The making of evidence-based practice: The case of Project ALERT

Dennis M. Gorman [a,*], Eugenia Conde [b]

[a] Department of Epidemiology and Biostatistics, Texas A&M Health Science Center School of Rural Public Health, College Station, TX 77843, United States
[b] Department of Sociology, Texas A&M University, College Station, TX 77843, United States

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ABSTRACT

Evidence-based practice has been enthusiastically embraced within the field of drug prevention during the past decade. Project ALERT, a school-based universal prevention program, is among the most widely advocated evidence-based interventions. We examined the results of three large-scale evaluations of Project ALERT, and concluded that assessment of data from the total samples shows that the program has little effect on drug use. Despite this, Project ALERT is included on evidence-based drug prevention lists because the criteria for inclusion are extremely weak. We discuss the implications of this for drug prevention evaluation research and the creation of evidence-based practice lists.

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1. Introduction

Like many areas of social policy, the field of drug prevention has enthusiastically embraced the idea of evidence-based practice in the last decade (Hallfors, Pankratz, & Hartman, 2007; Petrosino, 2003; Weiss, Murphy-Graham, Petrosino, & Gandhi, 2008). Project ALERT, a school-based prevention program targeted at middle-school children, is among the most widely advocated evidence-based interventions. For example, it was rated an "exemplary program" by the US Department of Education (US Department of Education Safe, Disciplined, and Drug-Free Schools Expert Panel, 2002) and classified as a "research-based" program by the National Institute on Drug Abuse (2003). Most important, given the list's high profile in the drug prevention field (Hallfors et al., 2007), Project ALERT is included in both the original and revised versions of the Substance Abuse and Mental Health Service's Administration's (SAMHSA) registry of evidence-based interventions.[1] Each of these lists of best practices claims that the inclusion of Project ALERT is based on the research evidence pertaining to the program's efficacy in reducing drug use

(effects on non-behavioral variables such as attitudes and knowledge are insufficient for inclusion). Likewise, the marketing of the program is firmly grounded in the idea that the program's efficacy has been established through rigorous evaluations. As the promotional material posted on the ALERT webpage states: "Project ALERT works. That's not just marketing hype. Empirical research tells us so" (Best Foundation for a Drug-Free Tomorrow, no date).

Project ALERT has been the subject of two large-scale evaluations conducted by its developers at the RAND Corporation and one independent evaluation. The first of the developer-led evaluations commenced in the mid-1980s and was conducted with middle and junior high school students in Oregon and California (referred to herein as the "West Coast evaluation") (Bell, Ellickson, & Harrison, 1993; Ellickson & Bell, 1990a; Ellickson, Bell, & McGuigan, 1993). The second developer-led evaluation was conducted with students from middle schools in South Dakota and began in the late-1990s (Ellickson, McCaffrey, Ghosh-Dastidar, & Longshore, 2003; Longshore, McCaffrey, St. Clair, & Ellickson, 2007). The independent evaluation of Project ALERT was conducted in eight middle schools in Pennsylvania in the early-2000s (St. Pierre, Osgood, Mincemoyer, Kaltreider, & Kauh, 2005).

Given the timing of the evaluations, it was the results of the West Coast study that were the basis for Project ALERT's inclusion on the various best practice lists that appeared in the early-2000s (i.e., the US Department of Education's list of exemplary programs and SAMHSA's original National Registry of Effective Prevention Programs). However, the findings of the two more recent evaluations were available for consideration when Project ALERT was reviewed for inclusion in

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* Corresponding author. Department of Epidemiology & Biostatistics, School of Rural Public Health, TAMU 1266, College Station, TX 77843-1266, United States. Tel.: +1 979 458 8059; fax: +1 979 458 1877.
E-mail address: gorman@srph.tamhsc.edu (D.M. Gorman).

[1] SAMHSA's evidence-based list of drug prevention programs was originally called the National Registry of Effective Prevention Programs (Schinke et al., 2002). Recently it was revised and re-named the National Registry of Evidence-based Programs and Practices (with the acronym, NREPP, remaining the same) (Department of Health and Human Services, 2006).

SAMHSA's revised National Registry of Evidence-based Programs and Practices (NREPP) in December of 2006 (National Registry of Evidence-based Programs and Practices, 2006).

Here we will examine the results of each of the three evaluations.[2] This is followed by a discussion of how the findings from these evaluations are used in the evidence-based practices literature, especially that of the revised NREPP. We conclude with a discussion of the implications of our findings for the manner in which evaluation research is conducted in the field of drug prevention and the procedures used to generate lists of evidence-based practices.

2. West Coast evaluation of Project ALERT

The version of the ALERT program that was evaluated in the West Coast study comprised 11 sessions, eight delivered in 7th grade and three in 8th grade. Two versions of the program were assessed, one delivered just by health educators and one delivered by health educators and teen peers. Outcome data pertaining to actual drug use (as opposed to mediator variables such as knowledge and attitudes) from this evaluation of ALERT are presented in three main publications. The first of these contains a set of findings regarding its effects at 3-, 12-, and 15-month follow-up when subjects were in 7th and 8th grades (Ellickson & Bell, 1990a). The second publication presents results from a 9th grade follow-up (Bell et al., 1993), while the third contains data collected three and five years after the intervention was administered, when subjects were in 10th and 12th grades (Ellickson, Bell, & McGuigan, 1993). It is not necessary to spend much time on the 9th through 12th grade evaluations since the data from these revealed essentially no differences between ALERT subjects and controls on measures of drug use. The number of statistically significant differences between the two ALERT and control groups at 9th grade was just two out of 78 comparisons, a difference that the investigators acknowledge "is easily explained by chance" (Bell et al., 1993: 475). Also no effects were found for alcohol, cigarettes or marijuana use at 12th grade, leading the investigators to observe that: "Once the lessons stopped, the program's effects on drug use stopped" (Ellickson, Bell, & McGuigan, 1993, p. 856). The evidence of the program's efficacy must therefore be found in the 1990 publication in *Science* (Ellickson & Bell, 1990a) that reported outcomes at 3-, 12- and 15-month follow-ups.[3]

The results of Ellickson and Bell's (1990a) evaluation of ALERT have been discussed in detail in a number of earlier publications (Gandhi, Murphy-Graham, Petrosino, Chrismer, & Weiss, 2007; Gorman, 1994, 1998), including a re-analysis of the data by a committee of the National Research Council (Gerstein & Green, 1993). The main issue raised in these earlier critiques is that Ellickson and Bell's (1990a) publication presents no results describing how the total ALERT groups compared to the total control group at follow-up; rather, the sample was broken down into three subgroups according to drug use reported at baseline. In addition, the effects of the program were assessed for multiple outcome variables at each follow-up point (e.g., "ever" used the drug and "weekly" use of the drug). The details of

these subgroups and outcome variables are presented in the footnote to Table 1.

The combination of these risk groups and outcome variables, along with the three follow-up periods (3-, 12- and 15-month) and two study conditions (teacher taught; teacher plus peer taught) resulted in a large number of comparisons being made between the ALERT and control groups for each drug. The number of such logically possible comparisons between study conditions is shown in column 2 of Table 1. Ellickson and Bell (1994), however, contend that it is unfair to judge the success of ALERT in terms of all of the logically possible comparisons that their analysis strategy produced. Specifically, they argue that 42 of the comparisons that were logically possible involved subgroups of individuals that reported too little drug use to allow for meaningful statistical analysis to be conducted. In line with this argument, the actual number of comparisons for each drug as reported by Ellickson and Bell (1990a) is shown in column 3 of Table 1. The two remaining columns of the table show the number of statistically significant (at the conventional level of $p \leq 0.05$) positive and negative results that emerged from the analysis. It can be seen that even when judged in terms of the findings reported by Ellickson and Bell (1990a), the effects of ALERT that emerged from the subgroup analyses were limited. For alcohol use, just two of the follow-up comparisons made between ALERT participants and controls were favorable to the intervention and statistically significant (another one showed the program was detrimental). Similarly, while six comparisons indicated that there were proportionally fewer cigarette users in the ALERT groups, four others showed that a higher proportion of program participants than controls were smoking at follow-up assessments. In the case of marijuana, six of the 70 comparisons between the ALERT and control groups were statistically significant and favorable to the program (Gorman, 1994).

3. South Dakota evaluation of Project ALERT

The revisions to the ALERT curriculum that occurred in the late-1990s involved additional lessons on smoking cessation and alcohol use and the inclusion of "home-learning opportunities" intended to encourage parental involvement in drug prevention. The revised curriculum comprised 14 sessions, 11 delivered in 7th grade (compared to eight in the previous version) and three in 8th grade

Table 1
Summary of results from the 7th and 8th grade follow-ups of the West Coast Project ALERT evaluation (Ellickson & Bell, 1990a).[a]

Variables	Logically possible comparisons	Comparisons reported by Ellickson & Bell (1990a)	Statistically significant positive results	Statistically significant negative results
Alcohol use	68	54	2	1
Cigarette use	86	64	6	4
Marijuana use	70	46	6	0

Notes:
[a] The total subgroup analysis for each drug was a function of the number of follow-up points, study conditions, risk groups, and outcome variables. For each drug, there were 3 follow-up points (3-, 12- and 15-month) and 3 study conditions (ALERT-teacher taught; ALERT-teacher and peer taught; control). There were also 3 risk subgroups for each drug, although the definitions of these differed. For alcohol and cigarettes, the subgroups were "non-users", "experimenters" and "users". The former were those who had never used the drug, experimenters those who had used the drug <3 times and not in the previous month, and users those who had used ≥3 times in the previous year or at any point during the previous month. In the case of marijuana, the 3 subgroups were based on prior use of marijuana and prior use of cigarettes (since use of marijuana was relatively infrequent). Those who had used neither drug at baseline were defined as non-users, marijuana non-users/cigarette users as experimenters, and users of both drugs as users. Finally, there were 5 outcome variables assessed at follow-up for alcohol and marijuana, and 6 for cigarettes.