The Department of Educational Psychology's Research Methods, Measurement, & Evaluation (RMME) program and the Department of Statistics at the University of Connecticut present:

Testing an Elaborate Theory of a Causal Hypothesis

Dr. Dylan Small, University of Pennsylvania

Friday, 11/11/2022, 11am ET

https://uconn-cmr.webex.com/uconn-cmr/j.php?MTID=m8da0e35b64c861fc97a21dd36fb29ded

When R.A. Fisher was asked what can be done in observational studies to clarify the step from association to causation, he replied, "Make your theories elaborate" -- when constructing a causal hypothesis, envisage as many different consequences of its truth as possible and plan observational studies to discover whether each of these consequences is found to hold. William Cochran called "this multi-phasic attack…one of the most potent weapons in observational studies." Statistical tests for the various pieces of the elaborate theory help to clarify how much the causal hypothesis is corroborated. In practice, the degree of corroboration of the causal hypothesis has been assessed by verbally describing which of the several tests provides evidence for which of the several predictions. This verbal approach can miss quantitative patterns. So, we developed a quantitative approach to making statistical inference about the amount of the elaborate theory that is supported by evidence. This is joint work with Bikram Karmakar.

Dr. Dylan Small is a statistician specializing in observational studies, causal inference and applications to the health and social sciences. Dr. Small is the Universal Furniture Professor and Department Chair in the Department of Statistics and Data Science at the Wharton School of the University of Pennsylvania. He joined the University of Pennsylvania in 2002 after obtaining his Ph.D. in statistics from Stanford University in 1997. Dr. Small is a fellow of the American Statistical Association and was the founding editor of the journal, *Observational Studies*--the first journal to focus on observational studies.

ONLINE INTERDISCIPLINARY SEMINARS ON STATISTICAL METHODOLOGY FOR SOCIAL AND BEHAVIORAL RESEARCH: Support for this seminar comes from Department of Educational Psychology's Research Methods, Measurement, & Evaluation (RMME) program and the Department of Statistics at the University of Connecticut (UCONN), the Statistical and Applied Mathematical Sciences Institute (SAMSI), and the New England Statistical Society (NESS). This seminar aims to promote connection between the statistics and social/behavioral science communities and encourage interdisciplinary research across faculty and students.

For announcements and WebEx live streaming links, please contact Tracy Burke (tracy.burke@uconn.edu). For questions related to the seminars, please feel free to contact the session organizers, Prof. Xiaojing Wang (xiaojing.wang@uconn.edu) and/or Prof. Betsy McCoach (betsy.mccoach@uconn.edu). For information about previous and upcoming speakers, please visit https://stat.uconn.edu/online-seminars/ or https://rmme.education.uconn.edu/.

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