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National Institute on Alcohol Abuse and Alcoholism

PROJECT
MATCH

Project MATCH Hypotheses: Results and Causal Chain Analyses



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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National Institute on Alcohol Abuse and Alcoholism
Project MATCH Monograph Series
Volume 8

Project MATCH Hypotheses: Results and Causal Chain Analyses

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For further information on Project MATCH and a list of the study's publications, see <http://www.commed.uchc.edu/match>. The NIAAA website is <http://www.niaaa.nih.gov>.

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Project MATCH Monograph Series

The following publications are available from the National Institute on Alcohol Abuse and Alcoholism, Publications Distribution Center, P.O. Box 10686, Rockville, MD, 20849-0686.

- Volume 1** *Twelve Step Facilitation Therapy Manual: A Clinical Research Guide for Therapists Treating Individuals With Alcohol Abuse and Dependence*, by J. Nowinski, S. Baker, and K.M. Carroll. NIH Publication No. 94-3722.
- Volume 2** *Motivational Enhancement Therapy Manual: A Clinical Research Guide for Therapists Treating Individuals With Alcohol Abuse and Dependence*, by W.R. Miller, A. Zweben, C.C. DiClemente, and R.G. Rychtarik. NIH Publication No. 94-3723.
- Volume 3** *Cognitive-Behavioral Coping Skills Therapy Manual: A Clinical Research Guide for Therapists Treating Individuals With Alcohol Abuse and Dependence*, by R. Kadden, K.M. Carroll, D. Donovan, N. Cooney, P. Monti, D. Abrams, M. Litt, and R. Hester. NIH Publication No. 94-3724
- Volume 4** *The Drinker Inventory of Consequences (DrInC): An Instrument for Assessing Adverse Consequences of Alcohol Abuse*, by W.R. Miller, J.S. Tonigan, and R. Longabaugh. NIH Publication No. 95-3911.
- Volume 5** *Form 90: A Structured Assessment Interview for Drinking and Related Behaviors. Test Manual.* by W.R. Miller. NIH Publication No. 96-4004.
- Volume 6** *Improving Compliance With Alcoholism Treatment*, K.M. Carroll, editor. NIH Publication No. 97-4143.
- Volume 7** *Strategies for Facilitating Protocol Compliance in Alcoholism Treatment Research*, A. Zweben, D. Barrett, K. Carty, B. McRee, P. Morse, and C. Rice, editors. NIH Publication No. 98-4144.
- Volume 8** *Project MATCH: Hypotheses, Results, and Causal Chain Analyses*, R. Longabaugh and P.W. Wirtz, editors. NIH Publication No. 01-4238.

Foreword

The editors and authors are to be warmly applauded for their work in developing this unique monograph. Although Project MATCH officially concluded in 1997, not all analyses and interpretations of this rich data set were complete at that time. In this work, Drs. Longabaugh and Wirtz and their authors make particularly insightful and rigorous contributions not previously published.

This volume is the first systematic and comprehensive treatment of causal chain analysis of interventions for alcohol problems. Causal chains are theory-based models of the change process underlying intervention effects. Causal chains specify a testable sequence of steps postulated to be necessary and sufficient occurrences leading to an intervention's effects. The Project MATCH design included causal chain testing for all of the tested hypotheses.

In the initial chapters, the editors lay the methodological groundwork developed in Project MATCH for testing the causal chains associated with the matching hypotheses. The subsequent 18 topical chapters examine each of the hypotheses tested in Project MATCH and provide a rich array of approaches to conceptualizing and testing the associated causal chains. In the final two chapters, the editors provide a comprehensive and thoughtful critique of the preceding topical chapters and bring in new analytic approaches not available at the time of the original MATCH analyses. Their discussions shed light on why MATCH produced the findings it did and what this implies for future matching research and treatment research in general.

The primary audience for this volume is treatment researchers engaged in testing the efficacy of interventions. It offers a systematic guide to specify, classify, and test causal chains. The message to the field is that as we test the efficacy of interventions, we would do well to assure that we also specify a theory-grounded basis for our hypotheses and make use of methodology to test the causal chains underlying intervention effects. We recognize that the field has far to go in understanding the mechanisms by which behavioral interventions for alcohol problems exert their effects and how this knowledge might ultimately be used to improve outcomes. This pioneering volume is to be recommended to the research community as important guidance in this endeavor.

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Preface

In this, the final volume of the Project MATCH Monograph series, the editors and chapter authors address aspects of the Project MATCH findings absent from previous publications. Matching was a promising approach for alcoholism treatment from the 1970s through the mid 1990s but, after MATCH reported no compelling support for the concept, many puzzling issues were raised. Why were relatively few significant matches found? Why were the effects of these matches small in size and inconsistent across time, outcome measure, and setting? How well developed were the theories underlying the matching hypotheses? Did the design and analytic methods used in Project MATCH permit a fair test of the hypothesis? Does the dearth of compelling matching findings imply that matching is no longer a relevant topic for treatment research?

Whereas previous MATCH publications have reported on *what* works, the emphasis here is on the *why* (or why not) behind the observed effects. In focusing on testing treatment matching theory, the editors and authors undertake several daunting tasks: a review of the rationale of the hypotheses; a summary of all reported and unreported matches from the enormous Project MATCH data base; a description of the causal chains postulated for the hypotheses; and the analytic methods employed to test the causal chains.

The term “causal chains” may be new to many. It refers to the sequence of steps (or pathway) postulated to lead from the intervention to its outcome(s). It specifies aspects of treatment, patient characteristics, or other factors linking the operative components of the intervention to intermediary processes that, in turn, lead to changed drinking behavior. This mechanism of action concept is fundamental in medicine and is analogous to, for example, the steps in a pharmacologic pathway, which may involve the metabolism of a drug to its active species, its binding to a particular enzymatic site, and its alteration of a biochemical reaction that leads to a change in the physiological state of the organism. In this volume, we see a systematic application of the concept of causal mechanisms and their testing in the realm of behavioral sciences.

An understanding of the causal sequence of events can inform us how and why the interventions were or were not effective. This constitutes a step beyond efficacy testing which determines *if* an intervention works. The pathway idea is built around the concepts of mediators and moderators, variables that change the relationship between the independent variable (i.e., treatment) and the outcome variable (i.e., drinking).

Mediators explain the “why and how” of the effect, whereas moderators influence the strength of the association between independent and outcome variables. Given the many behavioral and environmental factors shaping alcohol addiction, it is not surprising that the picture grows more complicated in Project MATCH, which examined the mediation of moderator effects.

The authors summarize the work done by Project MATCH investigators using the analytic models extant at that time, that is, the late 1980s and early 1990s. The editors reflect on that effort and also bring to bear thinking developed in other fields since that time. They offer a critique on why Project MATCH yielded the results it did and go on to provide a theoretical and analytic model for an approach that could fruitfully become a standard aspect of treatment research in the future.

This important work has the potential to significantly advance alcoholism treatment research by stimulating other theory-driven work on the causal mechanisms of treatments for alcohol abuse and dependence. Improved understanding of the active ingredients of treatment might well contribute to: (1) more accurate models of treatment and placebo effects; (2) more efficient and parsimonious interventions; (3) a more informed justification for combining interventions; and (4) better facilitation of the transfer of treatment research findings to practice settings.

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