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Meta-Analysis: Methods for Combining Independent Studies

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EDITOR'S INTRODUCTION

The National Library of Medicine defines meta-analysis as "a quantitative method of combining the results of independent studies (usually drawn from the published literature) and synthesizing summaries and conclusions which may be used to evaluate therapeutic effectiveness, plan new studies, etc., with application chiefly in the areas of research and medicine."

The name "meta-analysis" is due to Gene Glass, in 1976, who carried out a synthesis of data related to the effects of class size. Although there have been many meta-analyses in the behavioral and social sciences, the methodology has been incorporated into medicine with astounding growth. A search of medline (carried out by Dr. Marlos Viana) shows the number of meta-analyses in medicine from 1977 to 1990 to be as follows:

Year	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Number	1	0	1	4	3	8	11	6	15	16	31	61	85	81

This growth in the number of publications that synthesize the results of separate studies may be due, in part, to the explosive growth in the number of scientific journals (which increased from 2,300 in 1940 to 23,000 in 1980). It may also be due to some of the recent successful medical meta-analyses that have gained notoriety. However, there remains a variety of difficult theoretical and practical issues in the conduct of a meta-analysis.

We are pleased to present three papers by Frederick Mosteller and Thomas C. Chalmers, Keith B. G. Dear and Colin B. Begg, and Larry V. Hedges that deal with some of these issues. These papers were part of the International Statistical Institute Program when it met jointly with the Bernoulli Society and the Institute of Mathematical Statistics in Uppsala, Sweden in 1990.