Combining experiments, models boosts social behavior research

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Credit: Dan DeLuca

Researchers from North Carolina State University and Northwestern University are outlining a new approach to behavioral research that draws on experimental studies and computer models to offer new insights into organizational and group behavior.

"Social research has a history of using both small-scale experiments and computer models to explore questions about human behavior – but there are very few examples of how to use these two techniques in concert," says William Rand, a computer scientist and assistant professor of business management in NC State's Poole College of Management who

is co-lead author of a paper describing the work.

"This paper details an approach that we feel capitalizes on the best aspects of both research techniques to advance our understanding of the behavior of large groups and advance the field," says Ned Smith, an associate professor of management and organizations at Northwestern University's Kellogg School of Management, who is co-lead author of the paper.

Here's how the approach works. Researchers design and conduct experiments aimed at addressing a behavioral question, such as how a small group tries to solve a particular problem. The data from those experiments can then be fed into a model, allowing researchers to predict how this behavior would manifest itself on a larger scale. The results of the model may then be used to inform future experiments, further validating the model or shedding new light on the research question.

For example, experiments may find that groups take two different approaches to solving a given problem. The model could then help researchers predict which circumstances lead groups to choose one approach over the other. The researchers can then devise additional experiments to determine whether the model is correct.

"This sort of work can help us answer questions that have relevance for everything from business management to public policy," Rand says. "That's because computer models provide us with a testbed to explore how sensitive lab results are to the particular settings they are constructed around, as well as examining policy interventions that may alter social behavior in beneficial ways.

"Our goal with this paper is to make people aware of this approach, which makes good use of experimental data and advances in

computational modeling," Rand says. "We think this is a valuable tool that could help advance the field of organizational behavior as a whole. We want this idea to catch on."

The paper, "Simulating Macro-Level Effects from Micro-Level Observations," is published in the *Management Journal*.

More information: Edward Bishop Smith et al. Simulating Macro-Level Effects from Micro-Level Observations, *Management Science* (2017). DOI: 10.1287/mnsc.2017.2877

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