Behavioral Measures

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Key issues to consider

- Using validated scales can help you compare your results to results from other studies.
- If no validated scale exists to best test your intervention then put effort into creating one. If you can't measure the dynamic you are interested in then there is no point in running the study.
- When possible focus on actions, without reference to mental or contextual states.
- When measuring sensitive behaviors you are likely to get systematically biased responses. This is not the usual "measurement error" that will average out with enough data. It is a fundamental barrier to getting good estimates.

Behavioral measures in pragmatic trials

- Invest time in understanding the data-ecosystem you are going to operate in. What are they currently measuring? How does that data look (e.g., missingness)? How reliable do they think those data are?
- If possible then using the already collected data will save you headaches.
- When speaking with practitioners, ask them if there are any variables they are not collecting but wish they could. Consider building out a permanent system to collect these – for your study but also for them going forward.
- The participants in your study are being measured in an environment that they will continue to participate in after the results of the study are published. Be aware of the pressures and consequences this puts on your participants.

Randomized response

- Participants may feel uncomfortable answering questions truthfully if they believe their answers may become known to others.
- Randomized response lowers participants discomfort by providing plausible deniability through obscuring if their answers for a given question are "truthful" or if the answer that appears was due to a chance-modifier.
- While the analyst will not know if a specific participant's response is correct, population estimates are valid.
- This approach has been shown to lead to better estimates for the target population's estimand.
- This can be thought of as a bias-variance tradeoff: the more random-response the lower the bias, but the higher the variance of the estimator.

Comparative lists

- Similar to randomized response, comparative lists give participants an ability to respond truthfully on a survey but in a way such that exposure of their responses would not cause the participant shame.
- This technique has had a lot of recent development in the economic and behavioral literature.

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Prior to meeting with a statistician

- Identify the key aspects of the current data-ecosystem you plan to leverage, its flaws, and where you may need to build out.
- Talk with participants in the current system to understand their sensitivities and incentives – this will help you prepare the kinds of survey questions and designs to anticipate and reduce biased responses.
- Think about how much of an issue you believe biased responses may be – this will help discussions of how much "randomness" to add to protect produce less biased responses.

References/Resources

- **[randomized response - theory]** Blair, G., Imai, K., & Zhou, Y. Y. (2015). Design and analysis of the randomized response technique. Journal of the American Statistical Association, 110(511), 1304-1319.
- **[randomized response - example]** Fidler, D. S., and Kleinknecht, R. E. (1977), Randomized Response Versus Direct Questioning: Two Data-Collection Methods for Sensitive Information. Psychological Bulletin, 84, 1045–1049.
- **[comparative lists]** Ahart, A. M., & Sackett, P. R. (2004). A new method of examining relationships between individual difference measures and sensitive behavior criteria: Evaluating the unmatched count technique. Organizational Research Methods, 7(1), 101-114.

Notes: