

Meta-Analysis of Drug Abuse Prevention Research

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INTRODUCTION

After nearly 15 years of declining rates in adolescent drug abuse, current epidemiologic research indicates significant increases in the use of a variety of illicit drugs of abuse such as inhalants, marijuana, cocaine, lysergic acid diethylamide (LSD), and phencyclidine (PCP) (Department of Health and Human Services 1994) by children and youth in the 8th, 10th, and 12th grades. Faced with these alarming increases in drug abuse, concerned parents, educators, and community leaders are turning to prevention research to better understand the nature of these recent trends and to guide prevention policy and program development. Critical to effective preventive action at all levels of Government is an assessment of the numerous scientific findings that have been published over the past decade that may indicate which prevention practices are efficacious and which drug abuse prevention strategies need to be considered for implementation in school and community programs in order to bring a halt to increased drug abuse by the Nation's youth.

To assist in this deliberative process, the National Institute on Drug Abuse (NIDA) has consulted with a number of this country's best scientists to analyze prevention research findings from a variety of published studies and to integrate those results into a meaningful and objective meta-analysis in order to identify promising drug abuse prevention strategies and policies. Given the complexities of the published prevention research, it was decided that the meta-analysis of research findings should follow the systematic procedures employed in this methodology and utilize a common standard or metric that would permit the comparison and integration of outcomes across a variety of individual studies (Cook et al. 1992). Central to this process is the calculation of a metric that is called the effect size. The effect size provides, in standard deviation units, an objective and uniform measure of quantitative differences in drug prevention outcomes such as self-reported drug use, knowledge of negative consequences of drug abuse, and antidrug-abuse attitudes that could be attributed to the exposure of the treatment group that had been

randomly assigned to an experimental prevention intervention in comparison to a control group that did not receive the program.

To conduct a meta-analysis, researchers identify salient prevention research studies. Using a standardized procedure, they calculate the effect sizes for drug-related outcome measures reported in each study. Given that effect sizes are calculated in units of standard deviation, the measurements are comparable across studies and hence subject to further analysis such as assessing the efficacy of different prevention program strategies. Rather than relying on findings from one study, meta-analysis provides a technically sound method of combining results from a variety of studies in order to identify the extent to which specific types of prevention programs are effective in reducing and preventing adolescent drug abuse.

The technique of meta-analysis provides a systematic and objective assessment of prevention research findings reported by many scientific studies and results in a convergence of higher order information that can only be provided by analysis of an entire body of research findings. Meta-analysis provides a standardized approach to the identification, selection, assessment, and interpretation of the results of a variety of medical, psychiatric, and behavioral research literatures and is particularly valuable in synthesizing research findings from an emerging science, such as drug abuse prevention research.

The practical outcome of NIDA's meta-analysis of prevention research is twofold: programmatic and methodological. Each chapter in this monograph addresses one of these two objectives.

In the first section of the monograph, Tobler presents a meta-analysis of adolescent drug abuse prevention research findings; Schmidt and colleagues provide a meta-analysis of integrity tests for predicting drug and alcohol abuse; and Becker provides an approach for meta-analysis of drug-related risk and protective factors research. In the second section of the monograph, several chapters explore the appropriateness and special methodological considerations that must be addressed when conducting a meta-analysis of the drug abuse prevention research literature. Perry's chapter focuses upon methods to calculate effect sizes; Devine's chapter discusses issues in coding prevention intervention studies; Shadish and Heinsman assess the differences in outcomes produced by experimental versus quasi-experimental studies; Matt explores issues concerning generalized causal inferences related to program effects; Hansen reviews

approaches to classifying independent variables and types of correlational relationships between dependent and independent variables; in separate chapters, Lipsey and Hedges discuss potential applications of meta-analysis for policy development; and Bangert-Drowns presents general advantages and potential limitations of conducting and utilizing meta-analysis in drug abuse prevention research.

Collectively these chapters provide a current overview of the efficacy of drug abuse prevention programs and related measurement systems and help define the techniques employed in meta-analysis of drug abuse prevention programs. The monograph provides firsthand guidance in the application of research findings from meta-analysis and appropriate discussion of key technical procedures that should be considered in conducting future meta-analyses of drug abuse prevention research. It also helps to delineate what prevention programs and policies appear to be the most effective in combating drug abuse by adolescents and young adults who may be entering the workplace.

This publication clearly illustrates the value of being able to combine findings from specific high-quality primary research studies into a cohesive summary that better defines what the science of drug abuse prevention offers to guide future program decisionmaking by prevention practitioners. It is expected that future decisions concerning prevention programs and policy at the Federal, State, and community level will be enhanced by practical application of these findings, leading to the implementation of more effective drug abuse prevention strategies at all levels.

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