Reply to Sir Iain Chalmers’ Comment on Our Review

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We apologize for the unsatisfactory delay in responding to Sir Iain Chalmers’ comment on our review. His question is most appreciated, and inspired us to query some of our more methodologically- and statistically-minded colleagues for advice.¹ We have now had ample opportunity to mull over these responses.

He asked that we clarify what is meant by “tests for equivalence at baseline.” Indeed, our reference is to statistical tests that are conducted by the experimental investigators to determine if randomization produced equivalent groups before the intervention or treatment is introduced. In his comment, Dr. Chalmers is correct when he states (referencing Altman 1985) that such “pretests of group equivalence” are illogical because of randomization. But this only applies when we have confidence that randomization was carried out with full integrity.

Unfortunately, thorough description of how randomization was done and what efforts were taken to conceal such allocation are often missing in reports of experimental studies. This is particularly true of trials reported several decades ago; in our review, all of the studies were reported before 1993 and at least one was briskly reported in a short government document circa 1967. Sure enough, concealment and allocation was rated as “unknown” in eight of the nine trials we included in our systematic review. Pretests of group equivalence increase our confidence (but does not guarantee) that randomization was successfully implemented.

Missing information is not the only problem. It is also the case that allocation in many criminological experiments is often left out of the hands of the investigators and is actually conducted by practitioners or treatment providers. Such individuals often have a good reason to corrupt the allocation schedule to ensure that particular cases end up in

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¹ Our review co-author, John Buehler, died on November 27, 2003. John was not only a promising statistician training at Harvard under Frederick Mosteller, but he had a gift for treating people honestly and with decency.

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a certain group. Pretests of group equivalence are one way to determine if an intentional subversion of the allocation scheme has resulted in unhappy configurations of the groups.

Besides missing information and covert manipulation of allocation, there is another problem with criminological experiments that pretests of group equivalence can assist. Many justice experiments have very small samples. For example, the Locke, et al study in our review (though it was not included in the meta-analysis) had 16 participants in each group. The laws of randomization naturally follow the laws of sampling probability. If you flip a valid coin 32 times, you may end up with 22 heads and 10 tails. Randomizing 32 participants to study groups may result in the experimental group receiving far more boys than girls when compared to the control group. To the extent that males are more likely to commit another crime than females, the experimental group is at a distinct disadvantage. Flipping a valid coin several hundred times is more likely to produce a near 50/50 split of heads and tails than 32 flips; random allocation of several hundred participants is more likely to produce balanced groups than assignment of 32 participants. Pretests of group equivalence, in this case, can identify situations where unintentional bias has produced unhappy configurations of groups.

The methodological quality table contains our own subjective language of whether we thought the pretest results were “satisfactory.” This should be changed. In our update of the Cochrane review, we will simply list if the pretests were done and whether the experimental investigators reported that pretest equivalence was confirmed.

Notes

1 We especially thank Dr. Mark Lipsey and Dr. David Weisburd, among others, for their valuable input.
ii Of course, experimental investigators who have good a priori knowledge of a particular variable especially relevant to the outcome, can block on that variable to ensure equal distribution across study groups irrespective of randomization (in essence, they can randomize boys and girls separately into the study groups).