

LAY ABSTRACT

TITLE: Methods for Large-Scale Single Mediator Hypothesis Testing: Possible Choices and Comparisons

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Scientists often try to measure how an exposure affects an outcome. When the exposure affects another factor, and this other factor affects the outcome, we call this factor a “mediator”. Scientists study mediators to explain the relationship between exposures and outcomes. When there are many mediators at the same time, scientists have a tough time figuring out how they all work together and affect an outcome.

In this study, the researchers compared six ways (methods) to identify potential mediators. The research team tested each method to find the best one. The best method should give the most true positives and least false positives. True positives happen when the test correctly says “true”. False positives happen when the test says “true,” but it should be “false”.

The research team found that the best method was to first test each mediator itself and then find how much each mediator impacts the outcome. They listed pros and cons for each method, and a flow chart to help other researchers pick the best method for their study. They also created a statistical software tool so other researchers can use these methods to study mediators.