

Discussion

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Compounding, offsetting, and intersecting error sources

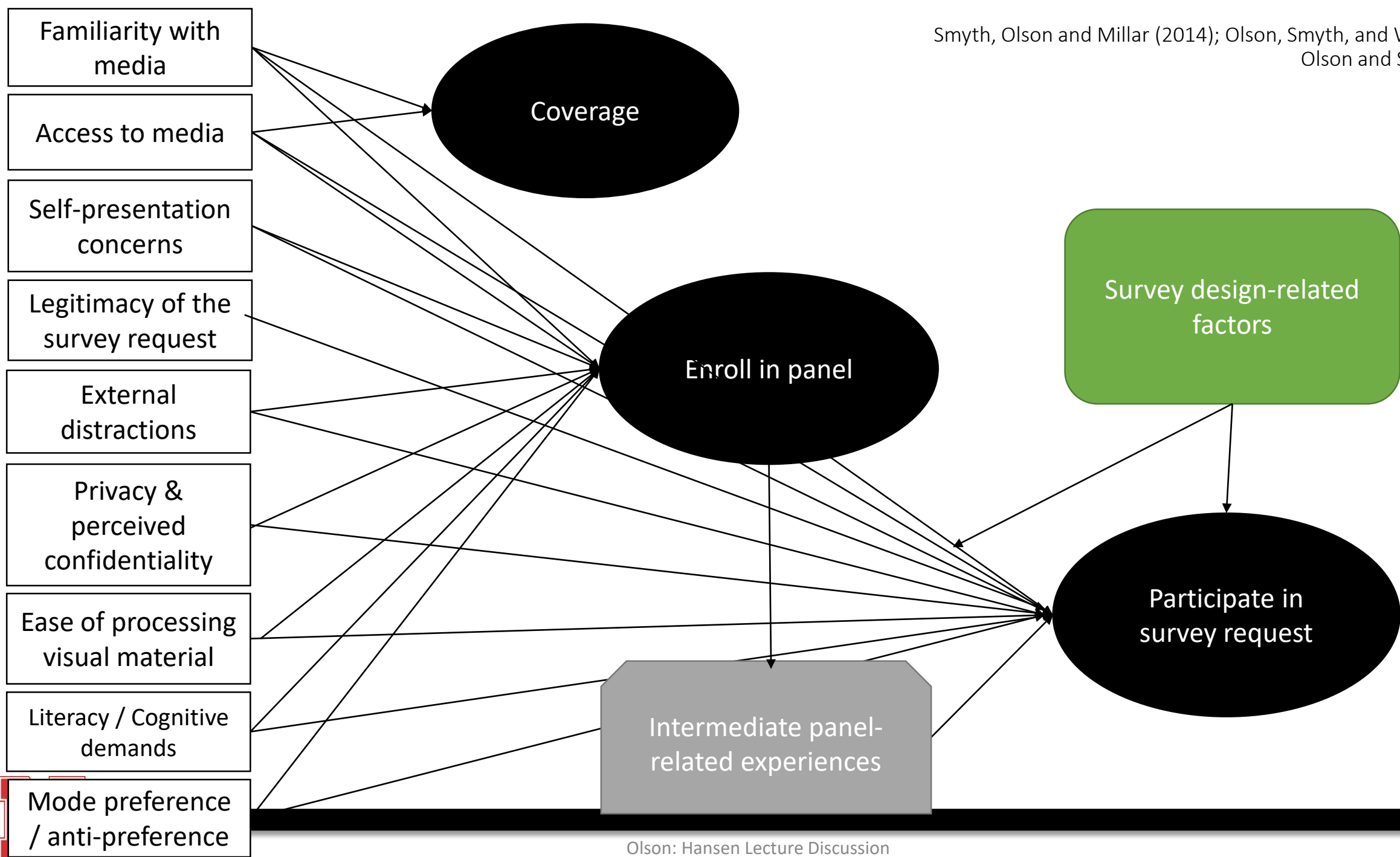
- Case 1: Coverage, selection, and nonresponse errors work together jointly
 - Example: Web surveys, especially with nonprobability samples
- Case 2: Nonresponse and measurement error may or may not be related
 - Example: item nonresponse + unit nonresponse; socially (un)desirable characteristics



Case 1: Compounding errors in web surveys

- Why might errors related to coverage, sample selection, and nonresponse compound in web surveys?
- Clearly, coverage, selection bias, and nonresponse rates are a problem in web surveys
- What kinds of estimates are most likely to be affected by these joint effects?
 - Internet access (obviously)
 - Sample demographics (age, education, race, income)
 - But why?





So, what estimates are likely to see $\text{cov}(p^*, Y)$?

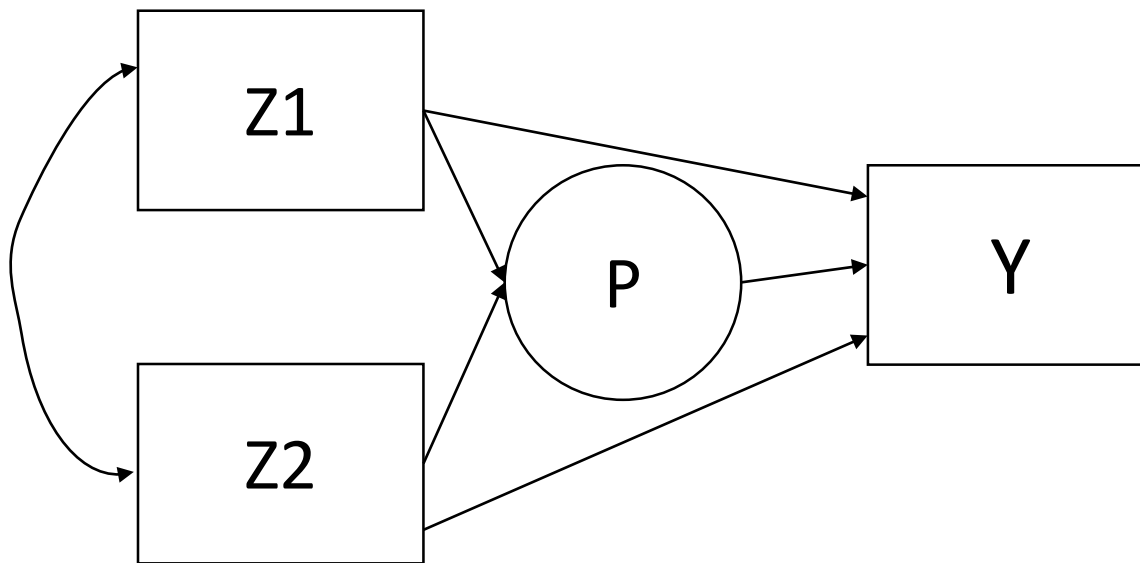
- Media familiarity / access
 - Sex, age, income, race, internet use, internet at home, presence of landline, cell phone use, self-rated computer ability, urbanicity, choose web to do a task
- External distractions
 - Marital status, kids, employment status
- Cognitive and physical abilities
 - Education, hearing ability, self-rated health, working memory capacity, literacy, mental health (depression)
- Safety concerns
 - Fear of computer viruses, fear of online scams, fear of identity theft, fear of crime
- Privacy and perceived confidentiality
 - Trust in surveys, privacy concerns
- Ease of processing visual materials
 - Self-rated vision, forms literacy
- Mode preference or anti-preference

(Smyth, Olson, and Millar 2014)



Offsetting influences

- Even in the context of only one error source, multiple influences on p are difficult.

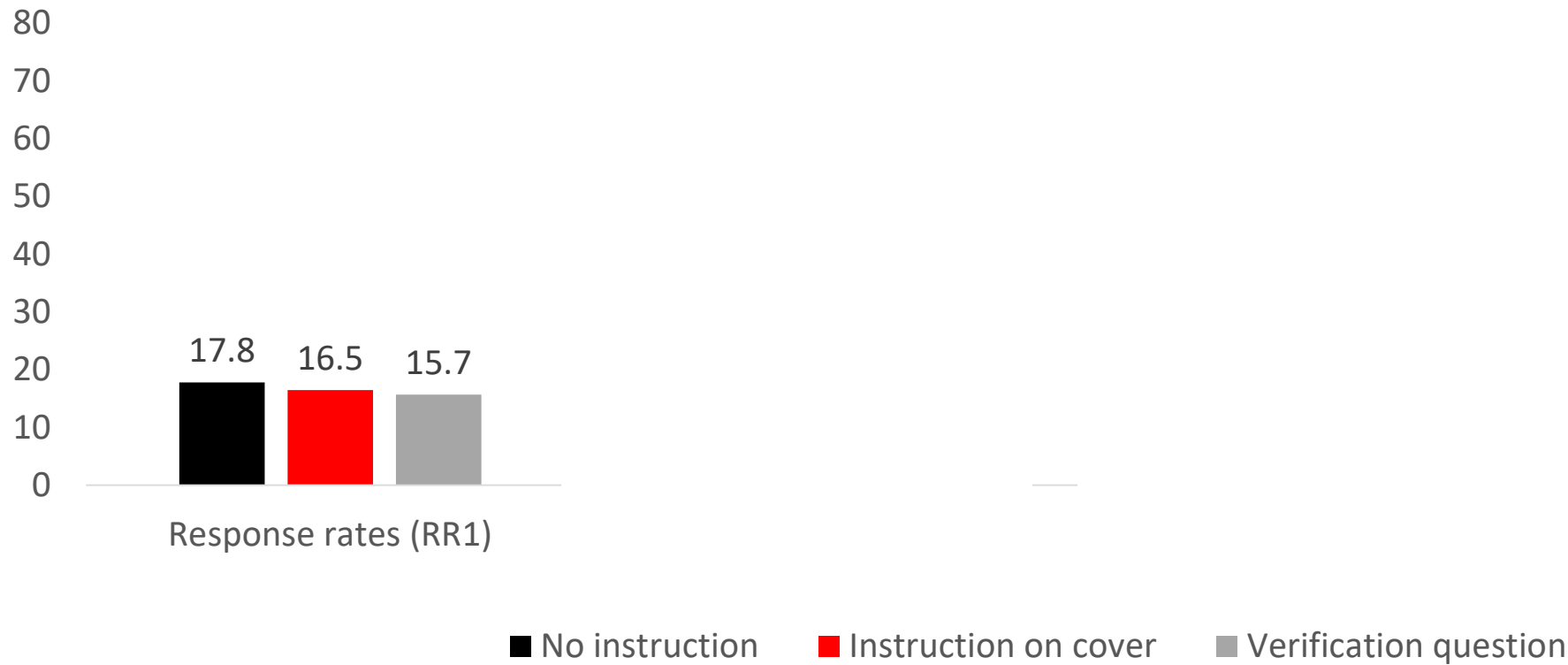


(Kreuter and Olson 2011)



Offsetting influences, part 2

- Should we increase one type of error to reduce another?
 - Example: Within-household selection with explicit question (Olson and Smyth 2017)



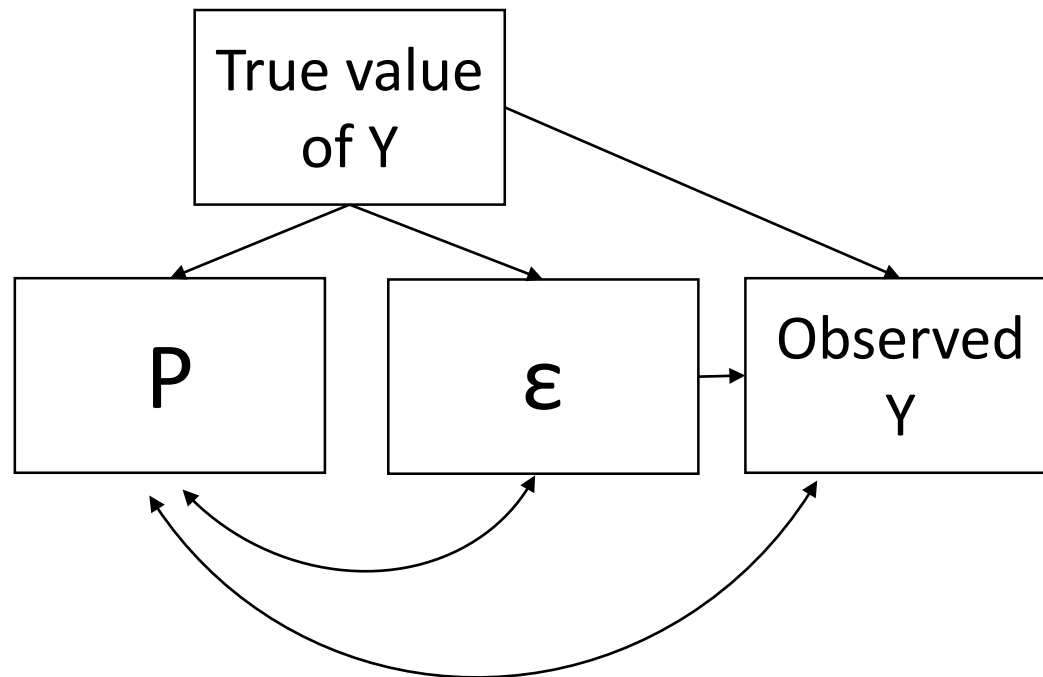
Case #2: Nonresponse and measurement errors

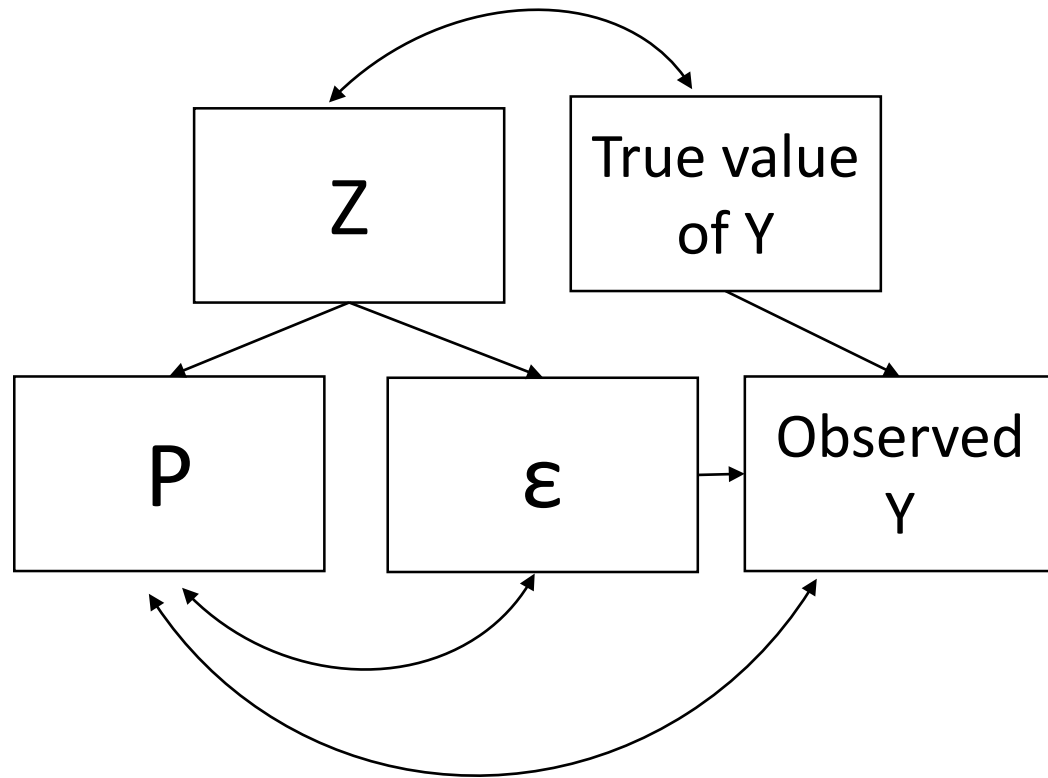
- Clear relationship between unit and item nonresponse propensity
- Less clear relationship between unit nonresponse and other indicators of measurement error
- Socially (un)desirable characteristics may be “low hanging fruit”



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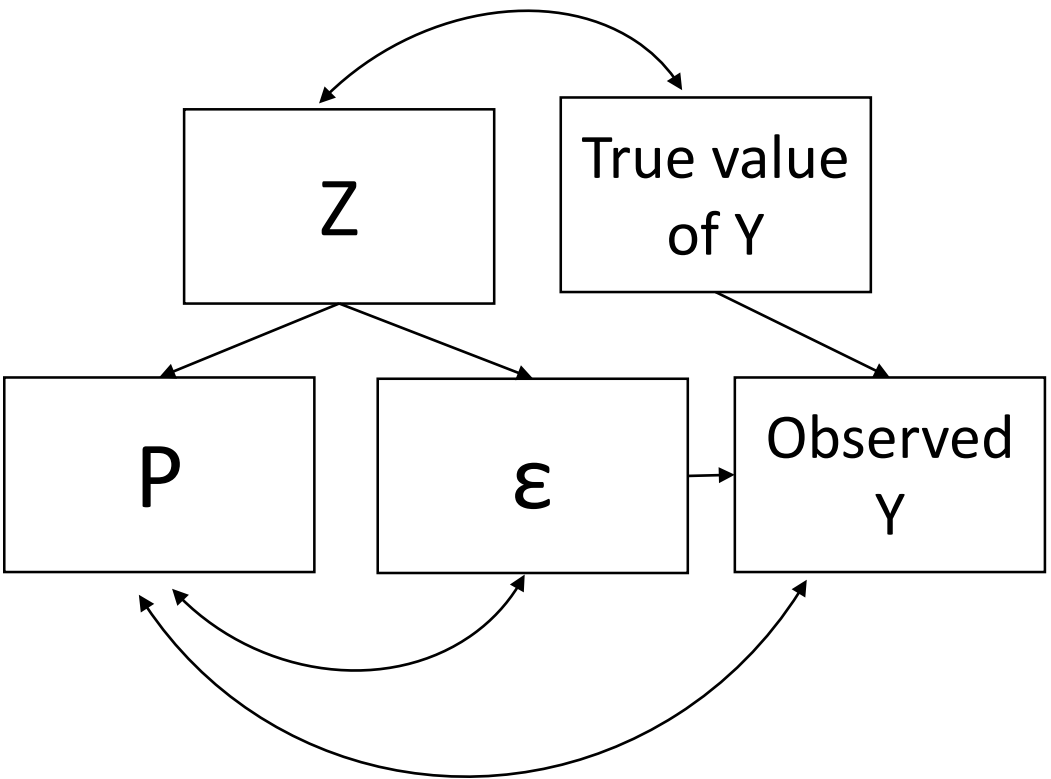
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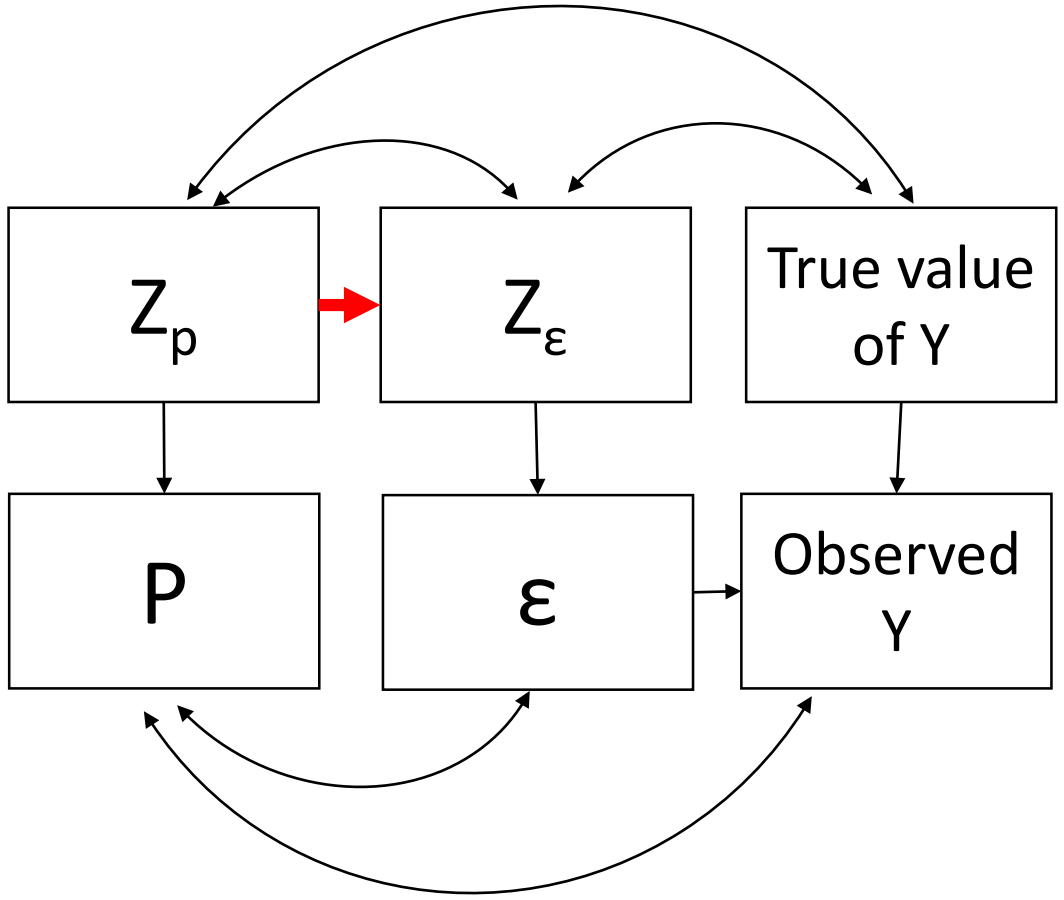
Latent cooperation continuum
Respondent characteristics
Research importance
Topic interest





Latent cooperation continuum
 Respondent characteristics
 Research importance
 Topic interest

Reactance
 Self-perception
 Commitment
 Changes in survey protocol



What don't we know about nonresponse and measurement error?

- Are self-administered modes more likely to observe an association between nonresponse and measurement errors?
- Are there certain subgroups for which different mechanisms linking the two error sources apply?
- Measurement error is a function of how questions are asked. How do properties of the question affect the relationship between nonresponse and measurement error?
- Does the relationship between nonresponse and measurement error depend on the information presented to the respondent during recruitment?
- And more...



Case #3: Masquerading errors

- Interviewer-related variance [West and Olson (2010); West, Kreuter, and Jaenichen (2013); West, Conrad, Kreuter, and Mittereder (2018)]
- Is it nonresponse or measurement error?
 - Often both; especially for age-related variables



In sum

- Errors may compound
- Errors may offset
- Errors may be related
- Errors may hide other errors

- Much more work to be done!



Thank you!

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