Substance abuse prevention programmes in schools

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ABSTRACT

Background

Drug addiction is a chronic, relapsing illness. Primary therapy should be designed to minimise first use, or prevent the move from experimental use to addiction. School is the best location for preventive interventions.

Objectives

To assess the efficacy of school-based treatments in enhancing knowledge, developing skills, encouraging change, and avoiding or decreasing drug use compared typical curricular activities or an other school-based intervention .

Search strategy

We searched the Cochrane Drug and Alcohol Group trial register (February 2004), the Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 2, 2004), MEDLINE (1966 to February 2004) , EMBASE (1988 to February 2004), and other databases. We also contacted researchers in the region and checked reference lists of works.

Selection criteria

Randomised controlled trials (RCT), case controlled trials (CCT) or controlled prospective studies (CPS) examining school-based treatments meant to reduce drug use.

Data collection and analysis

Two writers independently extracted data and evaluated trial quality.

Main results

32 studies (29 RCTs and three CPSs) were included with 46539 participants. Twenty eight were done in the USA; most research focused on 6th-7th grade pupils, and depended on post-test assessment.

PLAINLANGUAGESUMMARY

Drug addiction is a long-term illness induced by an overpowering drive to obtain narcotics. People may use drugs to seek an effect, to be accepted by their peers or as a technique of dealing with life's challenges. Even after undertaking detoxification to obtain a drug-free condition, many revert to opioid

addiction. This makes it vital to restrict the number of individuals initially consuming drugs and to prevent transition from trial usage to addiction. For young persons, peers, family and social environment are significantly related in early drug usage. Schools give the most structured and effective means of reaching them. School programmes can be designed to provide knowledge about the effects of drugs on the body and psychological effects, as a way of building negative attitudes toward drugs; to build individual self-esteem and self-awareness, working on psychological factors that may place people at risk of use; to teach refusal and social life skills; and to encourage alternative activities to drug use, which instil control abilities. The research authors uncovered 32 controlled studies, of which 29 were randomised, comparing school-based activities focusing at prevention of drug use with the normal curriculum. The 46,539 children participating were mostly in sixth or seventh grade. Programs that focused on knowledge boosted drug understanding to some degree, in six randomised trials. Social skills training were more commonly employed (25 randomised trials) and effectively

enhanced drug awareness, decision-making abilities, self-esteem, resistance to social pressure, and drug consumption including of marijuana (RR 0.8) and hard drugs (heroin) (RR 0.5). (RR 0.5). (RR 0.5). The sessions were primarily interactive and featured guest instructors in 20 randomised trials. Effects of the therapies on assertiveness, attitudes towards drugs, and willingness to use drugs were not notably different in any of the tests. Most studies were done in the USA and, as a nation's social backdrop and drug regulation have a considerable influence on the efficacy of the initiatives, these results may not be relevant to other countries. Measures of change were often made quickly after the intervention with very limited long-term follow up or evaluation of peer effect, social environment, and engagement of parents.

BACKGROUND

Substance addiction (see CDAG's module, Amato 2005) is frequently described both medically and socially as a chronic, relapsing dis ease, distinguished by the effects of the prolonged use of the drug itself and by the behavioural disorder connected to its compulsive pursuit (Leshner 1997). (Leshner 1997). (Leshner 1997). Drug users are commonly divided into "sensation seekers" and those who use drugs "as a means to deal with life's obstacles or with dysphoric mood". Not all users become addicted. Once established, however, addiction "is often an irresistible drive to obtain and use drugs" (Leshner 1999). (Leshner 1999). (Leshner 1999). Experimental use affects largely teens, who "take drugs merely for the wonderful feel ings or the pleasure that drugs could provide, or to feel accepted by their peers" (Leshner 1999). (Leshner 1999). (Leshner 1999). Since the neurological or psycho logical components affecting the risk of addiction are rarely acknowledged, "even occasional drug use could unknowingly lead to addiction" (Leshner 1997; Leshner 1999). (Leshner 1997; Leshner 1999). (Leshner 1997; Leshner 1999). The natural history of addiction has been explained in terms of a "gateway theory" or "stepping-stone hypothesis", such that participation in drug use may follow culturally deter mined phases. Hard liquors and tobacco, for example, are viewed as intermediate between beer/wine and marijuana, while marijuana stepping stone to other illicit drugs (Kandel 1975; Fergusson 2000). (Kandel 1975; Fergusson 2000). (Kandel 1975; Fergusson 2000). This approach, however, is not frequently acknowledged (Morral 2002). (Morral 2002). (Morral 2002). Whichever model of explanation is selected, key therapies should be targeted to minimise initial use, or prevent the move from experimental use to addiction. Drug dependence is a multifaceted subject, whose understanding re quires a full grasp of drivers of behavioural disturbances in a given milieu (Green 1991). (Green 1991). (Green 1991). The absence of a fulficiently thorough knowledge of the dynamics and determinants of initial drug abuse, however, inhibits the creation of effective prevention interventions. Application of Evidence- Based approach to primary prevention is in actuality restricted by the complexity of the causal chain. This chain comprises two significant links: the first is the relationship between risk factors and the problem to be pre vented (e.g. the role of tobacco smoking in the causation of lung cancer); the second is the relationship between the preventive in tervention and reduction of the risky behaviour (e.g. the effective ness of the preventive programme in reducing the number of young persons who start to smoke) (e.g. the effective ness of the preventive programme in reducing the number of young persons who start to smoke) (e.g. the effective ness of the preventive programme in reducing the number of young persons who start to smoke). The knowledge surrounding the first link is uncertain, while social and psychological characteristics, susceptibility, information about risks and many other components are involved. The inadequacy of the ideas about the origins of drug addiction is partly attributed to the challenges of analysing such issues. A positive association between an intervention and a reduction in drug use incidence naturally confirms both the role of the risk fac tor under study and the effectiveness of the intervention, whereas a negative result may reflect a mistaken identification of the risk factor and/or the inefficacy of the intervention. Many preventative measures have been predicated on the knowledge of risk factors, since "a prevention strategy which is not based on the understanding of the correlations and concerns associated to youthful drug addiction would be ill-fated from the beginning". Very few, nonetheless, have been successfully evaluated: they were rarely assessed by randomised controlled trials and the evaluation was typically insufficient to judge the ultimate effects. Schools are great places for illicit drugs use prevention campaigns for three reasons: first, four out of five tobacco smokers begin before adulthood. Prevention of drug use must accordingly focus on school-aged children and adolescents, before their be liefs and expectations towards substance use are created. Second, schools supply the most systematic and successful means of engaging a substantial number of young persons every year. Third, in most countries schools may design and execute a broad variety of ed ucational policies. Most programmes, therefore, are school-based. Different approaches are employed: as suggested by Nancy Tobler (Tobler 1986) pro grammes can be divided into those founded on: (1) knowledge-only interventions, where description of biological, and psychological effects of drug use aims to build negative attitudes toward drugs and hence decrease their use; (2) affective-only e.g. self-esteem or self-awareness building treatments, based on the

assumption that psychological characteristics put individuals at risk of use; (3) peer-based interventions, namely refusal skills and social life skills programmes, the former focused on resistance skills or "say No" techniques or peer role models and the latter are on inter-personal skills (com munication, modelling, etc) or intra-personal skills (affective edu cation), both being founded on the assumption that peer pressure can lead to drug use; (4) knowledge plus affective interventions, in which knowledge is combined with affective education to pro vide values and build decision making patterns; (5) alternative ap proaches (activities & competence), such as interventions encour ageing alternative activities to drug use or those aimed at enforcing control abilities. Many research have studied the efficacy of drug use prevention techniques. Most are randomised controlled experiments, varied in qual ity. Few of the non-randomised studies are of good quality and their relevance is questioned (MacMahon 2001). (MacMahon 2001). (MacMahon 2001). Some writers recommend their inclusion in systematic reviews, if they fulfil high level of quality. The findings, largely in the form of qualitative outcomes have been summarised on various instances (Hansen 1992; Kroger 1994; White 1997; White 1998). (Hansen 1992; Kroger 1994; White 1997; White 1998). (Hansen 1992; Kroger 1994; White 1997; White 1998). The most notable evaluations are those by Tobler (Tobler 1997; Tobler 2000) who utilised Glass's meta analysis method for social studies (Glass 1981). (Glass 1981). (Glass 1981). None of these evaluations did a full examination of the quality of study design, of forms of intervention, of various outcomes, of duration of follow-up, and other factors essential identify which form of intervention is most successful.

Selection criteria for included articles Categories of Research

All studies reporting the assessment of any intervention programme targeting individuals or groups against a control condition (normal curricular activities or another school-based drug prevention pro gramme) and seeking to prevent substance use in school environment, were taken into account. In order to be included, studies had to be based on an experimental or quasi-experimental design, such as Randomised Controlled Trial (RCTs), Controlled Clinical Trial (CCTs), or on a well con ducted observational design such as Controlled Prospective Stud ies (CPS), and fully describe the intervention.

Definitions of the Different Kinds of People Who Take Part

Target demographic included students in elementary and secondary education. Special population studies were not included.

DISCUSSION

Our analysis revealed distinct patterns of effectiveness with respect to individual outcomes across the three types of preventative programmes we considered (knowledge, skills, and affective-focused). • Compared to standard curricula, knowledge-focused programmes enhance mediating variables (particularly drug knowledge), but they are not more effective than skill-based programmes. • affective-focused programmes increase decision making abilities and drug knowledge compared to normal curriculum and knowledge-focused treatments; • when ultimate outcomes (drug usage) are evaluated, their benefits are equivalent to those of the other two kinds of programmes. Inconsistent findings were found in two low-quality studies: While Sexter (1984) found a favourable correlation between drug usage and good outcomes, Hansen (1988) discovered the converse to be true for marijuana use. This finding is consistent with a poor CPS of high school pupils, suggesting more marijuana usage following emotional intervention relative to more traditionally-taught courses (Valentine 1998a). When compared to traditional curriculum, skill-based programmes have a favourable impact on both intermediate factors (such as drug knowledge, decision making, self-esteem, and resistance to peer pressure), as well as end outcomes. Most of the RCTs included had excellent methodological quality (primarily quality score = B), and a meta-analysis of drug (ns), hard drug, and marijuana usage (dichotomous variables) shows a decreased use in the intervention groups at the post test, even years after the intervention. However, when compared to other types of therapies, skills-focused programmes simply vary in how they boost participants' sense of self-worth. However, there are caveats to the results: Substance abuse prevention programmes in schools (Review) 28 The Cochrane Collaboration. All rights reserved. A product of John Wiley & Sons, Ltd. The randomised controlled trials (RCTs) all received grades of B or C since they did not meet all the quality criteria employed in the evaluation. However, all but one of the studies included in the meta-analyses had a quality score of B; many comparisons between interventions have never been studied; for instance, we found no comparisons of affective with other interventions with regard to drug behaviour; most results are outcomes at post test; very little evidence exists for long-term follow-ups; many randomised controlled trials (RCTs) do not present effect measures but only statistical indicators (f, p...) or other heterogeneous effect measures. While this

review was able to account for and control for certain sources of heterogeneity (outcome, intervention techniques, study design and quality), many sources of "clinical" heterogeneity (grade of the target classes, intensity of the intervention, period of follow-up) were not. Unfortunately, a meta-regression cannot be performed since there are insufficient trials in each stratum of each qualifying variable (Sterne 2001). A meta-analysis based on trial-level data cannot rectify the heterogeneity under these circumstances. While it is theoretically possible to produce unbiased information utilising individual-level attributes during the analysis stage by directly accessing the original data, this is not a practical option. • just 4 of the 29 RCTs included were meant to control the cluster effect, as will be explained later; • most authors approached to give further data indicated they could not do so since the data set was no longer accessible. Also, the studies often leave out intricate structures that have a significant influence in determining whether or not adolescents would experiment with drugs. Young people's drug usage is often influenced by their peers, their families, and their communities (Hawkins 1992; Hawkins 2002). Our review's focus is on the part played by intervention programmes in schools, and the randomised form of assessment makes it possible to isolate the impact of these programmes from other factors that may contribute to drug use. In retrospect, it would be instructive to investigate how programme outcomes are affected by contextual factors that were not taken into account in the present research. In spite of these caveats, a similar pattern of findings emerged from the review: life skills-based programmes are the most successful in reducing drug use. Based on the idea that social and psychological variables play a role in encouraging the initiation of drug use, these programmes focus on the individual level risk and protective factors known to be related with adolescent drug use (Botvin 2000a). Our analysis indicates that one kid in every 33 who receives the intervention will choose not to take drugs as a result of it, compared to the standard curriculum. Five out of every thirty-three students (16.5% of the total) will experiment with marijuana if the prevalence shown in the post-test of the control harm of the RCTs included in this comparison (see graph 08 of the comparison 02 abilities versus conventional curriculum) holds true. Twenty percent of new initiators, or one in every four, would be averted by the intervention. The heterogeneity test indicates no significant bias in this estimate from 4 randomised controlled trials (RCTs) including 7287 students. In the framework of academic research, these are the programmes that should be prioritised when developing comprehensive community interventions to combat drug abuse. Our findings follow a similar trend to those reported by Tobler (Tobler 2000), who deserves credit for developing and conducting the first systematic review on the efficacy of primary drug prevention and for keeping it up to date for so many years (Tobler 1986; Tobler 1997). During this time period, she and her colleagues were almost the only ones to provide a quantitative summary of the efficacy, accounting for the quality of the methodological design and some fundamental covariate like the kind of programme, interactivity, etc. Numerous more critiques have also been released. Some are systematic reviews, but they don't provide meta-analytic data (Hansen 1992; Skara 2003), while others offer summary conclusions that aren't based on papers with high methodological quality (Bangert-Drowns 1988). While some narrow in on one facet of the problem, such as peer engagement or a particular programme (see, for example, Ennett 1994), (Mellanby 2000). In more recent evaluations, researchers have examined the factors that contribute to a program's success, such as the optimal scheduling of interventions, the importance of booster sessions, the quality of the program's content, and the method by which it is delivered (McBride, 2003). (Cuijpers 2002a). As a result, there is a growing need for accurate summaries of the research that has been published in scholarly journals. However, Tobler's 1986 research is the only one with summary measures and the outcome of a careful search for and selection of reports, evaluated in line with the methodological aspects of their design. Cochrane's guidelines were used for our analysis. The study set out to improve upon previous efforts by employing randomised controlled trials (RCTs) as its primary source, evaluating RCTs for quality, and then meta-analyzing the data. Herein lie the most salient distinctions between our method and that of Tobler (1997). Our findings seem to be in line with those of the Cochrane reviews on teen alcohol prevention (Foxcroft, 2004) and school-based smoking prevention (Thomas, 2004), but only in the short term. This stability supports the administration of school-based prevention programmes for teen drug use and provides indirect validation of a hypothesis that unites the pathways of risk and risk factors for alcohol, tobacco, and drugs (Review) 29 The Cochrane Collaboration. All rights reserved. A product of John Wiley & Sons, Ltd. of a unified school-wide effort to deter kids from trying dangerous drugs in the first place. The massive quantity of research done, particularly after 1980, did not provide the predicted proof of the efficacy of primary prevention, it must be emphasised. We chose 55 randomised controlled trials and 33 additional case-control studies to enhance the total number of studies included in our meta-analysis, however we were only able to utilise a subset of the data from these studies. Not all randomised controlled trials could pass muster, and many were disregarded due to methodological flaws; five are currently being assessed. There were just 29 people chosen. Even worse were the CPSs, of which just three were included after thirty were deemed insufficient due to methodological issues. One may assume that 32 research would be adequate to provide a solid and rigorous description of the data

supporting the efficiency of treatments aimed at decreasing drug use, but this was not the case. It was challenging to summarise the data because of the vast variety of indicators, scales, and scores used to measure such efficacy; a meta-analysis could include no more than four of the RCTs (out of a total of twenty-nine). The primary causes of this disappointing conclusion are explored, highlighting the need of considering study validity and result comparability in future research. Primary drug abuse prevention RCT validity is based on: • randomization: the major cause for the removal of 12 out of 21 RCTs was the failure of the randomisation procedure. • attrition: two RCTs were eliminated because of their > 50% attrition rates, among other reasons, and many of those included had high attrition rates, with five RCTs showing rates greater than 30%; these trials may have been included if they had accounted for adjustment for confounding variables (Botvin1990; Botvin 2001; Dent 2001; Hansen 1988; Sussman 2002). Three studies (Hecht 1993, Kim 1989, and Sexter 1984) did not report any rates; • unmanaged cluster effect: cluster effect emerges when children are the unit of study, but are organised into classes and schools, and a whole school is typically run domised to an intervention arm. Since there seems to be a stronger propensity for outcomes to exhibit more resemblance between two children from the same cluster compared to two children from differ ent clusters, this technique reduces the effective sample size and increases the random variability. To mitigate this impact with the available research power, the sample size must be increased (Campbell 2001). Except for a few of studies (Botvin 2001, Dent 2001, Ellickson 2003, Furr-Holden 2004, Hansen 1991, and Sussman 2002), the cluster effect was not accounted for in the design of any of the others. • group comparability, with the idea that all participants theoretically come from the same population as a whole, being key to establishing a CPS's validity. This need is easily met by randomised trials but calls for some more work in cohort research. As a first step, it's important that both the exposed and the control groups have a same starting point (e.g. geographical area). The second phase is identifying and adjusting for any potential biases. • linkage between exposure and outcomes: some studies were based on class surveys, with no linkages between pre and post test data (Becker 1992; Dedobbeleer 2001; Hansen 1997; Kim 1982; Lewis 1972; Moskowitz 1983; Sarvela 1987; Skroban 1999), so there was no certainty the students receiving the intervention were the same as those who fi (Freimuth 1997). The issue of generalizability is the last to be considered. Of the 29 RCTs, 28 were performed in the United States. Because the social climate and drug legislation of a country have such an impact on the success of intervention programmes, it is difficult to argue for the global standardisation of such initiatives.

Research Implications

Hard indicators (cannabis and heroin usage) and intermediate indicators (a similar trend) support the efficacy of skills-based intervention. To add, there are seldom any reliable statistics available on the impact of interventions over the long run. Further randomised studies with long-term follow-ups are needed to corroborate our findings, and randomised assessments of the efficacy of skills-based programmes in countries other than the United States are also needed. Evaluation of a 30-year programme to reduce drug usage among high school students The Cochrane Collaboration. All rights reserved. A product of John Wiley & Sons, Ltd. Peer pressure, booster sessions, and parental participation are all important additions to interventions, but they have not been sufficiently studied to draw firm conclusions. It is important to consider how programmes interact with other aspects of the social environment in which they are implemented. Whenever the cluster effect is relevant, subsequent research must include it. This fundamental flaw in the paradigm of causality makes it necessary to exclude research that focus only on mediating factors. Authors can help cut down on the number of flawed studies by doing things like favouring randomised designs, monitoring the conduct of the observation, reducing attrition, choosing a correct strategy of analysis, making their results comparable with those already published, selecting "hard" outcomes and scales that have already been validated and accepted, and reporting all data useful for the estimation of validity, including absolute numbers, relative risks, and statistical indicators. Finally, collaborative research combining the data of the high quality RCTs are desirable for more extensive analysis to achieve more accurate controlling of heterogeneity and more precise assessment of the impact size connected with the key aspects of the intervention (target age, intensity etc).

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REFERENCE

1. Bernstein 1987 {published data only} Bernstein E, Woodal WG. Changing perceptions of riskiness in drinking, drugs and driving: an emergency department-based alcohol and substance abuse prevention program. Annals of Emergency Medicine 1987;16(12):1350–4.
2. Botvin 1984 {published data only} Botvin GJ, Baker E, Filazzola AD, Botvin EM. A cognitive-behavioral approach to substance abuse prevention: one-year follow-up. Addictive Behaviors1990;15:47–63. ∗Botvin GJ, Baker E, Renick NL, Filazzola AD, Botvin EM. A cog- Behaviors1984;9:137–47
3. Botvin 1990 {published data only} Botvin GJ, Baker E, Dusenbury L, Botvin EM, Diaz T. Long-term follow-up results of a randomised drug abuse prevention trial in a white middle-class population. JAMA 1995;273(14):1106–12. ∗Botvin GJ, Baker E, Dusennbury L, Tortu S, Botvin EM. Preventing adolescent drug abuse through a multimodal cognitive-behavioral approach: results of a 3-year study. Journal of Consulting and Clinical Psychology 1990;58(4):437–46.
4. Botvin 1994 {published data only} ∗Botvin GJ, Schinke SP, Epstein JA, Diaz T. Effectiveness of culturally focused and generic skills training approaches to alcohol adrug abuse prevention among minority youths. Psychology Addictive Behaviors 1994;8(2):116–27. Botvin GJ, Schinke SP, Epstein JA, Diaz T, Botvin EM. Effectiveness of culturally focused and generic skills training approaches to alcohol and drug abuse prevention among minority adolescents: two-year follow-up results. Psychology Addictive Behaviors 1995;9(3):183–94.
5. Botvin 1997 {published data only} ∗Botvin GJ, Epstein JA, Baker E, Diaz T, Ifill-Williams M. Schoolbased drug abuse prevention with inner-city minority youth. Journal of Child and Adolescent Substance Abuse 1997;6(1):5–19.
6. Botvin 2001 {published data only} ∗Botvin GJ, Griffin KW, Diaz T, Ifill-Williams M. Drug abuse prevention among minority adolescents: posttest and one-year follow-up of a school-based preventive intervention. Prevention Science 2001;2(1):1–13.
7. Clayton 1991 {published data only} ∗ Clayton RR, Cattarello A, Walden KP. Sensation seeking as a potential mediating variable for school-based prevention intervention. a two-year follow-up of DARE. Health Communication 1991;3(4): 229–39. Clayton RR, Cattarello AM, Johnstone BM. The effectiveness or Drug Abuse Resistance Education (project DARE): 5-year follow-up results. Preventive Medicine 1996;25:307–18. Lynam DR, Milich R, Zimmerman R, Novak SP, Logan TK, Martin C, et al.Project DARE: no effects at 10-year follow-up. Journal of Consulting and Clinical Psychology 1999;67(4):590–3.
8. Cook 1984 {published data only} ∗ Cook R, Lawrence H, Morse C, Roehl J. An evaluation of the alternatives approach to drug abuse prevention. The International Journal of the Addictions 1984;19(7):767–87.
9. Corbin 1993 {published data only} ∗ Corbin SKT, Jones RT, Schulman RS. Drug refusal behavior: the relative efficacy of skill-based treatment. Journal of PediatricPsychology 1993;18(6):769–84.
10. Dent 2001 {published data only} ∗ Dent CW, Sussman S, Stacy AW. Project Towards No Drug Abuse: generalizability to a general high school sample. Preventive Medicine 2001;32:514–20.
11. Ellickson 1990 {published data only} Bell RM, Ellickson PL, Harrison ER. Do drug prevention effects persist into high school? How Project ALERT did with ninth graders. Preventive Medicine 1993;22:463–83. ∗ Ellickson PL, Bell RM. Drug prevention in junior high: a multisite longitudinal test. Science 1990;247:1299–305. Ellickson PL, Bell RM, Harrison ER. Changing adolescent propensities to use drugs: results from Project ALERT. Health Education Quarterly 1993;20(2):227–42. Ellickson PL, Bell RM, McGuigan K. Preventing adolescent drug use: long-term results of a junior high program. American Journal of Public Health 1993;83(6):856–61.
12. Ellickson 2003 {published data only} ∗ Ellickson PL, McCaffrey DF, Ghosh-Dastidar B, Longshore DL. New inroads in preventing adolescent drug use: results from a large scale trial of project ALERT in middle schools. Adolescent Health 2003;93(11):1830–6.
13. Furr-Holden 2004 {published data only} ∗ Furr-Holden CDM, Ialongo NS, Anthony JC, Petras H, Kellam SG. Developmentally inspired drug prevention: middle school outcomes in a school-based randomised prevention trial. Drug Alcohol Dependence 2004;73:149–58.
14. Hansen 1988 {published data only} ∗ Hansen WB, Anderson Johnson C, Flay BR, Graham JW, Sobel J. Affective and social influences approaches to the prevention of multiple substance abuse among seventh grade students: results from project SMART. Preventive Medicine 1988;17:135–54.
15. Hansen 1991 {published data only} ∗ Hansen WB, Graham JW. Preventing alcohol, marijuana and cigarette use among adolescents: peer pressure resistance training versus establishing conservative norms.

Preventive Medicine 1991; 20:414–30. Palmer RF, Graham JW, White EL, Hansen WB. Applying multilevel analytic strategies in adolescent substance use prevention research. Preventive Medicine 1998;27:328–36.

16. Hecht 1993 {published data only} ∗ Hecht ML, Corman SR, Miller-Rassulo M. An evaluation of the Drug Resistance Project: a comparison of film versus live performance media. Health Communication 1993;5(2):75–88.
17. Hurry 1997 {published data only} ∗ Hurry J, McGurk H. An evaluation of a primary prevention programme for schools. Addiction Research 1997;5(1):23–38.
18. Jones 1990 {published data only} ∗ Jones RT, McDonald DW, Fiore MF, Arrington T, Randall J. A primary preventive approach to children's drug refusal behavior: the impact of Rehearsal-Plus. Journal of Pediatric Psychology 1990;15(2): 211–23.
19. Jones 1995 {published data only} ∗ Jones RT, Corbin SKT, Sheehy L, Bruce S. Substance refusal: more than "Just Say No". Journal of Child Adolescent Substance Abuse 1995; 4(2):1–26.
20. Kim 1989 {published data only} ∗ Kim S, McLeod JH, Shantzis C. An outcome evaluation of refusal skills program as a drug abuse prevention strategy. Journal of Drug Education 1989;19(4):363–71.
21. Malvin 1985 {published data only} ∗ Malvin JH, Moskovitz JM, Schaps E, Schaeffer GA. Evaluation of two school-based alternatives programs. Journal of Alcohol and Drug Education 1985;30(3):98–108.
22. Moskowitz 1984 {published data only} ∗ Moskowitz JM, Malvin JH, Schaeffer GA, Schaps E. An experimental evaluation of a drug education course. Journal of Drug Education 1984;14(1):9–22.
23. Ringwalt 1991 {published data only} ∗ Ringwalt C, Ennett ST, Holt KD. An outcome evaluation of Project DARE (Drug Abuse Resistance Education). Health Education Research 1991;6(3):327–37.
24. Rosenbaum 1994 {published data only} Ennett ST, Rosenbaum DP, Flewelling RL, Bieler GS, Ringwalt CL, Bailey SL. Long-term evaluation of Drug Abuse Resistance Education. Addictive Behaviors 1994;19(2):113–25. Rosenbaum DP, Flewelling RL, Bailey SL, Ringwalt CL, Wilkinson DL. Cops in the classroom: a longitudinal evaluation of drug abuse