

Within group vs. between group comparisons

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Motivation for today's training



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Mental health disparities research: The impact of within and between group analyses on tests of social stress hypotheses

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[#] These authors contributed equally to this work.

Abstract

Social stress models are the predominant theoretical frame for studies of the relationship between social statuses and mental health (Horwitz 1999; Dressler, Oths, Gravlee 2005). These models propose that prejudice, discrimination and related social ills exert an added burden on socially disadvantaged populations (populations subjected to stigma, prejudice and discrimination) that can generate mental health problems. Researchers have used a variety of methodological approaches to study this hypothesis. In this paper we argue that researchers have not paid sufficient attention to the implications of this methodological variability, particularly the distinction between studies of within-group and studies of between-groups variation, in interpreting empirical tests of social stress theory. To fully evaluate the evidence, we need to carefully consider the convergence and divergence of results across diverse methodologies.

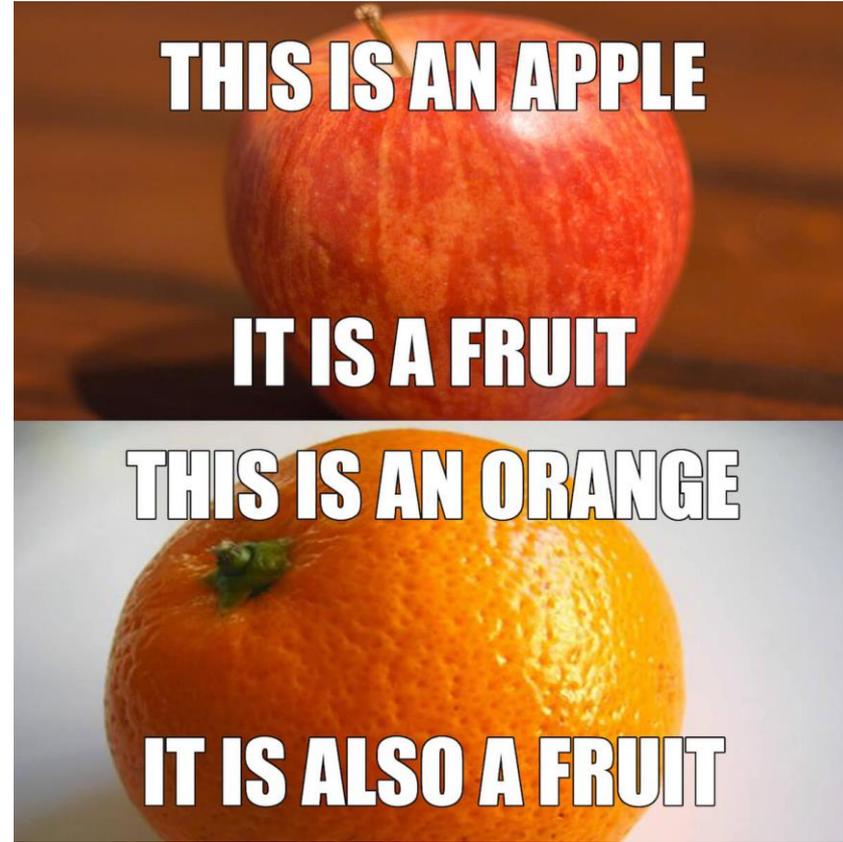
Keywords

stress; prejudice; methodology; health disparities; mental health; minority populations

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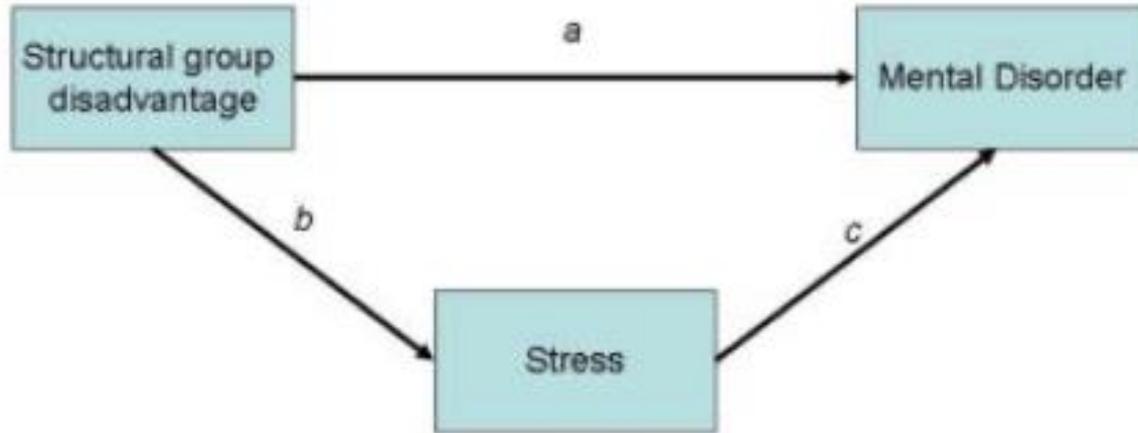
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Why do
comparisons?

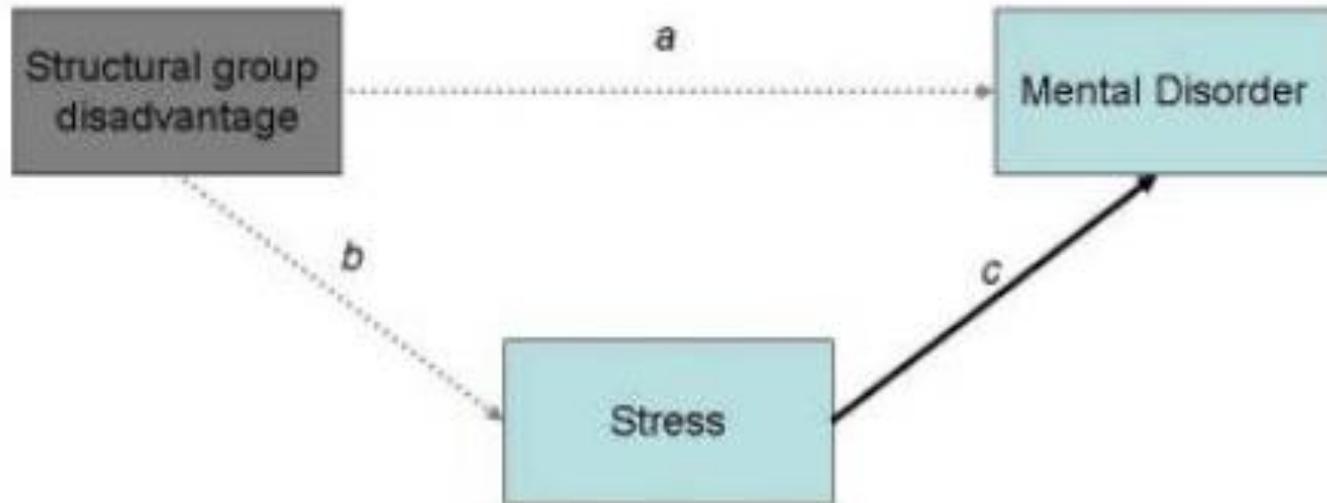


The Social Stress Model

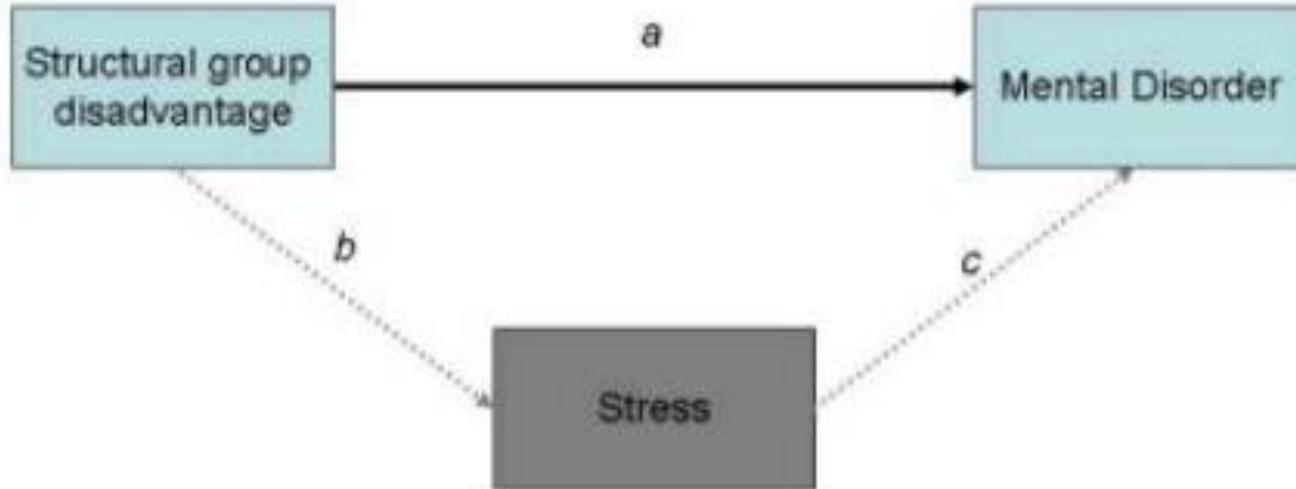
This is clearly a causal model.



Within group comparison



Between group comparison



Remember back to causal inference 1.0

- The **two arms of a RCT** are composed of individuals who are, on average, **similar in every way except for the fact** that one group got the **treatment (exposed)** and the other group got **placebo (unexposed)**.
- They are **similar on both observed and unobserved (unmeasured) characteristics...**

Except for the treatment/placebo - the “WHAT IF...”

Therefore, if the two groups differ at the end of the trial in their disease status, we infer that this is (only) because of the WHAT IF (treatment vs. placebo), *a.k.a. that the treatment CAUSED the difference in the outcome.*

Is the Potential Outcomes Framework appropriate for understanding racial inequities and differences in health?

Experimental designs form the conceptual underpinning of causal inference in observational data: **The Potential Outcomes Framework**

- **Main idea: To compare what was observed (what did happen) to what might have happened (what did not happen) - all other things being equal (controlling for all confounders [measured and unmeasured])**
 - What would have happened to the people who were exposed if they had been unexposed, given that they exposed?

How is does this relate to understanding how structural factors (like race[ism]) as causes of health outcomes?

Can you imagine a world where this question makes sense:

“What would have happened to the people who were Black if they had been White, given that they Black?”

Because that is the implied question we are trying to answer when we naively test between-group racial comparisons within a causal model.

A better way to think about this.

And another reading.



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On causal interpretation of race in regressions adjusting for confounding and mediating variables

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Abstract

We consider several possible interpretations of the “effect of race” when regressions are run with race as an exposure variable, controlling also for various confounding and mediating variables. When adjustment is made for socioeconomic status early in a person’s life, we discuss under what contexts the regression coefficients for race can be interpreted as corresponding to the extent to which a racial inequality would remain if various socioeconomic distributions early in life across racial groups could be equalized. When adjustment is also made for adult socioeconomic status, we note how the overall racial inequality can be decomposed into the portion that would be eliminated by equalizing adult socioeconomic status across racial groups and the portion of the inequality that would remain even if adult socioeconomic status across racial groups were equalized. We also discuss a stronger interpretation of the “effect of race” (stronger in terms of assumptions) involving the joint effects of race-associated physical phenotype (e.g. skin color), parental physical phenotype, genetic background and cultural context when such variables are thought to be hypothetically manipulable and if adequate control for confounding were possible. We discuss some of the challenges with such an interpretation. Further discussion is given as to how the use of selected populations in examining racial disparities can additionally complicate the interpretation of the effects.

Another causal diagram...

This time of how **H** [Historical processes] shape the relationship between physical characteristics, skin color, socioeconomic status, and place.

Which are in turn related to health.

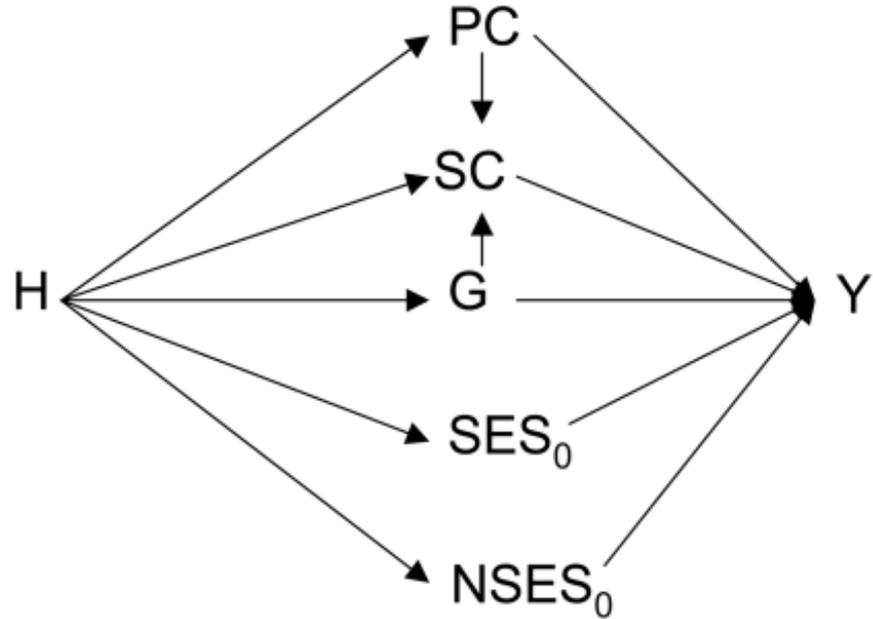


Figure 1.

Diagram illustrating relations between physical phenotype (P), parental physical phenotype (PP), genetic background (G), family/parental socioeconomic status (SES₀), neighborhood socioeconomic status (NSES₀), history (H), and the outcome of interest Y

Summary

- Comparisons are a fundamental part of scientific research. They form the logical foundation of how we generate scientific knowledge.
 - Controls wells in DNA plots
 - Placebos in drug trials
 - Usual care in intervention programs
 - Reference groups in regression models
- However, within-group and between-group comparisons are answering different scientific questions.
 - This is particularly important when considering variables like “race” which are themselves composites of various historical processes and multifactorial.
- Consider the question you are trying to answer and make sure that your study design matches it.

More resources:
annotated bibliography