alcohol use and in particular, risky drinking behaviours such as drunkenness and binge drinking. However, the applicability and transferability of these programmes requires further study.

***Classroom-based programmes led by external contributors:*** Nine classroom-based programmes were identified that were taught by external contributors, including adult health educators, uniformed police officers, research project staff, college age instructors, certified school psychologists and Life Education Centre staff. The majority of the programmes identified had inconsistent effects on alcohol use and only one culturally tailored programme for Native American students demonstrated evidence of medium- to long-term effects.

**Evidence statement 3**

There is evidence to suggest that classroom-based programmes taught by adult health educators (including Project ALERT, Project SMART, Project TND) and uniformed police officers, such as DARE, have no medium- or long-term effects on alcohol use. There is inconsistent and insufficient evidence to determine the medium- to long-term effectiveness of normative education programmes led by external contributors. There is evidence to suggest that a culturally tailored skills training intervention for Native American students may have long-term effects on alcohol use. However, given the cultural specificity of this programme it has limited applicability to UK practice and policy.

***Other in-school approaches:*** Nineteen school-based programmes that were delivered outside of the lesson format were identified including brief intervention programmes, counselling programmes, peer support and teacher training. The STARS for Families brief intervention programme demonstrated evidence of short-term effects on heavy drinking. However, data presented at one year indicated that these effects might not last into the medium to longer term. Other in-school approaches identified did not produce consistent reductions in alcohol use.

**Evidence statement 4**

There is evidence to suggest that brief intervention programmes, which target

children aged 12-13 and involve nurse-led consultations regarding a young person's alcohol use, such as the STARS for Families programme, can produce short-, but not medium-term reductions in heavy drinking. In addition these types of programmes may have limited applicability to UK policy and practice as they are based on an abstinence approach. There is evidence to suggest that other in-school approaches to prevent or reduce alcohol use including counselling programmes, peer support and teacher training do not produce reductions in alcohol use behaviours.

**Multicomponent programmes:** Twelve multicomponent programmes were identified that combined school-based intervention with family, community and/or media components. Three long-term programmes that combined school-based intervention with family and community components had conflicting effects on alcohol use, with two programmes, the MPP and Coalition for Youth Quality of Life, having no effects on alcohol use. Project Northland was shown to be partially effective in the short term but during the interim phase of the programme when only minimal intervention components were delivered, the programme was found to have a negative effect on alcohol use. Programmes that combined classroom-based intervention with components targeting parental participation, and focusing on wider problem behaviours, appeared to have more consistent effects on alcohol use. Two programmes in particular, the Seattle Social Development programme and Linking in the Interests of Families and Teachers had long-term effects on heavy and patterned alcohol use, respectively. In addition, the Healthy School and Drugs Project impacted on a range of alcohol use behaviours in the short-term. However, longer term follow-up data were not available to judge the continuing effectiveness of this programme. Positive short-term effects on alcohol use were also demonstrated for two programmes, Keepin' it REAL and Be Your Own Influence, that combined classroom-based intervention with media programming.

**Evidence statement 5**

There is evidence to suggest that programmes that begin early in childhood, combine school-based curriculum intervention with parent education such as the SSDP and LIFT, which target a range of problem behaviours including alcohol use can have long-term effects on heavy and patterned drinking behaviours. In addition, the Healthy School and Drugs Project, which targeted secondary school students, had short-term effects on alcohol use. However, longer term effects of the programme have not been examined.

### **Economic appraisal**

Two studies were identified that met the criteria for inclusion in the review of published economic evaluations. In addition, further analyses were undertaken to determine a 'cost per case of hazardous/harmful drinking averted'.

**Review of published economic evaluations:** One study (Swisher et al., 2004) assessed the cost-effectiveness of the standard Life Skills Training programme compared to infused Life Skills Training, and one study (Pentz, 1998) assessed the costs, benefits and cost-effectiveness of the Midwestern Prevention Project (MPP). The standard LST programme was found to be less costly than I-LST by \$33.46 per student after 1 year of intervention delivery. In the second year, however, standard LST had no effects and the authors concluded that I-LST was less costly. The 3-year total costs of the standard LST and I-LST were estimated at \$109,429.04 and \$93,088.17, respectively. The results of the cost-benefit analysis (CBA) of the MPP demonstrated a \$700 net saving per family per year resulting from a reduction in the incidence of monthly drunkenness. Cost benefits ratios were also shown to be favourable (ratio to \$1 spent on prevention to saving was \$1:1.69). Compared to "usual" drug education the incremental cost effectiveness ratio of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness.

#### **Evidence statement 6**

There is inconsistent and insufficient published evidence to determine the cost-effectiveness of school-based interventions that aim to prevent or reduce alcohol use in young people under 18 years old.

**Cost-effectiveness analysis:** It was only possible to include three programmes in the further analyses because the majority of the studies identified for inclusion in the review of effectiveness either did not demonstrate effectiveness or did not report outcomes in sufficient detail to determine the percentage of students reporting hazardous/harmful drinking at follow-up. The three programmes included in the cost-effectiveness analyses were the Lion's Quest 'Skills for Adolescence' (SFA) programme, the School Health and Harm Reduction programme (SHAHRP) and the STARS for Families brief intervention. The 'cost per case of hazardous/harmful drinking averted' for each of the programmes included in the cost-effectiveness

analyses were £540.25 for the STARS for Families programme, £284.54 for SHAHRP at 20 months and £1,869.71 at 32 months, and £34,254.70 for Lion's Quest SFA programme. Calculation of incremental cost-effectiveness ratios indicated that compared to the brief intervention programme, STARS for Families, the classroom-based SHAHRP cost an additional £257.47 to prevent an extra case of hazardous/harmful drinking. Both STARS for Families and SHAHRP were shown to be less costly and more beneficial than the Lion's Quest SFA programme.

#### **Evidence statement 7**

Cost-effectiveness analysis of three programmes found that a brief intervention programme, STARS for Families and a classroom-based programme focusing on harm reduction through skills-based activities, SHAHRP, were less costly and more beneficial than a classroom-based drug prevention programme, Lions Quest SFA. Compared to STARS for Families, SHAHRP cost an additional £257.47 to prevent one additional case of hazardous/harmful drinking.

#### **Discussion**

A range of school-based intervention approaches to the prevention and/or reduction of alcohol use have been evaluated but the findings of the effectiveness review highlight a lack of clear evidence on which types of programmes are most effective. The diversity of the studies identified, in terms of intervention content and outcomes presented meant that it was not possible to synthesise data across the types of programmes identified. In addition, long-term follow-up data was not available for the majority of programmes so it is difficult to determine the value of school-based intervention in the longer term. This review demonstrates the current lack of economic evaluation studies in the field of prevention. Of the 52 programmes identified for inclusion in the review of effectiveness, only two had been evaluated in terms of their cost-effectiveness. In addition, both studies had limitations and their findings should be interpreted with caution. In addition, methodological shortcomings and inadequate reporting severely hampered further efforts to determine the costs and ultimate benefits of these programmes.

#### **Conclusions**

Overall this review of the effectiveness and cost-effectiveness of interventions delivered in primary and secondary schools to prevent and/or reduce alcohol use by young people has highlighted a number of weaknesses in the evidence base. There

is a lack of clear, long-term evidence for the effectiveness of school-based interventions and the applicability of the few programmes that have demonstrated partial effectiveness warrants further study before widespread implementation can be supported. The review of published economic evaluations and further cost-effectiveness analyses has been limited by large and wide-ranging gaps in the evidence base and consequently can contribute little to determining which programmes provide value for money. There needs to be evaluation of the effectiveness and cost-effectiveness of school-based programmes currently being delivered or planned in England. Cost-effectiveness research should be concentrated on full economic evaluations that consider both the costs and consequences of implementing school-based programmes aimed at preventing or reducing alcohol use.

## **1 INTRODUCTION**

### **1.1 Aims and objectives**

This review was undertaken to support the development of guidance by the National Institute for Health and Clinical Excellence (NICE) for use in primary and secondary schools on sensible alcohol consumption. As such, the review sought to determine which interventions delivered in primary and secondary schools are effective and cost-effective for preventing or reducing alcohol use in young people under the age of 18 years.

### **1.2 Research question**

The following research question was addressed:

- What are the most effective and cost-effective school-based interventions that aim to prevent or reduce alcohol use in under 18 year olds?

The following subsidiary research questions were considered in the discussion of the findings of the effectiveness and cost-effectiveness review:

- What type of content works best? (For example, should it focus on the harmful effects to health, legal issues or the social consequences of alcohol use?)
- Is it better for the intervention to be delivered by a generalist, a specialist, or someone else (for example, the police, a peer or a drug worker)?
- What are the most cost effective and appropriate interventions for different groups of young people (for example, males and females, different age groups, different social classes and different ethnic groups)?
- Does the intervention lead to any adverse or unintended effects (for example, an increase in alcohol consumption)?
- What factors might inhibit or facilitate implementation (for example, parents' views)?

## 2 BACKGROUND

### 2.1 Prevalence of alcohol use among young people

In 1995, the Government published new sensible drinking guidelines based on daily consumption of alcohol. They recommend a maximum intake of 3-4 units of alcohol per day for men and 2-3 units of alcohol per day for women. Similar guidelines do not exist in relation to children and young people's drinking.

Data from national surveys of drinking behaviour in young people indicate that by the age of 15-16 years, the vast majority of young people have tried their first alcoholic drink (Becker et al., 2006). In addition, at age 15 nearly half of young people are consuming alcohol on a weekly basis and at levels similar to adults. In 2005, 22% of 11 year olds had drunk alcohol compared to 86% of 15 year olds (see Table 2.1.1). Twenty-two percent of 11-15 year olds reported that they had drunk alcohol in the past week. The proportion of pupils who reported drinking in the past week also increased by age, from 3% of 11 year olds to 46% of 15 year olds. The mean alcohol consumption of 11-15 year olds who had drunk in the last week was 10.5 units; 11-13 year olds reported drinking an average 8.2 units and 15 year olds reported an average of 11.8 units.

**Table 2.1.1. Percentage of 11-15 year olds who had ever had an alcoholic drink, by age and sex in 2005 (Becker et al., 2006)**

<b>Age</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>Total</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Boys	22	38	55	75	85	57
Girls	22	40	62	78	86	60
Total	22	39	58	76	86	58

Data from the European School Survey Project on Alcohol and Other Drugs (ESPAD) 2003 survey (Hibell et al., 2004) found that 75% of young people aged 15-16 years had been drunk at least once and 27% had been drunk 20 times or more in their lifetime. Fifty four percent of 15-16 year olds in the UK met the criteria for binge drinking in the past 30 days, and 27% reported binge drinking three times or more during the last 30 days. Binge drinking habits continue into young adulthood, with more than a third of 16-24 year olds reporting that they drink over the sensible

drinking daily limits (Drummond et al., 2005). In addition, a quarter of young adults may be classified as having an alcohol use disorder<sup>2</sup>.

## **2.2 Mortality and morbidity associated with alcohol use**

Studies identified for inclusion in the epidemiology review conducted as an addendum to this review (see Section 3.7), provide evidence of an association between alcohol consumption during adolescence and a range of acute outcomes. There is evidence of positive associations between alcohol consumption and sexual activity, with heavy drinkers more likely to initiate sex earlier and have sex without using contraception. In addition, one study found that early onset of drinking was associated with having more sexual partners and becoming pregnant. Research has also demonstrated that frequent and binge drinkers are more likely to be involved in fights, and more likely to be injured as a result of fighting. In addition, alcohol misuse has been linked to violent offending in young people.

Alcohol use has also been found to increase the risk for major chronic diseases including certain types of cancers, stroke and cirrhosis of the liver (Rehm et al., 2003). A number of studies have examined the dose-response relationship between exposure to alcohol and a range of outcomes including various cancers, stroke, cirrhosis of the liver, chronic pancreatitis and suicide. Data from these studies were used to develop a causality model and generate risk difference estimates. This allowed us to calculate the hypothetical number of alcohol-related events per outcome that would be expected to occur in the 2005 birth cohort for England and Wales (n=645,835) as shown in Table 2.2.1. A sensitivity analysis found that the estimation of the number of expected cases in the birth cohort were sensitive to the RR estimates used and this should be borne in mind when interpreting the data presented. In particular, the risk of lung cancer associated with alcohol consumption was based on a strong positive association in males classified as ‘never smoking’, resulting in a large number of hypothetical cases in the birth cohort model. Using

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<sup>2</sup> The World Health Organisation (WHO) defines three levels of alcohol use disorder: hazardous, harmful and dependent. Hazardous drinkers are those who drink above ‘sensible’ levels but who are not yet experiencing significant alcohol-related problems. Harmful drinkers are those who drink above ‘sensible’ levels and are experiencing damage to their health and show evidence of alcohol-related harm. Alcohol dependence is characterised by psychological dependence referring to the experience of impaired control over drinking. In more severe cases, alcohol dependent drinkers may experience physical dependence.

alternative estimates, the number of cases of lung cancer at 15 to 30 g/day of alcohol suggested a protective effect of alcohol.

**Table 2.2.1. Number of alcohol-related expected cases in the 2005 birth cohort by outcome**

Outcome	Consumption level (g/day)	Expected numbers in 2005 birth cohort (95% CI)
Cancers of the lip, oral cavity & pharynx	1	1 (1, 1)
Oesophageal cancer	1	1 (1,2)
Cancer of the larynx	1	0
Breast cancer (females)	1	5 (3, 6)
Lung cancer	>15	1,584 (512, 4094)
Adenocarcinoma of the small intestine	>25	17 (3, 49)
Stomach cancer	25	6 (3, 9)
Colon cancer	25	33 (16, 49)
Liver cancer	25	3 (2, 4)
Ovarian cancer	25	7 (0, 32)
Essential hypertension	1	1 (1, 2)
Haemorrhagic stroke	1	6 (4, 9)
Subarachnoid haemorrhage (SAH)	<150 <sup>a</sup>	11 (-22, 66)
Cirrhosis of the liver	1	11 (8, 14)
Chronic pancreatitis	1	5 (2, 7)
Suicide	1	1 (-1, 3)
Hip fracture	>0	-165 (-256, -58)
Injury	>0	13,666 (9,483, 18,762)
Depression	>0 <sup>b</sup>	117 (46, 198)
High risk intercourse	Intoxication <sup>c</sup>	2,066 (1,105, 5,189)
Unwanted pregnancy	Bingeing <sup>d</sup>	432 (131, 543)
Violent crime attributable to alcohol	-	4733 <sup>e</sup>
Sexual offences attributable to alcohol	-	98 <sup>e</sup>
All recorded crime attributable to alcohol	-	6751 <sup>e</sup>

<sup>a</sup>per week; <sup>b</sup>alcohol use in early 20s.; <sup>c</sup>one or more episodes of drunkenness a month; <sup>d</sup>consumption of 5 or more alcoholic drinks on 1 occasion; <sup>e</sup>NWPHO estimated using data from the Home Office and Office for National Statistics

## **2.3 Interventions to prevent and/or reduce alcohol use in young people**

### **2.3.1 Government policy on alcohol use in young people**

The *Alcohol Harm Reduction Strategy for England* (Strategy Unit, 2004) sets out the governments' strategy for minimising risky alcohol consumption and the harms associated with alcohol misuse. The strategy identifies that alcohol misuse by a small minority can cause major problems and provides direction on how to tackle these harms through four main objectives:

- Better education and communication;
- Improving health and treatment services;
- Combating alcohol-related crime and disorder; and
- Working with the alcohol industry.

The strategy identifies that children and young people need to receive adequate alcohol education. In particular schools should provide alcohol education that aims to motivate children and young people to change their drinking behaviours and attitudes towards alcohol, as well as raising awareness of alcohol and related issues. The strategy acknowledges that disseminating information alone is unlikely to be effective in reducing alcohol consumption and related harms amongst children and young people and encourages the use of interactive school programmes that develop personal skills.

Other government policy documents which target young people's drinking behaviours include the *Updated Drugs Strategy* (Home Office, 2002), *Every Child Matters: Change for Children 'Young People and Drugs'* (DfES, 2004) and *Choosing Health: Making Healthier Choices Easier* (DH, 2004). The *Drugs Strategy* outlines the government's plans to prevent and reduce drug use and its related harms through a number of approaches and recognises the important role schools play in providing drug education and raising pupils awareness of drugs and their harmful effects. The strategy also provides guidance and support to schools on delivering drug education. *Every Child Matters* supports the aims of the *Drugs Strategy*. It sets out the government's plans to prevent and reduce drug use among young people and to reduce the harms caused by drug misuse through more effective education, treatment and early intervention. In addition, *Choosing Health* builds upon the commitments of these strategies, with a particular focus on raising the awareness of the health risks associated with alcohol through the provision of alcohol education.

*Drugs: Guidance for Schools* (DfES, 2004) provides guidance to primary, secondary, and special schools, and pupil referral units in England, on all matters relating to drugs including alcohol and tobacco. In relation to alcohol the report provides guidance on planning and implementing drugs education. Drug education should be delivered as a non-statutory requirement through Personal, Social and Health Education (PSHE) and Citizenship lessons and as part of the statutory requirements of the National Curriculum Science Order. The Guidance affirms that drug education should start in primary school and develop and progress through the key stages. With regards to alcohol education the guidance states that “the aim of alcohol education should be to reduce the risks associated with pupils’ own and others’ drinking by taking a harm reduction approach”. Delivery of alcohol education is also a key part of the *National Healthy Schools Programme*, which aims to improve the health and achievement of children and young people through providing support and guidance to schools. The programme is based on a whole school approach to physical and emotional well-being and is focused on four core themes:

- Personal, Social & Health Education;
- Healthy Eating;
- Physical Activity; and
- Emotional Health & Wellbeing.

In order for a school to achieve the *National Healthy Schools Standard* (NHSS) status they must meet the national criteria using a whole school approach across the four core themes. A key part of achieving the NHSS involves providing adequate alcohol education based on the pupils knowledge, skills and abilities.

### **2.3.2 School-based approaches**

As previously noted, alcohol education in schools is a statutory requirement of the National Science Curriculum Order as part of drugs education. Through the Science Curriculum pupils are taught about drugs and the harmful effects of drug abuse from key stage one to four (ages 5-16). This includes the dissemination of information on the role of drugs as medicine and the associated benefits and negative consequences of drug use and abuse, including their harmful effects on health and the body. Drug and alcohol education is also provided through non-statutory PSHE lessons. Schools are expected to follow non-statutory guidelines for PSHE and Citizenship at key stage one (ages 5-7) and two (age 7-11) and PSHE at key stages

three (ages 11-14) and four (ages 14-16). The aim of PSHE is to prepare children and young people to lead healthy, confident and independent lives. In relation to drug and alcohol use, the aims of PSHE lessons are to increase pupils' knowledge and understanding and to develop their skills to enable them to make safe, healthy and responsible decisions. Schools are encouraged to develop their lessons in collaboration with parents, pupils, governors and the whole school population. Schools may also provide alcohol education as part of the requirements to meet the criteria for the NHSS standard.

### **2.3.3 Other approaches**

Other approaches that aim to prevent and reduce alcohol use and its associated harms amongst children and young people include multicomponent, community-based programmes, diversionary activities, server and responsible beverage service training and media campaigns. Multicomponent, community-based programmes are those that combine multiple initiatives, with an emphasis on involving the community (Thom and Bayley, 2007). The Blueprint drug education programme is an example of an ongoing multicomponent programme, which targets schools, parents and the media and includes increased action to reduce the availability of legal and illegal drugs to underage youths (Baker, 2006). Server and responsible beverage service training has been shown to be effective in reducing underage sales in licensed venues. The training involves developing owners', managers' and servers' skills and abilities to refuse service to underage youth and intoxicated patrons (Saltz and Stanghella, 1997). Other approaches to alcohol prevention include the implementation of diversionary activities and media campaigns. Diversionary activities aim to reduce episodes of binge drinking and alcohol consumption through the provision of positive and affordable alternatives such as sports or leisure activities, or alcohol-free clubbing events.

### **3 METHODOLOGY**

#### **3.1 Search strategy**

A database of published and unpublished literature was compiled in the Reference Manager software package from systematic searches of electronic sources and websites, and searching reference lists of relevant systematic reviews. Systematic reviews, RCTs (randomised controlled trial), non-RCTs, and controlled before and after studies published since 1990, were identified by searching the following health, social care and education databases:

- MEDLINE
- Cochrane Library (CDSR, DARE, HTA and CCTR)
- ASSIA (Applied Social Science Index and Abstracts)
- Cinahl
- EMBASE
- EPPI-Centre databases
- ERIC (Educational Resources Information Centre)
- ETOH
- Health Management Information Consortium.
- National Guidelines Clearing House
- National Research Register
- Project Cork
- PsycINFO
- SIGLE
- SOMED
- SPECTR (Campbell Collaboration Trials Registry)
- Web of Science (Science and Social Sciences citation indexes)

In addition, the following websites were searched:

- Department for Education and Skills ([www.dfes.gov.uk](http://www.dfes.gov.uk))
- Department of Health ([www.dh.gov.uk](http://www.dh.gov.uk))
- Drugscope ([www.drugscope.org.uk](http://www.drugscope.org.uk))
- Alcohol and Education Research Council ([www.aerc.org.uk](http://www.aerc.org.uk))
- Alcohol Concern ([www.alcoholconcern.org.uk](http://www.alcoholconcern.org.uk))

Economic evaluation studies were identified by searching the following major health economics databases:

- NHS Economic Evaluation Database (NHS EED),
- Health Economic Evaluation Database (HEED) and
- EconLit.

All search strategies were developed and performed by information staff at the Centre for Reviews and Dissemination (CRD) at the University of York.

In addition, information on current practice in English schools at a local and regional level was sought by the review team. Healthy Schools Coordinators and Drug and Alcohol Action Team (DAAT) coordinators were contacted by post or email, in order to identify and collect unpublished evaluation reports of school-based alcohol interventions they had commissioned or produced. Evaluation reports identified through this process were subject to the same inclusion/exclusion criteria and quality assessment as effectiveness studies identified through the sources described above.

## **3.2 Inclusion and exclusion criteria**

### **3.2.1 Population**

Studies were eligible for inclusion if they included children and young people aged less than 18 years old. Relevant educational settings included:

- State sector maintained schools;
- City technology colleges; academies; pupil referral, secure training and local authority secure units; and grammar, non-maintained special and independent schools;
- Further education institutions.

Studies that examined interventions aimed at children and young people who did not attend any of the types of schools listed above, for example, those in secure institutions and those receiving home education, were excluded.

### **3.2.2 Interventions**

Studies were eligible for inclusion if they examined interventions delivered in primary and secondary schools that aimed to prevent or reduce alcohol use. Relevant intervention approaches included:

- Lessons delivered by teachers or other professionals as part of a classroom-based curriculum;
- Peer led education by other pupils;
- External contributions to interventions in primary and secondary schools (these may include, for example, contributions from police, Theatre in Education, Life Education Centres);
- Implementation of school policies; and
- Interventions involving the ‘informal’ curriculum or those delivered outside of lesson time (these may include, for example, learning experiences in corridors, changing rooms, assembly/collective worship, and parent evenings).

Studies that examined the following intervention approaches were excluded:

- Interventions delivered in the wider community, including ‘server’ and ‘responsible beverage service’ (RBS) training, media campaigns and diversionary activities;
- Regulatory schemes including alcohol taxation, restrictions on alcohol sales and advertising, proof of age schemes and alcohol warning labels;
- Drink-driving schemes and driver training; and
- Treatment of alcohol misuse or alcohol dependence, including psychosocial interventions.

### **3.2.3 Comparator(s)**

Studies were eligible for inclusion if they compared the intervention of interest against a no intervention control or against another intervention approach.

### **3.2.4 Outcomes**

Studies were eligible for inclusion if they reported changes in alcohol-related behavioural outcomes, including:

- The percentage who reported drinking alcohol (lifetime, monthly or weekly use).
- The amount and frequency of alcohol use
- The age at which children/young people first drank alcohol; and
- Unsupervised alcohol use.

The following secondary outcomes were assessed but only where a study reported a primary outcome of interest:

- Attitudes, knowledge and skills in relation to alcohol use;
- Alcohol-related absence from school, school attendance and academic attainment;
- Alcohol-related violence, crime (including arrests for drink driving); prosecutions, incarcerations and anti social behaviour;
- Illegal sales of alcohol;
- Alcohol-related hospitalisation; and
- Alcohol-related morbidity and mortality.

### **3.2.5 Study design**

Systematic reviews, RCTs, CNRTs and controlled before and after studies that compared a school-based intervention against no intervention or another type of intervention aimed at changing alcohol consumption were considered for inclusion in the assessment of effectiveness. Studies that did not include a control group for comparison were excluded.

Studies that were considered for inclusion in the assessment of cost effectiveness included economic evaluations conducted alongside trials, modelling studies and analyses of administrative databases. Only full economic evaluations that compared two or more options and considered both costs and consequences (including cost-effectiveness, cost-utility and cost-benefit analyses) were included.

### **3.3 Data extraction strategy**

Data relating to both study design and quality were extracted by one reviewer into an Access database and independently checked for accuracy by a second reviewer. Disagreements were resolved through consensus and if necessary by consultation with a third reviewer.

### **3.4 Quality assessment strategy**

One reviewer independently assessed the quality of the individual studies into an Access database. A second reviewer independently checked the accuracy of the quality assessment. Disagreements were resolved through consensus and if necessary a third reviewer was consulted. The quality of the studies was assessed according to criteria set out in the NICE Centre for Public Health Excellence Methods Manual. Each of the effectiveness and cost-effectiveness studies were also graded using a code, ++, + or – based on the extent to which the potential sources of bias were minimised:

- ++ All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
- + Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
- Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

### **3.5 Assessing applicability**

Applicability was assessed across each individual study by examining the population and intervention, and by referring to the political and structural similarities between each of these factors and practice and policy in the UK. Applicability of the included studies was rated using the following statements adapted from the NICE Methods Manual (version 1, 2006):

- A Harm reduction approach AND likely to be applicable across a broad range of settings and populations;
- B Harm reduction approach AND likely to be applicable across a broad range of settings and populations, assuming appropriately adapted;
- C Harm reduction approach BUT applicable only to populations or settings included in the studies, and broader applicability is uncertain OR approach unclear;
- D Clear abstinence approach OR applicable only to settings or populations included in the studies.

For example, a programme based on a harm reduction approach and delivered by teachers through a classroom curriculum was rated A or B as UK culture and policy means that is likely that the intervention could be delivered without significant adaptation. Programmes rated C for applicability were those that were considered to be unlikely to be applicable because they were not clearly based on a harm reduction approach or were considered to have been conducted with a non-equivalent population or setting. Programmes with a clear abstinence based approach to alcohol use were rated D.

### **3.6 Methods of analysis/synthesis**

#### **3.6.1 Effectiveness studies**

The results of the data extraction and quality assessment for each study of effectiveness were presented in structured tables and as a narrative summary. The possible effects of study quality on the effectiveness data and review findings were also discussed within the text of the review.

Studies were grouped according to population age (e.g. primary or secondary school), and the intervention approach (e.g. teacher or external contributor, curriculum or whole school approach). Where sufficient data were reported in the study publication, intervention effects were presented as relative risks for dichotomous data<sup>3</sup> and weighted mean differences for continuous data in forest plots.

#### **3.6.2 Economic appraisal**

Details of each identified published economic evaluation, together with a critical appraisal of its quality were presented in structured tables and as a narrative summary. For economic analyses conducted alongside trials, the validity of the included studies was assessed by considering the source of the resource use and effectiveness data, the methods used to measure and calculate costs, the methods of analysis used and generalisability of the results to the UK population.

Further economic analyses were undertaken to determine the cost-effectiveness of interventions delivered in primary and secondary schools to prevent and/or reduce alcohol use. The 'cost per case of hazardous/harmful drinking averted' was chosen as the primary measure of cost and effect. The resource use for each programme included in the further analyses was determined in terms of staff, capital and consumables and used to calculate the 'cost per student' for each programme. The 'cost per case of hazardous/harmful drinking averted' was then calculated for an indicative cohort.

### **3.7 Epidemiology review**

An epidemiology review was conducted as an addendum to the review of effectiveness and cost-effectiveness. The purpose of the review was to explore the

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<sup>3</sup>In a number of studies, data were reported as odds ratios and therefore plotted accordingly.

prevalence and patterns of alcohol consumption in the general population, explore the relationship between adolescent drinking behaviours and drinking in adulthood, and to determine the mortality and morbidity risk associated with alcohol use. The review was also the first step in the development of a conceptual framework, which was intended to form the structure for an economic model that would examine the cost-effectiveness of interventions delivered in primary and secondary schools to prevent and/or reduce alcohol use by young people under 18 years old. English language studies published since 1990 were identified for inclusion by searching major medical databases (principally MEDLINE, EMBASE and CINAHL), reviewing reference lists of retrieved studies and key documents (e.g. documents related to the Alcohol Harm Reduction Strategy for England, ACMD Pathways to Problems), and by searching relevant websites (e.g. Department of Health). The results of studies that examined the prevalence of drinking, change in alcohol-related behaviours, or which examined acute outcomes associated with alcohol consumption in adolescence were presented in a narrative overview. Studies which examined mortality and morbidity associated with adult alcohol consumption were used to develop the disease incidence model described in Section 2.2.

## **4 SUMMARY OF STUDY IDENTIFICATION**

### **4.1 Review of effectiveness and cost-effectiveness**

A total of 10,783 references were identified from literature searches conducted for the review of effectiveness. Following screening of titles and abstracts, 662 references were judged to be eligible for further screening as full text articles. It was not possible to retrieve a total of 87 references; 22 references were for foreign language articles, 5 were for conference abstracts and the remaining 60 were either not available through inter-library loans or were not available in time for inclusion in the review. A total of 575 full text articles were therefore screened for inclusion in the review

A total of 76 references were identified from the literature searches conducted for the review of published economic evaluation studies. Four articles were retrieved for assessment as full text articles but no study met the criteria for inclusion in the review. Two studies were identified from the effectiveness searches and these were screened as full text articles for inclusion in the review. The process of study identification is shown in Figure 4.1.1.

#### **4.1.1 Included studies**

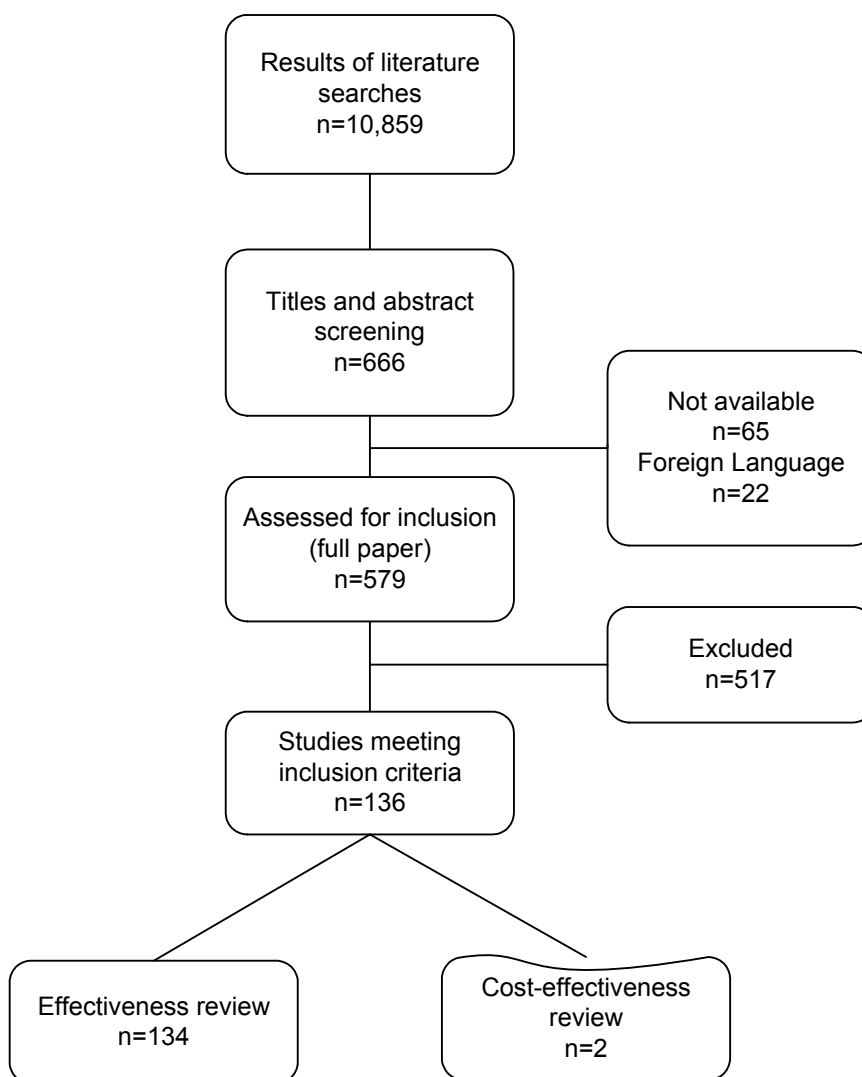
A total of 134 articles met the criteria for inclusion in the review of effectiveness and two published economic evaluations were identified for inclusion in the review of published economic evaluations. In addition to 14 systematic reviews and/or meta-analyses a total of 120 primary studies were identified including: 77 RCTs, 26 CNRTs, and 17 controlled before and after studies. Of the primary studies identified, 101 studies were conducted in the US and 19 were from other countries including seven from Australia, three from the UK, two from The Netherlands, and one each from Sweden, Canada, Israel, Spain, Norway and Russia. One study was conducted across a number of countries. Of the two studies identified for inclusion in the review of published economic evaluations, one study was a cost-effectiveness analysis and the second study presented a cost-benefit and a cost-effectiveness analysis. Both studies were conducted in the US.

#### **4.1.2 Excluded studies**

A total of 441 studies did not meet the criteria for inclusion in the review of effectiveness and were excluded. All of the four studies assessed for inclusion in the

review of published economic evaluations were excluded. Reasons for exclusion are presented in Appendix 2. The majority of studies were excluded because they were either based on expert opinion (e.g. non-systematic reviews and editorials), were conference abstracts or magazine articles, or were evaluation studies that did not include a control group. Four studies did not meet the criteria for inclusion in the review of published economic evaluations. This was because none of the studies was a full economic evaluation of a school-based programme.

**Figure 4.1.1. Flowchart showing the process of study identification**



## 4.2 Evaluation reports of current practice in English schools

A total of 172 Healthy Schools coordinators and 159 Drug and Alcohol Action Team (DAAT) coordinators were contacted by letter or email requesting reports of alcohol interventions delivered in schools. An advert was also placed on the National Collaborating Centre for Drug Prevention website. Reports were received from four primary care trusts, one Community Safety Trust Partnership and one DAAT. Brief details of the individual reports received are shown in Table 4.2.1. None of the reports received met the criteria for inclusion in the review of effectiveness.

**Table 4.2.1. Details of evaluation reports**

Organisation	Year	Title	Outline of report
Blackpool PCT	2006	Alcohol Harm Reduction Campaign Meeting - Results of Surveys	A survey to establish behaviour in relation to alcohol consumption, knowledge of alcohols impact on health and perception of information availability.
Derby Community Safety Partnership Drug team	2006	Alcohol and related violence amongst young people in Derby City	Provides a baseline for measuring the performance of the Young Persons Treatment Service in addressing the alcohol use of young people, by estimating the extent of alcohol use amongst young people across the city and to provide a baseline for measuring the correlation between alcohol use and violence.
Dorset PCT	2005	“Stepping Out” Special Schools Initiative	A description and evaluation of a programme of drama-style role plays, workshops, exercises and games aimed at encouraging pupils to develop their self confidence and self esteem; communication skills; group work and collaboration skills.
Dorset PCT	2005	Primary Drugs Project	Details of a DVD designed to increase the knowledge of the pupils, parents and the wider community about a healthy safer lifestyle.
Barnsley PCT	2006	A Health and Lifestyle Survey of Young People	A survey of the health and lifestyle behaviours of year 10 pupils.
Somerset DAAT	NR	Think Before You Drink	Information on “Think Before You Drink”, a 20 page booklet which provides information on alcohol issues through problem pages, quizzes, Q&A features, letter searches and offers practical advice.

## **5 REVIEW OF EFFECTIVENESS**

### **5.1 Systematic reviews and meta-analyses**

#### **5.1.1 Overview of evidence identified**

Fourteen systematic reviews were identified that examined the effectiveness of school-based interventions aimed at the prevention or reduction of alcohol use. The majority of the reviews identified examined the effectiveness of substance use prevention programmes.

#### **5.1.2 Classroom-based programmes**

Nine reviews were identified that examined the effectiveness of school-based programmes delivered within the curriculum (Black et al., 1998; Bruvold 1990; Coggans et al., 2003; Cuijpers, 2002; Loveland-Cherry, 2003; Tobler, 1993; Tobler et al., 1997, 2000; White et al., 2004). Coggan and colleagues (2003) undertook a critical review of evaluations of the Life Skills Training (LST) drug education and prevention programme, including primary research reports, meta-analyses and reviews of data-based research reports. Bruvold (1990) undertook a meta-analysis of studies that had examined the California school-based risk reduction programme. Programmes were delivered in the fourth grade through to the eighth grade and the author compared programmes guided by a rational model (based on didactic instruction) with those guided by a developmental model (based on life skills training). Four articles were identified that reported on a series of meta-analyses undertaken by Tobler (1993; Tobler et al., 1997; Tobler et al., 2000; Black et al., 1998). Cuijpers (2002) reviewed universal school-based drug prevention programmes aimed at the reduction of tobacco, alcohol and illegal drug use. Loveland-Cherry (2003) reviewed 73 studies that targeted the prevention of alcohol use in children and adolescents. Of these, 35 studies were school-based. White and colleagues (2004) undertook a review of the role of external contributors in delivering substance use education.

#### ***Quality assessment***

The systematic review by Coggan and colleagues (2003) was well conducted but details were lacking about the methods for data extraction and quality assessment. In addition, the quality of the included studies did not appear to have been accounted for in the authors' overview of study findings and the review was coded 'SR +'. The

quality of the meta-analysis by Bruvold (1990) was low. Few details were reported regarding the study methodology used and as no details of the literature searches were presented it was unclear whether the authors had located a comprehensive sample of studies. In addition, the authors did not assess the quality of the included studies. The review was consequently coded 'SR -'. The quality of the meta-analyses undertaken by Tobler and colleagues were judged to have been well-conducted. However, details were lacking about how studies were identified for inclusion and all articles were coded 'SR +'. Few methodological details were reported by Cuijpers (2002) and the review was coded 'SR -'. For example, details were lacking regarding the literature searches and study quality was not addressed. The quality of the review by Loveland-Cherry (2003) was adequate (+) and the author reported details of a comprehensive search strategy. However, other methodological details were lacking. The systematic review undertaken by White and colleagues (2004) was well conducted and the methods used were clearly reported. The methods included a comprehensive search of the literature and study quality was considered in the analysis of the results. The review was coded 'SR ++'.

### ***Primary and secondary outcomes***

Two articles (Bruvold, 1990; Coggans et al., 2003) reviewed the effectiveness of specific intervention approaches, Botvin's Life Skills Training (LST) programme and the California school-based risk reduction programme, respectively. Coggan and colleagues (2003; SR +) mainly focused on the effects of LST on illicit drug use outcomes. The authors commented that in terms of alcohol use, effects of the LST programme "can be positive if relatively modest in scale" but that completeness of delivery and fidelity were important in maximising the effects of LST. The authors also reported that there was some evidence that the positive impact of LST on alcohol and smoking could reduce likelihood of progression to illicit drug use, but that the evidence was not conclusive. The authors also reported that a well-implemented LST programme could positively affect knowledge, attitudes and behaviour with respect to alcohol use. Bruvold (1990; SR -) calculated study effect sizes for alcohol behavioural outcomes for each study. The author reported that rational based programmes had a smaller effect on alcohol use behaviours than developmental programmes (ES=0.02 vs 0.20, respectively). However, given the small number of developmental-based programmes included in the meta-analysis (n=2) the authors stated that this result should be interpreted with caution.

Loveland-Cherry (2003; SR +) reported that among programmes that lasted for three months or less, decreases in potential drinking were reported. However, overall the author reported that the effects of the programmes examined were inconsistent, relatively small and short-lived, and that few studies demonstrated long-term results. The most recent meta-analysis undertaken by Tobler and colleagues (2000; SR +) reported that for programmes targeting alcohol use, there was a small, but nonsignificant difference between non-interactive and interactive programmes, in favour of interactive programmes. In a subset of high-quality programmes, the difference between non-interactive and interactive programmes targeting alcohol was found to be significantly in favour of interactive programmes. Based on the evidence reviewed, Cuijpers (2002; SR -) proposed evidence-based quality criteria for drug prevention programmes. They stated that programmes should be based on well-designed scientific research demonstrating effectiveness, use interactive delivery methods, be based on the social influence model and focus on normative education, commitment not to use substances, and intentions not to use. In addition, adding community interventions, life-skills training and/or the use of peer leaders strengthens the effects of school-based interventions.

White and colleagues (2004; SR ++) identified evaluations on the use of 16 different types of external contributors: the police; Theatre in Education; health educators; peers from outside the school; Life Education Centres; school nurses; drug agency workers; researchers/psychologists; ex- and current drug users; youth workers; cartoon animators; fitness instructors; professional basketball players; health and legal experts; parents; and singer/songwriters. The authors found that there was no evidence to suggest that any particular agency or external contributor was more effective (in terms of being well received by pupils and teachers and/or leading to knowledge, attitude or behaviour change in the pupils) than any other in providing drug education. There was some evidence that the DARE programme could achieve short-term changes in knowledge, attitudes and behaviour, but that these effects were found to decay rapidly. However, the authors report that police officers could provide a valuable contribution (e.g. bringing specialist knowledge) to drug education when used in a supplementary role. Peer-delivered education, Theatre in Education and Life Education Centre programmes were evaluated but there was insufficient evidence to judge their effects on behaviour change. The authors reported that programmes delivered by nurses were shown to produce short-term knowledge gains, and to have effects on knowledge and alcohol use for up to 6 months.

### **5.1.3 Multicomponent programmes**

Four reviews were identified that examined the effects of a range of substance use prevention programmes (Dusenbury et al., 1997; Foxcroft et al. 2002, 2003; Skara and Sussman, 2003; Werch and Owen, 2002). Two articles were identified that were based on the same systematic review by Foxcroft and colleagues (2002; 2003). The main publication was a Cochrane review published in 2002. The aim of the review was to examine the effectiveness of psychosocial and educational interventions aimed at the primary prevention of alcohol misuse by young people. The aim of the review by Dusenbury and colleagues (1997) was to determine the number of drug prevention curricula (including alcohol) that have been shown to reduce substance use. Skara and Sussman (2003) examined the effectiveness of 25 long-term adolescent tobacco and other drug use (including alcohol) prevention programme evaluations. Werch and Owen (2002) undertook a systematic analysis of published studies to determine whether iatrogenic effects occur, what harmful results occur, and under what circumstances.

#### ***Quality assessment***

The quality of the systematic review conducted by Foxcroft and colleagues (2002; 2003) was high and the review was coded 'SR ++'. The review by Dusenbury and colleagues (1997) appeared to have adequately conducted. Sufficient information was reported regarding the study methodology but details were lacking about the methods of data extraction and the study was coded 'SR +'. The quality of the review undertaken by Skara and Sussman (2003) was adequate (SR +) but the assessment of the quality of the included studies was poorly addressed. Werch and Owen (2002) reported sufficient methodological details and the quality of the review was judged to be adequate. However, the authors poorly addressed the quality of the studies included in the review and it was coded 'SR +'.

#### ***Primary and secondary outcomes***

Foxcroft and colleagues (2002; 2003; SR ++) identified 56 studies that met the inclusion criteria for the review and they reported that 20 studies reported evidence of effectiveness. The authors reported that it was difficult to draw firm conclusions about the effectiveness of interventions delivered over the short and medium term because of mixed findings. Three programmes were found to have long-term effects on alcohol use, Botvin's LST, a culturally tailored curriculum for Native Americans and the family-based Strengthening Families Programme. Foxcroft and colleagues

(2002; 2003; SR ++) highlighted the Strengthening Families Programme as showing particular promise as an effective intervention. Based on a reanalysis of data to account for participants lost to follow-up, the authors calculated a number needed to treat (NNT) of 9 for three alcohol use behaviours: ever used alcohol (95% CI: 5 to  $\infty$ ), ever used alcohol without permission (95% CI: 5 to 160), and ever been drunk (95% CI: 5 to 327). This indicated that for every nine individuals who received the intervention, 4 years later there would be one fewer young person reporting that they had ever used alcohol, used alcohol without permission or ever been drunk.

Ten drug prevention curricula were included in the review by Dusenbury and colleagues (1997; SR +). The authors reported that the substance use curricula reviewed had been shown to effectively reduce substance use, and that in particular LST has been shown to have effects into young adulthood. Six curricula (Alcohol Misuse Prevention Project, Growing Healthy, Know Your Body, LST, Project Northland and STAR) were shown to have intervention effects lasting for at least two years after the pretest. The authors report that two programmes (Project Alert and DARE) did not appear to have sustained effects on drug use, although they had variable success at reducing substance use in the short term. Skara and Sussman (2003; SR +) reported very little data that was specific to alcohol use, but two studies that reported on the Healthy School and Drugs Project and the Midwest Prevention Project, respectively, provided sufficient information for the calculation of the percentage reduction in weekly alcohol use rates from baseline to follow-up (for experimental conditions relative to control conditions). Long-term reductions were 6.9% and 11.7% for the two programmes, respectively. Of six studies assessing alcohol or cannabis use, the authors reported that five had maintained long-term reductions in alcohol use at the end of the study period. Werch and Owen (2002; SR +) identified 17 studies for inclusion in their review of iatrogenic effects. Of these studies, 47% with negative substance outcomes were focused on the prevention of alcohol use. The alcohol prevention programmes reviewed (n=8) resulted in 19 harmful effects, or an average of 2.4 negative outcomes for every programme. The majority were non-behavioural measures (58%). Overall, the greatest number of negative programme effects was associated with social-influence based programmes (59%), and the next largest harmful were programmes associated with knowledge/attitudes/values models (23%).

#### **5.1.4 Summary and evidence statements**

A total of 14 reviews and meta-analyses were identified for inclusion in the review of effectiveness. The majority of the reviews identified examined the effectiveness of programmes targeting substance use including alcohol, and only the Cochrane review by Foxcroft and colleagues (2002; 2003; SR ++) focused specifically on the prevention of alcohol.

The Cochrane review found that there was no consistent evidence to determine which programmes were effective over the short to medium term, but highlighted three programmes which were effective over the longer term. These included the family-based, Strengthening Families programme, Botvin's LST and a culturally focused, curriculum for Native American students. The authors reported that the Strengthening Families programme showed particular promise as an effective preventive intervention.

##### **Evidence statement 1**

There is evidence from a high-quality systematic review<sup>1</sup> (that three programmes, Strengthening Families, Botvin's LST and a culturally focused curriculum for Native Americans students, can produce long term reductions (greater than 3 years) in alcohol use.

<sup>1</sup> Foxcroft et al., 2002; 2003 (SR ++)

**Table 5.1.1. Summary tables for systematic reviews and meta-analyses**

Author (Year)	Design	Inclusion/exclusion	Number of studies	Primary outcomes	Secondary outcomes
Bruvold 1990	SR -	Outcome evaluations of Californian programmes delivered to 4th to 8th graders	8 studies included	Rational based programmes had less of an effect on alcohol use behaviours than developmental programmes (ES = 0.02 vs 0.20)	Programmes based on rational model had more impact on knowledge (ES = 0.61) than developmental programmes (ES = 0.26); less effect on attitudinal outcomes (ES = -0.01; 0.04)
Coggan et al., 2003	SR +	Evaluations of Botvin's LST programme	45 reports	The authors reported that there was some evidence that positive impact of LST on alcohol and smoking could reduce likelihood of progression, but the data were not conclusive.	A well-implemented LST programme can positively affect knowledge, attitudes and behaviour with respect to smoking and alcohol use.
Cuijpers 2002	SR -	Universal school-based drug prevention aimed at tobacco, alcohol and illegal drugs	30 studies	Evidence-based quality criteria for programmes proposed, evidence table for full details.	NR
Dusenbury et al., 1997	SR +	Primary prevention of alcohol and/or drug use; classroom-based curricula	47 programmes included	Eight programmes were shown to be effective at reducing tobacco or drug use in at least some studies. LST has been shown to have effects into young adulthood. In addition, six curricula (Alcohol Misuse Prevention Project, Growing Healthy, Know Your Body, LST, Project Northland and STAR) were shown to have intervention effects lasting for at least two years after the pretest. Project Alert and DARE did not appear to have sustained effects on drug use	NR

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Foxcroft et al., 2002, 2003	SR ++	Psychosocial and educational interventions aimed at the primary prevention of alcohol misuse by young people aged up to 25 years	56 studies included	Twenty studies demonstrated evidence of ineffectiveness. No firm conclusions about the effectiveness of prevention in the short and medium term were possible. But over the longer term (>3 years), the Strengthening Families Programme showed more promise as an effective prevention intervention.	NR
Loveland-Cherry 2003	SR +	Intervention studies that prevent alcohol use in children and adolescents.	73 studies included	Overall the effects of the programmes were inconsistent, relatively small and short lived. Few studies have demonstrated long-term results.	An increase in alcohol knowledge was reported by several studies.
Skara and Sussman 2003	SR +	Controlled evaluations of school- and community-based prevention programmes providing at least a 2-years follow-up.	25 studies included	Very little data specific to alcohol use. Two studies provided sufficient information for calculation of the % reduction in weekly alcohol use rates from baseline to follow-up; long-term reductions were 6.9 and 11.7%, respectively.	NR
Tobler 1993; Tobler et al. 1997, 2000, Black et al., 1998	SR +	School-based drug prevention programmes	207 programmes included	Small, but nonsignificant difference between non-interactive and interactive programmes, in favour of interactive programmes. In a subset of high-quality programmes, the difference between non-interactive and interactive programs targeting alcohol was found to be significantly in favour of interactive programmes.	NR
Werch and Owen 2002	SR +	Programmes aimed at either slowing onset of substances, or reducing use;	17 studies included	Alcohol prevention programmes (n=8) resulted in 19 harmful effects, or an average of 2.4 negative outcomes for every programme. The majority were non-behavioural measures (58%).	NR
White et al., 2004	SR ++	Studies that evaluated the contribution of external contributors to classroom-based interventions or targeted groups within the school context/curriculum	114 reports were included	No evidence to suggest that any particular agency or external contributor was more effective (in terms of being well received by pupils and teachers and/or leading to knowledge, attitude or behaviour change in the pupils) than any other.	NR

## 5.2 Classroom-based programmes led by teachers

### 5.2.1 Overview of evidence identified

A total of 36 studies were identified that evaluated 19 curriculum-based programmes led by teachers. Of these, six programmes were judged to be highly applicable to UK practice and policy (A or B rating), 10 programmes were judged to have limited or unclear applicability (C rating) and three programmes were judged to not be applicable as they were based on an abstinence approach (D rating).

### 5.2.2 Programmes specifically targeting alcohol use

Ten programmes were identified that specifically targeted the prevention or reduction of alcohol use. Three programmes were judged to be highly applicable. Three studies (McBride et al., 2000; McBride et al., 2003; McBride et al., 2004) examined the effectiveness of the School Health and Alcohol Harm Reduction Project (SHAHRP) in the same sample of students, four studies examined the effectiveness of the Alcohol Misuse Prevention Study (AMPS) curriculum (Shope et al., 1992, 1994, 1996a, 1996b), and one study (Bagnall, 1990) examined the effectiveness of an alcohol education programme for 13 years olds. Three programmes that were based on an abstinence approach to alcohol use were rated D for applicability (Perry and Grant 1991; Schnepf 2002; Willhelmsen et al., 1994). The applicability of four programmes was unclear because programmes focused on additional elements that were judged to be of low applicability to UK practice and policy. Baumann (2006) examined a programme that targeted alcohol use and dating violence, and Padget and colleagues (2006) examined a programme that taught students about the effects of alcohol on the brain and vehicle safety. In addition, two programmes targeted drink driving behaviours, and these were judged to be of unclear applicability because the emphasis of the programme was on reducing the number of students who drove or drank or accepted rides with intoxicated drivers rather than the prevention or reduction of alcohol use per se.

#### Box 5.2.1. Summary of programme content: Classroom-based programmes led by teachers specifically targeting alcohol use

Programme	Reference	Programme content
SHAHRP	McBride et al., 2000, 2003, 2004	<ul style="list-style-type: none"> <li>• 17 consecutive skills-based activities in first year</li> <li>• 12 activities including skill rehearsal, and group decision-making and</li> </ul>

		discussions in second year
AMPS	Shope et al., 1992	<ul style="list-style-type: none"> <li>• 4 sessions delivered over 4 weeks in first year (5<sup>th</sup> and 6<sup>th</sup> grade classes)</li> <li>• 3 booster sessions in second year (5<sup>th</sup> grade classes only)</li> </ul>
AMPS	Shope et al., 1996a	<ul style="list-style-type: none"> <li>• As Shope et al., 1992</li> <li>• 5 sessions in 10<sup>th</sup> grade</li> </ul>
AMPS	Shope et al., 1994	<ul style="list-style-type: none"> <li>• 8 sessions in 6th grade</li> <li>• 5 sessions in 7th grade</li> <li>• 4 sessions in 8th grade</li> </ul>
Based on AMPS	Shope et al., 1996b	<ul style="list-style-type: none"> <li>• Tobacco and drug use in addition to alcohol</li> <li>• 7 lessons in the 5th and 6th grades</li> <li>• 8 lessons in the 7th and 8th grades</li> </ul>
Alcohol Education Package	Bagnall, 1990	<ul style="list-style-type: none"> <li>• 4 or 5 social education lessons</li> <li>• Seconded specialist teachers vs. regular classroom teachers</li> </ul>
WHO Alcohol Education programme	Perry & Grant 1991	<ul style="list-style-type: none"> <li>• 4 weekly, 50 minute lessons</li> <li>• Monthly booster sessions</li> </ul>
Alcohol education	Schnepf 2002	<ul style="list-style-type: none"> <li>• 7 sessions</li> <li>• 40 minute duration</li> </ul>
Alcohol specific prevention programme	Wilhelmsen et al., 1994	<ul style="list-style-type: none"> <li>• 10 lessons over 2 months</li> <li>• Highly role specific</li> <li>• Less role specific</li> </ul>
Project SAAV	Baumann, 2006	<ul style="list-style-type: none"> <li>• Alcohol and dating violence</li> <li>• 3 sessions over 3 days</li> <li>• 50 minutes long</li> </ul>
PY/PM	Padget et al., 2006	<ul style="list-style-type: none"> <li>• 5 year programme</li> <li>• 40 weekly lessons (8 per year)</li> </ul>
Resisting Pressures to Drink and Drive	Newman et al., 1992	<ul style="list-style-type: none"> <li>• 2 year programme</li> <li>• 10 lessons</li> </ul>
Students Against Drink Driving	Klitzner et al., 1994	<ul style="list-style-type: none"> <li>• 15 session curriculum</li> <li>• Kick off assembly</li> <li>• Student committee</li> </ul>

### **5.2.2.1 School and Alcohol Harm Reduction Project**

SHAHRP was a curriculum-based programme conducted over two phases. Phase one was implemented when students were aged 13 years and consisted of 17 consecutive skills-based activities conducted over 8 to 10 lessons. Phase two was conducted in the following year when students were aged 14 years, and consisted of 12 consecutive activities delivered over 5 to 7 weeks. The emphasis of the activities in both phases was on the identification of alcohol-related harm and the development of harm reduction strategies. Intervention and control groups were followed up at three time points: (1) following delivery of phase one (8 months from baseline); (2)

following delivery of phase two (20 months from baseline); and (3) one-year later (32 months from baseline).

### ***Quality assessment***

Evaluation of the SHAHRP intervention was based on a quasi-experimental design (CNRT +). Fourteen schools were selected and an attempt was made to randomly allocate them to intervention and control conditions. However, the authors reported that this resulted in differential acceptance and one school allocated to the intervention condition preferred to participate as a control school. The study methodology was well reported by the authors but there were some limitations. In particular, intervention and control students were not matched at baseline. There were significantly more unsupervised drinkers in the control group at baseline and control students reported experiencing more harm associated with their own use of alcohol than students in the intervention group. The authors did not report whether these differences were accounted for in subsequent analyses. In addition, the study suffered from relatively high levels of attrition (approximately 20%) over the course of the study and those lost to follow-up tended to have less safe attitudes towards alcohol use issues, a higher level of alcohol consumption, experience more alcohol-related harm and were more likely to be unsupervised drinkers.

### ***Primary outcomes***

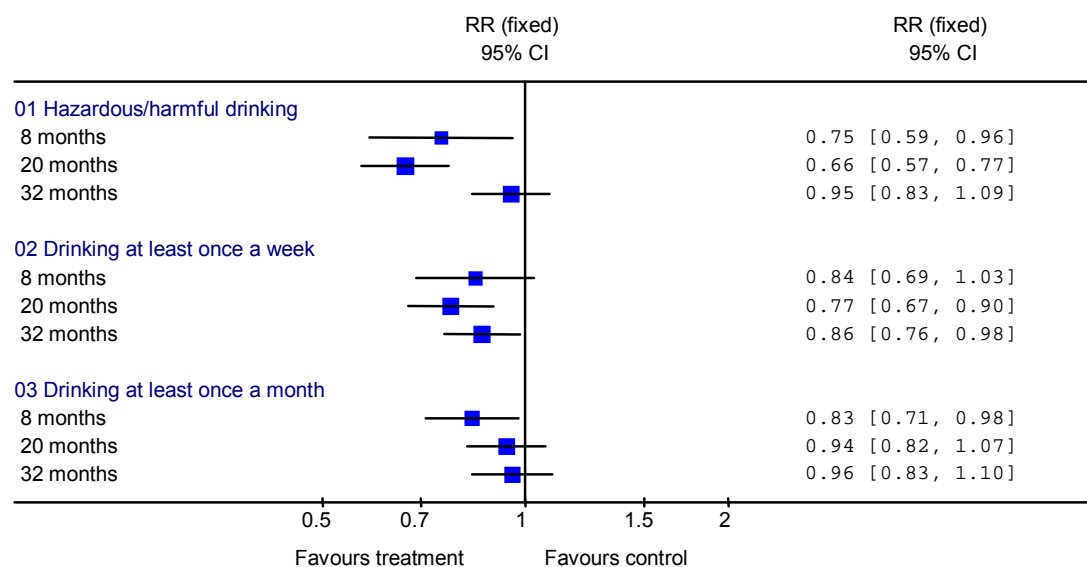
Results of multi-level modelling analysis revealed that the SHAHRP group consumed significantly less alcohol than the comparison group at both the 8- and the 20-month follow-up (McBride et al., 2004; CNRT +). These findings were supported by non-parametric tests, which showed that SHAHRP students consumed alcohol significantly less often than comparison students at the 8- and 20-months follow-up ( $p= 0.03$  and  $p<0.0001$ , respectively). At the final follow-up, 17 months after the intervention, the authors (McBride et al., 2004; CNRT +) reported that the total amount of alcohol consumed by intervention and comparison students was beginning to converge (significance not reported). In addition, intervention students reported consuming less alcohol per occasion at all follow-up points, but only significantly less at the 20-month follow-up ( $p= 0.01$ ). SHAHRP students were significantly less likely than comparison students to report consuming alcohol to harmful or hazardous levels<sup>4</sup> once a month or more at all three follow-ups, and there were significant

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<sup>4</sup> Defined as consuming more than 2 (for females) or 4 (for males) standard drinks (10g alcohol) per occasion.

differences in the context of alcohol use between SHAHRP and comparison students. Intervention students reported smaller increases in both supervised and unsupervised drinkers (data only presented graphically). The results of SHAHRP at each follow-up point are shown in Figure 5.2.1.

**Figure 5.2.1. Incidence of alcohol use: SHAHRP (McBride et al., 2004)**



### **Secondary outcomes**

SHAHRP students reported less harm associated with their own use of alcohol over 12 months compared to the comparison group at all three follow-ups. There was no significant difference between intervention and control groups in the harm that they experienced associated with other people’s alcohol use. Students who received the SHAHRP intervention reported significantly greater alcohol-related knowledge at the 8- and 20-month follow-ups. However, this difference was not maintained at the 32-month follow-up. SHAHRP students reported significantly safer alcohol-related attitudes at the 8-month follow-up and this was maintained to the end of the study at 32 months, 17 months after the final phase of the intervention. Although the intervention group showed significantly safer alcohol-related attitudes at all time points, the greatest difference in mean scores was evident after the first phase of the intervention at 8 months.

### **5.2.2.2 Alcohol Misuse Prevention Study (AMPS)**

The AMPS curriculum was designed as a social pressures resistance-training curriculum with the aim of teaching students about alcohol use and misuse. Shope and colleagues (1992) examined a version of the curriculum delivered over 2 years with four sessions delivered over 4 weeks in the first year and three additional

“booster” sessions delivered one week apart in the second year. Schools (fifth and sixth grade classes) were assigned to receive the curriculum plus booster (fifth grade classes only), curriculum only or control. Shope and colleagues (1996a) followed up a sample of students from Shope and colleagues (1992) who had received the AMPS curriculum as sixth graders through eighth graders and an additional five sessions in the tenth grade. Shope and colleagues (1994) examined an enhanced version of the AMPS curriculum. Students received eight sessions in sixth grade, followed by five in the seventh grade and four in the eighth grade. Shope and colleagues (1996b) examined the effectiveness of a curriculum based on the original AMPS (Shope et al., 1992), but which included lessons on tobacco and drug use in addition to alcohol. Students received seven lessons in the fifth and sixth grades, and eight lessons in the seventh and eighth grades. Shope and colleagues (1998) followed up a sample of students who participated in this study when they were in the twelfth grade.

### ***Quality assessment***

Shope and colleagues (1992) randomly assigned 49 schools to a pretest or no pretest condition, and then to intervention or control conditions (RCT -). It was difficult to judge whether the study had been well conducted because few details were reported about the study methodology. In addition, the authors reported little information on the pretest equivalence of the sample and attrition was relatively large over the two and half year duration of the study (28% were lost to follow-up). Shope and colleagues (1996a) used a quasi-experimental design (CNRT) to examine the effects of delivery of a tenth grade AMPS curriculum with participants who had received the sixth grade AMPS curriculum. An attempt was made to randomly assign classrooms to intervention and control conditions, but this was not achieved in a number of cases. Again it was difficult to judge the methodological quality of the study as few details were reported. There was no information on the baseline equivalence of intervention and control students and the study suffered from large attrition. The analyses focused on students who provided data at the 10<sup>th</sup> grade pretest and the two subsequent follow-ups, resulting in 42% of participants being lost to follow-up. Control students were more likely to be lost to follow-up and students lost reported more alcohol use and misuse. Shope and colleagues (1994) randomly assigned 35 matched schools to receive an enhanced version of the AMPS curriculum or to a control condition (RCT -). Few methodological details were reported and as with the previous studies there was little information given regarding the pretest equivalence of intervention and control students. In addition, and as previously, there was relatively large attrition over the study. By the eighth grade

posttest, 31% of students had been lost to follow-up. More students were lost from the control group than the intervention group, and those lost to follow-up reported higher levels of unsupervised drinking and alcohol use. Shope and colleagues (1996b; 1998) used a controlled before and after design to evaluate a substance prevention curriculum based on the AMPS curriculum (CBA -). The study was poorly reported and focused on a sample of 442 students who had been in sixth grade at the beginning of the study and then seventh grade in the second study year. These students represented just 10% of students pretested and 23% of those who received the programme for two consecutive years.

### ***Primary outcomes***

Shope and colleagues (1992; RCT -) found that there were no significant differences in levels of alcohol use or misuse<sup>5</sup> between students who received the AMPS curriculum (with or without booster sessions) and students in the control group at any follow-up. Follow-up of a sample of these students in high school found that delivery of the sixth grade curriculum had no long-term effects on alcohol use or misuse in high school. Following delivery of the tenth grade curriculum, students who received the intervention reported significantly less alcohol misuse than comparison students at the end of twelfth grade (1-year follow-up) ( $p < 0.05$ ). However, there were no differences in alcohol use between intervention and comparison students at either the tenth grade posttest or twelfth grade follow-up.

Shope and colleagues (1994; RCT -) found that an enhanced version of the AMPS curriculum had little effect on alcohol use or misuse. Alcohol use increased over time in both the intervention and control groups and there was no difference in alcohol use at any of the follow-up time points.

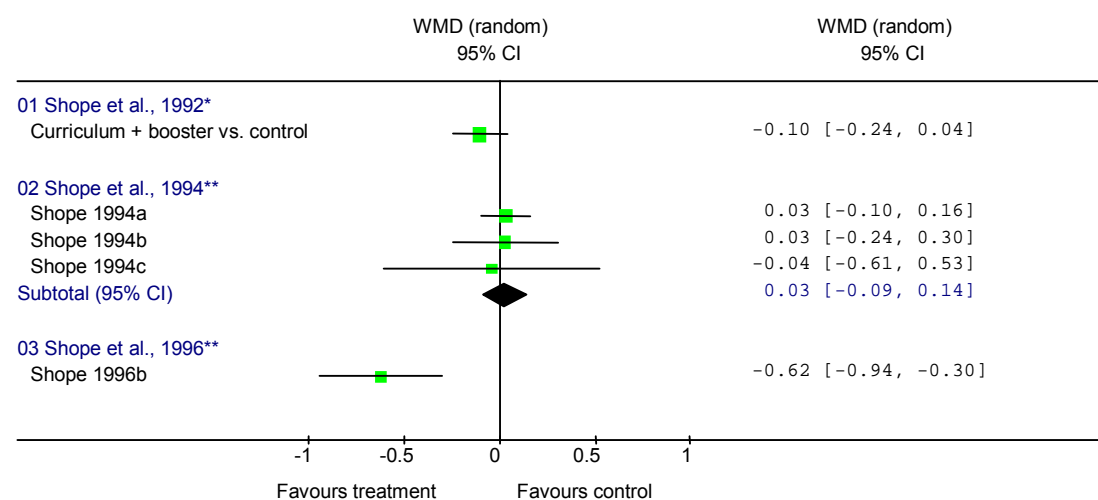
Shope and colleagues (1996b; CBA -) examined a substance abuse prevention programme based on the AMPS curriculum. The study focused on a sample of students who received the programme in the 6<sup>th</sup> and 7<sup>th</sup> grade. Compared to students who had not received the programme, intervention students reported significantly less use of alcohol and lower levels of alcohol misuse at the 7<sup>th</sup> grade follow-up. However, given the poor quality rating of this study and the high level of attrition, these results should be interpreted with caution.

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<sup>5</sup> Alcohol misuse was measured by 10 items reflecting overindulgence, trouble with peers and trouble with adults experienced as a result of alcohol use.

Short-term results from three studies (Shope et al., 1992, 1994, 1996) of the AMPS curriculum are presented in Figure 5.2.2.

**Figure 5.2.2. Alcohol use in the previous year: AMPS**



\* Responses were: I didn't drink any or I've only had a taste (0); a few times a year (1); about once a month (2); about once a week (3); three or four days a week (4); and every day (5).

\*\* Combination of 6 separate frequency and quantity items for beer, wine and liquor recoded to give number of drinks per week. Responses: none (0), <1 drink per week (1), 1 to <2 drinks per week (2), 2 to <4 drinks per week (3), 4 to <6 drinks per week (4), 6 to <10 drinks per week (5), 10+ drinks per week (6)

### Secondary outcomes

Shope and colleagues (1992; RCT -) measured understanding of the AMPS curriculum material using a curriculum index score. Intervention students scored significantly higher on the curriculum index than comparison students at all three posttest assessments. Follow up of a sample of these students who received additional AMPS curriculum sessions in 10<sup>th</sup> grade found that intervention students had significantly more alcohol-related knowledge than comparison students at the immediate posttest (end of 10<sup>th</sup> grade) and two years later at the end of 12<sup>th</sup> grade. The evaluation of an enhanced version of the AMPS curriculum also found that intervention students had significantly higher curriculum knowledge than students who had not received the programme. Shope and colleagues (1996b; CBA -) found that delivery of a substance use prevention programme based on the AMPS curriculum had a significant effect on substance-related knowledge but not knowledge of the pressures to use substances or skills knowledge. Follow-up of a sample of these students in 12<sup>th</sup> grade found no difference in substance-related knowledge between intervention and comparison students.

### **5.2.2.3 Alcohol Education Package**

The Alcohol Education Package (Bagnall, 1990) was based on the social influences model with an emphasis on pupil participation through group exercise and role-play. The aim of the programme was to increase student's alcohol knowledge and skills in relation to alcohol to enable them to make responsible decisions. Students were followed-up approximately 10 months after completion of the intervention programme.

#### **Quality assessment**

The quality of the study was judged to be low (CBA -) because few details were reported regarding the study methodology. For example, it was not clear whether data from intervention and control groups were collected contemporaneously or whether intervention and control sites were well matched. In addition, few details were reported about baseline equivalence of the sample and no details of participants lost to follow-up were given.

#### **Primary outcomes**

Ten months after delivery of the intervention, students in the control groups were significantly more likely than intervention students to have drunk alcohol in the last 7 days (Bagnall, 1990; CBA -). However, there was no difference in the number of intervention and control students reporting that they had ever had a hangover, a maximum consumption greater than 3 units of alcohol or an increased frequency of consumption. The impact of the intervention did not differ according to whether students were taught by seconded specialist teachers or by teachers based at the school.

#### **Secondary outcomes**

There was no difference between the two intervention groups (led by seconded specialist teachers or 'naive' teachers) and the control group in terms of positive or negative attitudes towards alcohol, 10 months after delivery of the intervention. In addition, there was no difference between groups on the knowledge scores. Reanalysis with the exclusion of one school (probability of contamination) showed that the intervention group had significantly greater scores on two of six knowledge items.

#### **5.2.2.4 Programmes based on an abstinence approach**

Perry and Grant (1991) evaluated the WHO Alcohol Education Programme, comparing teacher-led to peer-led alcohol education. The evaluation was conducted across four countries (Australia, Chile, Norway and Swaziland) with students aged 11 to 18 years. Schnepf (2002) evaluated a classroom approach to alcohol education, also comparing implementation by peers with teachers. The curriculum consisted of 7 sessions and focused on knowledge and information provision. Wilhelmsen and colleagues (1994) examined the effects of two 10-session alcohol specific prevention programmes. A highly role specific (HRC) programme was taught by teachers and peers trained to implement pre-planned activities and a less role specific (LRC) programme taught by a teacher and peers who led the sessions together (no training).

#### **Quality assessment**

The quality of the study by Perry and Grant (1991) was not easy to determine. Only brief details about the study methodology were reported and consequently the study was coded 'RCT -'. Schnepf (2002) used a CNRT design to evaluate an alcohol education curriculum. On the whole, methodological details were adequately reported but the study only included a small number of participants (n=45) and was coded 'CNRT -'. Willhelmsen and colleagues (1994) reported few details regarding study methodology, such as details of the randomisation procedure. In addition, few details were reported about baseline comparability between groups and no demographic details were presented. The study was coded 'RCT -'.

#### **Primary outcomes**

Perry and Grant (1991; RCT -) found that at immediate posttest, students receiving the peer-led programme demonstrated significantly lower alcohol use scores for both non drinkers ( $p < 0.001$ ) and drinkers ( $p < 0.05$ ). There was no difference in alcohol use between students receiving the teacher-led and control programmes. Schnepf (2002; CNRT -) reported that there were no significant differences between the intervention students who received an alcohol education curriculum and control students in terms of reduction in alcohol consumption (assessed using five questions on the 2001 Youth Risk Behaviour Survey) or problem drinking (assessed with a modified version of the Rutgers Alcohol Problem Index). Students who received a highly-role specific programme (Willhelmsen et al., 1994; RCT -) reported drinking less than both control students and students who received a less-role specific

programme. There were no differences observed between students who received the less-role specific programme and control students.

### ***Secondary outcomes***

Schnepf (2002; CNRT -) found that there were no significant differences between intervention and control groups in terms of developing a negative attitude towards alcohol. However, the peer- and teacher-led intervention groups scored significantly higher than the control group on the alcohol knowledge test. The studies by Perry and Grant (1991), and Wilhelmsen and colleagues (1994) did not report on secondary outcomes.

### ***5.2.2.5 Programmes targeting alcohol use and related behaviours***

Baumann (2006) examined Project SAAV, a prevention programme that focused on preventing alcohol use and dating violence in high school students. The programme was delivered in 3 sessions over 3 consecutive days. Key components included information and discussion, coping skills training, and completion of three homework assignments. Padget and colleagues (2006) examined Protecting You/Protecting Me (PY/PM). The programme was delivered over 5 years from the first to fifth grade and consisted of 8 lessons a year (40 lessons in total), which focused on teaching students about the adverse effects of alcohol on the brain and vehicle safety skills. The programme was taught either by elementary school teachers or high school students enrolled in a peer-helping course. Two studies examined the effectiveness of two drink driving programmes. Newman and colleagues (1992) examined the “Resisting Pressures to Drink and Drive” programme, a ninth grade programme that used video-based drama and Klitzner and colleagues (1994) evaluated “Students Against Drink Driving”, which included an introductory assembly, formation of a student committee and a 15-session curriculum for tenth grade students.

### ***Quality assessment***

On the whole, the study methodology of the RCT by Baumann (2006) was poorly reported and the study was coded ‘RCT -’. Few details were given regarding the method of randomisation and it was not clear whether intervention and control students were well matched at baseline. In addition, the study suffered from a high level of attrition; 42% of the intervention group were lost at the follow-up three months later and drop outs were more likely to be drinkers. Padget and colleagues (2006) used a quasi-experimental design (CNRT) to examine the effects of PY/PM. The intervention group consisted of fifth grade classrooms from five schools that had

began implementing the PY/PM programme five years previously. Intervention and comparison schools were matched on size, racial/ethnic composition, and percentage of students eligible for free lunches. However, intervention and control schools did not appear to be well matched in terms of size or 'economic disadvantage'. On the whole the study appeared to have been adequately conducted and attrition across the study was relatively low. This study was therefore coded 'CNRT +'. Newman and colleagues (1992) randomly assigned schools to intervention (Resisting Pressures to Drink and Drive) or control (traditional alcohol education) conditions. However, few details were reported about the method of randomisation. In addition, few details were reported about the baseline comparability of the intervention and control groups and the study was coded 'RCT -'. Klitzner and colleagues (1994) used a controlled before and after design to evaluate the effectiveness of the Students Against Drink Driving (SADD) programme. The study appeared to have been well conducted and was coded 'CBA +'. However, programme schools were selected on the basis that they were already planning to implement SADD giving rise to the possibility of selection bias.

### ***Primary outcomes***

Baumann (2006; RCT -) reported that compared to students in the control groups, students participating in Project SAAV reported drinking less frequently over time ( $p=0.004$ ), binge drinking less frequently over time ( $p=0.032$ ) and having fewer alcohol-related consequences ( $p=0.036$ ). These data are difficult to verify as results were only presented graphically. In addition, as previously reported the study suffered from a high level of attrition over a relatively short follow-up period (3 months). Padget and colleagues (2006; CNRT +) reported that the PY/PM programme had a small, but non-significant effect on drinking in the past 30 days at immediate posttest. Newman and colleagues (1992; RCT -) reported that the Resisting Pressures to Drink and Drive programme had little impact on alcohol consumption. There was no significant difference between intervention and control students in terms of their drinking behaviours at the 1-year follow-up. Klitzner and colleagues (1994; CBA +) also found that at the 1-year follow-up there was no difference in drinking quantity between students who had received the SADD programmes and comparison students.

### ***Secondary outcomes***

Baumann (2006; RCT -) reported that there were no effects of the Project SAAV programme on alcohol-related expectancies. Padget and colleagues (2006; CNRT +)

reported that the PY/PM intervention had significant positive effects on knowledge about the brain and alcohol ( $p < 0.01$ ); the perceived harm of and attitudes towards underage alcohol use (both  $p < 0.05$ ), and alcohol use intentions ( $p < 0.01$ ). In addition, the programme had significant effects on increasing vehicle safety skills ( $p < 0.01$ ) and reducing riding with a drinking driver ( $p < 0.05$ ). Newman and colleagues (1992; RCT - ) found that the Resisting Pressures to Drink and Drive programme was successful in increasing students' knowledge ( $p < 0.001$ ). The number of times students had ridden with a drinking driver in the last 30 days increased in both the intervention and control group, however, the increase in students who received the intervention was significantly less than that of control students ( $p < 0.05$ ). Klitzner and colleagues (1994; CBA +) found that the SADD programme had little impact on drink driving behaviour. At the 1-year follow-up, there was no overall difference between intervention and comparison groups on the index of driving while intoxicated or riding with impaired drivers.

### 5.2.3 Programmes targeting substance use including alcohol

Seven programmes were identified that examined the prevention of substance use including alcohol. Two programmes, LST and Lion's Quest "Skills for Adolescence" (SFA), were rated to be highly applicable. Fourteen studies examined the effectiveness of Botvin's LST programme and two studies (Eisen et al., 2002, 2003) reported on an evaluation of the Lion's Quest SFA drug education programme. The approach of five programmes targeting the prevention substance use was judged to be unclear as they mainly focused on the prevention of illicit drug use. Four studies (Hurry et al., 2000; Hurry & McGurk 1997; Schinke & Tepavac, 1995; Sigleman, 2004) examined the effectiveness of three programmes for primary school-aged children and three studies (Snow et al., 1992, 1997; Fearnow-Kenney et al., 2003) examined two programmes for secondary school-aged children.

#### Box 5.2.2. Summary of programme content: Classroom-based programmes led by teachers targeting substance use including alcohol

Programme	Reference	Programme content
Life Skills Training	Botvin et al., 1990a, 1995	<ul style="list-style-type: none"> <li>• Teachers who had attended a one-day workshop vs. delivery by teachers who received training by video</li> <li>• 15 sessions in seventh grade and booster sessions in the eighth and ninth grade</li> <li>• No intervention control</li> </ul>

Life Skills Training	Botvin et al., 1990b	<ul style="list-style-type: none"> <li>• 20 sessions in seventh grade with and without eight grade booster sessions</li> <li>• Peer leaders vs. regular classroom teachers</li> </ul>
Life Skills Training	Botvin et al., 1995	<ul style="list-style-type: none"> <li>• Generic LST vs. culturally focused intervention</li> <li>• Seventh grade interventions with eighth grade booster sessions</li> <li>• Information only control</li> </ul>
Life Skills Training	Botvin et al., 1997	<ul style="list-style-type: none"> <li>• 15 session version in a predominantly minority sample of seventh graders</li> </ul>
Life Skills Training	Botvin et al., 2001a, 2001b	<ul style="list-style-type: none"> <li>• 15 sessions of LST in the seventh grade and 10 booster sessions in the eighth grade</li> <li>• Regular classroom teachers</li> </ul>
Life Skills Training	Botvin et al., 2003	<ul style="list-style-type: none"> <li>• 24 classes taught to elementary school children in grades 3 to 6.</li> </ul>
Life Skills Training	Fraguela et al., 2003	<ul style="list-style-type: none"> <li>• 16 sessions in the first year of the programme and 9 booster sessions in the second</li> </ul>
Life Skills Training	Smith et al., 2004	<ul style="list-style-type: none"> <li>• Standard LST vs. infused LST</li> <li>• Standard LST: 15 sessions in seventh grade and 10 booster sessions in eighth grade</li> <li>• Infused LST: no set number of lessons</li> </ul>
Life Skills Training + Strengthening Families programme	Spoth et al., 2002, 2005	<ul style="list-style-type: none"> <li>• LST + Strengthening Families programme</li> <li>• 15 sessions in seventh grade plus 9 booster sessions in eighth grade</li> </ul>
Lion's Quest 'Skills for Adolescence'	Eisen et al., 2002, 2003	<ul style="list-style-type: none"> <li>• 40-session curriculum for 7<sup>th</sup> grade students</li> </ul>
Project Charlie	Hurry & McGurk, 1997; Hurry et al., 2000	<ul style="list-style-type: none"> <li>• Weekly 30 minute lessons over 1 year</li> </ul>
Million Dollar Machine	Schinke & Tepavac, 1995	<ul style="list-style-type: none"> <li>• 8 week programme</li> <li>• Assembly and classroom lessons</li> </ul>
Drug and alcohol curriculum	Sigelman, 1994	<ul style="list-style-type: none"> <li>• Audiotape curriculum delivery</li> <li>• 1 hour sessions on 3 consecutive days</li> </ul>
Adolescent Decision Making programme	Snow et al., 1992, 1997	<ul style="list-style-type: none"> <li>• 12 weekly sessions</li> <li>• Other details not reported</li> </ul>
All Stars Senior	Fearnow-Kenney et al., 2003	<ul style="list-style-type: none"> <li>• A minimum of two activities were taught each week</li> </ul>

### **5.2.3.1 Botvin's Life Skills Training**

The LST programme was designed to be delivered to students in the seventh grade with the main purpose of developing personal and social skills. LST has an emphasis on the development of skills for coping with social influences to smoke, drink or use drugs. Eight studies were identified that were conducted by Botvin and colleagues. Botvin and colleagues (1990a; 1995) examined the effectiveness of LST delivered by teachers who had attended a one-day workshop compared to delivery by teachers who received training by video or a no intervention control. The programme examined consisted of 15 classes in seventh grade and booster sessions in the eighth and ninth grade. Botvin and colleagues (1990b) examined a 20 session, seventh grade version of the LST programme with and without eight grade booster sessions implemented by older (tenth to twelfth grade) peer leaders or regular classroom teachers. Four studies by Botvin and colleagues focused on populations of inner-city, minority students. Botvin and colleagues (1995) examined the effectiveness of two seventh grade interventions with eighth grade booster sessions. The two interventions were generic LST and a culturally focused intervention, compared to the delivery of information only. The culturally focused intervention was specifically designed for inner-city minority students and targeted high-risk students. Botvin and colleagues (1997) examined the effectiveness of a 15 session version of LST in a predominantly minority sample of seventh graders. Botvin and colleagues (2001a; 2001b) examined the effectiveness of LST in large sample of students in inner-city New York schools. Students in the intervention group received 15 sessions of LST in the seventh grade and 10 booster sessions in the eighth grade, taught by regular classroom teachers. The most recent publication by Botvin and colleagues (2003), examined the effectiveness of LST with elementary school children in grades 3 to 6. The intervention consisted of 24 classes taught over three years. Fraguela and colleagues (2003) examined the effects of the LST programme in a Spanish school. Students aged 14-16 years received the original LST programme (translated and adapted to the Spanish context) with an additional component focusing on leisure activities. Students received 16 sessions in the first year of the programme and 9 booster sessions in the second. Smith and colleagues (2004) evaluated the standard LST curriculum (15 sessions in seventh grade and 10 booster sessions in eighth grade) and an infused approach to LST in a rural setting. The infused approach had no set number of lessons and components of LST were incorporated across subject areas. Spoth and colleagues (2002; 2005) examined the combination of the standard LST programme (15 sessions in seventh grade) with a family-based

programme, the Strengthening Families programme. Both programmes were delivered when students were in seventh grade (plus 9 booster sessions in eighth grade).

### ***Quality assessment***

Of the eight studies conducted by Botvin and colleagues, seven were RCTs with schools as the unit of assignment (Botvin et al., 1990a; 1990b; 1995a; 1995b; 2001a; 2001b; 2003) and one was classified as a CNRT (Botvin et al., 1997) as no details on randomisation were reported. Six of the RCTs appeared to have been fairly well conducted and were coded '+' (Botvin et al., 1990a; 1990b; 1995a; 1995b; 2001a; 2001b). However, details were lacking about the methods of randomisation and none of the studies used an intention to treat analyses despite attrition of participants. One RCT was coded '-' (Botvin et al., 2003) because although the study appeared to have been adequately conducted, 44% of participants were lost to follow-up at the posttest 3 months from baseline. Few methodological details were reported for the study using a CNRT design and it was coded '-' (Botvin et al., 1997). Fraguera and colleagues (2003) also used a CNRT design (CNRT -). Again few details were reported on the methodology of the study and the study suffered from a high level of attrition (60% by the third year of the study). Spoth and colleagues (2002; 2005) conducted an RCT to evaluate the effects of LST combined with the Strengthening Families Programme (RCT +). The study methodology was adequately reported and relatively few participants were lost to follow-up, however few details were available regarding the method of randomisation. The quality of the evaluation (Smith et al., 2004; Vicary et al., 2004) that compared the effectiveness of a standard LST programme with infused LST was adequate. No details of the methods of randomisation were reported but other methodological aspects were clearly reported. In addition, relatively few participants were lost to follow-up over the duration of the study and it was coded 'RCT +'.

### ***Primary outcomes***

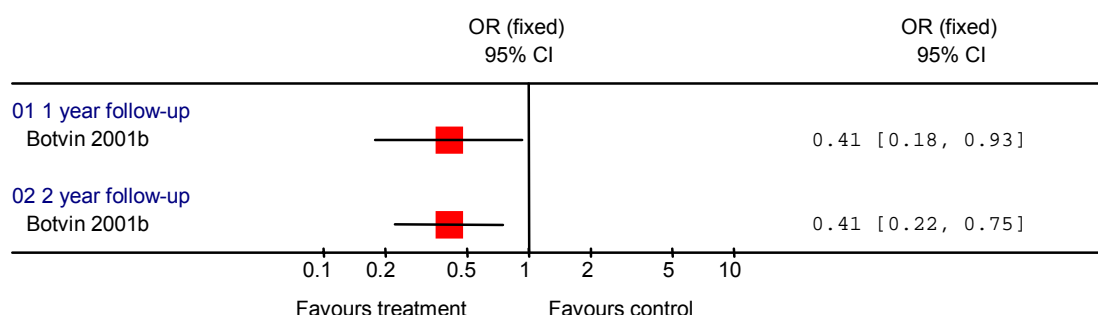
Three studies conducted by Botvin and colleagues in the 1990's focused on the delivery of the LST programme among predominantly White, middle-class seventh grade students (Botvin et al., 1990a; 1990b; 1995a). Following delivery of three years of LST (15 sessions in seventh grade and booster sessions in eighth and ninth grade), Botvin and colleagues (1990a; RCT +) found that delivery of the LST programme over three years did not have significant effects on drinking frequency or amount in a high fidelity sample (students exposed to 60% or more of the

programme; 62% of the original sample). The authors reported that compared to control students, students who were taught the programme by teachers who received training by video reported significantly fewer occasions of drunkenness ( $p=0.04$ ). Botvin and colleagues (1995a; RCT +) followed up this sample of students three years later (six years from baseline). There was no difference between intervention and control students in terms of monthly or weekly alcohol use, but the prevalence of being drunk was significantly lower in intervention students. In a sample of students who were exposed to more than 60% of the programme (high fidelity sample), compared to control students, both intervention groups reported significantly lower prevalence rates for weekly drinking, heavy drinking and problem drinking. Students who were taught the programme by teachers who received training by video also reported significantly lower monthly drinking rates. Botvin and colleagues (1990b; RCT +) found that a 20-session LST programme had significant effects on weekly and monthly drinking, and drinking frequency at 1 year. Students in the intervention groups reported significantly lower scores on these measures than students in the control group. In addition, students in the peer booster condition reported consuming less alcohol per occasion than students in the control group ( $p<0.05$ ), the teacher booster and non-booster group ( $p<0.06$  and  $p<0.03$ , respectively). The authors reported that on all three measures of drinking behaviour, the teacher booster condition produced the worst results. Significantly fewer students in the control group were drinkers based on both the weekly ( $p<0.001$ ) and monthly ( $p<0.0001$ ) measures and had a lower score on the drinking frequency index ( $p<0.0002$ ) compared to students in the teacher booster condition.

Four studies by Botvin and colleagues focused on delivery of LST among populations of inner-city, minority students. Botvin and colleagues (1995b; RCT +) found that relative to an information only control group, drinking frequency and drinking amount were significantly lower in students who received LST or a culturally focused intervention (CFI) ( $p<0.0001$  for both outcomes, respectively). In addition, students in the CFI intervention group reporting drinking less frequently and consuming less alcohol than students in the LST intervention group ( $p<0.003$  and  $p<0.03$ , respectively). Both interventions reduced the frequency of drunkenness compared to the control condition ( $p<0.0002$ ), and students in the CFI group were drunk less often than those in the LST group ( $p<0.04$ ) at 1 year. Botvin and colleagues (1997; CNRT -) found that compared to control students, inner city minority youth who received the 15-session LST programme reported drinking alcohol less often ( $p=0.0017$ ), consumed significantly less alcohol ( $p=0.0006$ ) and got drunk significantly less often

( $p=0.0133$ ) at posttest. Three studies (Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003) examined the effectiveness of LST in a large sample of seventh grade inner-city students ( $n=3,621$ ). At the end of seventh grade (Botvin et al., 2001a; RCT +), mean scores for drinking frequency ( $p<0.042$ ), drinking quantity ( $p<0.033$ ) and drunkenness frequency ( $p<0.007$ ) were significantly lower in the intervention group than in the control group. When the intracluster correlations were taken into account (to adjust for cluster assignment) the differences in drinking frequency and quantity became nonsignificant. At the end of eighth grade after the delivery of 10 booster sessions (1 year follow-up), students in the intervention group reported drinking less frequently ( $p<0.0001$ ), getting drunk less frequently ( $p<0.004$ ) and consuming less alcohol than control students ( $p<0.001$ ). These findings remained significant when the results were adjusted to account for clustering. Botvin and colleagues (2001b; RCT +) examined the effects of the intervention on binge drinking in this sample on the end of eighth and ninth grade (1- and 2-year follow-up, respectively). Results of logistic regression analyses found that intervention students reported significantly fewer occasions of binge drinking compared to control students at both follow-ups. These findings are shown in Figure 5.2.3.

**Figure 5.2.3. Binge drinking at follow-up: LST**



Griffin and colleagues (2003; RCT +) examined the effectiveness of LST in a subsample of youth who were identified as being at high risk for substance use initiation ( $n=426$ ). Compared to high risk students in the control group, high risk LST students reported significantly less drinking (composite score of the mean of the frequency of drinking and drunkenness scores and quantity of drinking score) at the 1-year follow-up ( $p=0.008$ ). Botvin and colleagues (2003; RCT -) examined the effectiveness of LST among elementary schools students. Following delivery of LST, results collected at posttest indicated that there were no differences between intervention and control students in terms of drinking frequency ( $p=0.287$ ) or the proportion drinking in the past year ( $p=0.172$ ). However, analysis at the school level

found that intervention schools had significantly lower drinking prevalence compared to control schools ( $p=0.054$ ). Fraguera and colleagues (2003; CNRT -) found that students who were taught the LST programme by members of their research team reported significantly lower consumption of beer (but not spirits) than control students at the 1-year follow-up ( $p$  value not reported). Students who were taught the LST programme by teachers reported significantly lower consumption of spirits (but not beer), relative to control students, also at the 1-year follow-up ( $p$  value not reported). There was no significant difference between intervention and control students in terms of beer or spirit consumption at any of the other follow-ups (two or three years). Smith and colleagues (2004; RCT +) found that at the end of seventh grade, neither intervention (LST or infused LST) had significant effects on alcohol use in male students. For females in the LST condition a significant reduction in the frequency of alcohol use and binge drinking was observed. For the infused LST intervention group a significant reduction in the frequency of binge drinking was found for females only. There were no differences between either intervention group and control students on drunkenness frequency. By the end of the eighth grade all intervention (LST and infused LST) effects had disappeared.

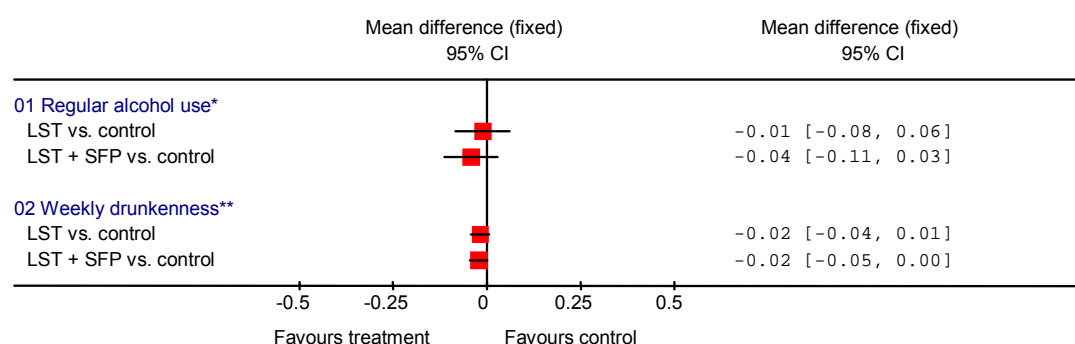
Spoth and colleagues (2002; 2005; RCT +) examined the combination of LST with the Strengthening Families Programme (SFP). Follow-up assessments were conducted in eighth and ninth grade, one and two years from posttest, respectively. The authors found that significantly fewer students in the LST + SFP group were 'new users' at the 1-year follow-up relative to the control and LST only groups (both  $p\leq 0.05$ ). There were no statistically significant effects on regular alcohol use in either intervention group at either follow-up. Compared to control students, adjusted mean scores on weekly drunkenness were significantly lower for the LST + SFP group ( $p=0.03$ ) but only non-significantly lower for the LST only group ( $p=0.08$ ) at the 2-year follow-up. These findings are presented in Figure 5.2.4.

### ***Secondary outcomes***

Botvin and colleagues (1990a; RCT +) reported that drinking knowledge was significantly higher in students who had received at least 60% of the LST programme relative to the control group ( $p<0.001$ ). No significant effects were observed on drinking attitudes, but interpersonal skills knowledge scores were significantly higher in the high fidelity subsample compared to control students. The LST programme had marginally significant effects on communication skills knowledge but no effects on any of the personality variables that were measured. Botvin and colleagues (1990b;

RCT +) found that the LST programme had significant main effects on drinking knowledge ( $p < 0.0003$ ) and drinking attitudes ( $p < 0.01$ ). Students in the peer-led booster and non-booster groups reported significantly higher drinking knowledge than control students ( $p < 0.0001$  and  $p < 0.01$ , respectively). However, in contrast, students in the teacher-led booster group reported significantly lower (i.e. more positive) drinking attitudes ( $p < 0.04$ ) than students in the control condition. In terms of personality outcomes, students in the peer-led booster group reported significantly lower locus of control scores than students in the control condition ( $p < 0.01$ ).

**Figure 5.2.4. Alcohol use at 2-year follow-up: LST + SFP (Spath et al., 2005)**



\*Responses were dichotomised so that 1 = use of alcohol one or more times a month and 0 = less frequent or no use

\*\*Responses were dichotomised so that 1 = drunkenness one or more times a month and 0 = frequency of drunkenness less than once a week.

Four studies examined the delivery of LST to inner-city minority students. Botvin and colleagues (1995b; RCT +) found that minority students who received the LST programme reported significantly lower intentions to use beer or wine, or hard liquor in the future compared to the information only control group ( $p < 0.01$  and  $p < 0.05$ , respectively). Students who received the culturally focused intervention reported significantly lower intentions to use beer or wine relative to the information only control ( $p < 0.01$ ), but only marginally fewer intentions to use hard liquor ( $p = 0.06$ ). Botvin and colleagues (1997; CNRT -) reported that future intentions to drink beer or wine within the next year were lower in the intervention group compared to the control group ( $p < 0.01$ ). There were no intervention effects on intentions to drink liquor. Intervention students reported significantly lower normative expectations for adult and peer drinking ( $p = 0.0060$  and  $p = 0.0001$ , respectively) and were more likely to report the use of refusal skills ( $p = 0.0114$ ). There was no difference between groups in terms of anti-drinking attitudes or other measures of skills use (decision-making, advertising, anxiety reduction, communication and social assertiveness). Botvin and colleagues (2001a; RCT +) found that at posttest, students in the

intervention group reported greater drinking knowledge ( $p < 0.0239$ ) than controls, and had lower peer and adult normative expectations for drinking ( $p < 0.0440$  and  $p < 0.0354$ , respectively). At 1-year follow-up, intervention participants reported greater drinking knowledge ( $p < 0.0086$ ) than control participants, had lower intentions to drink alcohol ( $p < 0.0028$ ), had more negative attitudes about drinking ( $p < 0.0017$ ) and reported lower normative expectations regarding drinking by peers and adults ( $p < 0.0015$  and  $p < 0.0122$ , respectively). At the 2-year follow-up, however, there was no difference between intervention and control students on any of these measures. Botvin and colleagues (2003; RCT -) found that elementary students who received the LST programme reported significantly more anti-drinking attitudes ( $p = 0.044$ ; also significant at the school level analyses,  $p = 0.051$ ) and increased substance use knowledge ( $p = 0.031$ ) relative to control students. Intervention students also reported lower normative expectations for peer alcohol use ( $p = 0.000$ ) as well as marginally higher levels of self-esteem ( $p = 0.06$ ; significant at the school level analyses,  $p = 0.013$ ) than control students. No significant differences were observed on the other measures reported (advertising knowledge, social skills knowledge, refusal skills knowledge, teen or adult drinking norms, and risk-taking). None of the other studies that examined the LST programme reported secondary outcomes of interest.

#### **5.2.3.2 *Lion's Quest 'Skills for Adolescence'***

The Lion's Quest SFA programme was a 40-session curriculum delivered to 7<sup>th</sup> grade students. The aim of the curriculum was to teach social competency and refusal skills. Students were followed up at the end of the intervention school year (posttest) and one year later in eighth grade (1 year follow-up).

#### ***Quality assessment***

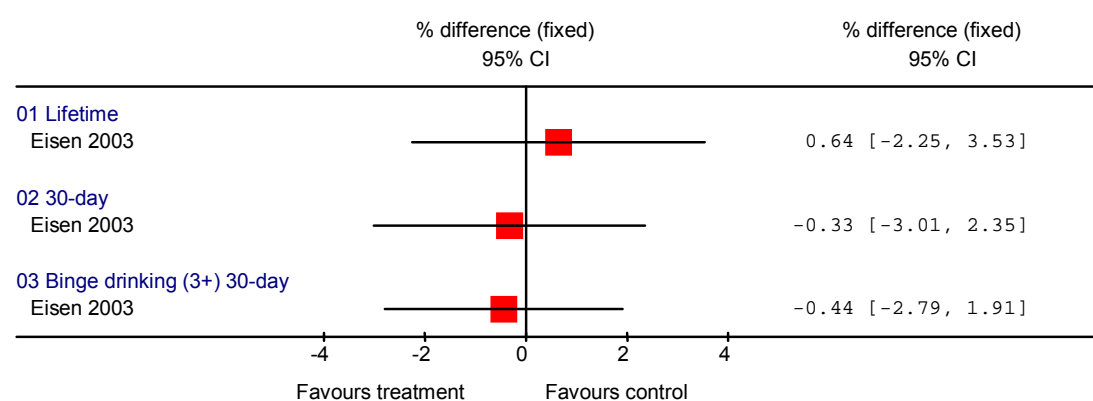
Eisen and colleagues (2002; 2003) used an RCT design with schools as the unit of assignment to examine the effects of the SFA programme (RCT +). Thirty-four schools were pair-matched within districts on sixth grade prevalence of previous 30 days use of tobacco, alcohol or illicit drugs and then randomised within pairs to the intervention or control condition (usual drug programming). The study methodology was adequately reported and the study appeared to have been well conducted, for example, intervention and control groups were matched at baseline. The study suffered from relatively high attrition, with 23% of students lost to follow-up at the 1-year follow-up. However, the authors report that a 'conservative' intention to treat analysis was used. There was no differential attrition between intervention and

control groups, but students lost to follow-up were significantly more likely to have used cannabis in the past 30 days.

### Primary outcomes

At the end of the intervention school year (posttest) there was no significant difference between baseline nonusers or users who received the SFA programme and control students in terms of alcohol use (lifetime, 30 day or binge drinking). In addition, at the 1-year follow-up, there was again no significant difference between students who received the SFA programme and control students in terms of lifetime, 30 days or binge drinking (Eisen et al., 2003; RCT +). However, students who reported binge drinking at baseline and who received the SFA programme were significantly less likely than students in the control group to report recent binge drinking at the 1-year follow-up. There were no differences between baseline non-binge drinkers in the intervention and control groups. These findings are shown in Figure 5.2.5.

**Figure 5.2.5. Alcohol use at 1-year follow-up: Lion's Quest SFA**



### Secondary outcomes

Aims of the Lion's Quest SFA programme (Eisen et al., 2002, 2003) were to strengthen students' behavioural intentions not to use drugs in the near future, to increase the perceived harm of drug use, to increase the sense of self-efficacy about their ability to refuse drugs, and to decrease perceptions that using drugs makes it easier to fit in. Only one alcohol-related outcome reached significance, at the 1-year follow-up (Eisen et al., 2003; RCT +), students who received the SFA programme reported an increased ability to refuse offers of alcohol in a variety of situations.

### **5.2.3.3 Project Charlie**

Two studies (Hurry et al., 2000; Hurry and McGurk, 1997) examined the effectiveness of Project Charlie, a 'life skills' drug education programme developed in the USA for primary school aged children. Children aged 9-10 years received the programme over one school year and were followed up three years later at the age of 14.

#### **Quality assessment**

The assessment of Project Charlie (Hurry and McGurk 1997; Hurry et al., 2000) appeared to have been adequately conducted and was coded 'RCT +'. However, there were few details reported about the method of randomisation and the number of students included in the evaluation was relatively small.

#### **Primary outcomes**

Following delivery of Project Charlie, Hurry and McGurk (1997; RCT +) found that there was no difference in lifetime alcohol use between intervention students and control students. Three years later when participants were aged 14, Hurry and colleagues (2000; RCT +) again found that there was no difference between intervention and control groups in terms of their alcohol use.

#### **Secondary outcomes**

At immediate posttest, Hurry and McGurk (1997; RCT +) reported that Project Charlie students had significantly higher decision-making skills than control students. However, there were no significant differences between groups in terms of self-esteem, intention to drink alcohol or peer pressure. Three years later at age 14 (Hurry et al., 2000), there were no differences between intervention and control students in terms of decision-making skills, peer pressure resistance or drug knowledge. However, children who received the Project Charlie programme expressed more negative attitudes towards drugs than control children ( $p=0.05$ ).

### **5.2.3.4 Million Dollar Machine**

One study (Schinke and Tepavac 1995) examined the effectiveness of an 8-week substance abuse prevention curriculum, the Million Dollar Machine, which focused on knowledge and resistance skills training.

#### **Quality assessment**

The evaluation of the Million Dollar Machine (Schinke and Tepavac, 1995) used a CNRT design. The study methodology was not well reported and consequently the study was coded 'CNRT -'. Although the authors reported that intervention and control students were well matched, they were not permitted to collect demographic details from study participants. It was therefore not possible to judge whether participants were matched on factors such as age and sex.

### ***Primary outcomes***

Fourth grade students who participated in the Million Dollar Machine substance abuse prevention programme (Schinke & Tepavac, 1995; CNRT -) reported significantly less actual and potential time drinking compared to fourth graders in the control group ( $p < 0.05$ ). No secondary outcomes were reported

### ***5.2.3.5 Sigelman's drug and alcohol curriculum***

Sigelman (2004) examined two versions of a drug and alcohol curriculum for elementary school children explaining how substances affect behaviour and health, consisting of a causally coherent version and a less coherent version, compared to a disease control curriculum. The 'coherent' curriculum was designed to teach the elements of a scientific, brain-mediated theory of drug effects in a causally coherent sequence. The 'less coherent' curriculum included the same content as the coherent curriculum, but was reordered so that the consequences of drug use on health and behaviour were discussed before the drug's effects on the body and brain.

### ***Quality assessment***

Sigelman and colleagues (2004) randomly assigned participants to intervention or control groups. The study appeared to have been adequately conducted but few details were reported regarding the methods of randomisation or baseline comparability and the study was coded 'RCT +'. In addition, although participants were lost to follow-up over the course of the study, the authors do not appear to have investigated this.

### ***Primary outcomes***

Sigelman and colleagues (2004; RCT +) found that two drug and alcohol programmes explaining how substances affect behaviour and health had no significant effects on alcohol use. There was no difference between intervention and control students in terms of alcohol use in the previous month at immediate posttest or 1-year follow-up.

### ***Secondary outcomes***

Sigelman and colleagues (2004; RCT +) found that compared to a disease control curriculum, two programmes explaining about how substances affect behaviour and health had no significant effects on attitudes to alcohol use or intentions to use alcohol.

#### ***5.2.3.6 Adolescent Decision Making programme***

Two studies (Snow et al., 1992; 1997) examined the effectiveness of the Adolescent Decision Making programme, delivered to students in sixth grade when they were aged 12 years. The programme was based on a social-cognitive approach and involved teaching decision-making skills.

### ***Quality assessment***

Snow and colleagues (1992) reported few details regarding study methodology in their evaluation of the Adolescent Decision Making programme and it was consequently coded 'CBA -'.

### ***Primary outcomes***

Snow and colleagues (1992; CBA -) found that the Adolescent Decision Making programme had a negative effect on alcohol use. At two years follow-up when students were in eighth grade, intervention students reported significantly more alcohol use than comparison students ( $p < 0.03$ ). No secondary outcomes were reported.

#### ***5.2.3.7 All Stars Senior***

One study (Fearnow-Kenney et al., 2003) examined the effectiveness of All Stars Senior, an education programme that targeted general health behaviours including alcohol use. Students aged 13 to 18 years received a minimum of two programme activities per week over one school year.

### ***Quality assessment***

The study by Fearnow-Kenney and colleague (2003) that examined the All Stars Senior programme was poorly reported. Few methodology details were reported and it was difficult to assess how well the study had been conducted. As a result this study was also coded 'RCT -'.

**Primary outcomes**

Fearnow-Kenney and colleagues (2003; RCT -) found that high school students who received the All Stars Senior programme were no more or less likely to report drunkenness in the last 30 days than control students at the end of the school year (posttest). No secondary outcomes were reported.

**5.2.4 Programmes targeting general health behaviours**

Two programmes were identified that aimed to prevent or reduce alcohol use by targeting general health behaviours. One study (Caplan et al., 1992) examined the effectiveness of a programme designed to promote young adolescents’ personal and social competence. Bond and colleagues (2004) examined the effectiveness of the Gatehouse Project that was designed to improve emotional wellbeing and reduce health risk behaviours.

**Box 5.2.3. Summary of programme content: Classroom-based programmes led by teachers targeting general health behaviours**

<b>Programme</b>	<b>Reference</b>	<b>Programme content</b>
Positive Youth Development programme	Caplan et al., 1992	<ul style="list-style-type: none"> <li>• Taught to sixth and seventh grade students across 6 units</li> <li>• 20 sessions in total (2 lessons per week)</li> </ul>
Gatehouse Project	Bond et al., 2004	<ul style="list-style-type: none"> <li>• Establishment of a school-based health team</li> <li>• 10 week curriculum delivered in years 8 and 9 (13-15 year olds)</li> </ul>

**5.2.4.1 Positive Youth Development programme**

The Positive Youth Development programme (Caplan et al., 1992) was designed to promote young adolescents’ personal and social competence. The programme was taught to sixth and seventh grade students across 6 units (including a total of 20 sessions) during two 50-minute lessons per week. Health educators co-taught the programme with classroom teachers.

**Quality assessment**

It was difficult to judge the quality of the study undertaken by Caplan and colleagues (1992) as insufficient details were reported regarding the study methodology. It appeared that the authors had originally intended to randomly assign classes within two schools to intervention and control groups. However, the authors report that one class was reassigned from the intervention to control group. Few details were reported regarding the participants and it was unclear whether intervention and

control participants were matched at baseline. In addition, no details were reported regarding the number of students included in the final analysis, and the study was coded 'CNRT -'.

***Primary outcomes***

Relative to control students, Caplan and colleagues (1992; CNRT -) reported that intervention students significantly reduced their frequency of having three or more drinks on a single occasion ( $p < 0.05$ ), and the amount of beer, wine, or liquor they usually consumed on one occasion ( $p < 0.05$ ).

***Secondary outcomes***

Caplan and colleagues (1992; CNRT -) found that relative to intervention students, the intentions of control students increased significantly with respect to beer and hard liquor (both  $p < 0.05$ ).

**5.2.4.2 Gatehouse Project**

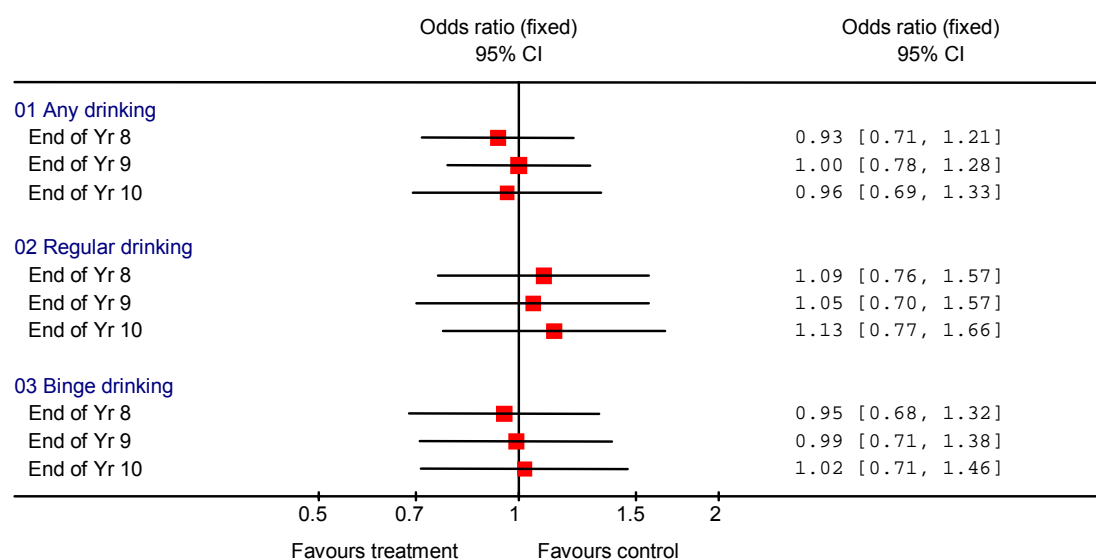
The Gatehouse Project (Bond et al., 2004) involved the establishment of a school-based health team who addressed risk and protective factors within the school's social and learning environment and the delivery of a 10-week curriculum to students aged 13-14 years (Australian Year 8), which focused on dealing with difficult or conflicting emotional responses.

***Quality assessment***

The study by Bond and colleagues (2004) was well conducted. The study methodology was well reported and it was coded '++'.

***Primary outcomes***

Students who participated in the Gatehouse Project evaluation were followed up at three time points, at the end of year 8, 9 and 10. Bond and colleagues (2004; RCT ++) found that there were no significant differences between students who received the intervention and control students on any of the measures of alcohol use (any drinking, regular drinking, and binge drinking), at any follow-up, as shown in Figure 5.2.6.

**Figure 5.2.6. Alcohol use at follow-up: Gatehouse Project (Bond et al., 2004)**

### Secondary outcomes

Bond and colleagues (2004; RCT ++) reported that there were no significant differences between students who participated in the Gatehouse Project and control students on any of the measures examining social relationships, school attachment or depressive symptoms, at any follow-up.

### 5.2.5 Summary and evidence statements

A total of 36 studies were identified that evaluated classroom-based programmes led by teachers. The programmes identified covered a variety of intervention approaches and included programmes that targeted alcohol specifically, substance use including alcohol and general health behaviours.

#### 5.2.5.1 Short term results (<6 months)

Fifteen programmes reported short-term follow-up data and three programmes demonstrated evidence of reducing alcohol use. Students who participated in the first year of SHAHRP (McBride et al., 2001, 2003, 2004) consumed significantly less alcohol and were less likely to consume alcohol at hazardous or harmful levels. In addition, the five-year PY/PM programme (Padget et al., 2005) had a small, borderline significant effect on drinking in the past 30 days. Three studies reported on the short term effects of Botvin's LST. In a high fidelity subsample of mainly White students, no intervention effects were observed on measures of drinking frequency, drinking amount or drunkenness frequency (Botvin 1990a). However, significant, positive intervention effects on drinking frequency and quantity, and frequency of

drunkenness were found at posttest in a sample of ethnic minority students (Botvin et al., 1997) and in terms of drinking prevalence in elementary school children (Botvin et al., 2003). Five additional programmes demonstrated some evidence of effectiveness, however, given the poor quality of the studies evaluating these programmes the strength of the evidence was judged to be insufficient. These programmes were: Positive Youth Development programme (Caplan et al., 1992), Million Dollar Machine (Schinke & Tepavac, 1995), Project SAAV (Baumann, 2006), WHO alcohol education programme (Perry & Grant, 1991), and a role-specific programme (Wilhelmsen et al., 1994). Seven programmes had inconsistent or no effects on alcohol use in young people: AMPS curriculum (Shope et al., 1992; 1994; 1996a; 1996b), Alcohol Education Package (Bagnall et al., 1990), Lion's Quest SFA (Eisen et al., 2002; 2003), Project Charlie (Hurry & McGurk, 1997; Hurry et al., 2000), All Stars Senior (Fearnow-Kenney et al., 2003), and two unnamed alcohol education programmes (Schnepf, 2002; Sigelman et al., 2004).

#### **5.2.5.2 Medium term results (up to 1 year)**

Medium term follow-up data (up to 1 year after delivery) were reported for six programmes. Two programmes, SHAHRP and LST demonstrated medium term effectiveness. Following the delivery of booster sessions in the second year of SHAHRP, students who received the intervention consumed significantly less alcohol overall and per occasion, and were less likely to consume alcohol at hazardous/harmful levels. There was also evidence for medium term effects of Botvin's LST programme on alcohol use. In particular, the programme reduced the incidence of drunkenness and binge drinking in White students and weekly and monthly drinking in ethnic minority students. Data presented indicated that the effectiveness of the programme was linked to the how completely the programme had been implemented. Four programmes had inconsistent or no effects on alcohol use at 1-year follow-up: AMPS, Lion's Quest SFA, and two programmes that targeted drink-driving behaviours.

#### **5.2.5.3 Long term results (>1 year)**

Long-term follow-up data were reported for six programmes, SHAHRP, Botvin's LST programmes, the AMPS curriculum, Project Charlie, the Adolescent Decision Making programme and the Gatehouse project. Seventeen months after the delivery of SHAHRP (32 months from baseline data collection) the positive effects of the programme seen at earlier follow-ups appeared to be declining. Although intervention effects favoured SHAHRP, differences between intervention and control students in

terms of alcohol consumption and other measures of alcohol use including harmful/hazardous drinking were no longer significant. Six studies reported long term follow-up data on Botvin's LST programme. Positive intervention effects were reported three years after intervention in terms of problem drinking, and weekly drinking and heavy drinking in a high fidelity subsample (Botvin 1995a). In addition, intervention with ethnic minority students produced reductions in drinking frequency and amount, and heavy drinking in terms of drunkenness and binge drinking at 2 years (Botvin et al., 1995b, 2001b). However, two studies by other research groups (Fraguela et al., 2003; Smith et al., 2004) in Spain and the USA, respectively, found that LST did not have long-term positive effects indicating that there may be issues with the transferability of the programme to other settings. Spoth and colleagues (2005) reported long-term effects of LST combined with a family-based programme on the incidence of weekly drunkenness. However, compared to LST alone, the combined programme did not have significantly greater effects.

Four programmes demonstrated no evidence of long-term effectiveness in terms of reducing or preventing alcohol use. Students who received the AMPS curriculum in sixth grade were followed up four years later in 10<sup>th</sup> grade in two studies (Shope et al., 1996; Shope et al., 1998). Both studies found that the sixth grade AMPS curriculum had no effects on alcohol use in later years. Two additional programmes, Project Charlie (Hurry et al., 2000), a substance misuse prevention programme and the Gatehouse project (Bond et al., 2004), designed to improve emotional wellbeing had no long-term effects on alcohol use at 3 and 2 years, respectively. The Adolescent Decision Making programme (Snow et al., 1997) had potentially harmful long-term effects, with a higher proportion of intervention students than control students reporting alcohol use at the 2-year follow-up.

**Evidence statement 2**

There is evidence from two classroom-based, teacher-led programmes that targeted children between the ages of 12 and 13 years, to suggest that interventions using the life skills approach<sup>1</sup> or focusing on harm reduction through skills-based activities<sup>2</sup> (SHAHRP) can produce medium to long-term reductions in alcohol use and in particular, risky drinking behaviours such as drunkenness and binge drinking. However, the applicability and transferability of these programmes requires further study.

<sup>1</sup> Botvin 1995a; 1995b; 2001b (all RCT +)

<sup>2</sup> McBride et al., 2004 (CNRT +)

**Table 5.2.1. Classroom-based programmes led by teachers: Programmes that targeted alcohol specifically**

Author (Year)	Design	Baseline population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
<b>School Health and Harm Reduction Programme (SHAHRP)</b>							
McBride et al., 2000	CNRT +	Australia 12-13 years N= 2,343	8 months	74% followed up	Significant intervention effects on change in alcohol consumption, but not initiation, frequency of consumption or quantity. Supervised drinkers in the intervention group had the lowest level of increase in consumption.	Positive intervention effects on knowledge and attitudes.	A/B
McBride et al., 2003	CNRT +	Australia 12-14 years N= 2,343	8, 20 and 32 months	76% followed up	Significant intervention effects in baseline nonusers only; less likely to consume alcohol in a risky manner.	Programme effects on knowledge and attitudes, although these dissipated over time.	A/B
McBride et al., 2004	CNRT +	Australia 13-14 years N= 2,343	8, 20 and 32 months	76% followed up	No difference in alcohol consumption between intervention and control group at final follow-up.	Programme effects on knowledge and attitudes, although these dissipated over time.	A/B
<b>Alcohol Misuse Prevention Study (AMPS)</b>							
Shope et al., 1992	RCT -	USA 5 <sup>th</sup> to 6 <sup>th</sup> grade n= 5,356	26 months	72% followed up	Partial effectiveness demonstrated in subgroup of students with prior drinking experience.	Intervention students scored higher on curriculum index.	B
Shope et al., 1996a	CBA +	USA 10 <sup>th</sup> to 11 <sup>th</sup> grade N=2,031	2 years	NR	No significant effect on high school alcohol use. Students in the control group reported more alcohol misuse at Grade 12 follow-up than the intervention group (p<0.04).	Intervention effects on knowledge.	B
Shope et al., 1994	RCT -	USA 6 <sup>th</sup> to 8 <sup>th</sup> grade n= 3,704	6 <sup>th</sup> – 8 <sup>th</sup> grade	NR	Not very clear from the results presented whether the intervention was effective. Alcohol misuse increased over time in both groups.	Intervention students had significantly higher curriculum knowledge than controls	B

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Author (Year)	Design	Baseline population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Shope et al., 1996b	CBA -	n= 422	PT, 1 year	NR	Reductions in alcohol use and misuse at the Grade 7 follow-up.	Programme students also had significantly higher scores on knowledge of the effects of substance use. No difference on knowledge of pressures to use substances or knowledge of skills.	B
Shope et al., 1998	CBA -	USA Mean 12 (SD 0.5) years n= 262	6 years	NR	No long term intervention effects.	No significant effects of the curriculum on knowledge at the 12th grade follow-up.	B
<b>Other classroom-based programmes</b>							
Bagnall 1990 Alcohol Education Package	CBA	UK 12-13 years N=1,560	PT (10 months)	NR	Intervention students significantly less likely to have drunk in previous week. No difference on other measures.	No difference between groups in positive and negative attitudes towards alcohol or on knowledge.	B (alcohol specific, old study)
Perry & Grant 1991 WHO Alcohol Education programme	RCT -	Australia, Chile, Norway, Swaziland 11-18 years N= 2,536	PT	NR	Students receiving the peer-led programmes demonstrated significantly lower alcohol use scores. No difference between students receiving the teacher-led and control programmes.	Not reported	D
Schnepf 2002	CNRT -	USA mean 15.2 years N=45	PT	NR	No significant differences between groups in terms of reduction alcohol consumption on the YRBS or in terms of reducing problem drinking.	No significant differences between groups in terms of developing a negative attitude towards alcohol. Intervention groups scored higher on the alcohol knowledge test.	D
Wilhelmsen et al., 1994	CNRT -	Norway 7 <sup>th</sup> grade N= 915	PT	95%	Students receiving the highly role specific intervention arm drank less than low role specific and control students.	Students in the highly role specific condition reported stronger attitudes, intentions and norms to abstain than low role specific and control students.	D

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Author (Year)	Design	Baseline population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Baumann 2006 Project SAAV	RCT -	USA Mean 16.92 (0.92) years N= 256	3 months	58% intervention group	Intervention students reported drinking less frequently, binge drinking less frequently and fewer alcohol-related consequences.	No intervention effects on alcohol-related expectancies.	C
Padget et al 2006 PY/PM	CNRT +	USA 5th grade N=493	PT	88% completed study	No significant differences between intervention and control students.	Significant positive effects on knowledge about the brain and alcohol, perceived harms of and attitudes towards underage alcohol use and alcohol use intentions.	C
<b>Drink-driving programmes</b>							
Newman et al., 1992	RCT -	USA 14-15 years N= ~3,500	PT, 1 year	NR	No significant difference between intervention and control students in terms of drinking behaviours	Programme effect on knowledge.	C
Klitzner et al., 1994	CBA +	USA 9 <sup>th</sup> to 12 <sup>th</sup> grade N= 4,174	PT, 1 year	26% lost from intervention groups	No difference in drinking quantity between intervention and control students.	None reported	C

**Table 5.2.2. Classroom-based programmes led by teachers: Programmes targeting substance use including alcohol**

Author (Year)	Design	Baseline population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
<b>Life Skills Training (LST)</b>							
Botvin et al., 1990a; Botvin et al., 1995a	RCT +	7 <sup>th</sup> grade N= 4,466	3 years, 6 years	83% (3 years); 81% (6 years)	Effects on weekly drinking, heavy drinking, and problem drinking at 6-year follow-up in high-fidelity subsample.	Significant effects on drinking knowledge and interpersonal skills knowledge. No effect on attitudes or communication skills.	B
Botvin et al., 1990b	RCT +	7 <sup>th</sup> grade N= 1,311	1 year	76%	Mixed outcomes, peer booster condition appeared to be partially effective but teacher booster condition had a negative effect.	Significant effects on knowledge. However, students in the teacher-led condition had significantly more positive attitudes.	B
Botvin et al., 1995b	RCT +	N=757	2 years	98% (PT); 60% (2 years)	Both intervention approaches reduced drinking frequency and amount, and drunkenness frequency. Culturally focused intervention was significantly more effective than standard LST.	Significant effect on intentions to use hard liquor.	B/C
Botvin et al., 1997	CNRT -	11-15 years N= 833	PT	87%	Significant, positive intervention effects on drinking frequency and quantity, and frequency of drunkenness.	Significant effect on future intentions to drink wine and beer and normative expectations. No difference between groups in terms of anti-drinking attitudes or other measures of skills use.	B
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	7 <sup>th</sup> grade N= 3,621	PT, 1 year, 2 years	NR	Intervention had significant, positive effects on drinking frequency, drunkenness and drinking quantity. Reduced binge drinking.	Significant effects on knowledge, intentions, attitudes and normative expectations at 1 year. No difference between groups on knowledge, attitudes or norms at 2 years.	B
Botvin et al., 2003	RCT -	4 <sup>th</sup> to 6 <sup>th</sup> grade N= 1,954	PT	56%	Prevalence of drinking was significantly lower in intervention schools.	Significant effects on attitudes (anti-drinking), knowledge, normative expectations and self-esteem. No effects on advertising knowledge, social skills knowledge, refusal skills knowledge, teen or adult drinking norms, and risk-taking.	B
Fraguela et al., 2003	CNRT -	14-16 years N= 1,029	PT, 1 yr, 2 yrs and 3yrs	40%	Short term effects on beer and spirit consumption, but no difference between groups in the longer term	Not reported	B

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Author (Year)	Design	Baseline population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Smith et al., 2004; Vicary et al., 2004	RCT +	7 <sup>th</sup> grade N= 732	PT, 2 years	90%	Significant intervention effects at PT, but no difference between groups at 2-year follow-up.	Not reported for full sample.	B
Spoth et al., 2002; Spoth et al., 2005	RCT +	7 <sup>th</sup> grade N= 1,673	PT, 1 year, 2.5 years	82%	Significant intervention effects on initiation and drunkenness, but not regular alcohol use	Not reported	B
<b>Lion's Quest Skills for Adolescence programme</b>							
Eisen et al., 2002	RCT +	USA 11-14 years N= 7,426	PT	84%	No significant difference between intervention and control students.	Not reported	B
Eisen et al. 2003	RCT +	USA 11-14 years N= 7,426	1 year	77%	No significant difference between intervention and control students. Baseline binge drinkers in the intervention group were less likely to report binge drinking at follow-up.	Significant intervention effects found for self-efficacy regarding alcohol use. No other effects.	B
<b>Project Charlie</b>							
Hurry & McGurk 1997	RCT +	UK 10 years N= 120	PT		No significant differences between intervention and control students.	Intervention students had significantly higher decision-making skills than control students at PT. No significant difference in self-esteem, intention to drink alcohol or peer pressure.	C
Hurry et al., 2000	RCT +	UK 13-14 years N= 44	3 years	77%	No significant differences between intervention and control students.	No difference between groups in terms of decision-making skills, peer pressure resistance, drug knowledge. Children who received Project Charlie expressed more negative attitudes towards drugs than control children.	C
<b>Other classroom-based programmes</b>							
Schinke & Tepavac 1995  Million Dollar Machine	CNRT -	USA 3rd to 6th grade N= 2,475	PT, 6 months	Not reported	Fourth grade students in the intervention group reported significantly less spent drinking	Not reported	C

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Author (Year)	Design	Baseline population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Sigelman 2004	RCT +	USA Grades 3-6 N= 327	PT, 1 year	82%	Programme did not have any significant effects on alcohol use.	Significant intervention effect on knowledge at PT, but not 1 year. No difference between groups in attitudes or intentions.	C
Snow et al., 1992; Snow et al., 1997  Adolescent Decision Making programme	CBA -	USA 6th grade N= 1,360	2 years	79% completed study	Higher proportion of intervention students reported alcohol use in eight grade.	Not reported	C
Fearnow-Kenney et al., 2003  All Stars Seior	RCT -	USA 13-19 years N= 653	PT	~80%	No difference between intervention and control students on alcohol use measures.	Not reported	C

**Table 5.2.3. Teacher-led classroom-based programmes: Programmes targeting general health behaviours**

Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Caplan et al., 1992 Positive Youth Development programme	CNRT -	USA 11-14 years N= 282	PT	NR	Intervention significantly reduced their frequency of heavy drinking and amount per occasion.	Less increase in intentions to use beer or 'hard liquor'.	B
Bond et al., 2004 Gatehouse Project	RCT ++	Australia 13-14 years N= 2,678	End of school years 8-10	90% at wave 3	No significant differences between intervention and control students.	No significant difference on any of the measures examining social relationships, school attachment or depressive symptoms, at any follow-up.	C

### 5.3 Classroom-based programmes led by external contributors

#### 5.3.1 Overview of evidence identified

A total of 28 studies examined the effectiveness of nine curriculum-based programmes led by external contributors. Two programmes (n=7 studies) were rated to be of high applicability, and six programmes (n=18 studies) were judged to be of low applicability.

#### 5.3.2 Programmes specifically targeting alcohol use

One programme was identified that specifically targeted the prevention of alcohol use. Five studies (Hansen & Graham, 1991; Donaldson et al., 1995; Donaldson et al., 2000; Palmer et al., 1998; Kreft, 1998) examined the effectiveness of the Adolescent Alcohol Prevention Trial (AAPT) curriculum.

#### Box 5.3.1. Summary of programme content: Classroom-based programmes led by external contributors specifically targeting alcohol use

Programme	Reference(s)	Programme content
AAPT	Hansen & Graham, 1991; Donaldson et al., 1995, 2000; Palmer et al., 1998; Kreft, 1998	<ul style="list-style-type: none"> <li>• Trained project staff</li> </ul> Four conditions: <ul style="list-style-type: none"> <li>• 8 lessons of resistance skills training</li> <li>• 8 lessons of normative education</li> <li>• 10 lessons of combined resistance skills training and normative education</li> <li>• 4 lesson information only control</li> </ul>

##### 5.3.2.1 Adolescent Alcohol Prevention Trial

The AAPT curriculum, taught entirely by trained project staff, was based on social influence theory and aimed at the prevention of alcohol misuse. Four different intervention approaches were examined: resistance skills training; normative education; a combination of resistance skills training and normative education; and information provision only. Students either received the main programme in fifth grade and a booster programme in seventh grade, or received the main programme in seventh grade only. All five studies were based on the same sample of 11,995 students. One study (Hansen and Graham 1991) examined data from students who received the main programme in seventh grade. Two further studies (Kreft 1998; Palmer et al., 1998) reanalysed data for this sample (seventh grade students) using multilevel analysis techniques. Two studies (Donaldson et al., 1995; Donaldson et al., 2000) examined data for the whole sample of students.

### ***Quality assessment***

The AAPT was based on an RCT design with schools as the unit of assignment (RCT -). Few methodological details were reported regarding the method of randomisation and details were not reported on the baseline comparability of participants. In the sample of students reported on by Hansen and Graham (1991), it appeared that participants were not well matched in terms of their ethnicity. The report by Donaldson and colleagues (1995) did not clearly report how many participants or clusters were randomised to each condition, and details on attrition were also lacking.

### ***Primary outcomes***

Hansen and Graham (1991; RCT -) reported that compared with classrooms that had not received normative education, those that did had significantly reduced rates of alcohol consumption in terms of lifetime use ( $p < 0.01$ ), 30-day use ( $p < 0.05$ ), seven-day use ( $p < 0.05$ ), drunkenness ( $p < 0.0001$ ) and problem use ( $p < 0.05$ ), following delivery of the programme. The authors found no effects of resistance training or the combined programme on alcohol use outcomes. The findings of this study should be interpreted with caution because data presented suggested that participants were not matched on alcohol use outcomes at baseline, with use lowest in the normative education and combined programme groups. Palmer and colleagues (1998) reanalysed the data from one cohort of the AAPT (see Hansen & Graham 1991) using multilevel analytic strategies. The results of the multilevel analytic strategy, which examined each programme condition (resistance skills training, normative education or combined programme) against control, showed that there were no programme effects on alcohol use at the 1-year follow-up. At the 2-year follow-up, however, there were significant programme effects on alcohol use demonstrated for the normative education condition versus the information only control. This effect was found at both the classroom and school level analyses ( $p = 0.003$  and  $p = 0.005$ , respectively). Kreft (1998) also reanalysed the data presented in the study by Hansen and Graham (1991). Using multiple regression analysis, Kreft (1998) reported that using the student as the unit of analysis showed a statistically significant effect for normative education ( $p < 0.05$ ) but that no statistically significant effects were found for resistance training or the combined program. Based on analyses conducted using the classroom as the unit of analysis, Kreft (1998) concluded that the whole programme, including the normative education component, was not effective.

Two papers by Donaldson and colleagues (1995; 2000; RCT -) examined data from the entire sample of AAPT participants. Donaldson and colleagues (1995; RCT -) found that among students who believed it was not acceptable to drink alcohol there was a significant positive relationship between seventh grade refusal skills and eighth grade alcohol use (fifth grade students:  $p < 0.05$ ; seventh grade students:  $p < 0.01$ ). The same analysis for adolescents who believed that it was acceptable to drink revealed a nonsignificant relationship between seventh grade refusal skills and eighth grade alcohol use. Donaldson and colleagues (2000; RCT -) further analysed data from AAPT students using both self-report and reciprocal best friend reports of alcohol (and other substance) use. Results were separately analysed for students attending public and private schools. For the sample of students attending public schools, those who received normative education reported significantly lower scores on the alcohol index measure and significantly lower rates of lifetime alcohol use in the eighth, ninth and tenth grades (1-, 2- and 3-year follow-ups, respectively) compared to students receiving comparison interventions. In addition, students who received normative education reported lower rates of 30-day alcohol use at the 1- and 3-year follow-ups and drunkenness at the 1- and 2-year follow-ups. For the majority of outcomes, students who received resistance skills training reported using alcohol significantly more often than students who had not received resistance skills training. For the sample of students in private schools, there were no effects of normative education on alcohol use behaviours at any follow-up. However, private school students who received resistance skills training reported significantly lower rates of 30-day alcohol use at the 1- and 3-year follow-ups and a lower prevalence of drunkenness at the 3-year follow-up. No secondary outcomes of interest were reported.

### **5.3.3 Programmes targeting substance use including alcohol**

Six programmes were identified that aimed to prevent and/or reduce alcohol use by targeting substance use including alcohol. Two studies by Hawthorne and colleagues (1995; 1996) examined the effectiveness of the Life Education Centre's drug education programme targeted at 5-12 year olds. This programme was rated to be highly applicable. For four programmes that targeted substance use (Project ALERT, Project Towards No Drug Abuse, Project SMART and DARE) it was not clear whether the approach to alcohol use was based on a harm reduction or abstinence approach. Three programmes, Project ALERT (Ellickson & Bell 1990; 1993a; 1993b), Project SMART (Graham et al., 1990) and Project Towards No Drug Abuse (Dent et

al., 2001; Sun et al., 2006; Sussman et al. 1998; 2003), were delivered by adult health educators and one programme, Drug Abuse Resistance Education (DARE) was delivered by uniformed police officers. Thirteen studies examined DARE (Clayton et al. 1991; 1996; Lynam et al., 1999; Bennett, 1995; Rosenbaum et al., 1994; Ennett et al., 1994; Rosenbaum & Hanson 1998; Dukes et al., 1996; 1997; Ringwalt et al., 1992; Brewer et al., 1992; Harmon 1993; Perry et al., 2003). Three additional studies (Schinke et al., 2000; Moberg & Piper, 1990; Brewer 1991), also rated C for applicability, examined the effects of programmes delivered by cultural group leaders (Schinke et al., 2000), trained college age instructors (Moberg & Piper, 1990) and a certified school psychologist (Brewer, 1991), respectively.

**Box 5.3.2. Summary of programme content: Classroom-based programmes led by external contributors specifically targeting substance use including alcohol**

<b>Programme</b>	<b>Reference(s)</b>	<b>Programme content</b>
Life Education Centres	Hawthorne et al., 1995; 1996	<ul style="list-style-type: none"> <li>• Mobile Life Education Centre presentation</li> <li>• Preparatory and follow-up classroom work by classroom teachers</li> </ul>
Project ALERT	Ellickson et al., 1990; 1993a; 1993b	<ul style="list-style-type: none"> <li>• 8 lessons delivered in seventh grade and 3 lessons delivered in eighth grade</li> <li>• Taught by adult health educator, with or without assistance by a teen leader from a neighbouring high school</li> </ul>
Project ALERT (revised)	Ellickson et al., 2003	<ul style="list-style-type: none"> <li>• 11 lessons in seventh grade and 3 lessons in eighth grade</li> <li>• With or without booster lessons in the ninth and tenth grade</li> </ul>
Project TND	Sussman et al., 1998; Sun et al., 2006	Two intervention groups: <ul style="list-style-type: none"> <li>• 9 session curriculum</li> <li>• 9 session curriculum plus community components (implementation of a study committee, school events and distribution of a newsletter)</li> <li>• Delivered by trained health educators</li> </ul>
Project TND	Sussman et al., 2003	Two intervention groups: <ul style="list-style-type: none"> <li>• 12 session curriculum delivered by a health educator</li> <li>• 12 session self-instruction curriculum</li> </ul>
Project TND	Dent et al., 2001	<ul style="list-style-type: none"> <li>• 9 session curriculum</li> <li>• General high school sample</li> </ul>

Project SMART	Graham et al., 1990	Two intervention groups: <ul style="list-style-type: none"> <li>• 12 sessions on resistance skills training</li> <li>• 12 sessions on personal decision making, values clarification and stress management techniques.</li> </ul> Taught by health educator
DARE	Clayton et al. 1991; 1996; Lynam et al., 1999; Bennett, 1995; Rosenbaum et al., 1994; Ennett et al., 1994; Rosenbaum & Hanson 1998; Dukes et al., 1996; 1997; Ringwalt et al., 1992; Brewer et al., 1992; Harmon 1993	<ul style="list-style-type: none"> <li>• 17 weekly 1-hour sessions</li> <li>• Taught by uniformed police officers</li> </ul>
DARE vs. DARE Plus	Perry et al., 2003	<ul style="list-style-type: none"> <li>• Core DARE programme</li> <li>• 4-session classroom-based peer-led, parental involvement programme</li> <li>• Extracurricular activities</li> <li>• Neighbourhood action teams</li> </ul>
Curriculum for Native American students	Schinke et al., 2000	<ul style="list-style-type: none"> <li>• Based on LST</li> <li>• Sessions incorporated cultural content</li> <li>• Community involvement component based on community mobilisation</li> </ul>
Here's Looking at You 2000	Brewer, 1991	<ul style="list-style-type: none"> <li>• 9 sessions in 10<sup>th</sup> grade</li> <li>• Taught by a certified school psychologist</li> </ul>

### **5.3.3.1 Life Education Centres**

The Life Education programme evaluated by Hawthorne and colleagues (1995, 1996) consisted of three parts, preparatory classroom work, the Life Education presentation and follow-up work conducted by a classroom teacher. The Life Education presentation took place in a mobile classroom with an emphasis on learning how the body worked and identifying drug use pressures.

#### **Quality assessment**

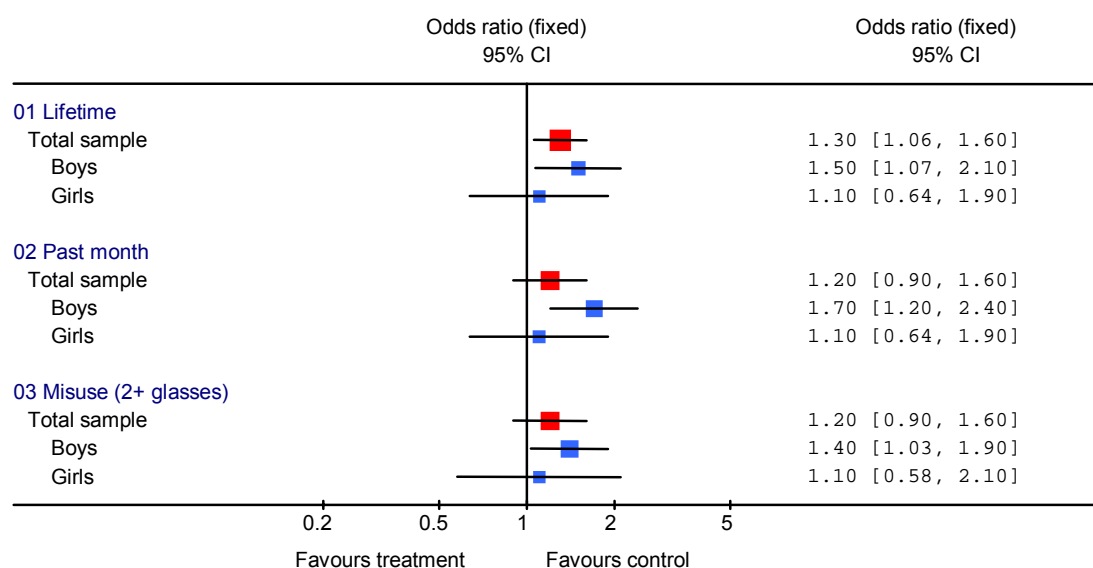
Hawthorne and colleagues (1995) used a controlled before and after design to examine the effects of the Life Education curriculum. The study compared students who had been exposed to the Life Education programme over 5 consecutive years with students not exposed to the programme but who had received conventional school-based drug education. Few details about the study methodology were

reported and it was therefore difficult to judge how well the study had been conducted. The study was consequently coded ‘CBA -‘.

**Primary outcomes**

Hawthorne and colleagues (1995; CBA -) found that students who received the Life Education programme were significantly more likely to report having drunk alcohol than non-Life Education students as shown in Figure 5.3.1. The authors reported that these findings were largely due to boys who received Life Education being significantly more likely to have drunk alcohol than non-Life Education boys as there was no difference between girls. There was no difference between students who had received the Life Education programme and those who hadn’t in terms of drinking in the previous month. However, boys who received the Life Education programme were more likely to have drunk in the previous month than non-Life Education boys. Again, there was no difference between girls. Boys who received the Life Education programme were also significantly more likely than non-Life Education boys to report having drunk two or more drinks per occasion. This finding was significant across the whole group at the student level analysis but not the school level. No secondary outcomes were reported.

**Figure 5.3.1. Alcohol use: Life Education Centres (Hawthorne et al., 1995)**



**5.3.3.2 Programmes delivered by health educators**

Three studies (Ellickson and Bell 1990; Bell et al., 1993a; Ellickson et al., 1993b) examined the effectiveness of the original Project ALERT drug prevention curriculum, which was based on the social influence model of prevention. The programme was taught over 2 years and was taught by an adult health educator, with or without

assistance by a teen leader from a neighbouring high school. One study (Ellickson et al., 2003) examined a revised version of the Project ALERT programme which put more emphasis on the reduction of alcohol misuse and increased parental involvement in the programme.

Four studies (Dent et al., 2001; Sun et al., 2006; Sussman et al., 1998, 2003) were identified that examined the effectiveness of the Project Towards No Drug Abuse (TND) prevention curriculum. The programme was originally developed for students at continuation high schools<sup>6</sup> in California. Three studies (Sun et al., 2006; Sussman et al., 1998, 2003) examined the effectiveness of the Project TND curriculum with students in continuation high schools. Sussman and colleagues (1998; Sun et al., 2006) compared two intervention groups with control; one group received a nine session version of the Project TND curriculum delivered by trained health educators and the second group received the same Project TND curriculum plus community components, which included the implementation of a study committee, school events and distribution of a newsletter. Sussman and colleagues (2003) compared students who received a 12 session version of the Project TND curriculum delivered by a health educator or a self-instruction version of the programme, to a standard care control group. One study (Dent et al., 2001) examined the generalisability of the nine session Project TND curriculum to a general high schools sample (ninth, tenth and eleventh grades).

Graham et al (1990) examined the Project SMART (Self-Management and Resistance Training) programme, delivered to seventh grade students.

### ***Quality assessment***

Ellickson and Bell (1990; Bell et al., 1993; Ellickson et al., 1993) randomly assigned schools to one of three experimental conditions, blocked by district. The study methodology was adequately reported and the study appeared to have been well conducted. However, although the authors report that the procedures used for randomisation produced substantial baseline equivalence across groups, no data were presented to verify this statement. In addition, the analysis sample at the end of the 2 year programme and at subsequent follow-ups included approximately 60% of

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<sup>6</sup> Students who are unable to remain in the regular school system (for example, because of substance use) are transferred to continuation high schools as according to a California mandate all youth must receive part-time education until the age of 18.

the original baseline sample, indicating a high level of attrition across the duration of the study (RCT +). The revised version of the Project ALERT programme (Ellickson et al., 2003) also used randomly assigned school clusters to intervention and control groups, blocking by geographic region and community size and type. The study methodology was clearly reported and the study was judged to have been adequately conducted (RCT +). For example, there were baseline differences between groups but the authors adjusted for these in subsequent analyses. In addition, attrition from the study was relatively low with 90% of students retained at the end of the 2 year programme.

Sussman and colleagues (1998; Sun et al., 2006) used an RCT design, with schools as the random unit of assignment to examine effects of Project TND in continuation high school students. The study appeared to have been well conducted but not all aspects of the study methodology were clearly reported. In addition, over 30% of the sample was lost to follow-up at 1 year and less than 50% provided long-term follow-up data. Sussman and colleagues (2003) also used an RCT cluster design to compare the effects of Project TND delivered by a health educator delivery to self-instruction. Again the study appeared to well conducted but insufficient methodological details were reported to determine this fully and it was coded '+'. In addition, the study suffered from a high level of attrition with over 50% of participants lost to follow-up at 2 years. The RCT by Dent and colleagues (2001) appeared to have been adequately conducted but full details were lacking about the experimental design of the study. In addition, the rate of attrition from the study was high, over 40% of participants were lost to follow-up over at 1 year.

Graham et al (1990) used an RCT design to examine the effects of the Project SMART programme, with schools as the unit of assignment. The study examined students who had received the Project Smart programme in seventh grade against students who had not. The study addressed a clearly focused question and provided adequate information on the methodology of the study and was consequently coded '+'.

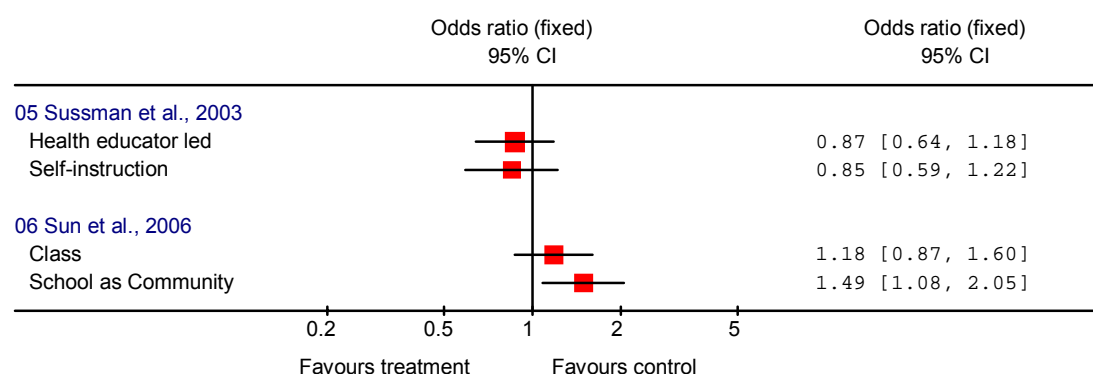
### ***Primary outcomes***

Results of the original Project ALERT programme were reported according to baseline drinking status (non-drinker, experimenter, user) (Ellickson and Bell 1990; Bell et al., 1993; Ellickson et al., 1993). The authors reported that among baseline non-drinkers, Project ALERT reduced the number of students who initiated alcohol

use in the subsequent 3 months by 28% ( $p=0.04$ ) and also reduced past month drinking ( $p=0.02$ ). The programme also produced reductions among experimenters and users but the results did not reach significance. Between the seventh and eighth grades, students in both groups increased their exposure to alcohol and there was no difference between intervention and control students on any measure of alcohol use at the 12- and 15-month follow-ups (before and after delivery of the eighth grade curriculum, respectively), with the exception of students in the teen leaders condition. Students in the teen leader condition reported significantly more alcohol use in the past month compared to controls at the 12-month follow-up ( $p<0.05$ ). There was no difference between intervention and control students on any measure of alcohol use at the ninth grade follow-up (Ellickson et al., 1993; RCT +). However, there was a trend towards greater alcohol use in the adult-only condition. Ellickson and colleagues (2003; RCT +) found that there were no significant effects of the revised Project ALERT programme on initial or current drinking behaviours. However, Project ALERT students were marginally less likely to engage in multiple forms of high risk drinking (binge drinking in the past month, poly-drug use of alcohol and cannabis in the past year, or weekly drinking) ( $p<0.10$ ).

Sussman and colleagues (1998; RCT +) reported that at the 1-year follow-up, continuation school students in the classroom-only Project TND group who reported alcohol use at baseline had significantly lower alcohol use than control students ( $p<0.01$ ). There was no effect of the programme in baseline nonusers. Sun and colleagues (2006; RCT +) reported that the programme had no significant effects on alcohol use at the middle- to long-term follow-up (2 to 3 years, and 4 to 5 years follow-up, respectively). At the 2-year follow-up, Sussman and colleagues (2003; RCT +) found that neither the health instructor led programme nor the self-instruction programme significantly reduced alcohol use compared to standard care control at the 2-year follow-up of the programme. However, the effect on alcohol use favoured a positive intervention effect for both programmes. Alcohol use at the 2-year follow-up for these two studies is plotted in Figure 5.3.2.

Dent and colleagues (2001; RCT -) reported that there appeared to be no effect of the Project TND curriculum on alcohol use among baseline nonusers and students reporting lower levels of alcohol use in a general high school sample. Among students who reported higher levels of baseline alcohol use, intervention students reported significantly lower alcohol use at the 1-year follow-up compared to the control students.

**Figure 5.3.2. Alcohol use at 2-year follow-up: Project TND**

The Project SMART programme (Graham et al., 1990; RCT +) had significant effects on the alcohol use index ( $p=0.03$ ) at 1-year follow-up. The programme's effect was strongest for Asian students, with Hispanic, Black and White students less affected by the programme.

### **Secondary outcomes**

Students who received the revised Project ALERT programme (Ellickson et al., 2003; RCT +) were significantly less likely to engage in drinking that resulted in negative consequences (including getting sick, getting in a physical fight, getting in trouble at school, getting in trouble at home, or doing something he/she later regretted) ( $p<0.04$ ). In addition, students assigned to intervention schools had significantly lower overall alcohol misuse scores (sum of alcohol-related consequences and high-risk drinking) than did those in the control schools at the eighth grade follow-up, 18 months from baseline ( $P<0.05$ ). Secondary outcomes were not reported for Project TND or Project SMART.

### **5.3.3.3 Programmes delivered by police officers**

The core DARE programme consisted of 17 weekly 1-hour sessions delivered by uniformed police officers to students in sixth grade (aged 11 to 12 years). Four studies by Clayton and colleagues (1991; 1996), Bennett (1995) and, Lynam and colleagues (1999) examined the effectiveness of DARE in a cohort of sixth grade students in schools in Kentucky, USA. The study began in 1987 and students were followed up over 10 years. Three studies followed a cohort of students in Illinois, USA (Rosenbaum et al., 1994; Ennett et al., 1994; Rosenbaum & Hanson 1998), following students from sixth through twelfth grade. Dukes and colleagues (1996; 1997) also examined the long-term effectiveness of DARE, following a cohort of students in Colorado Springs, USA over six years. Three additional studies (Ringwalt et al.,

1991; Becker et al., 1992; Harmon 1993) examined the short-term effectiveness of DARE in three different student cohorts. Perry and colleagues (2003) examined the effectiveness of DARE compared to DARE Plus, which combined the core components of the DARE programme with a 4-session classroom-based peer-led, parental involvement programme, extracurricular activities and the formation of neighbourhood action teams. All programmes were delivered to students in seventh or eighth grade.

### ***Quality assessment***

The four studies (Clayton et al. 1991; 1996; Bennett 1995; Lynam et al., 1999) that followed the cohort of students in Kentucky used an RCT design, however the design of the study was not balanced and more schools were randomly assigned to receive DARE (n=23) than were assigned to the comparison condition (n=8). Few details were reported about how schools were randomly assigned and details were lacking regarding the baseline equivalence of intervention and comparison groups. On the whole it was difficult to judge whether the study had been adequately conducted (RCT -). The study suffered from relatively high attrition across the duration of the study although this was to be expected because of the long duration of follow-up. Approximately 45% of students were lost to follow-up after 5 years. The three studies by Rosenbaum and colleagues (Rosenbaum et al., 1994; Ennett et al., 1994; Rosenbaum & Hanson 1998) used a quasi-experimental design. Of 36 schools selected for the study, 12 pairs were randomly assigned to intervention or control groups. In the remaining six pairs, schools were nonrandomly assigned based on whether a DARE officer served their area. On the whole the studies were judged to have been conducted adequately (CNRT +). However, it was not clear how many students participated in the study at the 6-year follow-up. Dukes and colleagues (1996; 1997) used a controlled before and after design to examine the long term effects of DARE. Schools received DARE based on an administrative decision by the district and the school. Students in schools that did not receive DARE served as the comparison group. The studies appear to have been poorly conducted (CBA -). It was not clear whether intervention and comparison groups were similar at baseline, and although the authors reported that groups were matched no data were presented to verify this statement. At the three and six year follow-ups, students who had received the DARE programme in sixth grade were identified by asking them about their exposure to DARE. It was therefore doubtful that the authors matched pre- and post-test data for participants. The three remaining studies examined the effects of DARE over the duration of the programme only. Ringwalt and colleagues (1991)

used an RCT design, assigning schools to receive DARE or to a wait list control group. Few details regarding the study methodology were reported and intervention and control students were not matched at baseline on alcohol use measures. Consequently the study was coded '-'. Brewer and colleagues (1992) used a controlled before and after study design. Very few details were reported regarding the methodology of the study and it was difficult to judge how well the study had been conducted (CBA -). The study by Harmon (1993) also used a controlled before and after study design but sufficient methodological details were reported to determine that the study had been adequately conducted (CBA +). Perry and colleagues (2003) used an RCT design to examine the effectiveness of an expanded version of the DARE curriculum. The study appears to have been adequately conducted and was coded '+

### ***Primary outcomes***

Clayton and colleagues (1991; RCT -) found that there was no significant difference between students who received the DARE programme and control students on any of the measures of alcohol use (lifetime, past year or past month) immediately following delivery. Clayton and colleagues (1996) followed up the same group of participants five years later. No significant differences were observed between intervention and comparison schools regarding alcohol use in the 7<sup>th</sup> grade, one year after the project was delivered, or over the 5 year measurement interval. Lynam and colleagues (1999) found that receiving the DARE programme in the sixth grade was unrelated to alcohol use or either kind of alcohol expectancy (negative and positive) at age 20.

Rosenbaum and colleagues (1994) reported that the results of a logistic regression model showed that DARE exposure had no statistically significant main effects on the initiation of alcohol use, increased use of alcohol, or quitting behaviour at immediate posttest. Ennett and colleagues (1994; CNRT +), however, found that DARE had significant, positive effects on increased alcohol use in a subgroup of students in rural schools. These effects were not sustained at subsequent follow-ups and there were no significant effects of DARE on heavy drinking or attempts to quit alcohol at any follow-up. After controlling for age and exposure to supplementary drug education Rosenbaum and Hanson (1998; CNRT +) found no significant effects of DARE on lifetime or last month alcohol use after 6-years follow-up. DARE participation had a small but nonsignificant effect on delaying the onset of first getting drunk but decreased the delay in regular drinking. Dukes and colleagues (1996;

1997; CBA -) found that DARE had no effects on alcohol use or age of alcohol initiation at either the 3- or 6-year follow-up.

Three additional studies examined the short-term effects of DARE. The analyses undertaken by Ringwalt and colleagues (1991; RCT -) showed that DARE had significant overall effects on alcohol-related variables. However, there was no difference between DARE students and control students on measures of current use or lifetime involvement with alcohol. Becker and colleagues (1992; CBA -) found that DARE had no effects on alcohol use over time. After controlling for pre-existing differences between intervention and control students at baseline, Harmon (1993; CBA +) found that DARE students reported less alcohol use in the last year compared to control students ( $p < 0.05$ ). However, DARE and control students did not differ significantly in terms of the frequency of alcohol use in the past month.

Perry and colleagues (2003) found that there was no significant difference in use of alcohol between DARE Plus students and control students at the 6- or 18-month follow-ups. The authors also examined the results separately for boys and girls. Boys who received the DARE Plus programme were less likely than those in the control group to show increases in past year or month alcohol use ( $p=0.04$  and  $p=0.01$ , respectively). Girls in DARE Plus schools were less likely to report increases in ever having been drunk, compared with girls in DARE only schools ( $p=0.04$ ). There were no other differences between conditions among girls.

### ***Secondary outcomes***

Clayton and colleagues (1991; RCT -) reported that students in the DARE group reported a significant increase in negative attitudes towards alcohol compared to students in the control group ( $p < 0.01$ ) at the immediate posttest. There was no effect of DARE on self-esteem or peer-pressure resistance. In the same sample five years later (Clayton et al., 1996; RCT -), significant effects of DARE were found in terms of students' general and specific drug attitudes, capability to resist peer pressure and estimated level of drug use among peers. Lynam and colleagues (1999; RCT -) found that DARE status in the 6th grade was unrelated to peer-pressure resistance levels at age 20 and negatively related to self-esteem at age 20, however the authors report that this was likely to be a chance finding.

Ennett and colleagues (1994; CNRT +) reported that at immediate posttest, DARE had a significant, positive effect on participant's self esteem, but no effects on any of

the other variables measuring students' attitudes towards drugs or their social skills. At the 1- and 2-year follow-ups there were no effects of DARE on any social or psychological outcomes. Rosenbaum and colleagues (1994; CNRT +) reported that the only significant effects of DARE on attitudes and beliefs at 1-year follow-up was a significant effect on the perceived media influence on beer drinking. That is, students exposed to DARE were significantly more likely than students in the control group to recognise the media's portrayal of beer drinking as desirable ( $p < 0.05$ ). DARE had no statistically significant main effects on any of the school performance and behaviour outcomes measured. Rosenbaum and Hanson (1998; CNRT +) tested the hypothesis that DARE would have a sustained effect on the variables that are thought to mediate the relationship between drug education and drug use. After 6 years of follow-up, students who participated in DARE were more likely than control students to report awareness of media efforts to make beer appear attractive. However there was a significant interaction with time suggesting dissipation of the effects over time. All other DARE effects were small and nonsignificant. Duke and colleagues (1996; CBA -) reported that at the 3-year follow-up there was no difference between students who received D.A.R.E. and those who did not in terms of pro drug use attitudes or resistance to peer pressure.

Three studies examined the short term effects of DARE only. Ringwalt and colleagues (1991; RCT -) found that compared with control students, students who received DARE perceived alcohol costs to be higher, and the media's portrayal of beer drinking to be more favourable. Becker and colleagues (1992; CBA -) reported that significant overall effects of DARE were shown for the following outcomes compared to control: general attitude toward drugs, attitude toward use of specific drugs, perceived peer attitude toward drug use and assertiveness. There was no effect of DARE on self-esteem. Relative to students in the control schools, students who received DARE had more negative attitudes both toward drugs in general and the use of specific substances; and were less likely to believe that their peers had a positive attitude and were more assertive. Harmon (1993; CBA +) found that DARE students reported higher levels of belief in prosocial norms ( $p < 0.01$ ), reported less association with drug using peers ( $p < 0.01$ ), felt more of the peer associations were positive or prosocial ( $p < 0.05$ ) and had more negative attitudes towards substances ( $p < 0.001$ ), and were more assertive ( $p < 0.05$ ) than control students. Compared to controls, DARE had no effect on items targeting coping strategies and attitudes about the police, or social integration, commitment and attachment to school, rebellious behaviour or self esteem.

Perry and colleagues (2003; RCT +) examined the effectiveness of an enhanced version of the DARE programme, DARE Plus. At the 18-month follow-up, boys who received the DARE Plus programme were less likely than those in the control group to show increases in alcohol behaviour and intentions ( $p=0.04$ ). There were no differences between intervention and control conditions among girls.

#### **5.3.3.4 Programmes delivered by other types of external contributors**

One programme was identified that targeted substance use and was delivered by a certified school psychologist. Brewer (1991) examined the effectiveness of Here's Looking At You, 2000, a social skills training programme delivered to 10<sup>th</sup> graders (15-16 years old). The programme was based on social learning theory and was delivered by a school psychologist over nine sessions. Students were followed up six months after delivery of the programme. Schinke and colleagues (2000) examined a culturally tailored school-based substance abuse prevention programme for third, fourth and fifth grade Native American students. The school-based prevention programme was based on life skills training and incorporated Native American values, legends and stories. Students in one intervention arm also participated in a community involvement component that involved community activities and media programming.

#### **Quality assessment**

Brewer (1991) used a RCT design to assess the effectiveness of the Here's Looking At You, 2000, programme. Students were randomly assigned to intervention, 'placebo' or control conditions. The intervention group received the Here's Looking At You, 2000 programme, the 'placebo' group received an intervention of equal time and the control group received no intervention. The research design and method of data analysis were efficiently reported, and the groups were matched at baseline, consequently the study was coded 'RCT +'. On the whole the study methodology used to evaluate the programme for Native American students was adequately reported (Schinke et al., 2000). However, details were lacking regarding the methods used to randomly assign schools between the intervention and control arms. The study was coded 'RCT +'.

#### **Primary outcomes**

The Here's Looking At You, 2000 programme did not significantly delay the onset of alcohol use or decrease alcohol use amongst students experimenting with alcohol or

students regularly using (but not addicted to) alcohol (Brewer 1991; RCT +). Schinke et al., (2000; RCT +) found that significantly fewer Native American students who participated in the school curriculum only, and school curriculum plus community groups reported alcohol consumption at 30- and 42-month follow-up compared to control ( $p < 0.01$ ). In addition, significantly fewer participants in the school curriculum only group reported alcohol use at 30- and 42- month follow-ups compared to both control and participants who received the school curriculum plus community components. No secondary outcomes were reported for either study.

### 5.3.4 Programmes targeting general health behaviours

One programme (Moberg & Piper, 1990) was identified that targeted general health behaviours including alcohol use and drinking driving. The applicability of the programme was judged to be unclear because the programme appeared to target drink driving behaviours rather than the reduction or prevention of alcohol use specifically.

**Box 5.3.3. Summary of programme content: Classroom-based programmes led by external contributors specifically targeting general health behaviours**

Programme	Reference(s)	Programme content
Project Model Health	Moberg & Piper, 1990	<ul style="list-style-type: none"> <li>• 32 hours of classroom instruction and activities</li> <li>• Male/female teams of college-age instructors</li> </ul>

#### 5.3.4.1 Project Model Health

Project Model Health was a health promotion program aimed at middle school children led by teams of college age instructors (Moberg & Piper, 1990). The programme targeted multiple health behaviours including drinking and driving. The program was delivered in the eighth grade over 64 sessions and consisted of 32 hours of classroom time. The health promotion programme comprised of a number of health behaviour objectives including teaching students not to accept a ride in a motor vehicle driven by a driver whose ability has been impaired by drinking alcohol. The study evaluated the immediate and long-term effects of the programme.

#### Quality assessment

Moberg and Piper (1990) used a quasi-experimental design to evaluate the effectiveness of Project Model Health. The study compared eighth graders that were exposed to the programme with students from a similar school where the programme

was not offered. The study suffered from a relatively high attrition rate with only 74% of participants completing the study. However the study methodology was sufficiently explained and the study identified its limitations, including non-experimental assignment to conditions. The study also provided detailed information on data collection methods and analysis, and was subsequently coded 'CBA +'.

### ***Primary outcomes***

At the 1-year follow-up, there was no difference in prevalence of alcohol use in the last month or frequency of use in the last month between students who participated in Project Model Health and control students (Mober & Piper, 1990; CBA +).

### ***Secondary outcomes***

At the 1-year follow-up there was no difference in self-esteem was demonstrated between students who received the Project Model Health programme and control students (Moberg & Piper, 1990; CBA +).

## **5.3.5 Summary and evidence statements**

A total of 28 studies were identified that evaluated nine classroom-based intervention programmes taught by external contributors. Programmes were taught by the following types of external contributors: research project staff, adult health educators, uniformed police officers, college age instructors, certified school psychologist, and Life Education Centre staff.

### ***5.3.5.1 Short term results (<6 months)***

Short-term follow-up data were reported for three programmes. The Life Education Centre curriculum was found to have no short-term effects on alcohol use and to have potentially increased alcohol use in boys who participated in the programme. The original version of the Project ALERT programme (Bell et al., 1993) was shown to reduce alcohol use in the short-term but only amongst students who reported that they did not drink at baseline. The revised Project ALERT curriculum had no effects on alcohol use however intervention students reported less risky drinking behaviour in the short term. Five studies (Clayton et al., 1990, 1996; Ennett et al., 1994; Ringwalt et al., 1991; Becker et al., 1992) reported on the short-term effects of the DARE programme, but the programme did not show consistent effects on alcohol use.

### **5.3.5.2 Medium term results (up to 1 year)**

Medium-term follow-up data were reported for five programmes. Three studies (Hansen & Graham 1991; Donaldson et al., 2000; Kreft 1998) reported 1-year follow-up data for the AAPT. One study (Hansen & Graham, 1991) reported that students who received normative education had lower rates of alcohol consumption, although in a second study (Donaldson et al., 2000) this finding was only found in students who attended public schools. Three studies (Sussman et al., 1998; Sun et al., 2006; Dent et al., 2001) reported 1-year outcomes of Project TND. There were no significant effects of a 9-session curriculum with continuation high school students. However, delivery of the same programme to a general high school reduced drinking among students who reported high baseline use. Three programmes were shown to have no effects on alcohol use at 1-year: Project ALERT, Project SMART, and Project Model Health.

### **5.3.5.3 Long term results (>1 year)**

Long-term follow-up data (>1 year) was reported for five programmes. Schinke and colleagues (2000) reported positive, long-term effects of a culturally tailored intervention for Native Americans on weekly drinking. One study (Palmer et al., 1998) examined the long-term effects of the AAPT curriculum. Normative education was found to be more effective than information only control in terms of reducing alcohol use, two years after delivery of the programme. However, these findings are limited as the programme was delivered entirely by research project staff and the effectiveness of the programme when delivered by other professionals is not known. One study (Ellickson et al., 1993) examined the long-term effectiveness of the original Project ALERT curriculum as delivered by adult health educators. There were no long-term effects on alcohol use when students were followed-up in tenth or twelfth grade. Five studies examined the long-term effects of the DARE programme on alcohol use behaviours (Clayton et al., 1996; Lynam et al., 1999, Rosenbaum & Hanson 1998; Dukes et al., 1996, 1997). All five studies demonstrated that the programme did not have any long-term effects on alcohol use. The long-term effectiveness of Project TND was examined in two studies (Sussman et al., 2003; Sun et al., 2006). There were inconsistent effects of the programme on alcohol use behaviours in continuation high school students over different programme versions. Neither programme had a significant long-term effect on alcohol use, but intervention effects favoured the 12-session programme delivered by health educators.

### **Evidence statement 3**

There is evidence to suggest that classroom-based programmes taught by adult health educators (including Project ALERT<sup>1</sup>, Project SMART<sup>2</sup>, Project TND<sup>3</sup>) and uniformed police officers, such as DARE<sup>4</sup>, have no medium- or long-term effects on alcohol use. There is inconsistent and insufficient evidence to determine the medium- to long-term effectiveness of normative education programmes<sup>5</sup> led by external contributors. There is evidence to suggest that a culturally tailored skills training intervention for Native American students may have long-term effects on alcohol use<sup>6</sup>. However, given the cultural specificity of this programme it has limited applicability to UK practice and policy.

<sup>1</sup> Ellickson et al., 1990; 1993a; 1993b; Ellickson et al., 2003 (all RCT +)

<sup>2</sup> Graham et al., 1990 (RCT +)

<sup>3</sup> Sussman et al., 1998; Sun et al., 2006 (RCT +); Sussman et al., 2003 (RCT +); Dent et al., 2001 (RCT -)

<sup>4</sup> Clayton et al. 1991; 1996 (RCT -); Lynam et al., 1999 (RCT +); Bennett, 1995 (RCT -); Rosenbaum et al., 1994 (CNRT +); Ennett et al., 1994 (CNRT +); Rosenbaum & Hanson 1998 (CNRT +); Dukes et al., 1996; 1997 (CBA -); Perry et al., 2003 (RCT +)

<sup>5</sup> Hansen & Graham, 1991; Donaldson et al., 1995, 2000; Palmer et al., 1998; Kreft, 1998 (all RCT -)

<sup>6</sup> Schinke et al., 2000 (RCT +)

**Table 5.3.1. Classroom-based programmes led by external contributors: Programmes targeting alcohol specifically**

Author (Year)	Study design	Study population	Length of follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
<b>Adolescent Alcohol Prevention Trial (AAPT)</b>							
Hansen & Graham 199	RCT -	USA 7 <sup>th</sup> grade N= 3,011	1 year	N=2416 (80.2%)	Normative education reduced rates of alcohol consumption. No effect of resistance training or combined programme.	NR	B/C (refusal skills, normative education)
Kreft 1998	RCT -	USA 7 <sup>th</sup> grade N= 3,027	1 year	2378 (78.6%)	No effects on alcohol use.	NR	B/C (refusal skills, normative education)
Palmer et al. 1998	RCT -	USA 7 <sup>th</sup> grade N= 3,027	2 years	46%	No programme effects on alcohol use. At the ninth grade follow-up, there were significant programme effects on alcohol use demonstrated for the normative education condition versus the information only control.	NR	B/C (refusal skills, normative education)
Donaldson et al 1995	RCT -	USA 5 <sup>th</sup> and 7 <sup>th</sup> grade N= 11,995	PT at 1 year	80% completed the PT questionnaire	Resistance training delayed the onset of alcohol use, but only when adolescents believed it is not acceptable to drink	NR	B/C (refusal skills, normative education)
Donaldson et al. 2000	RCT -	USA 5 <sup>th</sup> and 7 <sup>th</sup> grade N= 11,995	8th, 9th and 10th grades	NR	Significant effect on alcohol use of normative education in public school students. Negative effects of resistance skills training. No effects seen in private school students.	NR	B/C (refusal skills, normative education)

**Table 5.3.2. Classroom-based programmes led by external contributors: Programmes targeting substance use including alcohol**

Author (Year)	Study design	Study population	Length of follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
<b>Life Education Centres</b>							
Hawthorne et al. 1995	CBA -	Australia Year 6 N= 3,019	PT	Not reported	Intervention had significant negative effects on alcohol use, particularly in boys.	Not reported	B
Hawthorne 1996	CBA -	Australia Year 6 N= 3,019	PT	Not reported	No preventive effects of the programme at the school or population level. Indication that programme was harmful.	Not reported	B
<b>Project ALERT</b>							
Ellickson et al., 1990; Bell 1993	RCT +	USA 7th grade N=6,527	PT (3, 12, and 15 months from baseline)	60% followed up	No intervention effects on drinking behaviour in the longer term.	Not reported	C
Ellickson et al., 1993	RCT +	USA 7th grade N=~4,000	PT, 1, 2 and 4 years (12, 15, 24, 36, and 60 months from baseline)	57% at follow-up	No intervention effects on drinking behaviour in the longer term.	NR	C
Ellickson et al., 2003	RCT +	USA 7th and 8th grade N=4,689	PT (18 months from baseline)	79% completed intervention	Students in intervention schools had significantly lower overall alcohol misuse scores and were less likely to engage in drinking that resulted in negative consequences. No effects on initiation or current use.	Project ALERT students were significantly less likely to engage in drinking that resulted in negative consequences.	C
<b>Project Towards No Drug Abuse</b>							
Sussman et al., 1998; Sun et al., 2006	RCT +	USA 14-19 years N= 1,578	1, 2, 3, 4 and 5 years	46% followed up at 4/5 years	No effects of the programme on alcohol use.	NR	C
Sussman et al., 2003	RCT +	USA 14-19 years N= 1,037	2 years	55% followed up	No significant differences between either intervention condition or control.	NR	C

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Author (Year)	Study design	Study population	Length of follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
Dent et al., 2001	RCT -	USA 14-17 years N= 1,208	1 year	63% followed up	Significant, positive programme effects demonstrated on alcohol use in high baseline users. No effects in baseline nonusers or low-level users.	NR	C
<b>Drug Abuse Resistance Education (DARE)</b>							
Clayton et al., 1991	RCT -	USA 11-12 years n= 2,091	PT (4 months from baseline)	92% completed study	No significant effects on alcohol use measures.	Students in the DARE group reported a significant increase in negative attitudes towards alcohol. No effect of DARE on self-esteem or peer-pressure resistance.	C
Clayton et al., 1996	RCT -	USA 11-12 years n= 2,091	PT at 4 months and each year for 5 years	45% lost at 5 years	No significant effects on alcohol use measures.	Significant intervention effects were found for students' general and specific drug attitudes, capability to resist peer pressure and estimated level of drug use among peers.	C
Lynam et al., 1999	RCT +	USA 11-12 years N=1,002	10 years	NR	DARE status was unrelated to alcohol use at age 20.	DARE status in the 6th grade was unrelated to peer-pressure resistance levels at age 20 and negatively related to self-esteem at age 20 (the authors report that this was likely to be a chance finding).	C
Bennett 1995	RCT -	USA 11-12 years n= 2,091	PT, follow-up from 7-9th grade	NR	At 7th grade follow-up, more low-achieving control participants reporting using alcohol on at least one occasion compared (p<0.05).	Students who received DARE reported significantly more negative attitudes to alcohol than comparison students at posttest.	C
Rosenbaum et al 1994	CNRT +	USA 10-11 years N=1,584b	1 year after baseline assessment	88% followed up	No statistically significant main effects on alcohol use	Only significant effects of DARE on attitudes and beliefs, was a significant effect on the perceived media influence on beer drinking.	C

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Author (Year)	Study design	Study population	Length of follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
Ennett et al 1994	CNRT +	USA 10-11 years N=1,334a	PT, 1 yr from baseline and 2 years from baseline	74% followed up	Significant effects on alcohol use (rural students only) at PT. Not sustained.	Significant effects of DARE on participant's self esteem at PT, but no effects on any of the other variables measuring students' attitudes towards drugs or their social skills. There were no effects of DARE on any social or psychological outcome at 1- or 2-year follow-ups.	C
Rosenbaum and Hanson 1998	CNRT +	USA 10-11 years N=1,798	6 years from baseline	2% lost to follow-up	No significant effects on lifetime or last month alcohol use.	Long term effects of DARE were small and nonsignificant.	C
Dukes et al., 1996; Dukes et al., 1997	CBA -	USA 5th or 6th grade n= 849	3 years, 6 years	NR	No effects on alcohol use at either follow-up	No difference between students who received D.A.R.E. and those who did not in terms of pro drug use attitudes or resistance to peer pressure at 3-year follow-up.	C
Ringwalt et al., 1991	RCT -	USA Mean 10.4 (SD 0.81) years N=1402	Immediate (PT)	91%	No effects on current use or lifetime involvement with alcohol	Significant overall effects of DARE shown for: general attitude toward drugs, attitude toward use of specific drugs, perceived peer attitude toward drug use and assertiveness. There was no effect of DARE on self-esteem.	C
Becker et al 1992	CBA -	USA 10-11 years n= 3,109	Immediate (PT)	93% followed up	Significance of change in alcohol variables not calculated	Not reported	C

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Author (Year)	Study design	Study population	Length of follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
Harmon 1993	CBA +	USA Mean 10.3 years n= 708	20 weeks	85% followed up	DARE students reported less alcohol use in the last year than control students No difference in frequency of alcohol use in the past month	DARE students reported higher levels of belief in prosocial norms, less association with drug using peers, felt more of the peer associations were positive or prosocial and had more negative attitudes towards substances, and were more assertive. No effect on items targeting coping strategies and attitudes about the police, or social integration, commitment and attachment to school, rebellious behaviour or self esteem.	C
Perry et al., 2001	RCT +	USA 7 <sup>th</sup> grade n= 6,237	6 and 18 months	84% completed study	No significant difference in use of alcohol between D.A.R.E. Plus students and control students at follow-up.	Boys receiving the D.A.R.E. Plus programme less likely to show increases in alcohol behaviour and intentions than controls. No differences between conditions among girls.	C
<b>Other classroom-based programmes</b>							
Graham et al., 1990 Project SMART	RCT +	USA 7th graders N= 5,070	1 year	70%	Significant programme effects on alcohol use index.	Not reported	C
Brewer 1991 Here's Looking at You 2000	RCT +	USA 10th grade N= 54	PT, 6 months	Not reported	No intervention effects.	NR	C

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Author (Year)	Study design	Study population	Length of follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
Schinke et al 2000  Curriculum for Native Americans students	RCT +	USA Mean 10.3 years N= 1,396	6, 18, 30 and 42 months	86% completed study	Significantly smaller percentage of participants in skills, and skills & community conditions reported alcohol consumption at 30 and 42 months. Fewer participants in the skills only condition reported alcohol use at 30 and 42 months (vs. control).	Not reported	C
Moberg & Piper 1990  Project Model Health	CBA +	USA 12-14 years N= 197	1 year	74% completed study	No difference between intervention and control groups in terms of alcohol use in the previous month	No difference between groups in terms of self-esteem.	C

## 5.4 Other in-school approaches

### 5.4.1 Overview of evidence identified

Nineteen studies were identified that examined school-based interventions that targeted alcohol use but that were delivered outside of the lesson format. The following types of approaches were identified: Five brief intervention programmes; two counselling programmes; three peer support programmes; and two other approaches.

### 5.4.2 Brief intervention programmes

Thirteen studies were identified that examined the effectiveness of brief intervention programmes. Details of the intervention components examined across the identified studies are shown in Box 5.4.1. Eight of the included studies (Werch et al., 1996; Werch & Carlson 1996; Werch et al., 1998; Werch et al., 2000a; Werch et al., 2000b, Werch et al., 2001, Werch et al., 2003; Werch et al., 2005a) examined the STARS (Start Taking Alcohol Risks Seriously) for Families programme. Three additional studies by Werch and colleagues (Werch et al., 2003b, 2005b, 2005c) examined two sport-based brief prevention programmes and an alcohol-tailored beverage programme. One study examined the relative effectiveness of the Risk Skills Training Program (RSTP) compared to an abbreviated version of DARE (DARE-A) and a no intervention control (D'Amico and Fromme 2002). Peleg et al (2001) assessed the impact of the Brief Alcohol Abuse Programme delivered to 10<sup>th</sup> grade students.

#### Box 5.4.1. Summary of programme content: brief interventions

Programme	Reference(s)	Programme content
Stars for Families	Werch et al., 1996	<ul style="list-style-type: none"> <li>• Self-instructional module and audiotape</li> <li>• Brief health consultation with nurse or doctor</li> <li>• Follow-up consultation with trained peers</li> <li>• Alcohol education booklet control</li> </ul>
Stars for Families	Werch & Carlson 1996	<ul style="list-style-type: none"> <li>• Brief health consultation with nurse</li> <li>• 6 focused weekly follow-up consultations</li> <li>• No intervention control</li> </ul>
Stars for Families	Werch et al., 1998	<ul style="list-style-type: none"> <li>• Brief health consultation with nurse</li> <li>• Letter to parents</li> <li>• Up to 9 family-based prevention lessons</li> <li>• Alcohol education booklet control</li> </ul>

Stars for Families	Werch et al., 2000a, 2001, 2003a	<ul style="list-style-type: none"> <li>• Brief health consultation with nurse</li> <li>• Up to 10 prevention postcards sent to parents</li> <li>• Follow-up consultation in second year</li> <li>• Four family lessons</li> <li>• Alcohol education booklet control</li> </ul>
Stars for Families	Werch et al., 2000b	<ul style="list-style-type: none"> <li>• Telephone-based nurse consultation</li> <li>• 10 prevention postcards sent to parents</li> <li>• No intervention control</li> </ul>
Stars for Families	Werch et al., 2005a	<ul style="list-style-type: none"> <li>• Single vs. multiple drug prevention</li> <li>• Brief health consultation with nurse</li> <li>• Eight prevention postcards sent to parents</li> <li>• Postcards only control</li> </ul>
Sport, Sport Plus, Sport Plus Parent	Werch et al., 2003b	<ul style="list-style-type: none"> <li>• Health fitness screen and health consultation with a nurse</li> <li>• Above, plus alcohol preventive consultation with a nurse</li> <li>• Above, plus five parental cards mailed once a week</li> </ul>
Project SPORT	Werch et al., 2005b	<ul style="list-style-type: none"> <li>• Health behaviour screen</li> <li>• Brief health consultation</li> <li>• Take-home fitness prescription and prevention flyer</li> <li>• No intervention control</li> </ul>
Alcohol beverage tailored programme	Werch et al., 2005c	<ul style="list-style-type: none"> <li>• Brief screening instrument</li> <li>• Brief alcohol risk reduction consultation</li> <li>• Tip sheet reinforcing key messages</li> <li>• Alcohol education booklet control</li> </ul>
Risk Skills Training Programme and DARE-A	D'Amico & Fromme 2002	<ul style="list-style-type: none"> <li>• Risk Skills Training Programme - 50 minute interactive group session with personalised feedback</li> <li>• Abbreviated DARE – four modules delivered over a 50 minute session</li> <li>• No intervention control</li> </ul>
Brief and intensive alcohol abuse prevention programme	Peleg et al., 2001	<ul style="list-style-type: none"> <li>• 3 day programme</li> <li>• Presentations by external experts</li> <li>• Small group extracurricular activities</li> <li>• Presentation of videotapes and movies</li> <li>• Parental involvement events</li> </ul>

#### 5.4.2.1 STARS for Families

Eight studies (Werch et al., 1996; Werch & Carlson 1996; Werch et al., 1998; Werch et al., 2000a; Werch et al., 2000b, Werch et al., 2001, Werch et al., 2003a; Werch et al., 2005a) were identified that examined the STARS for Families programme.

STARS is a universal prevention programme based on the stages of initiation and change prevention model (transtheoretical model).

### ***Quality assessment***

All evaluations of STARS for Families utilised an RCT design, and were generally of high quality (rated + or ++). Overall, participants were well matched between groups although in the study by Werch and colleagues (2000; RCT +) baseline alcohol prevalence was greater in intervention students. Follow up ranged from 10 weeks (Werch et al., 1996) to 1 year (Werch et al., 1998; Werch et al., 2003a), and attrition ranged from 3% (at 10 weeks) to 30% (at 1 year).

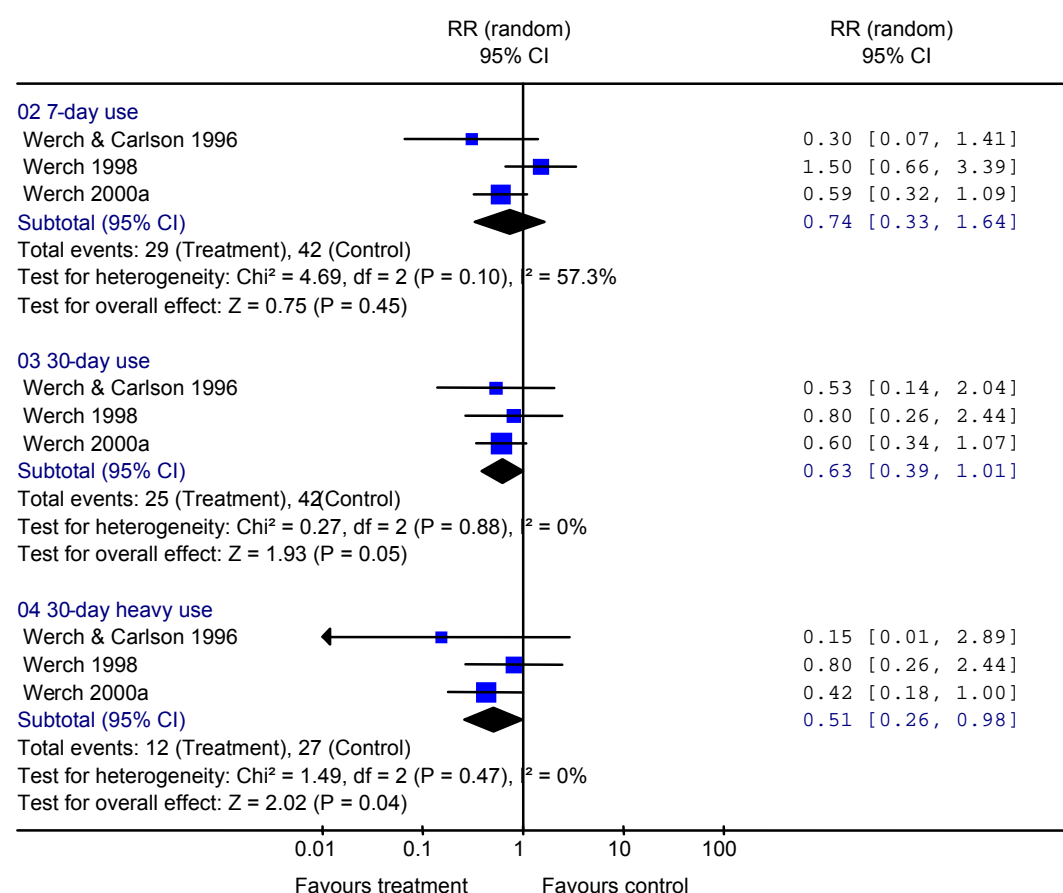
### ***Primary outcomes***

Werch and colleagues (1996; RCT +) reported that the STARS intervention had significant effects on 30-day quantity and frequency of alcohol use at 10 weeks follow-up (after delivery of the peer follow-up consultation), and STARS students reported using less alcohol than control students. However, there was no difference between intervention and control students on the measure of recent alcohol use or heavy alcohol use. A modified version of STARS that included six additional nurse contacts did not appear to affect alcohol use (Werch and Carlson, 1996; RCT +). At 3 months follow up, in a predominantly African American population, there was no difference in the prevalence of 7- or 30-day alcohol use, or frequency and quantity of alcohol use. Heavy alcohol use was significantly lower in the intervention group compared to control group ( $p=0.02$ ); although both group means were low. Werch and colleagues (1998; RCT +) found that a version of STARS, which included up to nine family-based prevention lessons, had no effects on alcohol use prevalence, frequency, or quantity at 1-year follow up. There was high attrition in this study (30%), and participants lost to follow-up were more likely to have initiated alcohol use.

Comparing community and commuter schools at 3 months post intervention (end of the first year of a two year intervention), Werch and colleagues (2001; RCT +) found intervention associated reductions in last week and last month drinking in STARS students in community schools (both  $p < 0.05$ ) but not in their commuter school counterparts. Although the proportion of community school intervention students who reported that they did not drink was higher than control students, there was no effect upon other indicators of alcohol involvement. At the end of the two-year programme (Werch et al., 2000a; RCT +), significant intervention effects were observed in terms

of alcohol initiation and 30-day heavy alcohol use<sup>7</sup>. Examining the same sample of students one year later, Werch and colleagues (2003a; RCT ++) found that although fewer intervention students were using alcohol than control students, there were no significant differences between groups (in either community or commuter schools) on lifetime, 30-day, or 7-day use of alcohol, or length of drinking. Short and medium term intervention effects of the STARS for Families programme are presented in Figure 5.4.1 and Figure 5.4.2, respectively.

**Figure 5.4.1. Short-term effects on alcohol use: STARS for Families**

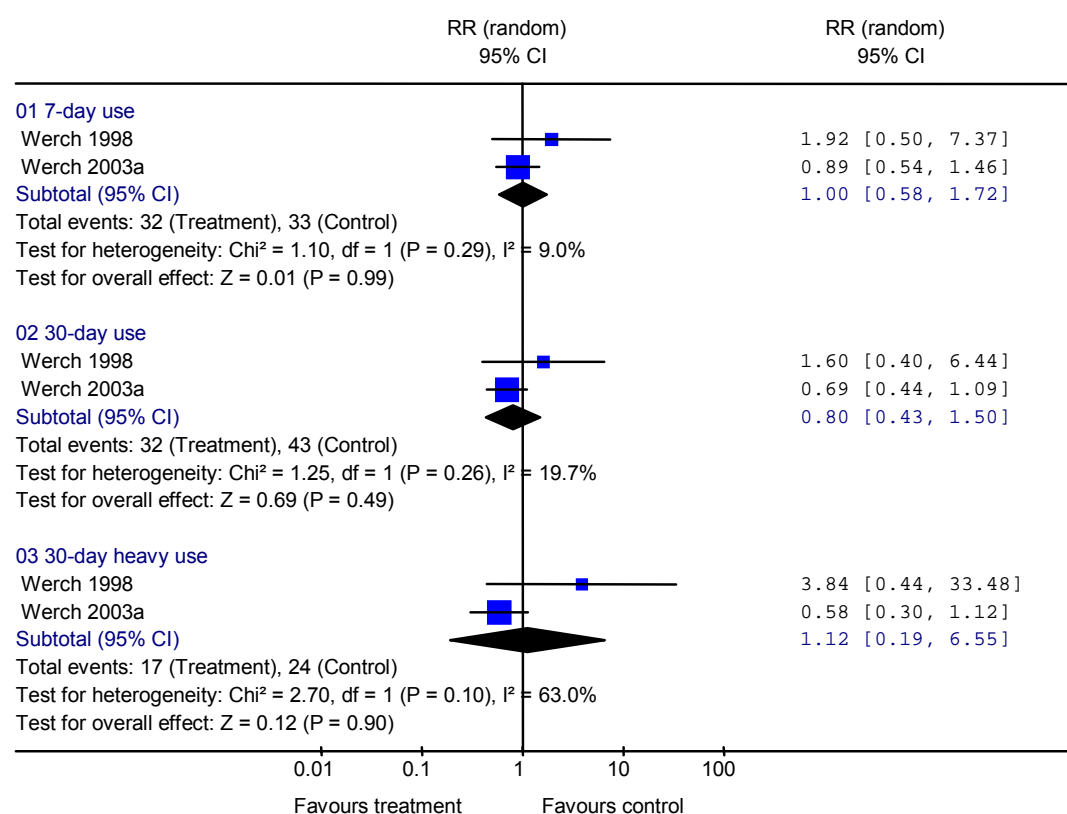


At 6 months follow up, in a sample of students recruited from sports physical examinations (Werch et al., 2000b), fewer intervention youth reported drinking during the previous month ( $p < 0.05$ ), and fewer reported drinking heavily ( $p < 0.05$ ) compared to control students who received no intervention. There were no significant effects on drinking in the last 7 days. However, it should be noted that at baseline, a significantly greater number of intervention students reported lifetime alcohol use and intentions to use alcohol. Werch and colleagues (2005a; RCT +) compared STARS

<sup>7</sup> Defined as consuming five or more drinks in a row during the past 30 days and two weeks

for Families (alcohol only) to a multiple substance intervention (STARS Plus), which included the same components as STARS for Families, and an information postcard control. At 3 months follow-up, alcohol consumption did not differ significantly across intervention and control groups. However, after adjusting for baseline substance use significant main effects were found according to intervention status. Mean adjusted 30-day frequency of alcohol use was lower for STARS students, than for Postcard only and STARS Plus students, ( $p < 0.05$ ).

**Figure 5.4.2. Medium-term effects on alcohol use: STARS for Families**



**Secondary outcomes**

Compared to control students, 10 weeks after receiving STARS for Families, 8<sup>th</sup> grade intervention students reported significantly fewer peer expectations to drink alcohol, less intention to use alcohol in the future, less intention to try alcohol and predicted less intention to use alcohol (all  $p < 0.05$ ) (Werch et al., 1996; RCT +). At 3 months, fewer intervention than control youth attending for sports examinations reported that they intended to use alcohol in next 6 months (Werch et al., 2000b; RCT +). At 1 year follow-up, after a 2 year STARS intervention (Werch et al., 2000a, 2001, 2003; RCT +) the authors reported that compared to control students, there was a significant reduction in alcohol risk (incorporating measures of

'influenceability', peer prevalence, expectancy beliefs, motivation to avoid) in community school intervention students, but not in their counterparts in the commuter school. As STARS is based on the transtheoretical model of change, several secondary outcomes addressed stage of alcohol contemplation. At 1 year follow-up, Werch and colleagues (1998; RCT +) reported there were no differences intervention and control students in terms of their contemplation stage. Three studies (Werch et al., 2000a; 2001; 2003; RCT +) examined the effects of a two year STARS programme in students attending neighbourhood and magnet (bused) schools. Following delivery of the first year of the programme (Werch et al., 2001; RCT +), compared to control students, more intervention students in neighbourhood schools were in the pre-contemplation stage (i.e. they had not tried alcohol in the previous year) ( $p < 0.05$ ). However, there was no difference between intervention and control students in magnet schools. Follow-up of these students after the delivery of the second year (Werch et al., 2000a) found that there were no significant differences between intervention and control students in either type of school on the stage of alcohol contemplation. At 1-year follow-up, however, fewer intervention students in magnet schools were in more advanced stages of alcohol contemplation than were control students. There were no differences observed between intervention and control students in neighbourhood schools.

#### **5.4.2.2 Other brief intervention programmes**

Five other brief intervention programmes were identified for inclusion. Werch and colleagues (2003b; 2005b) examined the effectiveness of two sport-based brief intervention programmes. Werch and colleagues (2003b) examined the effects of an alcohol prevention programme in the context of a sports programme. Participants received either a sport consultation programme with prevention consultation (Sport), or a sport and alcohol consultation (Sport Plus), sport and alcohol consultation plus parent materials (Sport Plus Parent). Werch and colleagues (2005b) examined the Project SPORT consultation programme for 11<sup>th</sup> grade students compared to printed materials. A brief alcohol-tailored beverage programme was also examined by Werch and colleagues (2005c), topics covered by the intervention programme were matched to the use of six alcoholic beverages (beer, wine, alcopops, fortified wine, spirits, malt liquor). One study examined the relative effectiveness of the Risk Skills Training Program (RSTP) compared to an abbreviated version of DARE (DARE-A) and a no intervention control (D'Amico and Fromme 2002). Peleg et al (2001) assessed the impact of the Brief Alcohol Abuse Programme delivered to 10<sup>th</sup> grade students. The programme was delivered over three days by high school staff and

external expert guests. The programme included presentation by external experts, small group extracurricular activities, presentation of videotapes and movies and parental involvement events.

### ***Quality assessment***

The quality of the RCT by Werch and colleagues (2003b) that examined the sport consultation was high. Clear details of the methods of randomisation were reported and the study suffered from a very low rate of attrition. The study was coded 'RCT ++'. The RCT of Project SPORT (Werch et al., 2005x) was also given a ++ rating and study details were well reported. Groups were largely balanced although a greater proportion of control participants reported a parent with an alcohol or drug problem. Attrition was relatively low with 9.6% and 14.9% of participants lost at 3 and 12 months, respectively. Participants lost to follow-up were equally distributed between the intervention and control groups and did not differ from participants retained on measures of alcohol behaviour. The evaluation of the alcohol-tailored beverage programme used an RCT design and was given a + rating (Werch et al., 2005c). Groups were balanced on sociodemographic variables at baseline, and attrition was judged to be relatively low at follow-up (13%). The authors acknowledged that there may have been some intervention contamination through face-to-face contact of participants as participants were drawn from a single school. The evaluation of RSTP was a good quality RCT (+), and included details on intervention allocation, treatment integrity and population characteristics (D'Amico and Fromme 2002), however the study suffered from a high level of attrition. At 6 months follow-up, 39% of participants had been lost to follow-up. Full attrition analysis was conducted which indicated that participants lost to follow-up were more likely to be control students and female, and have more positive alcohol expectancies. Peleg et al (2001) used a quasi-experimental design to examine the effects of the Brief Alcohol Abuse Prevention Programme. Selection of schools and allocation to intervention and control conditions was based on the socioeconomic status of the students and the size and academic orientation of the schools. However, there were more students born in countries other than Israel in the control group and the number of participants in the intervention and control groups at the 1- and 2-year follow up were not reported. Subsequently the study was coded '-'.

### ***Primary outcomes***

Werch and colleagues (2003b; RCT ++) found that there were reductions in alcohol use across all participants who received a sport consultation. Significant reductions

were reported on 3 of 6 alcohol use measures: 30-day heavy drinking, alcohol problems and alcohol use initiation. However, there was no difference between groups (Sport, Sport Plus, or Sport Plus Parent). At 3 months follow up, students who received the Project SPORT intervention (Werch et al., 2005b; RCT ++) reported significantly less alcohol frequency, quantity and heavy use in the last 30 days compared to no intervention control students (all  $p < 0.001$ ). The stage ( $p < 0.001$ ) and length ( $p < 0.01$ ) of alcohol initiation was also less. At 12 months, most of these effects had dissipated and only length of alcohol use remained significantly different ( $p < 0.05$ ). Werch and colleagues (2005c; RCT +) reported that there was no differences between intervention students who received a beverage tailored brief intervention and control students on any of the alcohol use measures (quantity, frequency of use, 'chugging' or heavy use of target beverages) at 4 months follow up. However, univariate analyses indicated that intervention students reported significantly lower 30-day frequency of malt liquor use and 30-day quantity of malt liquor use, compared to control students (both  $p < 0.05$ ). D'Amico and Fromme (2002; RCT -) reported that there were significant decreases in risky drinking behaviour in the RSTP group between baseline and posttest. DARE-A and control students reported no significant changes on this measure, but the authors did not compare outcomes across groups. The control group increased their weekly consumption of alcohol whereby drinking at follow-up was significantly higher than drinking at post-test ( $p < 0.05$ ). In participants who reported a lifetime use of alcohol at baseline, results for the RSTP group were similar to those for other groups; drinking youth reported a significant decrease in risky drinking behaviour from the baseline to post-test ( $p < 0.01$ ). In addition, students in the abbreviated DARE group reported a decrease in risky drinking behaviour from baseline to post-test ( $p < 0.01$ ). However, their risky drinking behaviour subsequently increased from 2 months post-test to 6 months follow-up ( $p < 0.05$ ). Students that participated in the brief prevention programme evaluated by Peleg and colleagues (2001) were followed up 1 year and 2 years later. At both follow-ups, students in the control group reported consuming significantly more beer, wine and spirits than students in the intervention group.

### ***Secondary outcomes***

Werch and colleagues (2003b; RCT ++) found that students who received the Sport Plus Parent programme had greater increases in negative expectancy beliefs and self-control over time than students in the Sport or Sport Plus groups. At 3 months, compared to controls Project SPORT youth reported significantly greater negative

alcohol expectancy beliefs (indicating greater protection against alcohol use) ( $p=0.042$ ), behavioural capability ( $p=0.005$ ), perceived susceptibility ( $p=0.043$ ), parental monitoring ( $p=0.045$ ), and parent/child communication ( $p=0.039$ ) (Werch et al., 2005b; RCT ++). No intervention effects on resistance self-efficacy, self-control, value incompatibility or positive parent/child relationship. SPORT participants showed less risk for alcohol use compared to control participants, on measures of intentions to drink in the future ( $p=0.009$ ), alcohol attitudes ( $p=0.010$ ), and 'influenceability' ( $p=0.009$ ). No effects on positive expectancy beliefs, subjective norms or perceived peer prevalence of alcohol were found. At 12 months, Project SPORT youth reported significantly better parent/child communication ( $p=0.005$ ), and positive parent/child relationship ( $p=0.055$ ), compared to controls, but less protection on perceived susceptibility ( $p=0.027$ ). There was no significant difference in intentions to drink in the next 6 months. Werch and colleagues (2005c) reported that an alcohol beverage tailored intervention had significant, positive effects (all  $p<0.05$ ) on the following alcohol risk factors: 'influenceability' for beer, wine, distilled spirits, and malt liquor consumption; perceived peer prevalence for wine, flavoured coolers, and fortified wine consumption; perceived susceptibility for beer and wine consumption; and perceived severity for beer, wine and distilled spirit consumption.

D'Amico and Fromme (2002; RCT -) reported that compared to baseline, DARE-A participants decreased their negative alcohol expectancies at 2 month post-test ( $p<0.01$ ) and reported stronger positive expectancies at 6-month follow-up compared to post-test ( $p<0.05$ ) (indicative of increased risk of drinking). From baseline to the post-test assessment, control participants showed decreased negative alcohol expectancies ( $p<0.05$ ) and increased positive expectancies, ( $p<0.01$ ). No changes in alcohol outcome expectancies were found for RSTP participants at any assessment time. Significant decreases in driving after drinking and riding with a drunk driver ( $p=0.02$ ), were found for the RSTP group from baseline to the 2-month post-test. However, there was a significant increase in driving after drinking and riding with a drunk driver in the RSTP group from the post-test to the 6-month follow-up assessment ( $p<0.05$ ). Peleg and colleagues (2001; CNRT -) observed that high levels of spirit consumption were associated with positive attitudes towards drugs ( $p<0.001$ ), cigarette smoking ( $p<0.001$ ), the availability of illicit drugs ( $p<0.001$ ) and belonging to the control group ( $p<0.002$ ).

### 5.4.3 School-based counselling programmes

Two studies were identified that examined school-based counselling programmes. Bremberg and Arborelius (1994) examined “It’s Your Decision”, a Swedish counselling programme for 15 and 16 year olds that was based on coping behaviour, self efficacy, and social modelling theories. Participants underwent six one-hour sessions over a period of two months, which comprised of a mixture of individual and group interventions. Sessions were lead by a health counsellor who helped to identify personally relevant health issues and concluded by suggesting tailored health promotion activities. Evaluation of effectiveness was performed at 4 and 6 months from baseline. Valentine and colleagues (1998) assessed the effectiveness of the Urban Youth Connection. The programme consisted of individual, pair and group counselling services. Students were referred by classroom teachers or could self-refer. Sessions were led by postgraduate educational psychology student interns supervised by a qualified social worker affiliated with local health centres. Alcohol related outcomes were assessed post-intervention (students attended a mean of 8.3 sessions over 7.8 months) and compared against a no intervention control.

#### Box 5.4.2. Summary of programme content: school-based counselling programmes

Programme	Reference(s)	Programme content
“It’s Your Decision”	Bremberg & Arborelius, 1994	<ul style="list-style-type: none"> <li>• Group discussions and individual counselling</li> <li>• Facilitated by a health counsellor (either a teacher, school social worker or a school nurse)</li> </ul>
Urban Youth Connection	Valentine et al., 1998	<ul style="list-style-type: none"> <li>• Individual, paired or group counselling</li> <li>• Facilitated by educational psychology students</li> </ul>

#### Quality assessment

The study by Bremberg and Arborelius (1994) used non-experimental allocation of participants to groups, and was classed as a controlled before and after study (CBA - ). Valentine and colleagues (1998) used a quasi-experimental design (CNRT) to examine the effects of the Urban Youth Connection programme. There were differences in ethnicity and baseline alcohol use between intervention and comparison groups. In addition, no data was reported on attrition of subjects and few methodological details were reported. Hence this study was rated ‘CNRT –’.

### ***Primary outcomes***

Bremberg and Arborelius (1994; CBA -) reported that at posttest and 6-months follow-up, there were no statistically significant differences between intervention and control students on any measure of alcohol consumption (quantity, frequency, frequency of getting drunk). Valentine and colleagues (1998; CNRT -) reported that there was no difference in use of different alcohol drinks in middle school students between intervention and comparison students. In high school students, there was a greater proportion of users of liquor, beer, wine, and 'alcopops' in the intervention group than the control group. These results seemed exposure dependent, logistic regression analysis showed that high programme exposure resulted in a reduced probability of reporting beer use in the last 30 days in middle school students ( $p < 0.05$ ). However, in high school students, any or low programme exposure was associated with increased likelihood of reporting drinking wine in the last 30 days ( $p < 0.05$ ).

### ***Secondary outcomes***

At 4 months post baseline, intervention students who participated in "Its Your Decision" counselling programme (Bremberg and Arborelius, 1994; CBA -) reported a greater reduction in self attributed psychological problems related to alcohol ( $p < 0.05$ ). There was no difference in accidents related to alcohol, peer problems related to alcohol, parent problems related to alcohol or perceived lack of control of drinking. Valentine and colleagues (1998) did not report any secondary outcomes of interest.

#### **5.4.4 School-based peer support programmes**

Three studies (Colnes, 2001; Padget et al., 2005; Webster et al., 2002) were identified that examined school-based peer support programmes. Colnes (2000) examined the Super Leaders programme which involved four days of residential training for peers, an after school leadership programme and activities. The programme was evaluated after 4 months. Padget and colleagues (2005) evaluated a cross age peer support programme Protecting You/Protecting Me. The effectiveness of this curriculum was reviewed in Section 5.1. The study by Padget and colleagues (2005) examined the effects of the programme on peer leaders' intentions and actual substance use. Webster and colleagues (2002) assessed the effectiveness of a peer support programme based on normative education. Following two days of training, peers led 45 minute sessions which included games, exercise sheets and discussion.

**Box 5.4.3 Summary of programme content: school-based peer support programmes**

<b>Programme</b>	<b>Reference(s)</b>	<b>Programme content</b>
Super Leaders	Colnes, 2001	<ul style="list-style-type: none"> <li>• 4 day residential training</li> <li>• After school leadership programme and activities</li> </ul>
PY/PM	Padget et al., 2005	<ul style="list-style-type: none"> <li>• 1 lesson per week for 8 weeks over 5 years</li> </ul>
Peer support programme	Webster et al., 2002	<ul style="list-style-type: none"> <li>• Games, exercise, discussion and role play</li> <li>• 10-16 sessions</li> </ul>

**Quality assessment**

The study by Colnes (2000) appeared to have been adequately conducted, however the sample size for the study was small (n=76 students). In addition, the method of randomisation using names randomly picked from a paper bag was not adequate. This study was coded 'RCT +'. Padget and colleagues (2005) used a quasi-experimental design to examine the effects of the PY/PM programme on peer leaders. Adequate details of the study methodology were reported and the study was coded 'CNRT +'. Webster and colleagues (2002) used a controlled before and after study design to evaluate the effects of the peer support programme. The study was not judged to be of high quality as insufficient details were reported on the measures used to assess alcohol use and it was not clear how many participants were included at the follow-up assessment. The study was consequently coded 'CBA -'.

**Primary outcomes**

Two studies examined the effects of peer support programmes on peer leaders. Colnes (2000; RCT +) reported that there was no significant change in frequency of alcohol use in either peer leaders who participated in the Super Leaders programme or the control students between baseline and 4-months follow-up. Means for both the intervention and control groups at pre and post test indicated that students in both groups were largely abstinent from alcohol at baseline and follow-up. Padget and colleagues (2005; CNRT +) found that students who taught the PY/PM programme reported lower levels of binge drinking at posttest relative to control students (p<0.05). There was no significant difference in the number of students reporting recent alcohol use. Webster and colleagues (2002; CBA -) found that a peer support programme had no effects on the alcohol use of students (average age 12 years) who participated in the programme. Over 6 months of follow-up, participants in both

intervention and comparison schools showed an increase in the enjoyment and use of alcohol and there was no difference in the pattern of change between groups.

### ***Secondary outcomes***

Colnes (2000; RCT +) reported that means for both intervention and control groups indicated that both groups had negative attitudes towards substance use at both baseline and follow-up. Compared to control students, students who taught the PYP/PM programme (Padget et al., 2005; CNRT +) demonstrated more positive changes in attitudes about the effects of alcohol use ( $p < 0.001$ ) and the risks of high levels of alcohol use ( $p < 0.05$ ). There was no difference between intervention and control students on other attitude and knowledge measures. In addition, there was no evidence that the programme affected changes in riding with impaired drivers or driving after drinking. Webster and colleagues (2002) did not report on any secondary outcomes.

### **5.4.5 Other approaches**

Two studies (Argentos, 1991; Allison et al., 1990) were identified that examined other approaches designed to target substance use including alcohol. Programme “Kickoff” was a drug and alcohol prevention programme delivered to ninth and 10<sup>th</sup> grade over one week (Argentos, 1991). The programme involved external motivational speeches, a prevention curriculum, group discussions and role-play, and t-shirts promoting a drug free lifestyle. In addition, teachers identified six student leaders to attend a summer programme, Project REACH. One study was identified that examined a teacher-training programme (Allison et al., 1990). D.A.P.P.E.R. was developed in the USA and largely based on knowledge and resistance skills training. The D.A.P.P.E.R. curriculum was developed from the Life Skills Training model and was supported by provision of intensive staff development focusing on knowledge, attitudes and implementing skills and in-service training. The training schedule included five sessions, each of three hours, and recipients were encouraged to hold one to two hour workshops in their school following training. One study examined this programme and compared students’ drinking at the end of the school year in schools where teachers had received intensive D.A.P.P.E.R training to those that just received in-service training and those that received curriculum material but no staff development (Allison et al., 1990).

**Box 5.4.4. Summary of programme content: other school-based approaches:**

<b>Programme</b>	<b>Reference(s)</b>	<b>Programme content</b>
Programme “Kickoff”	Argentos, 1991	<ul style="list-style-type: none"> <li>• Motivational speaker, prevention curriculum, group discussion and role-play, t-shirts promoting drug free lifestyle</li> <li>• 36 hours over one week</li> </ul>
DAPPER	Allison et al., 1990	<ul style="list-style-type: none"> <li>• Intensive staff development programme and in-service training on DAPPER curriculum</li> <li>• 5 sessions of 3 hours</li> </ul>

**Quality assessment**

Argentos (1991) used a controlled before and after study to measure the impact of Programme “Kickoff”. Two hundred and eighty students were exposed to Programme “Kickoff” and were compared to a control group which consisted of 70 students that received no intervention. Details of the study methodology were poorly reported, and it was not clear if the intervention and control groups were balanced at baseline as little information on the demographics of participants were reported. The study was consequently coded ‘CBA -’. Allison and colleagues (1990) did not match the unit of allocation (school) and analysis (individual), and groups were not matched on their intentions to use alcohol in the future. Furthermore, there was little detail on curriculum implementation; this study was therefore given a rating of RCT -.

**Primary outcomes**

Argentos (1991; CBA -) followed up students who had received Programme “Kickoff” at posttest and 6 months. The author reported that there were no significant differences between intervention and control students in terms of alcohol use at either follow-up. Allison and colleagues (1990; RCT -) reported that there were no differences between intervention students who were taught by teachers who were intensively trained or who received in-service training and control students, on any of the measures of alcohol use at post-test (lifetime use; drinking with parents; unsupervised drinking; intentions to drink).

**Secondary outcomes**

Compared to students in the control group, students who participated in the one week Programme “Kickoff” reported an increased belief that their alcohol (and other

drug) use might result in serious consequences ( $p < 0.01$ ). They also demonstrated significantly higher levels of understanding about popular myths regarding alcohol use and other drugs (Argentos, 1991; CBA -). Allison and colleagues (1990; RCT -) reported that there were no differences intervention students who were taught by teachers who were intensively trained or who received in-service training and control students, on measures of alcohol related knowledge, problem solving, coping, and decision-making.

#### **5.4.6 Summary and evidence statements**

##### **5.4.6.1 Short term results (<6 months)**

Six studies (Werch et al., 1996; 1998; 2000a, 2000b, 2005a; Werch & Carlson, 1996) reported on the short-term effectiveness of various versions of the STARS for Families programme. The programme had inconsistent effects on the quantity and frequency of alcohol use, and alcohol use in the last 7- or 30-days. However, STARS for Families did have a positive short-term effect on heavy drinking in the past month. Three additional studies by Werch and colleagues (Werch et al., 2003b; 2005b; 2005c) reported on the short-term effects of two sport brief intervention programmes. There were no differential intervention effects across a sports consultation when students received an additional preventive consultation on alcohol. However, Project SPORT (Werch et al., 2005b) was shown to have short-term effects on frequency and quantity of alcohol use, and heavy alcohol use in the past month. An alcohol tailored beverage programme (Werch et al., 2005c) did not have consistent effects on alcohol use across a range of alcoholic beverages, with significant intervention effects only demonstrated on the measure of the frequency and quantity of malt liquor use. It was difficult to judge the effects of the RSTP and DARE-A programmes examined by D'Amico and Fromme (2002) as the effects of the intervention groups did not appear to have been compared with the control group. In addition, the programme suffered from a high level of attrition.

Two studies (Bremberg & Arborelius, 1994; Valentine et al., 1998) reported on the short-term effects of in-school counselling programmes. Neither programme was shown to be consistently effective. In addition, one programme had potentially harmful effects on high school students' alcohol consumption. Three studies reported short-term data on the effectiveness of peer support programmes. Two of the programmes examined were shown to have no effects on the alcohol use of participants (Colnes, 2000; Webster et al., 2002). However, peer leaders who taught

the PY/PM programme reported lower levels of binge drinking (Padget et al., 2005). Two additional studies (Argentos, 1991; Allison, 1990), which examined the week long Programme Kickoff and a teacher training programme, found that these approaches did not have significant short term effects on alcohol use.

#### **5.4.6.2 Medium term results (up to 1 year)**

Two studies (Werch et al., 1998; Werch et al., 2003) examined the effectiveness of the STARS for Families programme at 1 year. Neither version of the programme examined had significant effects on alcohol use behaviours in the medium-term. However, the analyses of 30-day heavy use showed an effect in favour of the 2-year version of the STARS for Families programme (Werch et al., 2003). The short-term effects of the Project SPORT programme had declined by the 1-year follow-up, although the effects still favoured the intervention. A 3 day prevention programme based on Botvin's LST (Peleg et al., 2001) was shown to have positive effects on beer, wine and spirit use at 1-year follow-up, however this study was judged to be of poor quality.

#### **5.4.6.3 Long term results (>1 year)**

Long-term follow-up data was only reported for one brief intervention programme (Peleg et al., 2001). A 3-day in-school prevention programme had positive long-term effects on the consumption of beer, wine and spirits. However, as previously noted this study was judged to be of poor quality.

### **Evidence statement 4**

There is evidence to suggest that brief intervention programmes that involve nurse-led consultations regarding a young person's alcohol use, such as the STARS for Families programme<sup>1</sup> that target children aged 12-13, can produce short-, but not medium-term reductions in heavy drinking. However, these types of programmes may have limited applicability as they are based on an abstinence approach. There is evidence to suggest that other in-school approaches to prevent or reduce alcohol use including counselling programmes<sup>2</sup>, peer support<sup>3</sup> and teacher training<sup>4</sup> do not produce reductions in alcohol use behaviours.

<sup>1</sup> Werch et al., 1996 (RCT +); Werch & Carlson 1996 (RCT ++); Werch et al., 1998 (RCT +); Werch et al., 2000a (RCT +); Werch et al., 2001 (RCT +); Werch et al., 2003a (RCT +); Werch et al., 2005b (RCT ++); Werch et al., 2000b (RCT +); Werch et al., 2005a (RCT +).

<sup>2</sup> Bremberg & Arborelius 1994 (CBA -); Valentine et al., 1998 (CNRT -)

<sup>3</sup> Colnes, 2000 (RCT +); Webster et al., 2002 (CBA -); Padget et al., 2005 (CNRT +)

<sup>4</sup> Allison, 1990 (RCT -)

**Table 5.4.1. Other school-based approaches: Brief interventions**

Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
<b>STARS for Families programme</b>							
Werch et al., 1996	RCT +	USA Mean age 13.8 6 <sup>th</sup> to 8 <sup>th</sup> grade N= 104	PT, weeks 10	97%	Significant intervention effects on quantity of alcohol use in previous month at 10 weeks. No intervention effects on frequency of use or recent alcohol use.	8 <sup>th</sup> graders in the intervention group reported fewer peer expectations, less intention to use alcohol in the future, less intention to try alcohol and predicted less intention to use alcohol.	D
Werch & Carlson 1996	RCT ++	USA 8 <sup>th</sup> grade Mean age 12.2 N= 138	3 months	90%	Intervention students significantly reduced heavy alcohol consumption. No significant effects on other alcohol use measures.	NR	D
Werch et al., 1998	RCT +	USA 6 <sup>th</sup> grade Mean age 12.08 N=211	One year	89%	No differences were found between intervention and control students on alcohol use measures. However drinking students who received the intervention reported significant less frequent alcohol use than those who received the control materials.	NR	D
Werch et al., 2000a	RCT +	USA Mean age = 12.08. N=650	3 months	79%	Significantly fewer intervention magnet-school students initiated alcohol use, drank heavily during last 30 days or drank over any period of time compared to minimal intervention control students (p<.05).	No significant difference in stages of contemplation; preparation; action; or maintenance.	D

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Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Werch et al., 2001	RCT +	USA 6 <sup>th</sup> grade N= 650	3 months	88%	Significantly fewer neighbourhood intervention students initiated alcohol use, used alcohol in the past week or month, drank heavily during the past month. No significant results for students bussed to school, although those with who had received the intervention and had past alcohol consequences had significantly fewer intentions to use alcohol and less frequent use of alcohol.	Intervention subjects had less risk for alcohol use on all risk factors measures (influenceability, peer prevalence, expectancy beliefs, motivations to avoid, total alcohol risk) than control students; however, these differences were not significant.	D
Werch et al., 2003a	RCT +	USA 6 <sup>th</sup> grade Mean age 11.4 N= 650	One year	78%	Positive intervention outcomes on heavy alcohol use that were seen at 3 months posttest for the magnet (bussed) school, were not seen at one year's follow-up.	For the neighbourhood school, intervention students showed significantly less total alcohol risk factors than for the control students.	D
Werch et al., 2005b	RCT ++	USA 8 <sup>th</sup> grade mean 13.2 years	3 month PT	2% lost to follow-up	Heavy alcohol use and alcohol use initiation decreased across all 3 groups, but no difference across groups.	Self-control increased most amongst those in the Sport Plus Parent group. Peer prevalence of alcohol use decreased only among those in the Sport intervention group.	D
Werch et al., 2000b	RCT +	USA 7 <sup>th</sup> -9 <sup>th</sup> grade N= 178	6 months	92%	Significantly fewer intervention youth drank during previous month and fewer drank heavily. For intentions to drink, current alcohol use and heavy consumption, significant reductions were found in particular among suburban and rural youth but not urban school youth. No significant effects were found on drinking in the previous week.	NR	D

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Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Werch et al., 2005a	RCT +	USA 8 <sup>th</sup> grade Mean age 13.4 N= 448	3 months	97%	Alcohol consumption did not differ significantly across groups (those receiving STAR, STAR plus or postcards only). 30-day frequency of alcohol use approached significance with less frequent current alcohol consumption among STARS youth, compared to STARS Plus and Postcard Only youth.	Perceived alcohol use susceptibility was significantly lower was those receiving STARS compared with STARS plus or postcards only. Approaching significance was perceived peer alcohol use, which was lower for those receiving STARS than for those receiving STARS Plus or postcards only.	D
<b>Other brief intervention programmes</b>							
Werch et al., 2003b Sport, Sport Plus, Sport Plus Parent	RCT ++	USA Mean 13.2 years N=454	3 months	93%	30-day heavy drinking, alcohol use initiation and alcohol problems decreased in all groups; no significant difference between groups.	Negative expectancy beliefs and self-control improved over time, greatest increase observed in Sport Plus Parent group.	D
Werch et al., 2005b Project SPORT	RCT ++	USA Mean 15.24 (SD 1.09) years N= 604	3, 12 months	15% lost to follow-up at 12 months	Significant effects on alcohol use at 3-month follow-up not evident at 1 year. Only length of alcohol use significantly lower in intervention students at 1 year.	Significant, positive effects on alcohol protective and risk factors at 3 months. At 12 months, significant positive effects on parent/child relationship, and intentions in the next 6 month.	D
Werch et al 2005c Alcohol beverage tailored programme	RCT +	USA Mean 17 (SD 0.68) years N= 232	PT	87%	No difference between intervention and control group.	Intervention participants had significantly reduced risk on the following alcohol risk factors: 'influenceability' for beer, wine, distilled spirits, and malt liquor consumption; perceived peer prevalence for wine, flavoured coolers, and fortified wine consumption; perceived susceptibility for beer and wine consumption; and perceived severity for beer, wine and distilled spirit consumption.	B
D'Amico & Fromme 2002 RSTP, DARE-A	RCT +	USA 14-19 years N= 300	PT, 6 months	61% followed up at 6 months	RSTP reduced drinking in the short term but there were no longer term intervention effects.	DARE-A students reported stronger positive expectancies. No change for RSTP students.	B (RSTP)

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Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Peleg et al., 2001 Brief and intensive alcohol abuse prevention programme	CNRT -	Israel 10th graders N= 1,000	1 and 2 years	76%	Intervention students consumed significantly less alcohol.	Not reported.	D

**Table 5.4.2. Other school-based approaches: School-based counselling programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Bremberg & Arborelius 1994 "It's Your Decision"	CBA -	Sweden 15-16 years N=124	4 and 6 months	87% at 6 months	No statistically significant differences between intervention and control students at either follow-up in terms of consumption of alcohol.	No difference between intervention and control students in terms of problems they perceived to be related to alcohol use.	D
Valentine et al., 1998 Urban Youth Connection	CNRT -	USA 13-16 years N= 336	PT	Not reported	Middle school students with high levels of programme participation reported significantly lower rates of 30-day beer use. High school students with any level of programme participation reported significantly high rates of 30-day wine use.	Not reported	C

**Table 5.4.3. Other school-based approaches: Peer support programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Colnes 2000 Super Leaders	RCT +	USA 14-17 years N= 76	PT	87% completed study	No significant change in frequency of alcohol use in either group.	No difference in attitudes towards substances.	C
Webster et al., 2002 Peer support programme	CBA -	Australia Mean 12 years N= 428	3 and 6 months	76% completed study	No difference between groups. Enjoyment of alcohol increased in both intervention and control students.	No difference between groups.	B
Padget et al., 2005 PY/PM	CNRT +	USA Not reported (high school) N= 401	PT	82% completed study	Peer leaders reported lower levels of binge drinking. No significant difference in the number of students reporting recent alcohol use.	Peer leaders demonstrated more positive changes in attitudes about the effects of alcohol use and the risks of high levels of alcohol use. No difference on other attitude and knowledge measures.	C

**Table 5.4.4. Other school-based approaches: other programme approaches**

Author (Year)	Design	Population	Follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
Argentos 1991 Programme "Kickoff"	CBA -	USA Not clear N= 350	PT, 6 months	Not reported	No significant differences observed between treatment and control students.	Intervention students reported an increased belief that their alcohol (and other drug) use might result in serious consequences, also demonstrated significantly higher levels of understanding about popular myths regarding alcohol use and other drugs.	D
Allison 1990 DAPPER	RCT -	Canada 5th grade N=266	End of school year	82%	No difference between groups on any of the measures of alcohol use at posttest.	No difference between groups on knowledge, problem solving, coping and attitudes, or decision-making.	C

## 5.5 Multicomponent programmes

### 5.5.1 Overview of evidence identified

A total of 12 programmes were identified that included school-based programmes delivered in conjunction with other components: four programmes (Project Northland, Midwest Prevention Programme, the Coalition for Youth Quality of Life and Healthy for Life) examined school, family and community-based intervention components; six programmes (Say Yes First, Seattle Social Development Project, Raising Healthy Children, Linking the Interests of Families and Teachers, and Going Places) examined programmes which included in-school and family-based intervention approaches to tackle substance use; and two programmes examined school-based curricula combined with media programming.

### 5.5.2 Programmes combining school-, family- and community-based components

Four programmes were identified that combined school-based intervention components with components delivered to the family and within the community. One programme, Project Northland, specifically targeted alcohol use but it was unclear whether the approach was based on abstinence or harm reduction. Two programmes, the Midwest Prevention Programme and the Coalition for Youth Quality of Life targeted substance use including alcohol use and were also rated as ‘unclear’ in terms of applicability. The Healthy for Life programme (Piper et al., 2000), which targeted general health behaviours stated a clear abstinence approach and was rated D for applicability.

#### Box 5.5.1. Summary of programme content: programmes combining school-, family and community-based components

Programme	Reference(s)	Programme content
Project Northland	Komro et al., 1999, 2001; Perry et al., 1996, 2002; Toomey et al., 1996; Williams et al., 1995, 2001	<ul style="list-style-type: none"> <li>• Phase 1 delivered in 6<sup>th</sup> to 8<sup>th</sup> grade</li> <li>• Phase 2 delivered in 11<sup>th</sup> and 12<sup>th</sup> grade</li> <li>• Parental involvement/education programmes, behavioural curricula, and peer leadership programmes</li> <li>• Interim phase include minimal intervention</li> </ul>

MPP	Johnson et al., 1990; Chou et al., 1999	<ul style="list-style-type: none"> <li>• 10 session school-based programme</li> <li>• Parent organisation programme for reviewing school prevention policies and parent training in parent-child communication skills</li> <li>• Community prevention taskforce</li> <li>• Mass media coverage</li> </ul>
Coalition for Youth Quality of Life	Dedobbeleer and Desjardins 2001	<ul style="list-style-type: none"> <li>• 3 year programme</li> <li>• Youth educational programmes</li> <li>• Parent education programmes</li> <li>• Diversionary programmes</li> <li>• Youth mobilisation and support systems for youth in trouble</li> </ul>
Healthy for Life programme	Piper et al., 2000	<p>Two programme versions:</p> <ul style="list-style-type: none"> <li>• Intensive: curriculum delivered in one sequential twelve-week block</li> <li>• Age Appropriate: curriculum delivered in three four-week segments</li> </ul> <p>Additional components were</p> <ul style="list-style-type: none"> <li>• Peer component (election of peer leaders)</li> <li>• Family component (parent orientation session, home mailings; and parent/adult Interviews as “homework assignments”)</li> <li>• Community component.</li> </ul>

### 5.5.2.1 Project Northland

A total of seven studies (Komro et al., 1999, 2001; Perry et al., 1996, 2002; Toomey et al., 1996; Williams et al., 1995, 2001) examined the effectiveness of Project Northland, a two phase community trial designed to prevent alcohol use and alcohol related problems among young adolescents. Risk factors for adolescent alcohol abuse were targeted through school-, home- and community-based interventions. Phase one of Project Northland was delivered in 6<sup>th</sup> through 8<sup>th</sup> grade. Full intervention details are reported in the accompanying evidence tables, but briefly students participated in parental involvement/education programmes, behavioural curricula, and peer leadership programmes. In addition, community-wide task forces activities were implemented over the 3 years of the programme. Phase two intervention components were delivered when students were in high school (11<sup>th</sup> and 12<sup>th</sup> grade) and included a classroom curriculum in 11<sup>th</sup> grade, 11 postcards (“behavioural tips”) for parents, a print media campaign, peer action teams, and the formation of community action teams aimed at reducing commercial and social access to alcohol. During the interim phase in the 9<sup>th</sup> and 10<sup>th</sup> grade, a brief five-

session classroom programme ('Shifting Gears') was implemented when students were in 9<sup>th</sup> grade. Six of the included studies reported on the same sample of students who participated in Project Northland during Phase one (1991-1994) and two (1996-1998). Perry and colleagues (1996) reported on the outcomes of the programme after delivery of Phase one and Perry and colleagues (2002) reported on the long term effects of both intervention phases. Three studies examined the effects of particular Project Northland intervention components. Williams and colleagues (1995) reported on the Slick Tracy Home Team programme delivered in 6<sup>th</sup> grade, Toomey and colleagues (1996) reported on the Amazing Alternatives! Home programme delivered in 7<sup>th</sup> grade and Komro and colleagues (1999) examined two major peer leadership components delivered during Phase one. Stigler and colleagues (2006) undertook a post-hoc component analysis to determine the relative effects of the various intervention components used in Project Northland. Finally, one study conducted by Williams and colleagues (2001) evaluated the effects of the Slick Tracy Home Team programme when it was adapted and delivered to 5<sup>th</sup> grade students in Russia.

### ***Quality assessment***

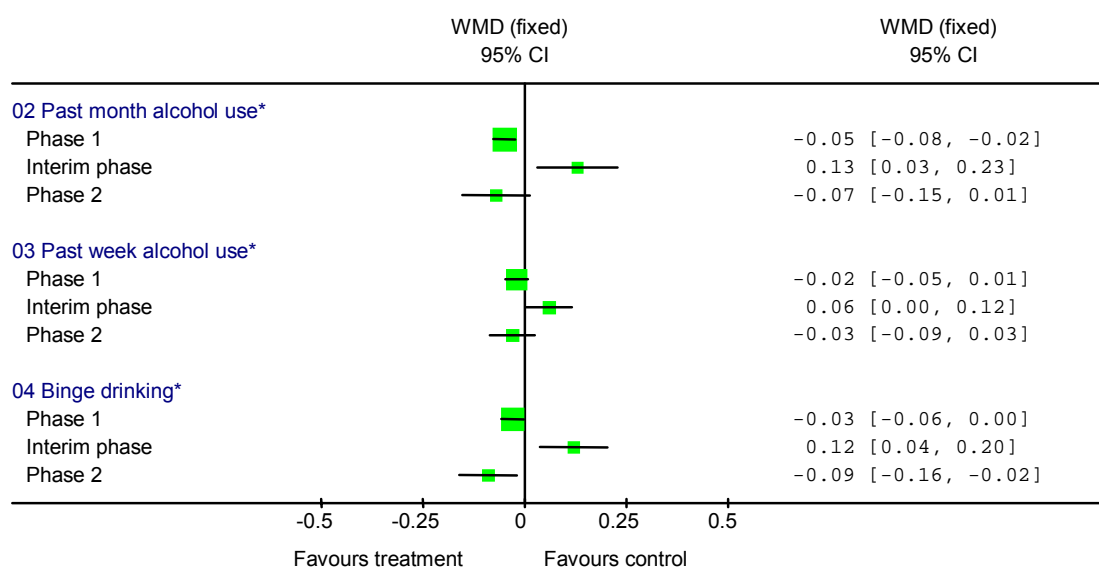
The quality of the studies that examined Project Northland were generally judged to be of good quality, with the majority of studies (Komro et al., 1999; Komro et al., 2001; Perry et al., 1996; Perry et al., 2002; Williams et al., 1995; Toomey et al., 1996) being coded 'RCT +'. Details were lacking across the studies regarding the method of randomisation and the authors did not always sufficiently report on baseline differences between intervention and control students. Two studies, one RCT (Williams et al., 2001) and one CNRT (Stigler et al., 2006) failed to report sufficiently clear information on the methodological aspects and were coded 'RCT -' and 'CNRT -', respectively.

### ***Primary outcomes***

Perry and colleagues (1996; RCT +) reported that significant positive effects of Project Northland were found at the end of 8th grade (end of Phase one). Students in the intervention districts had significantly lower scores ( $p < 0.05$ ) on the Tendency to Use Alcohol scale than students in control districts. In addition, nonusers of alcohol at baseline in the intervention communities reported lower scores than nonusers in control communities at the end of 8th grade ( $p < 0.01$ ), but not at the end of 6<sup>th</sup> or 7<sup>th</sup> grade. In addition for all students, the percentages who reported alcohol use in the past month and past week were significantly lower in the intervention group at the

end of 8th grade. For baseline nonusers, intervention students had significantly lower monthly and weekly alcohol use at the end of the 8th grade. The percentage of students who reported past year alcohol use were also significantly lower among baseline nonusers in the intervention districts at the end of the 7th grade ( $p < 0.05$ ) and 8th grades ( $p < 0.006$ ). Perry et al., (2002; RCT +) reported that students in the intervention schools were also significantly less likely to increase their Tendency to Use Alcohol and binge drinking during phase two of Project Northland. However, no differences were found on other measures, although intervention students were marginally less likely than control students to have increased their past month alcohol use during the 11th and 12th grades ( $p < 0.07$ ). During the interim phase (9th and 10th grades), students in the intervention schools were significantly more likely than control students to increase their alcohol use on all measures. The differences in the growth of alcohol use between intervention and control students over both phases of Project Northland are shown in Figure 5.5.1.

**Figure 5.5.1. Differences in growth of alcohol use: Project Northland (Perry et al., 2002)**



\*Past month, past week and binge drinking (more than 5 drinks in a row in the past 2 weeks) were assessed based on questions from the Monitoring the Future study

Stigler and colleagues (2006; CNRT -) reported that participation in parent programmes was associated with a significant decrease in the rate of increase in the Tendency to Use Alcohol. In addition, being a planner for one or more extracurricular activities was associated with a significant decrease in Tendency to Use Alcohol. Being exposed to the classroom curricula was associated with a marginally

significant decrease in Tendency to Use Alcohol, but the level of community activism, being a peer leader, or participation (as opposed to a planner) in the extra-curricular activities was not associated with changes in any of the outcome variables. Using a study sample of 24 schools, Komro and colleagues (1999; RCT +) examined the effectiveness of two peer leadership components of the 7<sup>th</sup> grade Project Northland intervention, 'Amazing Alternatives!' programme. The authors reported that at the end of the 7<sup>th</sup> grade, students who were elected peer leaders had higher scores on the Alcohol Use Tendency Scale<sup>8</sup> than did those who had participated as volunteer peer leaders ( $p < 0.01$ ), students who did not participate as peer leaders ( $p = 0.04$ ) and (although not significant) students who participated as both elected and volunteer peer leaders ( $p = 0.06$ ). By the end of eighth grade no significant differences remained on the Alcohol Use Tendency Scale. Three studies examined the effects of Project Northland behavioural curricula. Williams and colleagues (1995; RCT +) found that at the end of the sixth grade the 'Slick Tracy Home Team Program', had no significant effects on alcohol use after controlling for baseline differences between intervention and control students. A second study conducted in Russian schools and examining an adapted version of the 'Slick Tracy Home Team Program' (Williams et al., 2001; RCT -) also found no statistically significant differences in measures of alcohol use between intervention and control students. The effects of the 'Amazing Alternatives! Home Program' were examined by Toomey and colleagues (1996; RCT +). The study found that the 7<sup>th</sup> grade programme had no significant effects on any measure of alcohol use.

### **Secondary outcomes**

Perry and colleagues (1996; RCT +) reported that students in the intervention district had significantly lower scores on the peer influence scale at the end of the 8th grade compared to students in comparison districts. However, there were no significant differences between intervention and control communities on the self-efficacy or perceived access to alcohol scales. Among baseline non-users, students in the intervention districts had significantly lower scores at the end of 8th grade on the peer influence scale, and greater self-efficacy to refuse alcohol, relative to students in control districts. No difference was found between intervention and control baseline users. Perry and colleagues (2002; RCT +) reported that there were no differences in

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<sup>8</sup> A summary of alcohol use and intentions to use alcohol based on occasions of alcohol use (lifetime, last year, and last month), intentions to use alcohol (when 21 years or older, next year, month, and week).

the trajectories of students' perceptions of peer influence to use alcohol or their perceived access to alcohol during phase two. During the interim phase, students in intervention schools were significantly more likely to experience increased perceptions of peer influence to use alcohol and to decrease their self-efficacy to refuse alcohol. Stigler and colleagues (2006; CNRT -) reported that the parental involvement component of Project Northland had the most consistent and positive effect on behavioural outcomes related to alcohol. Participation in the parent programmes was associated with a significant decrease in the rate of increase in peer influence scales over time and a significant increase in self-efficacy. Being a planner for one or more extracurricular activities was also associated with a significant increase in self-efficacy. However involvement in extracurricular activities had no significant effects on peer influence or perceived access. Williams and colleagues (2001; RCT -) found that at the end of 5<sup>th</sup> grade, Russian students who received an adapted version of the Slick Tracy Home Team programme had statistically significantly higher rates of knowledge compared to control students.

#### **5.5.2.2 Midwest Prevention Programme**

Two studies examined the effectiveness of the Midwest Prevention Project (MPP) (Chou et al., 1998; Johnson et al., 1990). The overall research design of the MPP included a quasi-experimental trial in Kansas City, Kansas and Kansas City, Missouri, followed by an experimental trial in Indianapolis. Johnson and colleagues (1990) examined delivery of the MPP in 8 schools in Kansas City with students in grades 6 and 7. The programme described consisted of four intervention components: (1) a 10 session school-based programme focused on drug resistance skills training, additional homework sessions encouraging involvement with parents; (2) a parent organisation programme for reviewing school prevention policies and parent training in parent-child communication skills; (3) training of community leaders in organising a drug abuse prevention taskforce; and (4) mass media coverage. The study examined the relative effectiveness of the MPP according to level of risk for drug abuse. Chou and colleagues (1998) investigated the secondary effects of the MPP in a cohort of students from 57 schools in Indianapolis by examining outcomes in students who reported alcohol, cigarette or cannabis use at baseline. Programme content was not described.

#### **Quality assessment**

The study by Johnson and colleagues (1990; RCT +) was well reported and the study was judged to be of good quality. However, the study suffered from a relatively high

level of attrition and the authors did not report whether an intention to treat analysis had been undertaken. Chou and colleagues (1998) used an RCT design to examine the secondary prevention effects of the MPP. Few details of the study methodology were reported and it was difficult to judge whether the study had been well conducted. There were differences between intervention and control participants at baseline. Among baseline alcohol users, the control group included more 7<sup>th</sup> grade students from public schools. In addition, the study suffered from a high level of attrition with almost 60% of participants failing to provide complete data at all follow-ups. These limitations meant that the study was coded 'RCT -'.

### ***Primary outcomes***

Johnson and colleagues (1990; RCT +) reported that the MPP had no significant effects on alcohol use at the 3-year follow-up when students were in ninth and tenth grade. Chou and colleagues (1998; RCT -) reported the programme showed a secondary prevention effect on decreasing alcohol use at 6 months after the intervention. The effect was also marginally significant for alcohol use at the 1.5-year follow-up with results of the logistic regression analysis indicating that the secondary prevention effect diminished over time. No secondary outcomes were reported.

### ***5.5.2.3 Coalition for Youth Quality of Life Project***

Dedobbeleer and Desjardins (2001) examined the effectiveness of the Coalition for Youth Quality of Life Project. The first year of the project included the delivery of youth educational programmes to students in sixth and eighth grade, parent education programs, alternatives programs, youth mobilization and the development of support systems for youth in trouble. Youth educational programmes were stopped during the second year and the intervention was restricted to parent education programme and community development. The third year of the programme focused on high-risk youth only. Interventions included competence enhancement programmes, parent education programme, and development of alternatives to substance use and youth mobilization.

### ***Quality assessment***

A quasi-experimental design with a non-equivalent control group was used to evaluate the effects of the Coalition for Youth Quality of Life Project (Dedobbeleer and Desjardins, 2001). Participants in the intervention and control groups were not well matched at baseline. Sixth grade intervention students were younger than sixth grade control students and they reported drinking significantly lower amounts of

alcohol per occasion. In addition, attrition from the study was high; 60% of students had been lost to follow-up at the 30-month follow-up. The study was consequently coded '-'.

### ***Primary outcomes***

Dedobbeleer and Desjardins (2001; CNRT -) reported that no statistically significant differences were observed between sixth grade students who participated in the Coalition for Youth Quality of Life programme or control students in terms of alcohol drinking frequency or alcohol consumed per typical occasion at either follow-up. Compared to control students, eighth grade students in the intervention group reported significantly higher alcohol drinking frequency at the 30-month posttest ( $p < 0.05$ ) and a higher amount of alcohol consumed per typical occasion at the 15- and 30-month posttests (both  $p < 0.05$ ). When pretest differences were controlled for there was no significant difference between groups, except that eighth grade intervention students were less likely to be nonusers of alcohol than control students at the 30-month follow-up.

### ***Secondary outcomes***

Sixth grade students who participated in the Coalition for Youth Quality of Life project reported significantly greater change scores on the measure of self-esteem and reported a better relationship with their fathers than control students at the 10-month follow-up (both  $p < 0.05$ ) (Dedobbeleer and Desjardins, 2001; CNRT -). There were no intervention effects on awareness of drug and alcohol problems, intentions to become involved in prevention activities, relationship with mother or enabling factors at either the 10- or 30-month follow-up.

#### ***5.5.2.4 Healthy for Life***

Piper and colleagues (2000) examined the effects of the Healthy for Life programme. The programme targeted general health behaviours including alcohol, tobacco and cannabis use. Two versions of the programme were compared in the study, an intensive version of the programme taught as a one semester effort, and an age-appropriate version of programme taught as a four-week segment each year over three years. Additional components were peer- (election of peer leaders), family- (parent orientation session, home mailings; and parent/adult Interviews as “homework assignments”) and community-based.

### ***Quality assessment***

On the whole the study by Piper and colleagues (2000) appeared to have been well conducted, however, the RCT design was revised to allow schools to select whether they delivered the intensive or age-appropriate version of the intervention programme. In addition, there was relatively high attrition across the duration of the study. Approximately 20% and 30% of students were lost to follow-up at the ninth and tenth grade follow-ups respectively. The study was therefore coded 'RCT –'

### ***Primary outcomes***

Piper et al., (2000; RCT -) reported that there were significant negative treatment effects on past month alcohol use for both the 'Age Appropriate' and 'Intensive' conditions in the 9th and 10th grades. That is, students receiving either intervention condition reported greater past month alcohol use than controls in the 9th and 10th grades.

### ***Secondary outcomes***

Students in the 'Age Appropriate' condition reported significantly higher rates of intercourse in the past month in 9th grade than those in the control condition. This difference was not however significant one year later, when participants were in the 10th grade. The Intensive condition had no effect on rates of intercourse.

## **5.5.3 Programmes combining school- and family-based intervention components**

Six programmes were identified that combined school-based intervention components with components for parents. All six programmes targeted substance use including alcohol. Two studies (Cuijpers et al., 2002; Smit et al., 2003) examined the effectiveness of the Healthy School and Drugs Project, which was rated to be highly applicable. Two studies (Zavela et al., 1997; 2004) examined the effectiveness of Say Yes First (SYF), two studies evaluated the Seattle Social Development Project (SSDP) (Hawkins et al., 1999; O'Donnell et al., 1995), and one study each examined the effectiveness of the 'Raising Healthy Children' (RHC) programme (Brown et al., 2005), Linking the Interests of Families and Teachers prevention programme (Eddy et al., 2003) and the Going Places programme. (Simons-Morton et al., 2005).

**Box 5.5.2. Summary of programme content: programmes combining school- and family-based intervention components**

<b>Programme</b>	<b>Reference(s)</b>	<b>Programme content</b>
Healthy School and Drugs Project	Cuijpers et al., 2002; Smit et al., 2003	<ul style="list-style-type: none"> <li>• 3 year programme</li> <li>• 9 session curriculum, activities, videos and brochures</li> <li>• Active committee coordinating activities</li> <li>• Parental participation</li> </ul>
Say Yes First	Zavela et al., 1997; 2004	<ul style="list-style-type: none"> <li>• 5 year programme</li> <li>• Substance abuse programme including parent education</li> <li>• Case management of high-risk youth</li> </ul>
Seattle Social Development Project	Hawkins et al., 1999; O'Donnell et al., 1995	<ul style="list-style-type: none"> <li>• 5 or 2 year programme versions</li> <li>• Classroom instruction and management</li> <li>• Child skill development</li> <li>• Parent intervention</li> </ul>
Raising Healthy Children	Brown et al., 2005	<ul style="list-style-type: none"> <li>• Teacher and staff development workshops</li> <li>• After-school tutoring sessions and study clubs (Grades 4-6),</li> <li>• Parenting workshops and in-home services for selected families (Grades 1-8).</li> </ul>
LIFT	Eddy et al., 2003	<ul style="list-style-type: none"> <li>• Classroom-based programme (20 lessons)</li> <li>• Playground behaviour intervention</li> <li>• Parent management training programme and weekly newsletters</li> <li>• Ongoing access to a classroom-based telephone answering machine</li> </ul>
Going Places	Simons-Morton et al., 2005	<ul style="list-style-type: none"> <li>• 3 year programme (6-8 grade)</li> <li>• Social skills training</li> <li>• School environment change</li> <li>• Parent education</li> </ul>
Developmental drug prevention programmes	Furr-Holden et al., 2004	<ul style="list-style-type: none"> <li>• Classroom centred intervention: curriculum enhancements, classroom behaviour management practices.</li> <li>• Family School Partnership: staff trained in parent-school communication, weekly home-school activities, parent workshops</li> </ul>

**5.5.3.1 Healthy School and Drugs Project**

Two studies (Cuijpers et al., 2002; Smit et al., 2003) examined the effectiveness of the Healthy School and Drugs Project. The programme was developed in The Netherlands in the late 1980s and widely disseminated among Dutch schools in the 1990s. The intervention consisted of five key components delivered over a period of three years: (1) formation of a coordinating committee of key members of school staff, a health official and a figure representing the parents; (2) nine lesson curriculum delivered by teachers over a period of three years to students between the age of 12 and 15; (3) formulation of school policy on drug use (4) identification of

pupils with drug problems and provision of support; (5) involvement of parents in the schools drug prevention strategy. Follow-up assessments for intervention and control groups were made at one year, two years and three years. Cuijpers and colleagues (2001) examined the effects of the Healthy School and Drugs Project in 9 schools. The study by Smit and colleagues (2003) was a reanalysis of this data.

### ***Quality assessment***

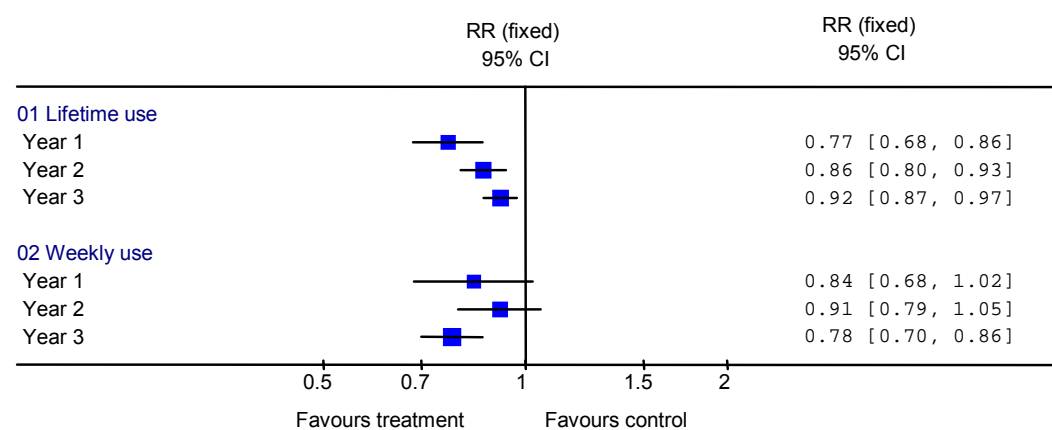
Cuijpers and colleagues (2001) used non-random assignment of schools to intervention and control conditions. Intervention schools were selected on the basis that they had an active committee coordinating drug prevention activities in school. Control schools were recruited from the same region as intervention schools and had to agree not to implement the programme within the next 3 years. The study appeared to have been well conducted but data on the comparability of intervention and control groups at baseline was lacking, which was particularly important given the non-random assignment to conditions. As a result of these limitations the study was coded 'CNRT +'.

### ***Primary outcomes***

Cuijpers and colleagues (2001; CNRT +) reported significant effects of the Healthy School and Drugs programme on measures of alcohol use at all follow ups (1, 2 and 3 years from baseline, respectively). At the 1-year follow up, significant positive effects were found for weekly use and the number of drinks per occasion, and on the measure of overall use. However, no significant effects were found for the number of drinks per week. At the 2-year follow-up, after the delivery of the alcohol specific intervention components, significant positive effects were found for the proportion of people who drank, however none of the other outcomes relating to use of alcohol showed significant effects of the intervention. At the 3-year follow-up, when all intervention components had been delivered, the authors reported significant positive effects of the intervention on the proportion of weekly users of alcohol and measures of the number of drinks per week consumed and drinks per occasion, as well as the proportion of participants who reported drinking. Weekly and lifetime consumption of alcohol use across the duration of the programme are shown in Figure 5.5.2. After adjusting for initial baseline differences in alcohol use, Smit and colleagues (2003) reported that there were significant intervention effects of the Healthy School and Drugs programme on the prevalence of alcohol use. Using multivariate logistic regression analysis, the authors found that the effect of the intervention on alcohol use was less favourable in students who disliked school. Further to this a positive

trend, bordering on significance, was found in those who perceived drinking as unhealthy.

**Figure 5.5.2. Alcohol consumption: Healthy Schools and Drugs Project (Cuijpers et al., 2001)**



### **Secondary outcomes**

Cuijpers and colleagues (2001; CNRT +) reported that significant intervention effects of the Healthy School and Drugs programme were found on alcohol knowledge at both the 2- and 3-year follow ups, but not at the 1-year follow up. Significant intervention effects were also found on measures of attitudes towards alcohol at 2-year follow up however not at 1- and 3-year follow ups. Furthermore measures of self-efficacy towards alcohol use showed significant intervention effects at the 1-year follow up but not at years 2 or 3.

### **5.5.3.2 Say Yes First**

Two studies (Zavela et al., 1997; 2004) examined the effectiveness of Say Yes First (SYF), which aimed to promote resiliency and protective factors in young people. The program was implemented over five years, between grades four and eight. The intervention was educationally based but also employed case management techniques for high-risk youths and their families. The program included parent education programs, alternative youth and family activities, SYF councils and youth leadership training.

### **Quality assessment**

Both studies of Say Yes First used controlled before and after designs and were given a 'CBA -' rating. This was because of poor reporting of key elements, a lack of

similarities between conditions at baseline, and the use of historical control in the study reported on by Zavela and colleagues (1997).

### ***Primary outcomes***

Zavela and colleagues (1997; CBA -) followed students from the 4<sup>th</sup> to 8<sup>th</sup> grades. They reported found that students who received the Say Yes First programme reported lower prevalence of 'ever' use of alcohol than comparison students in the 1993-1994 and 1994-1995 cohorts ( $p < 0.05$ ). For 30-day use of alcohol, students in the intervention cohort reported lower prevalence than students in the 1994-1995 comparison cohort ( $p < 0.02$ ). Three year follow up data reported by Zavela and colleagues (2004) showed lower scores on measures of lifetime alcohol use, 30 day alcohol use and amount of alcohol use in SYF students compared to control students, however these differences were not significant. No secondary outcomes were reported.

### ***5.5.3.3 Seattle Social Development Project***

Two papers reported on evaluations of the Seattle Social Development Project (SSDP) (Hawkins et al., 1999; O'Donnell et al., 1995). The SSDP was delivered to students in the 1<sup>st</sup> to 6<sup>th</sup> grades (full intervention) or 5<sup>th</sup> and 6<sup>th</sup> grade only (late intervention), and included modified teaching practices, child social skills training, and developmentally appropriate parent training (O'Donnell et al., 1995). In the fifth and sixth grades parents were offered participation in 'Preparing for the Drug Free Years', a five session programme designed to reduce a child's risk for drug use (Hawkins et al., 1999). Both studies were part of a larger ongoing longitudinal study. O'Donnell and colleagues (1995) reported outcomes for students who had received the full intervention programme at the beginning of fifth grade and at the end of sixth grade. Hawkins and colleagues (1999) reported 6-year follow-up data for all fifth grade students assigned to the full and late intervention or control groups.

### ***Quality assessment***

Both studies of the SSDP used a quasi-experimental design (CNRT) to assign participants to intervention and control groups. It was difficult to judge how well the study by O'Donnell and colleagues (1995) had been conducted as only limited information on differences between conditions, attrition and intention to treat analysis was reported and the study was coded 'CNRT -'. The study by Hawkins and colleagues (1999) was reported in more detail and was judged to have been

adequately conducted and was rated 'CNRT +'. In addition, the study experienced a low rate of attrition, with 93% of participants followed up at 6 years.

### ***Primary outcomes***

O'Donnell and colleagues (1995; CNRT -) found that at the end of sixth grade there were no differences between intervention students who participated in the SSDP and control students on the measure of lifetime alcohol use in a subsample of low income participants. Hawkins and colleagues (1999; CNRT +) reported that significant differences were found between control and full SSDP intervention students on alcohol use measures at the 6-year follow-up when students were aged 18. Fewer full intervention students than control students reported having drunk alcohol 10 or more times in the past year ( $p=0.04$ ). The authors do not report any significant effects of the late intervention programme.

### ***Secondary outcomes***

Hawkins and colleagues (1999; CNRT +) reported that at aged 18, students who had received the full SSDP intervention reported significantly stronger commitment ( $p=0.006$ ) and attachment to school ( $p=0.03$ ) compared to control students. The authors do not report any significant effects of the late intervention programme.

#### ***5.5.3.4 Raising Healthy Children***

One study (Brown et al., 2005) examined the effectiveness of the 'Raising Healthy Children' (RHC) programme, a multicomponent programme aimed at reducing adolescent alcohol, cannabis and cigarette use. The programme consisted of: (1) school intervention strategies (series of teacher and staff development workshops teaching proactive classroom management techniques; cooperative learning methods and strategies to promote student motivation, participation, reading, and interpersonal problem solving skills); (2) student intervention strategies delivered during grades 4-6, with booster sessions throughout middle and high school years; (3) family intervention strategies, including parenting workshops and in home services, delivered between grades 1-8. Data were reported for students who first participated in the programme as 1<sup>st</sup> and 2<sup>nd</sup> grade students and were followed from 6<sup>th</sup> through to 10<sup>th</sup> grade.

### ***Quality assessment***

Whilst the RCT reported by Brown and colleagues (2005) generally appeared to have well conducted, full details of the methods of randomisation were not reported. As a result of the limitations to the study the RCT was rated '+’.

### ***Primary outcomes***

The results of a latent growth model showed that there was no significant difference between students who received the Raising Healthy Children and control students in terms of change in alcohol use over 5 years (Brown et al., 2005; RCT +). However, there was a significant intervention effect on alcohol use frequency. There was a significantly greater rate of linear decline in alcohol frequency in the intervention group during Grades 8-10 relative to the control group (adjusted mean frequency ES = 0.40;  $p < 0.05$ ). No secondary outcomes were reported.

### ***5.5.3.5 Linking the Interests of Families and Teachers***

Eddy and colleagues (2003) evaluated the effectiveness of the Linking the Interests of Families and Teachers prevention programme. The aim of the programme was to tackle conduct problems including the use of alcohol and other substances. The programme consisted of a 20-session classroom-based programme delivered to fifth grade students, a playground behaviour intervention, a behaviour management programme for parents and weekly newsletters, and ongoing access to a classroom-based telephone answering machine.

### ***Quality assessment***

The study by Eddy and colleagues (2003) was not well reported (RCT -). Few details were reported regarding the method of randomisation. In addition, intervention and control participants were not matched at baseline. Intervention students were significantly younger and less likely to be from an ethnic minority.

### ***Primary outcomes***

Eddy and colleagues (2003; RCT -) reported that significant differences were found in hazard rates between the Linking the Interests of Families and Teachers intervention schools and a control schools receiving \$2,000 in unrestricted funds. Self-reports of patterned alcohol use during middle school (alcohol use at least once every 2 or 3 months) indicated that youth in the control group were 1.49 times more likely to report patterned alcohol use during middle school than youth in the intervention group. No secondary outcomes were reported.

### **5.5.3.6 *Going Places Programmes***

Simons-Morton and colleagues (2005) examined the effects of the Going Places programme, which included a 3-year social skills training curriculum delivered in sixth through eighth grade, parent education (booklet and instructional video) and school environment enhancement. The programme was aimed at reducing substance use and tackling antisocial behaviour.

#### ***Quality assessment***

Few details were reported regarding the study methodology used to examine the effects of the Going Places programme (Simons-Morton et al., 2005) but on the whole it appeared to have been adequately conducted (RCT +). However, the study suffered from relatively high attrition rates and 50% of the original sample was not included in the final analyses.

#### ***Primary outcomes***

Simons-Morton and colleagues (2005; RCT +) reported that compared to a no intervention control group, the Going Places programme had 'negligible' intervention effects on measures of drinking behaviour (significance not reported). No secondary outcomes were reported.

### **5.5.3.7 *Developmental drug prevention programme***

Furr-Holden and colleagues (2004) examined the effectiveness of two developmental drug prevention programmes, which targeted problem behaviours in primary school aged children. The two programmes examined were a classroom-centred intervention that combined a classroom-based curriculum with teacher training and a family-school partnership intervention that emphasised parent-school communication and partnership building through workshops and communication activities.

#### ***Quality assessment***

First grade classrooms in nine schools were randomly assigned to the intervention or control group. Further details were not reported regarding the method of randomisation and the authors did not report whether groups were balanced at baseline on key factors. However, other study methodology aspects were clearly reported such as the level of attrition, which was relatively low over the long follow-up duration of the study, and details of the control group. The study was coded 'RCT +'.

**Primary outcomes**

A total of 566 participants (178 control participants, 192 classroom-centred intervention participants and 196 family-school partnership participants) completed the follow-up assessments from sixth through eighth grade, 6, 7 and 8 years after intervention, respectively (Furr-Holden et al., 2004; RCT +). Over the three years of assessment, the percentage of students reporting unsupervised alcohol use did not differ significantly across the intervention and control groups, and was lowest in the control group (29% of control participants, 34% of classroom-centred intervention participants, and 37% family-school partnership participants). No secondary outcomes were reported.

**5.5.4 Programmes combining school-based intervention with media programming**

Two programmes were identified that combined the delivery of a classroom-based intervention with media intervention components. Four studies (Kulis et al., 2003; Hecht et al., 2003; Gosin et al., 2003; Warren et al., 2006) examined the effects of the culturally tailored ‘Keepin’ it R.E.A.L.’ adolescent substance use prevention curriculum and one study (Slater et al., 2006) examined an in-school media campaign, Be Under Your Own Influence combined with a sixth/seventh grade curriculum.

**Box 5.5.3. Summary of programme content: programmes combining school-based intervention with media programming**

<b>Programme</b>	<b>Reference(s)</b>	<b>Programme content</b>
Keepin it REAL	Kulis et al., 2003; Hecht et al., 2003; Gosin et al., 2003; Warren et al., 2006	<ul style="list-style-type: none"> <li>• 3 culturally tailored programme versions</li> <li>• 10 session curriculum (classroom videotapes + booster sessions)</li> <li>• Televised PSAs</li> </ul>
Be Under Your Own Influence + All Stars	Slater et al., 2006	<ul style="list-style-type: none"> <li>• Printed media material in school and community based participative campaign with workshops</li> <li>• 13 session curriculum (7 booster sessions)</li> </ul>

#### **5.5.4.1 *Keepin it REAL***

Four studies (Gosin et al., 2003; Hecht et al., 2003; Kulis et al., 2005; Warren et al., 2006) examined the effects of the 'Keepin' it R.E.A.L' adolescent substance use prevention curriculum. The programme consisted of 10 culturally grounded, interactive lessons, five of which contained videotapes. The classroom curriculum was reinforced by televised public service announcements (PSAs), a neighbourhood billboard campaign and in-school booster sessions. All four studies identified examined the effectiveness of three versions of the Keepin' it R.E.A.L curriculum (Mexican American, Black/White and multicultural) in the same sample of seventh grade students. Kulis and colleagues (2005) reported data on a subsample of students who reported their race or ethnicity as Mexican American, Mexican or Chicano.

#### ***Quality assessment***

All four articles were reports of a study conducted between 1997 and 2000. However, the quality of the individual reports was variable. Three reports (Kulis et al., 2003; Hecht et al., 2003; Warren et al., 2006) were generally well reported and were coded 'RCT +'. Only very limited information was reported by Gosin and colleagues (2003) and the study was therefore coded '-'.

#### ***Primary outcomes***

Hecht and colleagues (2003; RCT +) reported that use of alcohol was found to have increased over time in both the intervention and control groups. However, the increase was significantly less in intervention students. Analysis of the Mexican American, Black/White, and Multicultural versions of 'Keepin' it REAL' revealed that students in each intervention condition reported increased alcohol use over the course of the study. However, increases were significantly smaller than in each of the intervention conditions compared to control with regards to alcohol use at 3- and 14-months. Kulis and colleagues (2005; RCT +) found that whilst alcohol use increased between baseline and the 14-month follow up for Mexican students in both intervention and control groups, students in the intervention group reported significantly smaller increases in recent use of alcohol compared to control students ( $p < 0.01$ ). In addition, Mexican and Mexican American students who received the multicultural version of the intervention reported significantly smaller increases in alcohol use compared to control students ( $p < 0.01$ ). There were no differences in alcohol use between control students and intervention students who received the

Latino and non-Latino versions of the intervention. The aim of the study by Warren and colleagues (2006) was to determine whether the changes in substance use (including alcohol) resulting from the Keepin' it REAL curriculum could be accounted for by exposure to videotapes and PSAs. Results showed that exposure to 4-5 videotapes produced a significant positive effect on reducing the number of drinks consumed in the past 30 days and the number of drinking days in the past 30 days. However, no statistically significant differences were found between students seeing PSAs one or more times, and students who reported that they had not seen any PSA.

### ***Secondary outcomes***

Gosin et al., (2003; RCT -) reported a significant treatment effect on measures of self efficacy to resist drugs, and also personal anti-drug norms amongst participants who took the Mexican American curriculum. The Multicultural curriculum was found to significantly reduce positive expectancies of drug use at waves 3 and 4 and resulted in a significant increase in personal antidrug norms at waves 2 and 3 as well as an increase in friends injuncture at wave 3. Overall the Mexican curriculum showed the strongest intervention effects over the three follow-ups. Kulis and colleagues (2005; RCT +) found that there were no differences between intervention and control students on any of the secondary measures (refusal confidence, intent to accept, positive expectancies, and norms).

### ***5.5.4.2 Be Under Your Own Influence and All Stars***

Slater and colleagues (2006) examined the effects of combining a school-based curriculum with a media campaign, which targeted alcohol and cannabis use. The school-based intervention was based on the All Stars programme, which involved 13 sessions delivered in the sixth or seventh grade followed by seven booster sessions a year later.

### ***Quality assessment***

Slater and colleagues (2006) clearly reported the study methodology used and the study appeared to have been adequately conducted (RCT +). Communities were randomly assigned to intervention (community coalition media efforts) or control (no media efforts) conditions, and two schools within each community were assigned to either the curriculum or no curriculum condition. The authors report that it was not possible to randomly assign all schools due to staffing and scheduling problems.

Attrition was relatively high across the study; approximately 30% of students did not provide data at all four measurement occasions.

### ***Primary outcomes***

Results from the RCT conducted by Slater et al., (2006; RCT +) showed a significant positive effect of the in-school media intervention on lifetime incidence of drunkenness (OR 0.40,  $p=0.009$ ). Effects of the All Stars curriculum also produced statistically significant positive effects on this measure (OR 0.68  $p<0.001$ ). However, as schools were not randomly assigned to receive the curriculum, the authors advise caution in interpreting this result. No secondary outcomes were reported.

## **5.5.5 Summary and evidence statements**

A total of 25 studies were identified which evaluated 12 programmes combining school-based intervention with other family-, media- or community-based components.

### ***5.5.5.1 Short term results (<6 months)***

Short-term outcomes were reported for three long-term comprehensive multicomponent programmes combining school, family and community-based components, Project Northland, MPP and the Coalition for Youth Quality of Life. Project Northland significantly reduced growth in binge drinking and tendency to use alcohol during Phase I and II of the programme, however, during the interim phase of the programme the growth in alcohol use was greater in intervention students than control students. The three-year MPP did not have significant effects on alcohol use in one cohort of ninth/tenth grade students, but a short-term secondary prevention effect was reported in a second cohort. The three-year Coalition for Youth Quality of Life programme did not have any effects on drinking frequency or consumption.

Short-term outcomes were also reported for four long-term programmes that combined school and family intervention components: the Healthy School and Drugs Project, Raising Healthy Children, Say Yes First, Seattle Social Development Programme. The Healthy School and Drugs Project (Cuijpers et al., 2001) had significant effects on weekly drinking, and quantity per week and per occasion at the end of the three-year programme. Although, there were no significant effects of the Raising Healthy Children programme (Brown et al., 2005) in terms of change in alcohol use over the duration of the programme, the intervention had significant, positive effects on alcohol use frequency. Two programmes had limited findings. The

Say Yes First programme was reported to have had short-term effects on alcohol use (Zavela et al., 1997), however, interpretation of this finding was limited due to the use of historical controls. The SSDP did not have short-term effects on lifetime alcohol use in a sample of students from low-income families and results were not reported for the whole sample.

Positive short-term effects were demonstrated for two programmes that combined school and media intervention components. The “Keepin it REAL” programme combined a culturally tailored classroom curriculum with public service announcements (Hecht et al., 2003). The two-year programme had significant, positive effects on alcohol use across all three versions. Effects were largest for the multicultural version of the curriculum. Delivery of an in-school media intervention, ‘Be Under Your Own Influence’, had significant, positive effects on lifetime incidence of drunkenness (Slater et al., 2006).

#### **5.5.5.2 Medium term results (up to 1 year)**

Medium term outcome data was reported for two multicomponent programmes. The three-year Going Places programme (Simons-Mortons et al., 2005) combined a social skills training curriculum with parent education and school environment enhancement. At the 1-year follow-up, there were no significant effects of the intervention on alcohol use. The Healthy for Life programme targeted general health behaviours (Piper et al., 2000). Two versions of the programme were examined; an intensive version of the programme (one semester long) and an age-appropriate version of programme (four-weeks each year over three years). Both versions were found to have potentially negative effects on alcohol use when students were in ninth grade (1-year follow-up).

#### **5.5.5.3 Long term results (>1 year)**

Five studies (Eddy et al., 2003; Furr-Holden et al., 2004; Hawkins et al., 1999; Piper et al., 2000; Zavela et al., 2004) reported long-term follow-up data for five multicomponent programmes: Say Yes First, SSDP, LIFT, two developmental prevention programmes and the Healthy for Life programme. Two programmes were shown to be partially effective over the long-term. The full intervention version (delivered in grades 1 to 6) of the SSDP had significant long-term effects on heavy drinking at age 18. However, there were no effects of the late intervention programme (delivered in grades 5 and 6 only) on this outcome, and neither intervention condition had effects on lifetime alcohol use. In addition, four years after

delivery of the LIFT programme, intervention students reported that they were less likely to report patterned alcohol use. Follow-up of students who had received the Say Yes First programme three years previously demonstrated that the programme did not have long-term significant effects on alcohol use. In addition, two developmental programmes, a classroom-centred intervention and a family-school partnership intervention, delivered to first grade students did not have effects on unsupervised alcohol use when students were in sixth to eighth grade. Both versions of the Healthy for Life programme were found to have potentially negative effects on alcohol use when students were in tenth grade (2-year follow-up).

#### **Evidence statement 5**

There is evidence to suggest that programmes that begin early in childhood, combine school-based curriculum intervention with parent education such as the SSDP<sup>1</sup> and LIFT<sup>2</sup>, which target a range of problem behaviours including alcohol use can have long-term effects on heavy and patterned drinking behaviours. In addition, the Healthy School and Drugs Project<sup>3</sup>, which targeted secondary school students, had short-term effects on alcohol use. However, longer term effects of the programme have not been examined.

<sup>1</sup> Hawkins et al., 1999 (CNRT +)

<sup>2</sup> Eddy et al., 2003 (RCT -)

<sup>3</sup> Cuijpers et al., 2001 (CNRT +)

**Table 5.5.1. Multicomponent programmes: School-, family- and community-based**

Author (Year)	Design	Population	Follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
<b>Project Northland</b>							
Perry et al., 1996; Komro et al., 2001	RCT +	USA 6 <sup>th</sup> to 8 <sup>th</sup> grade N= 2,351	End of 6th, 7th and 8th grades	81% followed up at end of 8 <sup>th</sup> grade	Significant intervention effects at end of 8 <sup>th</sup> grade; intervention students reported less alcohol use in the past month and week.	Intervention students had lower peer influence scores, but no difference on self-efficacy or perceived access scales.	C
Perry et al., 2002	RCT +	USA 11 <sup>th</sup> grade N= 2,953	End of grades 11 and 12	85% followed up at end of 12 <sup>th</sup> grade	Students in intervention schools significantly less likely to increase binge drinking frequency. No difference on other measures. During the interim (no intervention) phase, students in intervention schools were significantly more likely to increase their alcohol use on all measures.	No difference between groups in perceptions of peer influence or perceived access to alcohol.	C
Toomey et al 1996	RCT +	USA 7 <sup>th</sup> grade N= 1,028	PT, 1 year, 2 years	83% completed study	No significant effect on any measure of alcohol use.	Not reported	C
Williams et al., 1995	RCT +	USA 6 <sup>th</sup> grade N= 2,351	PT	94% followed up	No significant differences in alcohol use between groups.	Not reported	C
Komro et al., 1999	RCT +	USA 6 <sup>th</sup> grade N= 1,236	End of 7 <sup>th</sup> and 8 <sup>th</sup> grade	78% followed up	Students who were elected peer leaders had higher scores on the Alcohol Use Tendency Scale than did those who had participated as volunteer peer leaders at end of 7 <sup>th</sup> grade. No differences at end of 8 <sup>th</sup> grade	NR	C
Stigler et al., 2006	CNRT -	USA NR N= 2,709	Not clear	NR	Participation in the parent programmes and being a planner for one or more extracurricular activities was associated with a significant decrease in the rate of increase in the Tendency to Use Alcohol.	Overall, the parent involvement program had the most consistent and positive effect on secondary outcomes.	C

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Author (Year)	Design	Population	Follow-up	Attrition	Primary outcomes	Secondary outcomes	Applicability
Williams et al., 2001	RCT -	Russia 5th grade N= 980	End of 5 <sup>th</sup> grade	NR	No significant differences between the intervention and control groups in terms of alcohol use	Higher rates of knowledge in intervention students.	C
<b>Midwest Prevention Project (MPP)</b>							
Johnson et al., 1990	RCT +	USA 6th or 7 <sup>th</sup> grade N= 1,607	3 years	84% followed up	No significant intervention effects on alcohol use.	Not reported	C
Chou et al., 1998	RCT -	USA 6th or 7 <sup>th</sup> grade N= 3,412	6 months, 1.5 years, 2.5 year, 3.5 year	NR	Secondary prevention effect on decreasing alcohol use at 6 months. No effects at longer term follow-ups.	Not reported	C
<b>Other programmes</b>							
Dedobbeleer & Desjardins 2001  Coalition for Youth Quality of Life	CNRT -	Canada 6 <sup>th</sup> and 8 <sup>th</sup> grade N= 791	18 and 30 months	40% at 30 months	No significant difference between groups, except Grade 8 intervention students less likely to be nonusers than control students at 30-month follow-up.	Grade 6 intervention students reported greater self-esteem. No significant difference on any measures at 30-month follow-up.	C
Piper et al., 2000  Healthy for Life programme	RCT -	USA 6th to 8th grade N= 2,483	6th to 10th grade	68% in grade 10	Students receiving either intervention condition reported greater past month alcohol use than controls in the 9th and 10th grades.	Not reported	D

**Table 5.5.2. Multicomponent programmes: School- and family-based**

Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
<b>Say Yes First</b>							
Zavela et al., 1997	CBA -	USA 4 <sup>th</sup> grade N= 430	5 years	Not reported	Alcohol use lower than in preceding cohorts.	Not reported	C
Zavela et al., 2004	CBA -	USA 4 <sup>th</sup> grade N= 156	8 years	Not reported	No significant difference between intervention and control students.	No difference in attitudes to school or drugs, ability to resist peer pressure, social competence, or school performance and attendance.	C
<b>Seattle Social Development Programme</b>							
O'Donnell et al., 1995	CNRT -	USA 1 <sup>st</sup> grade N= 177	PT (6 years)	60% completed study	No significant differences between intervention and control students.	Not reported	C
Hawkins et al., 1999	CNRT +	USA 5 <sup>th</sup> grade N= 643	6 years	93% at 6 years	Fewer students receiving the full intervention reported heavy drinking (compared to control students). No difference in lifetime alcohol use between groups.	Students in the full intervention condition reported significantly stronger commitment and attachment to school.	C
<b>Other programmes</b>							
Cuijpers et al 2001; Smit et al., 2003  Healthy School and Drugs project	CNRT +	The Netherlands Mean 12.4 (12-18) years N= 1,930	1, 2 and 3 years from baseline	74% at 3 years	Significant intervention effects on weekly drinking, and quantity per week and per occasion at 3 years.	Significant effects were found for knowledge at the 2- and 3-year follow-ups, and attitudes at the 2-year follow-up only. A significant effect was found on self-efficacy at the 1-year follow-up, but not the 2- or 3-year.	B
Brown et al., 2005  Raising Healthy Children	RCT +	USA Mean 7.7 (SD 0.6) years N= 1,040	2 years	88% completed study	No significant difference between groups in terms of change in alcohol use over 5 years. However, significant intervention effect on alcohol use frequency (greater rate of linear decline in alcohol frequency in the intervention group)	Not reported	C

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Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
Eddy et al., 2003  Linking the Interests of Families and Teachers	RCT -	USA Mean 10.4 years N= 361	4 years	2.8% dropped out	Youth in the control group more likely to report patterned alcohol use during middle school.	Not reported	C
Simons-Morton 2005  Going Places programme	RCT +	USA 6th to 8th grade N= 2,651	6th to 9th grade	50%	No significant differences between intervention and control students.	Not reported	C
Furr Holden et al., 2004  Developmental drug prevention programmes	RCT +	USA Mean 6.2 (SD 0.3) years N= 678	4, 5 and 6 years	84% followed up at 5-6 years	Little impact of either intervention on alcohol use	None reported	C

**Table 5.5.3. Multicomponent programmes: School- and media-based**

Author (Year)	Design	Population	Follow-up	Analysed	Primary outcomes	Secondary outcomes	Applicability
<b>Keepin it REAL</b>							
Hecht et al., 2003; Gosin et al., 2003	RCT +	USA 7th grade N= 6,035	2, 8 and 14 months	84% at 14 months	Increase in alcohol use was significantly less in the intervention group.	Longer terms intervention effects on positive expectancies and descriptive norms. No effects on alcohol resistance strategies, self- efficacy, intentions or other norms.	C
Kulis et al., 2005	RCT +	USA 7th grade N= 3,402	14 months	Not reported	Significantly smaller increases in the use of alcohol in the intervention group. Most benefit from multicultural version.	No difference on any of the secondary measures (refusal confidence, intent to accept, positive expectancies, and norms).	C
Warren et al., 2006	RCT +	N= 4,734	14 months	Not reported	No difference between intervention and control groups.	Not reported	C
<b>Be Under Your Own Influence + All Stars</b>							
Slater et al., 2006	RCT +	USA Mean 12.2 years N= 4,216	2 years	69% completed study	In-school media campaign had significant, positive effects on alcohol use.	None reported	D

## **6 REVIEW OF PUBLISHED ECONOMIC EVALUATIONS**

### **6.1 Overview of evidence identified**

Two studies were identified that met the criteria for inclusion in the review of published economic evaluations. Quality assessment tables for each of the published economic evaluations identified are presented in Appendix 3.

### **6.2 Review of evidence from published economic evaluations**

#### **6.2.1 Classroom-based programmes**

##### ***Overview***

One of the two published studies assessed the cost-effectiveness of the standard Life Skills Training programme and infused Life Skills Training. Swisher and colleagues (2004; CEA -) conducted an economic evaluation alongside the cluster RCT reported on by Smith and colleagues (2004) (see Section 5.1). The aim of the economic evaluation was to compare the costs and effects of Infused Life Skill Training (I-LST) with those of Life Skill Training (LST).

##### ***Summary of effectiveness data***

The setting for the study was nine small schools of lower socio economic status in rural communities in Pennsylvania, USA. Effectiveness data was not clearly presented in the economic study. Details of the effectiveness of LST and I-LST (Smith et al., 2004) are presented in Section 5.1.

##### ***Summary of resource utilisation and cost data***

The authors only included additional costs required to implement either I-LST or LST. Therefore the cost elements included in the analysis broadly covered the costs of teacher training, lesson development and programme time and, student and teacher materials. The authors did not report how the cost data were obtained or the year in which costs were expressed. Cost elements and associated cost data are presented in Table 6.2.1.

**Table 6.2.1. Cost elements (reproduced from Swisher et al., 2004)**

Cost elements	Infused LST	Standard LST	Difference
<b>7<sup>th</sup> grade</b>			
Teacher training (time)	\$ 5468.40	\$ 2548.06	
Second day teacher training (time)	\$ 5468.40	\$ 2548.06	
Substitutes - @ \$75/day	\$ 3600.00	\$ 1500.00	
Trainers	\$ 6720.00	\$ 4131.00	
Travel	\$ 600.00	\$ 200.00	
Lesson development time	\$ 6115.33	\$ 1592.53	
School coordinator time	\$ 12130.52	\$ 5198.79	
Project coordinator time	\$ 5515.20	\$ 2757.60	
Programme time	\$ 5126.36	\$ 9555.21	
Teacher materials	\$ 639.84	\$ -	
Student materials	\$ -	\$ 2010.00	
<i>Total 7<sup>th</sup> grade</i>	<i>\$ 51384.32</i>	<i>\$ 32041.25</i>	<i>19343.07</i>
<i>Total 7<sup>th</sup> grade by Student</i>	<i>\$ 129.11</i>	<i>\$ 95.65</i>	<i>33.46</i>
<b>8<sup>th</sup> grade</b>			
Training (time)	\$ 4557.00	\$ 2038.44	
Second day training (time)	\$ 4557.00	\$ -	
Substitutes - @ \$75/day	\$ 3000.00	\$ 600.00	
Trainers	\$ 6720.00	\$ 702.72	
Travel	\$ 600.00	\$ 25.80	
Lesson development time	\$ 4557.00	\$ 1592.53	
School coordinator time	\$ 12130.52	\$ 5198.79	
Project coordinator time	\$ 5515.20	\$ 2757.60	
Programme time	\$ 4272.19	\$ 5096.11	
Teacher materials	\$ 533.20	\$ 800.00	
Student materials	\$ -	\$ 2010.00	
<i>Total 8<sup>th</sup> grade</i>	<i>\$ 46442.11</i>	<i>\$ 20822.01</i>	<i>25620.10</i>
<i>Total 8<sup>th</sup> grade by Student</i>	<i>\$ 116.69</i>	<i>\$ 62.16</i>	<i>54.33</i>
<b>Total both grade</b>			
<b>Total both grade</b>	<b>\$ 97826.43</b>	<b>\$ 52863.26</b>	<b>44963.18</b>
<b>Total both grades by Student</b>	<b>\$ 245.80</b>	<b>\$ 157.80</b>	<b>87.99</b>

**Summary of cost-effectiveness data**

The authors describe a CEA with calculations of incremental costs of the LST and I-LST programmes per year per student. After one year, the authors reported that the standard LST programme was more cost effective than I-LST by \$33.46 per student. In the second year, the authors reported that LST had no effects and cost \$62.16 per student, but that whereas I-LST was more costly at \$116.69 per student, it reduced smoking among females and was therefore more cost-effective. The authors

undertook an analysis of the project costs of the programme over three years. In the third year, they projected that the cost per student for delivery of the programme over two school grades would be \$91.65 for I-LST compared to \$92.63 for LST. The 3-year total costs of the two programmes were estimated at \$109,429.04 and \$93,088.17, respectively.

### ***Comments***

The description of the interventions and their effects were not clearly reported. The description of resource use and unit costs of each alternative was adequately reported but not clearly tabulated. The text refers obliquely to the use of marginal costs, considering the costs of both interventions as incremental compared to normal practice. No discount rate appears to have been applied although the authors refer to a time horizon. The authors report that the study design used is a cost-effectiveness analysis (CEA), however no incremental cost-effective ratios (ICERs) are expressed or reported and it is unclear how costs were related to outcomes (effects). What the authors call a sensitivity analysis is in fact a continuation model projecting the results of year 2 to year 3. Given the poor methodological and reporting quality of the study, the lack of clarity as to the effects described, the setting and the considerable attrition of participants in the original trial, the study is of unclear generalisability to a UK context.

## **6.2.2 Multicomponent programmes**

### ***Overview***

The second of the two published studies (Pentz, 1998; CBA/CEA +) assessed the costs, benefits and cost-effectiveness of the Midwestern Prevention Project (MPP). Approximate costs, benefits, and cost-effectiveness were calculated from 5-year follow-up (6-year) outcome data and operational costs.

### ***Summary of effectiveness data***

As reported in the effectiveness review, the overall research design of the MPP included a quasi-experimental trial in Kansas City, Kansas and Kansas City, Missouri, followed by an experimental trial in Indianapolis. Pentz (1998) reported on the whole sample of students who received the MPP, which included students based in 107 junior or middle schools and 62 senior schools (approximately 26,000 adolescents entered the intervention each year). Follow-up was initially at 5 years but the text reports on the follow-up of a sub sample of 1,002 participants into adulthood. The programme described by Pentz (1998) consisted of five components: (1) mass

media programming (31 programmes a year for the first 3 years); (2) a school programme (13 sessions in the sixth/seventh grade and 5 booster sessions the following year); (3) a parenting programme (education and coordination of parents with school policy in years 2 and 3 and towards the end of middle school); (4) community organisation (community leader training, organisation, planning, and implementation of community prevention campaigns); and (5) local policy change in years 4 and 5<sup>9</sup>.

The effects of the MPP were reported based on a random sample of 5,055 students from most of the Kansas City area. The author reported an accumulated 3-year net reduction of 9% in the incidence of monthly drunkenness, decreasing to approximately 2.5% by year 5. The effects on alcohol consumption appeared to be maintained into adulthood.

**Summary of resource utilisation and cost data**

Approximate costs for each prevention component of the MPP for each year of delivery are shown in Table 6.2.2.

**Table 6.2.2. Approximate direct costs of the MPP by component (in thousands of dollars)**

Prevention component	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Programme development	150	250	45	180	96	90
Training	44	88	118	162	176	176
Implementation	179	316	609	667	834	865
Institutionalisation	-	22	44	44	66	88
<i>Programme subtotal</i>	<i>373</i>	<i>676</i>	<i>816</i>	<i>1053</i>	<i>1166</i>	<i>1229</i>
Research/evaluation	246	470	565	776	879	925
Total (research programme) +	768	1146	1381	1829	2045	2144
<b>Dollars per family (total)</b>	<b>102</b>	<b>51</b>	<b>37</b>	<b>36</b>	<b>34</b>	<b>30</b>

However, the author estimated that costs of delivering the MPP as a “packaged product” would be less than those presented. Therefore, the yearly cost of the MPP was estimated at \$31 per family (year of costs was not reported) in a large city of over 1 million, although start-up costs were estimated to be more than treble this figure. The author however cautions that this may be a conservative estimate of cost

<sup>9</sup> This was an additional component not described in the study by Johnson and colleagues (1990) that was included in the review of effectiveness.

as it does not take into account constant development costs and the “ownership” of the programme by the community, which may impose further change on the design and content of the intervention.

### **Summary of cost-effectiveness data**

The results of the cost-benefit analysis (CBA) presented by the author show a \$700 net saving per family per year resulting from a reduction in monthly drunkenness. Cost benefits ratios are also favourable (ratio to \$1 spent on prevention to saving is \$1:1.69). Costs and benefits were based on 26,000 new families being added per year to the prevention programme.

The authors also undertook a CEA. The MPP was compared to drug education “as usual”, which was estimated to cost \$6 per students. Usual drug education programmes were assumed to have no effects on alcohol or other substance use behaviours. Results of the CEA are shown in Table 6.2.3.

**Table 6.2.3. Results from the cost-effectiveness analysis of the MPP**

Variables		MPP	Traditional drug education	Extra cost ( $\Delta C$ )	Extra effect ( $\Delta E$ )
Average cost	C	\$31	\$6	\$25	-
Reduction in monthly drunkenness	E	2.5%	0	-	2.5%
Incremental analysis					
ICER	$\Delta C / \Delta E$	$\$25 / 2.5 = \$10$		-	-

Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in monthly drunkenness. The authors do not report whether discount rates were applied in the analyses.

### **Comments**

The economic evaluation is based on effectiveness data presented in a conference abstract and was therefore not included in the review of effectiveness (Section 5). In addition, the authors made the assumption that “usual” drug education had little or no effect on alcohol use behaviours. However, it is possible that the intervention may be exportable into a UK setting and the costs may represent value for money when compared to the benefits.

### **6.3 Summary and evidence statements**

Two studies were identified that met the criteria for inclusion in the review of published economic evaluations. One study (Swisher et al., 2004; CEA -) assessed the cost-effectiveness of the standard Life Skills Training programme and infused Life Skills Training and one study (Pentz, 1998; CBA/CEA +) assessed the costs, benefits and cost-effectiveness of the Midwestern Prevention Project (MPP). Evaluations of the effectiveness of these programmes were identified and included in Section 5.

The standard LST programme was found to be more cost effective than I-LST by \$33.46 per student after 1 year of intervention delivery. In the second year, however, standard LST had no effects and the authors conclude that I-LST is more cost-effective. The 3-year total costs of the two programmes were estimated at \$109,429.04 and \$93,088.17, respectively.

The results of the cost-benefit analysis (CBA) of the MPP demonstrated a \$700 net saving per family per year resulting from a reduction in the incidence of monthly drunkenness. Cost benefits ratios were also shown to be favourable (ratio to \$1 spent on prevention to saving is \$1:1.69). Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness.

#### **Evidence Statement 6**

There is inconsistent and insufficient evidence to determine the cost-effectiveness of school-based interventions that aim to prevent or reduce alcohol use in young people under 18 years old.

## **7 COST-EFFECTIVENESS ANALYSIS**

### **7.1 Introduction**

It is important to consider not only the effects of an intervention but also their costs. Where resources are scarce and funds limited it is necessary to determine which interventions are likely to be the most cost effective and not just most effective. Any form of modelling is dependent on the quality of data available to put into the model. In order to conduct either a cost-effectiveness or a cost-utility analysis, the data must firstly be available. A significant problem in determining an economic case for interventions that target the prevention of reduction of alcohol use is that very little data exists; and of the data that does exist, even less is reported in a form that lends itself to an economic model.

### **7.2 Rationale for model**

Given the limitations outlined, the approach used has been to determine an estimate of the burden of disease in relation to the health sector (secondary care). Further analysis was performed on a number of programmes included in the review of effectiveness with reference to potential alcohol programmes for young people. This was used to determine a 'cost per case averted' in each of the programmes in preventing a young person becoming a harmful drinker.

### **7.3 Development of the economic model**

#### **7.3.1 Establishing the burden of disease**

Although not strictly an economic tool as it does not involve analysis of treatment choices or affects, estimating the burden of disease is a useful starting point. Burden of disease describes the overall effects of a particular disease area and its potential burden in terms of health effects and costs to the NHS. The hypothetical number of alcohol-related events per outcome that would be expected to occur in the 2005 birth cohort for England and Wales were calculated (see Table 2.2.1). The table represents the predicted effects of alcohol over the lifetime of the 2005 birth cohort. Unfortunately data for child and adolescent diseases attributable to alcohol could not be calculated, as data were not identified from published or unpublished literature.

In this section the costs associated with these expected numbers of alcohol-related events are estimated. In estimating this burden of disease we have taken the perspective of health service costs (secondary care only); societal costs such as the

costs of violent crime and family related costs are beyond the scope reported here. Unfortunately the data identified for inclusion in the epidemiology review were too broad and aggregated to allow further detailed analysis to be undertaken. In addition, no assumptions can be made from the data reported regarding age of onset of disease and as such the costs are currently reported in their undiscounted form taking 2005 as the base year. Individuals are usually assumed to have a positive time preference, which implies they would prefer to incur costs in the future rather than in the present. Therefore, future costs are valued less than current costs, and usually such costs are discounted. As it is not known in this case when the costs will be incurred in the future, it is not possible to discount back to present values but only assume the costs are incurred as of 2005. In two categories: injuries and unintended pregnancies, it was possible to further stratify the likely outcomes by reference to the published literature.

Nordqvist and colleagues (2006) reported data on alcohol-related injuries requiring accident and emergency (A&E) treatment. Injuries were reported by type in the following categories: luxation, contusion, fracture, gaping wound, concussion and examination after accident and other. The percentage of each type of alcohol-related injury was applied to the expected number in our 2005 cohort (13,666). The costs associated with each diagnosis for injury are shown in Table 7.3.1, and their sum estimates the total costs of injuries associated with our 2005 cohort.

**Table 7.3.1. Costs associated with the expected 13,666 cases of injuries**

Diagnosis*	Percentage*	Number in cohort	Unit cost (£)	Expected cost for 2005 birth cohort (£)
Luxation (dislocation)	25.75	3,519.00	106	373,013.47
Contusion	23.75	3,245.68	106	344,041.55
Fracture	23.50	3,211.51	106	340,420.06
Gaping wound	21.50	2,938.19	80	235,055.20
Concussion	1.00	136.66	134	18,312.44
Examination after accident	0.25	34.17	80	2,733.20
Other	4.25	580.81	80	46,464.40
<b>TOTAL COST</b>				<b>1,360,040.32</b>

\*Source: Nordqvist et al. (2006)

Lakha and Glasier (2006) reported the outcomes of unintended pregnancies in women attending for antenatal care or abortion. The outcomes of unintended

pregnancies reported were planned abortions, miscarriages and births. The percentage of each outcome reported has been applied to the expected number of unintended pregnancies in our 2005 cohort. A unit cost for each of these outcomes has been attached, and the expected costs for our 2005 cohort are shown in Table 7.3.2.

**Table 7.3.2. Costs associated with the expected 432 cases of unintended pregnancies**

<b>Outcome*</b>	<b>Percentage*</b>	<b>Number in cohort</b>	<b>Unit cost (£)</b>	<b>Expected cost for 2005 birth cohort (£)</b>
Abortion	72	309.28	568	175,669.36
Miscarriage	6	27.74	488	13,535.24
Childbirth	22	94.99	817	77,604.22
<b>TOTAL COST</b>				<b>266,808.82</b>

\*Source: Lakha and Glasier (2006)

The costs associated with all alcohol-related outcomes for our 2005 cohort are shown in Table 3. A unit cost for each outcome was attributed, and then multiplied by the expected number of cases. All unit costs were taken from DH National Reference Costs 2005\2006. No costs attributable to primary care have been included and the costs represent only the hospital based contact. Where the number of cases is negative, this indicates a potential protective effect of alcohol consumption. The cost savings associated with this have been calculated.

The total burden of disease is therefore the costs of all expected cases minus the costs of any cases averted.

**Table 7.3.3. Costs associated with alcohol-related expected cases in the 2005 birth cohort**

<b>Outcome</b>	<b>Expected numbers in 2005 birth cohort</b>	<b>Unit cost (£)</b>	<b>Expected cost for 2005 birth cohort</b>
Cancers of the lip, oral cavity and pharynx	34	1,155	39,270
Oesophageal cancer	41	2,693	110,413
Cancer of the larynx	11	2,693	29,623
Breast cancer (females)	141	1,494	210,654

Lung cancer	1,584	4,621	7,319,664
Adenocarcinoma of the small intestine	17	3,423	58,191
Stomach cancer	6	2,742	16,452
Colon cancer	33	3,641	120,153
Liver cancer	3	1,094	3,282
Ovarian cancer	7	1,231	8,617
Essential hypertension	1	1,338	1,338
Haemorrhagic stroke	6	2,794	16,764
Subarachnoid haemorrhage (SAH)	11	2,165	23,815
Cirrhosis of the liver	11	2,106	23,166
Chronic pancreatitis	5	2,076	10,380
Suicide	1	129	129
Hip fracture	-165	3,065	-505,725
Injury	13,666	Table 7.3.1	1,360,040
Depression	117	236	27,612
High risk intercourse	2,066	-	-
Unintended pregnancy	432	Table 7.3.2	266,809
Violent crime attributable to alcohol	4733	-	-
Sexual offences attributable to alcohol	98	-	-
All recorded crime attributable to alcohol	6751	-	-
		<b>TOTAL COST</b>	<b>10,814,360</b>

The focus of the table is on health service costs (secondary care). Costs associated with violent crime, sexual offences and all crime have not been calculated. While 'high risk intercourse' does increase the chances of an adverse health event, it is an intermediate rather than final outcome unlike the other categories, and is therefore not costed.

It can be seen from the above table that the total expected cost to the health service (secondary care) of alcohol related events is £10,814,360. This, in secondary care terms alone, represents a significant burden to the health service, however if primary care costs and societal costs were included, this figure would likely be much larger. The estimate given is therefore conservative.

### 7.3.2 Establishing a 'cost per case averted'

A total of 134 studies were identified for the review of effectiveness covering 52 programmes that targeted the prevention or reduction of alcohol use. Given the short time scale for the review it was not possible to include all 52 programmes in the cost-effectiveness analyses. Inclusion of programmes was determined according to the

following criteria: (1) the programme demonstrated effectiveness or partial effectiveness; (2) whether the associated references reported sufficient and useable outcome data in terms of effectiveness; and (3) whether resource use had been recorded in a manner that enabled an economic cost to be calculated.

‘Cost per case averted’ was chosen as the primary measure of cost and effect, more specifically a ‘cost per case of hazardous/harmful drinking averted’. ‘Cost per case averted’ was considered an appropriate measure of effect given the preventative nature of alcohol programmes and that many programmes are aimed at reduction in hazardous or harmful drinking in young people. Many of the papers poorly reported outcomes and therefore it was only possible to include three programmes in the cost-effectiveness calculations to give a cost per case averted. The three programmes included in the cost-effectiveness analyses were the Lion’s Quest ‘Skills for Adolescence’ programme (Lion’s Quest SFA; Eisen et al., 2002; 2003), the School Health and Harm Reduction programme (SHAHRP; McBride et al., 2000, 2003, 2004) and the STARS for Families brief intervention (STARS; Werch et al., 2000a, 2001, 2003).

None of the programmes identified for inclusion in the cost-effectiveness analyses were based in the UK. Two programmes were American based and one programme was based in Australia. Details of the three programmes, their origin, and type of intervention are shown in Table 7.3.4.

**Table 7.3.4. Programmes identified for inclusion in cost-effectiveness analyses**

<b>Programme</b>	<b>Reference</b>	<b>Country</b>	<b>Type of intervention</b>
School Health and Harm Reduction Programme	McBride et al., 2000, 2003, 2004	Australia	Curriculum
Lion’s Quest ‘Skills for Adolescence’	Eisen et al., 2002; 2003	USA	Curriculum
STARS for Families	Werch et al., 2000a, 2001, 2003	USA	Brief intervention

## 7.4 Results

### 7.4.1 Resource use and unit costs

A detailed breakdown of the resource use in each programme was recorded. Costs were calculated based on the primary resource use rather than an absolute cost of the intervention as absolute costs only give a single figure for all the components of care and do not allow further disaggregation. The resources for each programme were therefore identified in terms of staff, capital and consumables; for example a programme may have been delivered by one teacher, for one hour (staff), using a workbook (consumables) in a classroom (capital). Costing by resource use enables the finding of the work to be used and interpreted by decision makers in their own setting. This is extremely important when the programmes are not currently being run in the UK but an indication of costs of operating such programmes in the UK are required. The resources required for each programme were calculated and are presented in Table 7.4.1.

**Table 7.4.1. Resources required for each programme identified**

Programme	Staff	Time (mins)	Sessions	No of students	Training	Consumables
STARS	Nurse	20	2	1	None	4 postcards, 3 activity sheets, contract, feedback sheet
SHAHRP	Teacher	50	13	30	2 days	None
SFA	Teacher	40	40	15	3 days	Teacher's manual, Student workbook

Costs for the components of the interventions were derived from UK data using a number of sources including Curtis and Netten (2006) for health service costs through to teachers' pay and salary scales. Unit costs associated with each of the resources and their sources are shown in Table 7.4.2.

**Table 7.4.2. Unit costs of resources based on 2005-2006 UK prices.**

Resource	Source	Cost (£)
Teacher time	Teachernet	0.58 per min
Nurse time	Curtis and Netten 2006, 9.4	0.42 per min
Nurse travel	Curtis and Netten 2006, 9.4	1.30 per visit

Training	Swisher <sup>(a)</sup>	278.90 per day per teacher
Teacher's manual	Swisher <sup>(a)</sup>	39.81 per manual
Student workbook	Swisher <sup>(a)</sup>	30.42 per workbook
Postcard/activity sheet	Market prices	0.10 per postcard/sheet
<sup>(a)</sup> Costs were in US dollars but converted to UK pounds and inflated. Exchange and inflationary rate (combined) from <a href="http://www.measuringworth.com">www.measuringworth.com</a> . Exchange rate from \$ 2004 to £ 2005 was 0.56.		

#### 7.4.2 Costs

Following the detailed costing of the three programmes in terms of capital, staff and consumables, resource use and costs were linked to the number of students participating and the type of programme to be delivered. The costs of each of the programmes are presented in Table 7.4.3. The programmes available for analysis covered a broad spectrum of interventions from those delivered by nurses with only a few short sessions to intensive forty week programmes delivered by teachers. The costs per student are relatively modest (£20 - £150).

**Table 7.4.3. Costs of each programme**

Programme	STARS	SHAHRP	SFA
Staff Cost (£)	19.40	377.00	928.00
Training Cost (£)	0.00	557.80	836.70
Consumable Cost (£)	0.90	0.00	496.11
<b>Total Programme Cost (£)</b>	<b>20.30</b>	<b>934.80</b>	<b>2260.81</b>
No of students	1	30	15
<b>Cost per Student (£)</b>	<b>20.30</b>	<b>31.16</b>	<b>150.72</b>

#### 7.4.3 Outcomes

The results of the studies in terms of effectiveness data are presented in Table 7.4.4. It may be noted that all differences in effects are relatively small between intervention and control groups with the exception of the results for the SHAHRP at 2 years.

**Table 7.4.4. Outcomes for each of the programmes**

Programme	Outcome	Intervention	Control	Difference
STARS	30-day heavy use <sup>a</sup> at 2 years	7/254 2.7%	17/261 6.5%	3.7%

Programme	Outcome	Intervention	Control	Difference
SHAHRP	Hazardous/harmful drinking <sup>b</sup> : 20 months	209/970 21.5%	337/1037 32.5%	11.0%
SHAHRP	Hazardous/harmful drinking <sup>b</sup> : 32 months	278/863 32.2%	310/915 33.9%	1.7%
Lion's Quest SFA	Binge drinking <sup>c</sup>	12.67%	13.11%	0.44%
<sup>a</sup> Defined as consuming 5 or more drinks in a row during the last 30 days; <sup>b</sup> Defined as consuming 2 (females) or 4 (males) or more drinks in a row during the last 30 days; <sup>c</sup> Defined as consuming 3 or more drinks in a row during the last 30 days				

#### 7.4.4 Cost per case averted

The cost per case averted for each of the programmes included in the cost-effectiveness analyses are presented in Table 7.4.5. Although the costs were relatively modest, the effects were equally modest, hence the cost per case averted (2 year outcome) for the programmes included in the cost-effectiveness analyses ranged from £285 to £34,255. A breakdown of how the cost per case averted was calculated for each programme is presented in Appendix X.

**Table 7.4.5. Cost per case of hazardous/harmful drinking averted**

Programme	Cost per case averted (£)
STARS	540.25
SHAHRP (20mths)	284.54
SHAHRP (32mths)	1,869.71
Lion's Quest SFA	34,254.70

#### 7.4.5 Incremental cost-effectiveness ratios

In order to summarise the trade off in costs and effects between programmes, Incremental Cost Effectiveness Ratio (ICER) were calculated. In the formula presented below, if C and E represent the costs and effects, and the subscripts <sub>A</sub> and <sub>B</sub> represent two different treatments, then:

$$ICER = \frac{\sum C_A - \sum C_B}{\sum E_A - \sum E_B} = \frac{\Delta C}{\Delta E}$$

Outcomes were reported at 2 years for both the STARS for Families and Lion's Quest SFA programmes. Outcomes relating to SHAHRP were reported at 20 and 32 months, data from the 20-month follow-up were used for comparison since these were the closest outcomes to 2 years available.

**Table 7.4.6. Summary costs and outcomes for each indicative cohort**

Programme	Indicative cohort size	Total cost for the programme	Total number of cases averted
STARS	250	5,075.00	9.39
SHAHRP (20mths)	900	28,044.00	98.6
Lion's Quest SFA	750	113,040.50	3.3

The results of the ICER calculations are presented in Table 7.4.7 to Table 7.4.9. As shown in Table 7.4.7, the incremental cost was £257.47 to prevent an extra case of hazardous/harmful drinking with a programme such as SHAHRP compared to STARS. With the other two scenarios, it would be more beneficial not to move to the Lion's Quest SFA programme in either scenario. STARS for Families and SHAHRP dominated the Lion's Quest SFA programme, that is, they were both calculated to be less costly and more beneficial.

**Table 7.4.7. STARS versus SHAHRP**

Variables		STARS	SHAHRP	Extra cost ( $\Delta C$ )	Extra effect ( $\Delta E$ )
Average cost	C	£5,075	£28,044	-£22,969	
Total number of cases averted	E	9.39	98.6		-89.21
Incremental analysis					
ICER	$\Delta C / \Delta E$	-£22969/-89.21 = £ 257.47		-	-

**Table 7.4.8. STARS versus Lion's Quest SFA**

Variables		STARS	Lion's Quest SFA	Extra cost ( $\Delta C$ )	Extra effect ( $\Delta E$ )
Average cost	C	£5,075	£113,040.50	£107,966	
Total number of cases averted	E	9.39	3.3		6.09
Incremental analysis					

<b>ICER</b>	<b>ΔC/ ΔE</b>	<b>-£107,966/6.09 = -£17,728.3</b>	-	-
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**Table 7.4.9. SHAHRP versus Lion's Quest SFA**

<b>Variables</b>		<b>SHAHRP</b>	<b>Lion's Quest SFA</b>	<b>Extra cost (ΔC)</b>	<b>Extra effect (ΔE)</b>
Average cost	C	£28,044	£113,040.50	-£84,996	
Total number of cases averted	E	98.6	3.3		95.3
Incremental analysis					
<b>ICER</b>	<b>ΔC/ ΔE</b>	<b>-£84,996/95.3 = -£891.88</b>		-	-

## 7.5 Summary

Three programmes were included in the cost-effectiveness analyses; the Lion's Quest 'Skills for Adolescence' programme (Lion's Quest SFA; Eisen et al., 2002; 2003), the School Health and Harm Reduction programme (SHAHRP; McBride et al., 2000, 2003, 2004) and the STARS for Families brief intervention (STARS; Werch et al., 2000a, 2001, 2003). The 'cost per case averted' for each of the programmes were £540.25 for the STARS for Families programme, £284.54 for SHAHRP at 20 months and £1,869.71 at 32 months, and £34,254.70 for Lion's Quest SFA programme. Calculation of ICERs indicated that compared to the brief intervention programme, STARS for Families, the classroom-based SHAHRP cost an additional £257.47 to prevent one additional case of hazardous/harmful drinking. Both STARS for Families and SHAHRP were shown to be less costly and more beneficial than the Lion's Quest SFA programme.

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Cost-effectiveness analysis of three programmes found that a brief intervention programme, STARS for Families<sup>1</sup> and a classroom-based programme focusing on harm reduction through skills-based activities, SHAHRP<sup>2</sup>, were less costly and more beneficial than a classroom-based drug prevention programme, Lions Quest SFA<sup>3</sup>. Compared to STARS for Families, SHAHRP cost an additional £257.47 to prevent one additional case of hazardous/harmful drinking.

<sup>1</sup> Werch et al., 2000a, 2001, 2003 (RCT +)

<sup>2</sup> McBride et al., 2000, 2003, 2004 (CNRT +)

<sup>3</sup> Eisen et al., 2002; 2003 (RCT +)

## **8 DISCUSSION**

### **8.1 Summary of the review of effectiveness**

The review of the effectiveness included a total of 14 systematic reviews and meta-analyses, and 136 primary studies, which evaluated 52 programmes. A broad range of programmes were identified including classroom-based programmes delivered by teachers or other professionals, multicomponent programmes that combined classroom-based intervention components with family-based and/or community-based components, and other approaches delivered outside of lesson time including brief interventions and peer support programmes.

#### ***8.1.1.1 Systematic reviews and meta-analyses***

Fourteen systematic reviews were identified that examined the effectiveness of school-based interventions aimed at the prevention or reduction of alcohol use. However, the majority of the reviews identified examined the effectiveness of substance use prevention programmes and only one review specifically examined the effectiveness of programmes that aimed to prevent alcohol use. This systematic review found that there was no consistent evidence to determine which programmes were effective over the short to medium term, but highlighted three programmes which were effective over the longer term. These included the family-based, Strengthening Families programme, Botvin's LST and a culturally focused, community-based intervention with Native Americans. The authors reported that the Strengthening Families programme showed particular promise as an effective preventive intervention.

#### ***8.1.1.2 Classroom-based programmes led by teachers or external contributors***

Nineteen classroom-based programmes taught by regular teachers were identified. Three programmes SHAHRP, Botvin's LST and the PY/PM programme demonstrated evidence of reducing alcohol use in the short-term. Botvin's LST and SHAHRP also produced reductions in alcohol use and particularly, heavy alcohol use in the medium-term, but only Botvin's LST demonstrated evidence of long-term effects on alcohol use. Nine classroom-based programmes were identified that were taught by external contributors, including adult health educators, uniformed police officers, research project staff, college age instructors, certified school psychologists and Life Education Centre staff. The majority of the programmes identified had

inconsistent effects on alcohol use and only one culturally tailored programme for Native American students demonstrated evidence of medium- to long-term effects.

#### **8.1.1.3 Other in-school approaches**

Nineteen school-based programmes that were delivered outside of the lesson format were identified including brief intervention programmes, counselling programmes, peer support and teacher training. The STARS for Families brief intervention programme demonstrated evidence of short-term effects on heavy drinking. However, data presented at one year indicated that these effects might not last into the medium to longer term. Other in-school approaches identified did not produce consistent reductions in alcohol use.

#### **8.1.1.4 Multicomponent programmes**

Twelve multicomponent programmes were identified that combined school-based intervention with family, community and/or media components. Three long-term programmes that combined school-based intervention with family and community components had conflicting effects on alcohol use, with two programmes, the MPP and Coalition for Youth Quality of Life, having no effects on alcohol use. Project Northland was shown to be partially effective in the short term but during the interim phase of the programme when only minimal intervention components were delivered, the programme was found to have a negative effect on alcohol use. Programmes that combined classroom-based intervention with components targeting parental participation, and focusing on wider problem behaviours, appeared to have more consistent effects on alcohol use. Two programme in particular, the Seattle Social Development programme and Linking in the Interests of Families and Teachers had long-term effects on heavy and patterned alcohol use, respectively. In addition, the Healthy School and Drugs Project impacted on a range of alcohol use behaviours in the short-term. However, longer term follow-up data were not available to judge the continuing effectiveness of this programme. Positive short-term effects on alcohol use were also demonstrated for two programmes, Keepin' it REAL and Be Your Own Influence, that combined classroom-based intervention with media programming.

#### **8.1.1.5 Summary**

A range of school-based intervention approaches to the prevention and/or reduction of alcohol use have been evaluated but the findings of the effectiveness review highlight a lack of clear evidence on which types of programmes are most effective. The diversity of the studies identified, in terms of intervention content and outcomes

presented meant that it was not possible to synthesise data across the types of programme identified. In addition, long-term follow-up data were not available for the majority of programmes so it is difficult to determine the value of school-based intervention in the longer term.

## **8.2 Summary of economic appraisal**

### **8.2.1 Review of economic evaluations**

Two studies were identified that met the criteria for inclusion in the review of published economic evaluations. One study (Swisher et al., 2004) assessed the cost-effectiveness of the standard LST programme and infused LST (I-LST) and one study (Pentz, 1998) assessed the costs, benefits and cost-effectiveness of the Midwestern Prevention Project (MPP).

The standard LST programme was found to be less costly than I-LST by \$33.46 per student after 1 year of intervention delivery. In the second year, however, standard LST had no effects and the authors concluded that I-LST was less costly. The 3-year total costs of the standard LST and I-LST were estimated at \$109,429.04 and \$93,088.17, respectively. The results of the cost-benefit analysis (CBA) of the MPP demonstrated a \$700 net saving per family per year resulting from a reduction in the incidence of monthly drunkenness. Cost benefits ratios were also shown to be favourable (ratio to \$1 spent on prevention to saving was \$1:1.69). Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness.

Our review demonstrates the current lack of economic evaluation studies in the field of prevention. Of the 52 programmes identified for inclusion in the review of effectiveness, only two had been evaluated in terms of their cost-effectiveness. In addition, both studies had limitations and their findings should be interpreted with caution.

### **8.2.2 Cost-effectiveness analysis**

Further analyses were undertaken to determine a ‘cost per case of hazardous/harmful drinking averted’. It was only possible to include three programmes in the further analyses because the majority of the studies identified for inclusion in the review of effectiveness either did not demonstrate effectiveness or

did not report outcomes in sufficient detail to determine the percentage of students reporting hazardous/harmful drinking at follow-up. The three programmes included in the cost-effectiveness analyses were the Lion's Quest 'Skills for Adolescence' programme (Lion's Quest SFA; Eisen et al., 2002; 2003), the School Health and Harm Reduction programme (SHAHRP; McBride et al., 2000, 2003, 2004) and the STARS for Families brief intervention (STARS; Werch et al., 2000a, 2001, 2003).

The 'cost per case averted' for each of the programmes included in the cost-effectiveness analyses were £540.25 for the STARS for Families programme, £284.54 for SHAHRP at 20 months and £1,869.71 at 32 months, and £34,254.70 for Lion's Quest SFA programme. Calculation of ICERs indicated that compared to the brief intervention programme, STARS for Families, the classroom-based SHAHRP cost an additional £257.47 to prevent an extra case of hazardous/harmful drinking. Both STARS for Families and SHAHRP were shown to be less costly and more beneficial than the Lion's Quest SFA programme.

### **8.3 Limitations of the review**

#### **8.3.1 Review of effectiveness**

The review of effectiveness was conducted within a limited timescale and it was therefore not possible to conduct an exhaustive search of the grey literature. The results of the effectiveness review therefore rely on published, peer-reviewed studies reported in English language journals.

##### **8.3.1.1 Quality of the included studies**

The quality of the included studies varied greatly. A large majority of the RCTs identified were cluster RCTs, using school or class as the unit of random assignment. A large number of studies, although using a cluster design, analysed results at the individual level. If the clustering effect is ignored, then p values may be calculated as artificially extreme and confidence intervals may be artificially narrow (Campbell and Grimshaw, 1998). Given the short time over which the review was conducted it was not possible to fully investigate the effects that this had on the results. In addition, the report of the methodology used to conduct the RCTs rarely included details on the method of random assignment used and in a number of cases it was, therefore, not possible to determine whether selection bias had been minimised. Other aspects of study design were also poorly reported and a number of studies failed to report on fundamental features of the study methodology used. In a number of examples, the

number of participants assigned to intervention and control groups was not reported or were only available at baseline. Few studies reported outcomes data in sufficient details to allow presentation in forest plots. In addition, the choice of outcome measures varied greatly across studies, which meant that it was not possible to undertake a meta-analysis. A number of studies suffered from high levels of attrition. Attrition can introduce bias if the characteristics of those participants lost to follow-up or with missing data differ from those remaining in the study (Dumville et al., 2006). The effects of attrition may be managed by undertaking an ‘intention to treat’ analysis but few studies reported that this approach had been taken or reported how missing data were handled.

### **8.3.1.2 Applicability**

As highlighted in a previous review of substance use prevention programmes, there is a lack of prevention initiatives originating from the UK (Jones et al., 2006) and the research literature continues to be dominated by programmes from the US, which may have limited generalisability to a UK context. In particular, the goal of US prevention programmes targeting drug and alcohol use has traditionally been abstinence. Government policy in England points towards the adoption of a harm reduction approach to the prevention of alcohol use amongst young people. For example, the major aims of the Alcohol Harm Reduction Strategy for England are to “minimise risky alcohol consumption and harms associated with alcohol use” and Drugs: Guidance for Schools states that “the aim of alcohol education should be to reduce the risks associated with pupils’ own and others’ drinking by taking a harm reduction approach”. In addition, the majority of young people in England have begun drinking by the age of 15, indicating that total abstinence from alcohol may not be a realistic or desired goal for many young people. There has been much discussion in the research literature regarding the usefulness and acceptability of harm reduction approaches compared to abstinence approaches. Researchers in the field have highlighted that programmes based only on abstinence goals or “just say no” approaches may be ineffective and even counterproductive to prevention, causing adolescents to ‘rebel’ against the messages delivered (Marlatt et al., 2002). However, Midford and colleagues (1998) have proposed that harm reduction should be part of a strategy that does not oppose abstinence, but includes it as one of a number of possible goals.

Studies identified for inclusion in the review of effectiveness were rated in terms of their applicability to UK practice and policy, and studies based on an abstinence only

approach were considered to be of low applicability to UK practice and policy for the reasons discussed above. However, in practice it was difficult to fully determine whether the goal of many programmes was complete abstinence, as full details of programme goals were not always reported. This was particularly the case with programmes that targeted the use of illegal substances in addition to alcohol. Attempts were made to address the lack of published evaluation studies originating in the UK by seeking information on current practice in English schools. However, the response from those contacted was disappointing and no details of evaluation reports of school-based programmes were received.

### **8.3.2 Economic appraisal**

The review has highlighted the paucity of information regarding the economic evaluation of interventions that aim to prevent or reduce alcohol use among young people, and the gaps in the evidence are large and wide ranging. Firstly, there is no clear evidence of effectiveness for any of the programmes identified. Methodological shortcomings and inadequate reporting have severely hampered further efforts to determine the costs and ultimate benefits of these programmes. In addition, many programmes have not been evaluated over the longer term and it is not possible to determine implications of this in the assessment of cost-effectiveness, particularly when the evidence from the review of effectiveness suggest that positive programme effects largely dissipate over time. Secondly, little data were available on the burden of alcohol use in young people. Sufficient data were not identified to determine the impact of young people's alcohol use on acute outcomes such as school attendance, accidents and/or injury, violence and/or crime, or sexual behaviour resulting in unintended pregnancy. This in turn meant that it was not possible to determine resource use in health and non-health settings arising as a result of young people's drinking behaviours or to extrapolate the data to determine a cost per adolescent acute event avoided by delivering school-based interventions. Data for injury and unintended pregnancy were identified for adult populations but it was judged to be inappropriate to use adult data as a proxy for determining outcomes in an adolescent population. In addition, it was also not possible to examine the longer term impacts of adolescent alcohol use as there is no clear evidence to determine the relationship between alcohol use in adolescence and adulthood.

### **8.4 Research recommendations**

This review has identified a number of gaps in the evidence, in particular with regards to the economic evaluation of school-based alcohol prevention programmes. The

gaps are large and wide-ranging and the research recommendations listed are not exhaustive.

- Most importantly there needs to be evaluation of the effectiveness and cost-effectiveness of school-based programmes currently being delivered or planned in England. The ongoing evaluation of Blueprint (<http://www.drugs.gov.uk/young-people/blueprint>) is a good foundation but evaluation of prevention programmes in England needs to be further developed and ongoing. Cost-effectiveness research should be concentrated on full economic evaluations that consider both the costs and consequences of implementing school-based programmes aimed at preventing or reducing alcohol use.
- The effectiveness and cost-effectiveness of school-based programmes should be determined through well-designed and conducted studies. Improvements in study design and quality of the reporting are needed, particularly with respect to methods used to randomise participants or clusters, reporting of participant numbers at baseline and all follow-up points, and details of attrition. The reporting of outcome measures needs standardisation. In addition, primary outcomes of interest should be determined *a priori* and clearly reported.
- There needs to be development of systems for the standardised collection of data on alcohol-related outcomes in young people, such as injuries, violence and disorder, unintended pregnancies and school attendance.

## **9 CONCLUSIONS**

Overall this review of the effectiveness and cost-effectiveness of interventions delivered in primary and secondary schools to prevent and/or reduce alcohol use by young people has highlighted a number of weaknesses in the evidence base. There is a lack of clear, long-term evidence for the effectiveness of school-based interventions and the applicability of the few programmes that have demonstrated partial effectiveness warrants further study before widespread implementation could be supported. The review of published economic evaluations and further cost-effectiveness analyses has been limited by large and wide-ranging gaps in the evidence base and consequently can contribute little to determining which programmes provide value for money.

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**Appendix 3. Results of quality assessment**

**Table 8.4.1. Quality assessment for systematic reviews and meta-analyses**

- 1.1 The study addresses an appropriate and clearly focused question
- 1.2 A description of the methodology used is included
- 1.3 The literature search was sufficiently rigorous to identify all relevant studies
- 1.4 Study quality is assessed and taken into account
- 1.5 There are enough similarities between the studies selected to make combining them reasonable

Key: ✓✓✓ Well covered ✓✓ Adequately covered ✓ Poorly covered ✗ Not addressed N/A Not applicable

Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Bruvold 1990	✓✓	✓	NR	X	✓✓	-
Coggan et al., 2003	✓✓	✓	✓✓✓	✓	N/A	+
Cuijpers 2002	✓✓✓	✓	✓	✗	✓✓	-
Dusenbury et al., 1997	✓✓	✓	✓✓	✓✓	N/A	+
Foxcroft et al., 2002; 2003	✓✓✓	✓✓✓	✓✓✓	✓✓✓	N/A	++
Loveland-Cherry 2003	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓	+
Skara and Sussman 2003	✓✓✓	✓✓✓	✓✓✓	✓	✓✓	+
Tobler, 1993	✓✓	✓✓	✓	✓✓	✓✓	+
Tobler et al., 1997	✓✓	✓✓✓	✓	✓✓✓	✓✓✓	+
Tobler et al., 2000	✓✓✓	✓✓	✓	✓✓✓	✓✓	+

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Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Werch and Owen 2002	✓✓✓	✓✓	✓✓	✓	*	+
White et al., 2004	✓✓✓	✓✓✓	✓✓✓	✓✓	N/A	++

**Table 8.4.2. Quality assessment for RCTs**

- 1.1 The study addressed an appropriate and clearly focused question
- 1.2 The assignment of participants to intervention groups is randomised
- 1.3 An adequate concealment method is used
- 1.4 Participants and investigators are kept 'blind' about intervention allocation
- 1.5 The intervention and control groups are similar at the start of the trial
- 1.6 The only difference between groups is the intervention under investigation
- 1.7 All relevant outcomes are measured in a standard, valid and reliable way
- 1.8 What percentage of the participants or clusters recruited into each intervention arm of the study dropped out before the study was completed?
- 1.9 All participants are analysed in the groups to which they were allocated? (ITT)
- 1.10 Where the study is carried out at more than one site, results are comparable for all sites

Key: ✓✓✓ Well covered ✓✓ Adequately covered ✓ Poorly covered × Not addressed NR Not reported N/A Not applicable

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Allison et al., 1990	✓✓✓	✓	×	N/A	✓	✓✓	✓✓✓	8%	×	×	-
Baumann, 2006	✓✓	×	×	N/A	✓	✓	✓✓	42% from intervention and 25% from control	✓	N/A	-
Bennett, 1995	See Clayton et al., 1991, 1996										-
Bond et al., 2004	✓✓✓	✓✓✓	×	N/A	✓✓✓	×	✓✓	10%	✓✓✓	×	++

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Botvin et al., 1990a, 1995a	✓✓	✓	✗	N/A	✓✓	✗	✓✓	24% lost at 1 year follow-up	✗	✗	+
Botvin et al., 1990b	✓✓	✓✓	✗	N/A	✓✓	✓✓	✓✓	NR.	✗	✗	+
Botvin et al., 1995b	✓✓✓	✓✓	NR	N/A	✓✓	✓✓	✓✓	NR	NR	✗	+
Botvin et al., 2001a; 2001b; Griffin et al., 2003	✓✓	✓	✗	N/A	✓✓	✗	✓✓✓	17% not followed up.	✗	✗	+
Botvin et al., 2003	✓✓	✓	✗	N/A	✓✓✓	✗	✓✓	Matched data not available for 44%	✗	✗	-
Brewer, 1991	✓✓✓	✓✓✓	NR	NR	✓✓✓	✓✓✓	✓✓✓	NR	✓✓✓	N/A	+
Brown et al., 2005	✓✓✓	✓✓	NR	N/A	✓✓	✓	✓✓✓	12%	✓✓	✗	+
Chou et al., 1998	✓✓	✓✓✓	✓	✗	✓✓✓	✓✓✓	✓✓✓	Complete cases Intervention (42.72%) control (41.03%)	✓✓✓	✓✓	-
Clayton et al., 1991, 1996	✓✓	✓	✗	✗	✗	✗	✓	Overall, 45% rate of attrition.	✗	✗	-
Colnes 2000	✓✓✓	✓✓	✗	N/A	✓✓✓	✗	✓✓✓	47%	✗	✗	+
D'Amico & Fromme 2002	✓✓	✗	✗	N/A	✓✓	✗	✓✓	16% at PT, 39% at follow-up	✗	N/A	-
Dent et al., 2001	✓✓✓	✓	NR	N/A	✓✓	✓✓	✓✓	37%	✓	NR	-
Donaldson et al., 1995, 2000	✓✓	✓	NR	N/A	NR	NR	✓✓✓	NR	NR	N/A	-
Eddy et al., 2003	✓✓✓	✓✓	✗	✗	✓	✓	✓✓	3%	✓✓	N/A	-
Eisen et al., 2002, 2003	✓✓	✓	✗	N/A	✓✓	NR	✓	16% didn't complete PT survey	✗	✗	+

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Ellickson et al., 1990, 1993a	✓✓	✓✓	NR	NR	✓	✓	✓✓	40%	NR	N/A	+
Ellickson et al., 1993b	✓✓	✓✓✓	NR	NR	✓✓	✓✓	✓✓	125% failed to take 10th or 12th grade survey.	✓✓	✓✓✓	+
Ellickson et al., 2003	✓✓	✓✓	NR	NR	✓✓	✓	✓	9%	✓✓	×	+
Fearnow-Kenney et al., 2003	✓✓	✓	×	N/A	×	×	✓✓	~20%	×	×	-
Furr-Holden 2004	✓✓✓	✓✓✓	N/A	N/A	✓	✓	✓✓	16%	✓✓	NR	-
Graham et al., 1990	✓✓✓	✓	✓	NR	✓	✓✓	✓✓✓	30%	NR	NR	+
Hansen & Graham 1991	✓✓	✓✓	NR	NR	✓✓	✓	✓	20%	NR	N/A	-
Hecht et al., 2003; Gosin et al., 2003	✓✓	✓✓	NR	NR	NR	NR	NR	NR	NR	N/A	-
Hurry and McGurk 1997; Hurry et al., 2000	✓✓✓	✓✓	×	NR	✓	✓✓	✓✓	NR	NR	N/A	+
Johnson et al., 1990	✓✓	✓✓	N/A	N/A	✓✓	✓✓	✓✓	32%	NR	NR	+
Komro et al., 1999	✓✓✓	✓✓	×	N/A	N/A	N/A	✓✓✓	NR	✓✓	✓✓	+
Kreft 1998	✓✓	✓✓	NR	N/A	NR	NR	✓		NR	N/A	-
Kulis et al., 2005	✓✓✓	✓	×	N/A	✓	✓✓	✓✓✓	NR	×	NR	-
Lynam et al., 1999	See Clayton et al., 1991, 1996										
Newman et al., 1992	✓✓✓	✓	NR	N/A	NR	✓	✓✓✓	NR	NR		-

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Palmer et al., 1998	✓✓	✓✓	NR	NR	✓✓	✓✓	NR		NR	N/A	-
Perry & Grant, 1991	✓✓	✓	x	N/A	x	x	✓	NR	x	x	-
Perry et al., 1996; Komro et al., 2001	✓✓✓	✓	x	N/A	✓✓	x	✓✓	19% lost at end of 8th grade	✓	x	+
Perry et al., 2003	✓✓	x	x	N/A	✓✓	✓	✓✓	0.16	x	✓	+
Perry et al., 2002	✓✓✓	✓	x	✓✓	✓✓	x	✓✓	15% in 98	✓	x	+
Piper et al., 2000	✓✓✓	✓	x	N/A	✓✓	x	✓✓✓	32%	x	x	-
Ringwalt et al., 1991	✓	x	x	N/A	✓✓	x	✓✓	9% drop out	x	x	-
Schinke et al., 2000	✓✓✓	✓✓	✓✓	x	✓✓✓	✓	✓✓✓	14.11% total	✓✓✓	x	+
Shope et al., 1992	✓✓	x	x	N/A	✓	x	✓	28% at 2.5 yr	x	x	-
Shope et al., 1994	✓✓	x	x	NR	✓	x	✓✓	31%	NR	NR	-
Sigelman et al., 2004	✓✓✓	✓	x	N/A	✓✓	✓	✓✓✓	NR	x	NR	+
Simons-Morton et al., 2005	✓✓✓	✓	x	N/A	✓	✓✓	✓✓✓	~50% lost to follow-up	x	NR	+
Slater et al., 2006	✓✓	✓	x	N/A	✓✓✓	✓✓✓	✓✓✓	31.4% over 2 years	✓✓	✓✓	+
Smith et al., 2004; Vicary et al., 2004	✓✓	✓	x	N/A	✓✓	x	✓✓	~10%	x	x	+
Spoth et al., 2002; 2005	✓✓✓	✓	x	N/A	✓✓	✓✓	✓✓	14%	✓	x	+

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Sussman et al., 1998; Sun et al., 2006	✓✓	✓✓	*	NR	✓✓	✓	✓✓	~45%	NR	N/A	+
Sussman et al., 2003	✓✓	✓✓	*	N/A	NR	NR	✓✓	~45%	NR	N/A	+
Toomey et al., 1996	See Perry et al., 1996										
Warren et al., 2006	✓✓	✓✓	*	NR	✓✓	✓✓	✓✓	NR	NR	N/A	+
Werch et al., 1996	✓✓✓	✓✓	*	NR	✓✓✓	✓✓✓	✓✓✓	3.8% dropped out of the intervention group and 1.9% dropped out of the control group.	✓✓✓	N/A	+
Werch and Carlson 1996	✓✓✓	✓✓	*	N/A	✓✓✓	✓✓✓	✓✓✓	12% intervention group, and 9% control group.	✓✓✓	N/A	++
Werch et al., 1998	✓✓	✓✓	*	N/A	✓✓	✓	✓✓	11%	*	N/A	+
Werch et al., 2000a, 2001, 2003a	✓✓✓	✓	*	N/A	✓✓	✓✓	✓✓	23% from intervention group and 21% from the control group.	*	N/A	+
Werch et al., 2000b	✓✓✓	✓✓	NR	N/A	✓✓	✓✓	✓✓✓	NR	*	N/A	+
Werch et al., 2003b	✓✓✓	✓✓✓	✓✓	N/A	✓✓	✓	✓✓✓	2%	✓✓	N/A	++
Werch et al., 2005a	✓✓✓	✓✓	*	N/A	✓✓✓	✓✓	✓✓✓	3.3%	*	N/A	+
Werch et al., 2005b	✓✓✓	✓✓✓	NR	N/A	✓✓✓	✓✓✓	✓✓✓	42 and 48 students dropped out at 12 months from the two arms respectively.	NR	N/A	++

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Werch et al., 2005c	✓✓✓	✓	NR	N/A	✓✓	✓✓✓	✓✓✓	13%	NR	N/A	+
Williams et al., 1995	See Perry et al., 1996										
Williams et al., 2001	✓✓	✓	×	N/A	✓✓	×	✓✓	19%	×	×	-

**Table 8.4.3. Quality assessment for CNRT**

- 1.11 The study addressed an appropriate and clearly focused question
- 1.12 The assignment of participants to intervention groups is randomised
- 1.13 An adequate concealment method is used
- 1.14 Participants and investigators are kept 'blind' about intervention allocation
- 1.15 The intervention and control groups are similar at the start of the trial
- 1.16 The only difference between groups is the intervention under investigation
- 1.17 All relevant outcomes are measured in a standard, valid and reliable way
- 1.18 What percentage of the participants or clusters recruited into each intervention arm of the study dropped out before the study was completed?
- 1.19 All participants are analysed in the groups to which they were allocated? (ITT)
- 1.20 Where the study is carried out at more than one site, results are comparable for all sites

Key: ✓✓✓ Well covered ✓✓ Adequately covered ✓ Poorly covered × Not addressed NR Not reported N/A Not applicable

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Botvin et al., 1997	✓✓	N/A	N/A	N/A	✓✓	×	✓✓	14%	×	×	-
Caplan et al., 1992	✓✓	N/A	N/A	N/A	✓✓	✓	✓✓✓	NR	×	×	-
Cuijpers et al., 2001; Smit et al., 2003	✓✓	N/A	N/A	N/A	NR	NR	✓✓✓	32% of intervention group; 20% dropped out from the control group	×	×	+

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Dedobbeleer & Desjardins, 2001	✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓✓	60% lost to follow at 30 months	NR	NR	-
Ennett et al., 1994;	✓✓✓	N/A	N/A	N/A	✓✓	✓✓	✓	12% not followed up at 2 years (7th/8th grade); attrition at 6 years not clear/	NR	NR	+
Fraguela et al., 2003	✓✓✓	N/A	N/A	N/A	✓✓	✓	✓	60%	×	×	-
Hawkins et al., 1999	✓✓	N/A	N/A	N/A	✓	✓	✓✓	7%	NR	N/A	-
McBride et al., 2000, 2003, 2004	✓✓✓	N/A	N/A	N/A	✓	×	✓✓	~25%	×	×	+
O'Donnell et al., 1995	✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓	40%	NR	N/A	+
Padget et al., 2005	✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓✓	18%	×	×	+
Padget et al., 2006	✓✓✓	N/A	N/A	N/A	✓✓	✓✓✓	✓✓✓	Intervention 12% and control 12%	×	NR	+
Peleg et al., 2001	✓✓	N/A	N/A	N/A	✓	×	✓✓	24%	×	×	-
Rosenbaum et al., 1994	See Ennett et al., 1994										
Rosenbaum & Hanson, 1998	See Ennett et al., 1994										
Schinke and Tepavac 1995	✓✓✓	N/A	N/A	N/A	×	✓✓✓	✓✓	NR	×	NR	-
Schnepf, 2002	✓✓	N/A	N/A	N/A	✓✓	×	✓✓	NR	×	N/A	-

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Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Stigler et al., 2006	✓✓	N/A	N/A	N/A	×	✓✓	NR	NR	×	NR	-
Valentine et al., 1998	✓✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓	71% middle school, 48% high school completed	✓✓✓	N/A	-
Webster et al., 2002	✓✓✓	N/A	N/A	N/A	NR	✓✓✓	✓✓	28% intervention and 19% control students	✓✓✓	×	+
Wilhelmsen et al., 1994	✓✓✓	N/A	N/A	N/A	×	NR	✓✓	Not clear	NR	✓	-

**Table 8.4.4. Quality assessment for controlled before and after studies**

1.1 Contemporaneous data collection

- Score DONE pre and post intervention periods for study and control sites are the same.
- Score NOT CLEAR if it is not clear in the paper, e.g. dates of collection are not mentioned in the text.
- Score NOT DONE if data collection was not conducted contemporaneously during pre and post intervention periods for study and control sites.

1.2 Appropriate choice of control site

Studies using second site as controls:

- Score DONE if study and control sites are comparable with respect to dominant reimbursement system, level of care, setting of care and academic status.
- Score NOT CLEAR if not clear from paper whether study and control sites are comparable.
- Score NOT DONE if study and control sites are not comparable.

1.3 Baseline measurement

- Score DONE if performance or patient outcomes were measured prior to the intervention, and no substantial differences were present across study groups (e.g. where multiple pre intervention measures describe similar trends in intervention and control groups);
- Score NOT CLEAR if baseline measures are not reported, or if it is unclear whether baseline measures are substantially different across study groups;
- Score NOT DONE if there are differences at baseline in main outcome measures likely to undermine the post intervention differences (e.g. are differences between the groups before the intervention similar to those found post intervention).

1.4 Characteristics for studies using second site as control

- Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if the outcomes were not assessed blindly.

1.5 Blinded assessment of primary outcome(s)

- Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if the outcomes were not assessed blindly.

1.6 Protection against contamination

Studies using second site as control

- Score DONE if allocation was by community, institution, or practice and is unlikely that the control group received the intervention;
- Score NOT CLEAR if providers were allocated within a clinic or practice and communication between experimental and group providers was likely to occur;
- Score NOT DONE if it is likely that the control group received the intervention (e.g. cross-over studies or if individuals rather than providers were randomised).

1.7 Reliable primary outcome measure(s)

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- Score DONE if two or more raters with at least 90% agreement or kappa greater than or equal to 0.8 OR the outcome is obtained from some automated system e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if reliability is not reported for outcome measures that are obtained by chart extraction or collected by an individual;
- Score NOT DONE if agreement is less than 90% or kappa is less than 0.8.

1.8 Follow up of professionals (protection against exclusion bias)

- Score DONE if outcome measures obtained 80-100% subjects allocated to groups. (Do not assume 100% follow-up unless stated explicitly.);
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups.

1.9 Follow up of individuals

- Score DONE if outcome measures obtained 80-100% of individuals allocated to groups or for individuals who entered the study. (Do not assume 100% follow-up unless stated explicitly.);
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups or for less than 80% of individuals who entered the study.

Reference(s)	Question									Coding
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	
Argentos et al., 1991	Done	Not clear	Not clear	Not clear	Done	Not clear	Done	Not clear	Not clear	-
Bagnall 2003	Not clear	Not clear	Not clear	Not clear	Done	Not clear	Done	Not clear	Not clear	-

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Reference(s)	Question									Coding
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	
Becker et al., 1992	Done	Not clear	Not clear	Not done	Not done	Done	Done	Done	Done	-
Bremberg & Arborelius, 1994	Done	Not clear	Done	Done	Done	Not clear	Not clear	Not clear	Not clear	-
Dukes et al., 1996, 1997	Done	Not clear	Not clear	Not clear	Not done	Not clear	Not clear	Not done	Not done	-
Harmon 1993	Done	Done	Not done	Done	Done	Done	Done	Done	Done	+
Hawthorne et al., 1995; Hawthorne 1996	Not clear	Done	Not clear	Done	Done	Not clear	Not done	Not clear	Not clear	-
Klitzner et al., 1994	Done	Done	Done	Done	Done	Done	Not clear	Not done	Not done	+
Moberg & Piper, 1990	Done	Not clear	Done	Done	Not done	Done	Done	Not clear	Not clear	+
Shope et al., 1996a	Done	Not clear	Done	Not clear	Not done	Done	Not clear	Done	Done	+
Shope et al., 1996b; Shope et al., 1998	Not clear	Not clear	Not clear	Not clear	Done	Done	Done	Not clear	Not clear	-
Snow et al., 1992	Done	Not clear	Not clear	Not done	Not clear	Not clear	Not clear	Not clear	Not clear	-
Snow et al., 1997	Not clear	Not clear	Not clear	Not done	Not done	Not clear	Not clear	Not clear	Not clear	-
Zavela et al., 1997	Not done	Not done	Not done	Not clear	Not done	Done	Done	Not clear	Done	-
Zavela et al., 2004	Done	Not clear	Not done	Not done	Not done	Not clear	Done	Not clear	Not clear	-

**Table 8.4.5. Quality assessment for published economic evaluations**

<b>Study identification</b> Include author, title, reference, year of publication		<b>Pentz, 1998</b>	<b>Swisher et al., 2004</b>
<b>Evaluation criterion</b>			
<b>1.</b>	<b>Was a well-defined question posed in answerable form?</b>	Yes	Partly, the use of a do-nothing comparator is specified in the cluster randomised trial but not really mentioned in the economic evaluation
1.1	Did the study examine both costs and effects of the service(s) or programme(s)?	Yes	Partly, costs are listed (but not resource use items) but effects are not specified nor quantified.
1.2	Did the study involve a comparison of alternatives?	Yes	Yes: Infused Life Skill Training (ILST) with Life Skill Training (LST) compared to control (standard practice).
1.3	Was a viewpoint for the analysis stated and was the study placed in any particular decision-making context?	Yes	Yes, a societal viewpoint and set in a school
<b>2.</b>	<b>Was a comprehensive description of the competing alternatives given (that is, can you tell who? did what? to whom? where? and how often?)?</b>	Partly	No, especially the ILST description which is vague
2.1	Were any important alternatives omitted?	The text is a book chapter so alternatives are not mentioned in detail. There is a control intervention in the relevant C-RCT but the intervention may not be the same as that mentioned as an alternative in the ICER.	No clear description of incremental costs
2.2	Was (Should) a do-nothing alternative (be) considered?	No	Yes, in the C-RCT, see answer to 1 above
<b>3.</b>	<b>Was the effectiveness of the programmes or services established?</b>	Difficult to say because the results of the C-RCT are not mentioned but a figure of 9% reduction over 3 years of drunkenness is mentioned in the paper.	Yes
3.1	Was this done through a randomised, controlled clinical trial? If so, did the trial protocol reflect what would happen in regular practice?	There is a discrepancy between the C-RCT results and description of intervention and its effects in the economic evaluation.	Yes a C-RCT. Probably
3.2	Was effectiveness established through an overview of clinical studies?	No, C-RCT	No primary research
3.3	Were observational data or assumptions used to establish effectiveness? If so, what are the potential biases in results?	Not clear	No

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4.	<b>Were all the important and relevant costs and consequences for each alternative identified?</b>	Probably	No
4.1	Was the range wide enough for the research question at hand?	Probably	Yes
4.2	Did it cover all relevant viewpoints? (Possible viewpoints include the community or social viewpoint, and those of patients and third-party payers.)	Yes	Only societal viewpoint
4.3	Were capital costs, as well as operating costs, included?	N/A	No, for good reasons only staff and material costs were considered
5.	<b>Were costs and consequences measured accurately in appropriate physical units (for example, hours of nursing time, number of physician visits, lost work-days, gained life-years)?</b>	Yes	Costs were expressed, partly without resource consumption/unit cost breakdown. Effects were not defined (i.e. cost per smoking habit year gained at end of year 2).
5.1	Were any of the identified items omitted from measurement? If so, does this mean that they carried no weight in the subsequent analysis?	No	No
5.2	Were there any special circumstances (for example, joint use of resources) that made measurement difficult? Were these circumstances handled appropriately?	Not clear	Appeared to be
6.	<b>Were costs and consequences valued credibly?</b>	Not clear	
6.1	Were the sources of all values clearly identified? (Possible sources include market values, patient or client preferences and views, policy-makers' views and health professionals' judgements.)	Not clear	No
6.2	Were market values employed for changes involving resources gained or depleted?	Not clear	Mainly staff salaries and student materials. Impossible to say if valuation was realistic
6.3	Where market values were absent (for example, volunteer labour), or did not reflect actual values (for example, clinic space donated at reduced rate), were adjustments made to approximate market values?	Not clear	Not applicable
6.4	Was the valuation of consequences appropriate for the question posed (that is, has the appropriate type or types of analysis – cost-effectiveness, cost-benefit, cost-utility – been selected)?	Yes	No, not mentioned
7.	<b>Were costs and consequences adjusted for differential timing?</b>	No	
7.1	Were costs and consequences which occur in the future 'discounted' to their present values?	N/A	No
7.2	Was any justification given for the discount rate used?	N/A	N/A
8.	<b>Was an incremental analysis of costs and consequences of alternatives performed?</b>	Yes	
8.1	Were the additional (incremental) costs generated by one alternative over another compared to the additional effects, benefits or utilities generated?	Yes	Incremental costs were expressed (vaguely compared to standard practice), but no ICERs were calculated
9.	<b>Was allowance made for uncertainty in the estimates of costs and consequences?</b>	No	
9.1	If data on costs or consequences were stochastic, were appropriate statistical analyses performed?	No	No
9.2	Were study results sensitive to changes in the values (within the assumed range for sensitivity analysis, or	N/A	Sensitivity analysis presented is a projection

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	within the confidence interval around the ratio of costs to consequences)?		to year 3 of costs per student or teacher of each programme.
10.	<b>Did the presentation and discussion of study results include all issues of concern to users?</b>	Partly	Partly, the issue of generalisability of results and meaning of the evaluation are not discussed
10.1	Were the conclusions of the analysis based on some overall index or ratio of costs to consequences (for example, cost-effectiveness ratio)? If so, was the index interpreted intelligently or in a mechanistic fashion?	Yes	No
10.2	Were the results compared with those of others who have investigated the same question? If so, were allowances made for potential differences in study methodology?	No	No
10.3	Did the study discuss the generalisability of the results to other settings and patient/client groups?	No	No
10.4	Did the study allude to, or take account of, other important factors in the choice or decision under consideration (for example, distribution of costs and consequences, or relevant ethical issues)?	No	No
10.5	Did the study discuss issues of implementation, such as the feasibility of adopting the 'preferred' programme given existing financial or other constraints, and whether any freed resources could be redeployed to other worthwhile programmes?	Yes	No
<b>OVERALL ASSESSMENT OF THE STUDY</b>			
How well was the study conducted? Code ++, + or –		+	-
Are the results of this study directly applicable to the patient group targeted by this guideline?		Possibly. Difficulties in implementation are not discussed.	No, vague text, rural US situation, predominantly white males and low-socio economic status. Absence of description of effects.

**Appendix 4. Calculation of ‘cost per case averted’****STARS for Families (Werch et al., 2000a; 2001; 2003)**

Alcohol use measured at posttest (end of 2 years intervention programme)

	Intervention	Control	Difference
30-day heavy use*	7/254 2.7%	17/261 6.5%	3.7%
*Defined as consuming 5 or more drinks in a row during the last 30 days			

Taking an indicative cohort of 250, would expect to avert 9.39 cases:

Total cost for programme for 1 student £20.30

Total cost for programme for 250 cohort £5,075.00

Cost per case averted £540.25

**School Health and Harm Reduction Programme (McBride et al., 2000; 2003; 2004)**

Alcohol use measured at 20 and 32 months from baseline

Group	Intervention	Control	Difference
Hazardous/harmful drinking*: 20 months	209/970 21.5%	337/1037 32.5%	11.0%
Hazardous/harmful drinking*: 32 months	278/863 32.2%	310/915 33.9%	1.7%

Taking an indicative cohort of 900:

Expect to avert 98.6 cases based on 20 months follow up

Expect to avert 15.0 cases based on 32 months follow up

Total cost for programme for 30 students £934.80

Total cost for programme for 900 cohort £28,044.00

Cost per case averted (20 months follow up) £284.54

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Cost per case averted (32 months follow up)            £1,869.71

**Lion's Quest 'Skills for Adolescence' programme (Eisen et al., 2002; 2003)**

<b>Group</b>	<b>Intervention</b>	<b>Control</b>	<b>Difference</b>
Binge drinking	12.67%	13.11%	0.44%

Taking an indicative cohort of 750, would expect to avert 3.3 cases:

Total cost for programme for 15 students            £2260.81

Total cost for programme for 750 cohort            £113,040.50

Cost per case averted            £34,254.70

**Appendix 5. Conversion table for English key stages and US grade equivalents**

Age	England		USA	
		Year		Grade
0-4	Pre-School	-		-
4-5		-	Pre Kindergarten	-
5-6	Primary School	1	Kindergarten	-
6-7		2	Elementary School	1
7-8	3	2		
8-9	Junior School	4		3
9-10		5		4
10-11		6		5
11-12	Secondary School	7	Middle School	6
12-13		8		7
13-14		9		8
14-15	Secondary School - GCSE	10	High School	9
15-16		11		10
16-17	6th Form College	-		11
17-18		-		12