Quantitative Work after Case Studies

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August 11, 2010

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Case-Study Designs

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Regression Roles

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• Testing generalizability



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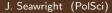
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Regression Roles

- Testing generalizability
- Mechanisms and models



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- Testing generalizability
- Mechanisms and models
- Addressing measurement problems

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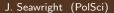
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- Testing generalizability
- Mechanisms and models
- Addressing measurement problems
- Testing the importance of omitted variables

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Data Quality



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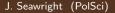
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Data Quality Does the model capture the qualitative hypothesis?

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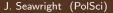


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• Proximity of Observations



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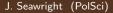
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- Proximity of Observations
- Transparency of Citations



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- Proximity of Observations
- Transparency of Citations
- Certainty of the Historical Record

- Proximity of Observations
- Transparency of Citations
- Certainty of the Historical Record
- Attention to Valid Comparison



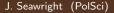
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• Simple Questions



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- Simple Questions
- Framing Effects

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- Simple Questions
- Framing Effects
- Pre-Test Evidence

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"Thick" Concepts:



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- "Thick" Concepts:
 - Cannot be reduced to a single indicator without losing some important part of their meaning.

- "Thick" Concepts:
 - Cannot be reduced to a single indicator without losing some important part of their meaning.
 - Multidimensional: no aspect of the concept is reducible to any of the others.

T_i is 1 or 0



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T_i is 1 or 0 $Y_i(t)$

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Mediation

$M_i(t)$

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Mediation

$M_i(t)$ $Y_i(t,m)$

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$\tau_i = Y_i(1, M_i(1)) - Y_i(0, M_i(0))$

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$\tau_i = Y_i(1, M_i(1)) - Y_i(0, M_i(0))$ $\delta_i(t) = Y_i(t, M_i(1)) - Y_i(t, M_i(0))$

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$\tau_i = Y_i(1, M_i(1)) - Y_i(0, M_i(0))$ $\delta_i(t) = Y_i(t, M_i(1)) - Y_i(t, M_i(0))$ $\zeta_i(t) = Y_i(1, M_i(t)) - Y_i(0, M_i(t))$

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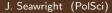
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Assumption of Sequential Ignorability:



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Assumption of Sequential Ignorability:

$$\{Y_i(t, m), M_i(t')\} \perp T_i | X_i = x$$

and
 $Y_i(t, m) \perp M_i | T_i = t', X_i = x$

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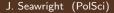
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Fit model for mediator, conditional on treatment, etc.



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- Fit model for mediator, conditional on treatment, etc.
- Fit model for observed outcome, conditional on treatment, mediator, etc.

- Fit model for mediator, conditional on treatment, etc.
- Fit model for observed outcome, conditional on treatment, mediator, etc.
- Solution Using the first model, simulate $M_i(0)$ and $M_i(1)$ for each case.

Mediation

• Using the second model, simulate $Y_i(0, M_i(0))$, $Y_i(0, M_i(1))$, $Y_i(1, M_i(0))$, and $Y_i(1, M_i(1))$ for each case.

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Mediation

- Using the second model, simulate $Y_i(0, M_i(0))$, $Y_i(0, M_i(1))$, $Y_i(1, M_i(0))$, and $Y_i(1, M_i(1))$ for each case.
- Solution Use simulated values to compute τ_i , $\delta_i(t)$, and $\zeta_i(t)$ for each case.

- Using the second model, simulate $Y_i(0, M_i(0))$, $Y_i(0, M_i(1))$, $Y_i(1, M_i(0))$, and $Y_i(1, M_i(1))$ for each case.
- Solution Use simulated values to compute τ_i , $\delta_i(t)$, and $\zeta_i(t)$ for each case.
- Repeat steps 3, 4, and 5 many times, saving the calculated values for each repetition.

Making mediation analysis go in R

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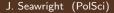
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Do a mediation analysis, for data on my website or another dataset of your interest.



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