

Causal Moderation and Mediation Analyses in Multisite Trials

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Motivation

- Intervention programs in economics, education, political science, public health, and social welfare are usually delivered in various sites.
- While most evaluation research in the past has focused solely on average intervention impacts, the average alone is not sufficient for informing policy and practice.
- To understand how and why the impact varies, it is crucial to investigate the heterogeneity of the underlying mechanism.

Project Description

- This project aims to develop statistical methods to
 - unpack the mediation mechanism underlying the impact of an intervention;
 - assess how the mechanism varies by different types of individuals and contexts.

Context

- With the existing statistical methods, empirical researchers cannot thoroughly investigate for whom and under what contexts an intervention is effective and why.
- To advance this line of research, this project will develop statistical methods and an easy-to-implement R package for in-depth causal mediation and moderation analysis in multisite trials.

Develop statistical methods for empirical researchers to investigate for whom and under what contexts an intervention is effective and why.

Project Deliverables

- By end of the funding period, I will
 - develop an R package;
 - disseminate the methodological development through submission to a top-tier statistics journal;
 - present the study at an educational research conference.
- Within 1-2 years after the funding period has ended, this funding will allow me to
 - apply for external grants to further advance this line of research;
 - distribute the new methodology and software through teaching a workshop at national conferences and through teaching a quantitative research methods course at the University of Pittsburgh.
- I will run comprehensive simulations to evaluate the performance of the proposed methods,

Potential Impact

- With the aid of an easy-to-implement R package, the new methods will allow researchers to generate a new set of thorough, precise, and valid empirical evidence regarding the generalizability of intervention theories across individuals and contexts.
- Such evidence will enrich theoretical understanding and inform policies and programs with direct societal impacts.

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