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An Exploration of R-squared Effect Size Measures in Mediation

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Poster

An Exploration of R-squared Effect Size Measures in Mediation

Author

Alexander Miles, Amanda J. Fairchild

Affiliation

University of Southern California; University of South Carolina

Abstract

Effect size (ES) measures offer insight into the magnitude of an effect. It has been 26 years since the 1999 APA Task Force on Statistical Inference recommended reporting ES (and complementary metrics like confidence intervals, CIs) alongside results of significance tests, and the availability of routine ES measures for a variety of statistical models has increased their uptake in the literature. ES options for some multivariate models remain understudied, however. One such model, mediation analysis, has been increasingly used over the past 25 years to understand the potential pathway(s) through which a predictor affects an outcome. Despite widespread application of the mediation model, less progress has been made in developing suitable mediation ES measures. Among the measures available, R-squared measures are particularly attractive - as they give researchers an easily interpretable portion of variance explained in the outcome by the indirect effect. At least three R-squared measures for mediation have been proposed, with each measure having unique advantages and limitations. Only one measure has offered associated CIs. As such, we develop and evaluate analogous CIs for the other two measures and then compare the widths and coverage of each. We additionally compare expected values for the sample estimators and relative percent bias under a variety of parameter combinations, shedding light on the strengths and weaknesses of each measure in different scenarios to inform their application.

Keywords

Mediation, effect size, indirect effects

Primary author: Mr MILES, Alexander (University of Southern California)

Co-author: Dr FAIRCHILD, Amanda (University of South Carolina)

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