

# Mediation by path analysis or causal inference: What is the difference?

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## **Abstract**

Mediation analysis has a long tradition among social scientists, especially those involved in structural equation modelling. However new insights from the causal inference literature have broadened its appeal, especially in epidemiology. In this talk I will compare definitions, assumptions and estimation methods used in structural equation modelling and in causal inference in order to highlight commonalities and differences. Estimands such as the controlled direct effect, pure natural direct effect and total natural indirect effect that are defined in the causal inference literature can be estimated after fitting suitable structural equation models and appropriately combining their parameters. Such ‘estimation by combination’ is shown to be equivalent to estimation by g-computation. Results obtained from analyzing a life course study of eating disorders in adolescence will be presented.

The conclusions are that adopting the definition of mediation parameters proposed in the causal inference literature leads to greater generality and explicit acknowledgement of the assumptions necessary for their identification, while appreciation of when structural equation modelling is equivalent to parametric g-computation will lead to greater understanding by applied researchers of, and access to, causal inference methods.