

are different competing treatments. The investigator and her audience prefer a primary analysis that does not distinguish versions of treatment, but both would be reassured by evidence that showed their preferred analysis does not embody a consequential error. Versions of control groups should also be distinguished from the deliberate use of two carefully selected control groups intended to reveal unmeasured biases if present; see, for instance, Rosenbaum (1987). In particular, Campbell (1969) suggested that two control groups should be deliberately selected to systematically vary a specific unmeasured covariate in an effort to demonstrate its irrelevance; however, versions of control are unintended flaws in study design, not purposeful quasi-experimental devices.

There are two versions of either the treatment condition or the control condition if we recognize in available data either two types of treated subjects or two types of controls, but we are uncertain about, or perhaps explicitly doubt, the relevance of this visible distinction. Versions refer to a visible but perhaps unimportant distinction, not to a distinction that is hidden or latent. There are important methodological issues in recognizing treatments that inexplicably affect some people but not others; however, this is practically and mathematically a different problem (Conover and Salsberg 1988; Rosenbaum 2007a).

In discussing randomized clinical trials, Peto et al. (1976, page 590-1) wrote: “A positive result is more likely, and a null result is more informative, if the main comparison is of only 2 treatments, these being as different as possible. ... [I]t is a mark of good trial design that a null result, if it occurs, will be of interest.” This advice is equally relevant for observational studies, and it is part of the reason that we prefer a conception in which there is a single treated condition and a single control condition. Despite this, an investigator may seek some reassurance that the study’s conclusions cannot be undermined by the possibility of two versions of treatment.

In that spirit, our analysis focuses on the main treatment-control comparison, and