

Does Drug Education Work?

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The short answer to the question posed in the title of this paper is yes, but with considerable qualifications. Some of the more recent drug education research interventions do stop or delay the onset of drug use in a small percentage of students under optimum conditions [1]. This does not necessarily mean that provision of mass drug education programs will achieve a reduction in use, because the education dose of even the best programs is small and likely to be diluted by the day to day disruptions that exist in normal school environments. However, the history of drug education suggests that whether or not drug education works, is actually not particularly relevant in the decision making process. Gorman considered that the decision to conduct drug education is driven by political and moral factors [2]. Society has determined that drug use is bad and dangerous and because young people are particularly susceptible to taking up use, they need to be appropriately skilled to remain drug free. On this basis, governments of all persuasions around the world have increased funding for drug education over the last decade [2]. In this climate of fundamental commitment to drug education, the better question is, what can be done to maximise the benefits of such an intervention?

Past Approaches

Drug education has a chequered history, starting with alcohol temperance education in many countries dating from the late nineteenth century [3,4]. This form of drug education reached its peak in America during the Prohibition years of the 1920s. Repeal of Prohibition signalled the failure of a solely abstinence focused approach and supporting prohibitionist education programs were rapidly abandoned. In the 1940s and 50s the prevailing view was that illicit drug use posed the greatest threat and that knowledge based education was actually counterproductive, because it encouraged experimentation [3]. A reaction to this approach occurred in the early 1960s, when a scientific approach to education was considered most likely to stem the rising tide of drug use. Programs of this period drew on behaviour theory. Providing factual information on the harmful effects of drugs was considered useful, as it supposedly established negative attitudes and fear of use. The information approach, even when used with deliberate scare tactics, was an acknowledged failure by the late 1970s, according to Kinder et al [5]. In America this spurred the next generation of drug education, the so-called affective programs, which sought to reduce use by enhancing personal development. There was also some development of abuse prevention programs, but this approach, which has also come to be known as harm reduction, tended to be adopted more in Europe, Canada and Australasia and was not well evaluated [6]. Once again the evidence indicated that these new affective programs did not succeed in changing drug use behaviour [7]. This should not have come as a surprise according to Dielman, because the affective programs still aimed to stop drug use, but were evaluated against completely different criteria, such as increased self esteem [8]. There is also the questionable assumption in this model that drug use by young people is driven by individual deficiency and that the problem can be remediated by enhancing self esteem or improving decision making skills. Shedler and Block found that while young people who used drugs frequently were maladjusted on a number of personality measures, those who had only engaged in experimentation, primarily with cannabis, exhibited better personality adjustment than abstainers [9]. Midford and McBride considered that the individual deficiency explanation is particularly difficult to defend in the case of alcohol, because adult use is so normative. Drinking, for young people, is associated with a right of passage to adulthood and is accordingly quite conformist [6].

Contemporary Effective Programs

Most current drug education programs are based on the social influence model, which itself derives from the Bandura's social modelling theory and McGuire's work on resistance training [10,11]. The approach is based on the premise that young people begin to use drugs, because of social pressure from a variety of sources, such as the mass media, their peers and even idealised images of themselves. In order to resist these pressures, young people need to be inoculated by prior exposure to counter arguments and trained in the skills necessary to implement non-use choices. These newer programs have almost universally retained abstinence as their goal, but the difference is that this is actually reflected in their dependent measures. Their intervention methodology is also more sophisticated than was the case in previous generations of drug education programs. Most importantly, the evidence suggests that some of the better conceptualised and more soundly implemented programs have achieved the desired behaviour change of abstinence or delayed onset of drug use [1,12].

Evans first used social inoculation to prevent young people taking up smoking and his success led to the approach being used to prevent the uptake of other drugs [13]. Perry and Kelder reported that social inoculation programs have been successful in reducing cannabis use by young people, although the number of studies is small [14]. The success of this approach in delaying onset of alcohol use has however been more limited. Duryea and his colleagues conducted an alcohol education intervention based on social inoculation theory [15]. They reported significant improvements in students' knowledge and attitudes, but no difference in drinking behaviour. Perry and Kelder considered that such poor results may be due to the widespread acceptability of alcohol [14]. Presenting students with arguments as to why they should resist drinking will be very difficult in a society that provides all kinds of reinforcements for alcohol use.

More recent social inoculation based education programs do seem to have had greater success in changing behaviour, including alcohol consumption. The Life Skill Training

(LST) program has been evaluated in 10 separate studies and according to Dusenbury, Falco and Lake has reduced alcohol, cannabis and tobacco use into young adulthood [16]. Project SMART was evaluated at a component level by Hansen and Graham [17]. They found that the life skill component was only effective in reducing alcohol use if students received additional education on normative alcohol use patterns. The Alcohol Misuse Prevention Study (AMPS) had harm reduction as an additional dependent variable and found that while there was no difference in the level of alcohol use between the intervention and control students, the intervention sub group with a prior history of unsupervised drinking experienced a lesser increase in harms compared to control students with a similar drinking history [18].

Methodological Limitations

The recent research literature on social inoculation based drug education contains an increasing number of examples of programs that have demonstrably changed behaviour, but Gorman, in a very detailed critique of the social inoculation approach, indicated that the claims of the programs need to be assessed in light of their methodological limitations [19]. He noted that while some of the LST evaluation studies reported significant education effects, most results indicated no change due to the intervention. An additional consideration with those studies that reported significant change, is the large number of comparisons. In such cases one or two significant results are likely to occur by chance. Gorman also pointed to the small numbers in some of the LST studies and in one instance, the collapsing of variables into dichotomised scales, which, depending on the cut off points chosen, could have influenced significance [19]. It is also worth making the point that the LST programs comprise at least 15 classroom sessions for year seven students, followed by 10 and eight sessions respectively in years eight and nine [14,16]. This is a substantial intervention and it may be difficult to persuade schools to add such a program to their already crowded curriculum. The promising harm reduction findings from AMPS have similarly been questioned by Gorman, on the basis that only 40 percent of the original students in the high fidelity implementation group remained at the six year

follow up and that the program effects were only evident in the unsupervised drinking group, who represented just eight percent of the sample [19].

Practical Significance

While recent research indicates that certain drug education approaches do achieve statistically significant changes in drug use, the practical implications of this need to be considered. White and Pitts in their meta-analysis of drug education program evaluations found that 10 out of 18 methodologically sound school-based programs had a statistically significant impact on drug use [1]. The effect size of these programs was however very small. At one year follow up these programs delayed onset or prevented drug use in 3.7 percent of the participating students. Effect size also declined with time. Similarly sound program evaluations were effective with only 1.8 percent of the participating students at two year follow up. Gorman illustrates the importance of this issue through an examination of two large, well-regarded drug education programs, an LST style program to prevent smoking and the WHO Collaborative Study designed to delay onset and reduce use of alcohol [20,21,22]. In the case of the LST study, statistically significant difference between control and intervention students was only found for past-month smoking, which is essentially an indication of low level, experimental use. In the case of the WHO study, two instances of statistically significant improvements in alcohol use scores emerged at post-test. However, the actual levels of use reported were all very low and fell within the 'rarely drink' range. Thus, according to Gorman, while the differences between control and intervention groups in this study were statistically significant, all scores fell in the same category of low level drinking and for practical purposes were similar.

The other side of this practical benefit argument is explored by Caulkins et al in considerable detail [23]. These researchers looked at the cost effectiveness of national implementation of model drug education programs in America. Specifically they looked at "Dollar for dollar, by how much can model school-based prevention programs reduce the nation's cocaine consumption?" [23, pp xx]. Project ALERT and LST formed the

basis for this modelling exercise, because they have both demonstrated an effect on student drug use, but have not been widely implemented. The middle estimate of program cost per student is US\$67.12 and the middle estimate of program effectiveness is a reduction in future cocaine consumption of 3.8 grams per participating student. Using these figures, the authors' middle estimate of a model drug education program's cost effectiveness is a reduction in consumption of 26kgs of cocaine for every million dollars spent on the program. This compares favourably with the cost effectiveness of most law enforcement approaches, but is not as cost effective as treatment. While treatment may be more cost effective, there is a clear cost dividend from such a comprehensive education approach in that estimated savings of US\$2.40 in social costs associated with cocaine use accrue for every education program dollar spent. There would also be parallel savings of US\$0.75 and US\$0.80 in social cost respectively associated with tobacco and alcohol use and additional savings from reduced use of other illicit drugs apart from cocaine. This research clearly demonstrates that there would be substantial cost benefit to the community from comprehensive, effective drug education programs.

Drug Education as Implemented

While there are some methodological qualifications, the drug education literature does indicate that soundly conceptualised and rigorously implemented programs can influence drug using behaviour and that comprehensive provision of such programs is likely to produce a net social cost saving to society. This demonstrable program effectiveness is supported by increased willingness by governments to spend money on drug education [24]. Taken together, these factors suggest that prevention dividends should be on the rise. However, there is a major obstacle to the rational development of better drug education. Effective drug education programs are not necessarily the ones selected for use in schools. Dusenbury, Falco and Lake looked at a selection of drug education programs in American schools and found that while a lot was known about the components of the more promising drug education curricula, most of the money spent on drug education in that country was not being spent on promising programs [16]. Project DARE (Drug Abuse Resistance Education), which uses specially trained police officers

to provide drug education lectures, has been taken up by approximately 50% of school districts in America and in almost twenty other countries [25,26]. Yet evaluations of this program have repeatedly indicated that it is not only less effective than other programs, which emphasise social skill development and interactive teaching techniques, but that in some cases it actually has an adverse effect on drug use [25,27]. DARE is however well known, because it is aggressively marketed and may be appealing to decision-makers because it has a strong abstention message and links drug education and law enforcement. Australia is another country where drug education programs with a high public profile, but no proven efficacy, continue to be supported. The Life Education program receives several million dollars a year from government, business and service groups and has a high profile in the community, yet an evaluation of students exposed to the program found no evidence that it reduced use of alcohol, analgesics or tobacco [28]. In fact in an evaluation of the social impact of the program in the Australian State of Victoria, Hawthorne reported that 22% of all Victorian boys' recent drinking could be attributed to participation in Life Education [29].

Future Directions

In some ways drug education is at a crossroads in terms of future development. There is an increasing body of evidence that indicates, not just which programs work, but which features consistently appear in the more effective programs [1,16]. This allows new programs to be developed which can distil the best practice features of past interventions and develop new approaches, which are likely to be more potent again. On top of this, new harm reduction approaches are being developed, which promise to take education objectives beyond maintaining abstinence or delaying onset, into the realms of equipping young people with the skills they need to keep themselves safe from drug harm [18,30]. These developments are likely to increase the impact and relevance of drug education for young people and make it a more effective strategy within the broad range of responses society deploys to deal with drug problems. However, the past history of drug education is littered with several false dawns, where considerable effort was put into particular approaches, only to dissolve when the evidence mounted as to their ineffectiveness. The

one critical factor that is different now, is that there is good evidence as to what works, but this is unlikely to be enough in itself to sustain the coherent development of effective mass drug education programs. The most powerful factor in the implementation process remains the same; decision-makers are still selecting drug education programs on the basis of what they would like to see happen, rather than on the evidence of what can realistically be achieved. Ultimately, this is self defeating, because when the programs are evaluated and shown to be ineffective, questions will again be asked as to why drug education is not achieving its objectives and the whole approach is discredited once more. This time around we must go beyond choosing drug education programs simply because they do not threaten conventional community views on drug use. Drug education programs must be selected because they have demonstrated the ability to have a beneficial impact on youth drug use and youth drug problems. The process should not however end there. The selected programs should be evaluated to measure achievement against stated objectives and ineffective programs culled. Finally, support and encouragement needs to be provided to schools and teachers providing innovative drug education programs, because little will change if educators feel too vulnerable to risk exploring less than ideal outcomes.

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