

# What are pragmatic trials good for?

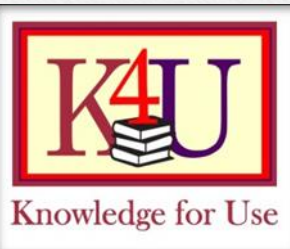
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# Goals

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- Explain distinction between pragmatic and explanatory trials
- Criticize standard view about pragmatic trials
  - Similarity thesis
  - Trade-off thesis
  - Straightforward extrapolation thesis
- How to improve problems with the standard view?
  - Framework
  - Additional causal evidence
- Conclusion



# What are pragmatic trials?

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- Differ regarding:
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# What are pragmatic trials?

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- Opposite of explanatory trials
- Differ regarding:
  - eligibility criteria
  - clinician expertise
  - compliance

# The trade-off thesis

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- There is a trade-off relationship between internal and external validity in medical trials.
- Pragmatic trials strike a more sensible balance between these two competing desiderata than explanatory trials do

# Against the trade-off thesis

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- In some cases, internal validity can be increased with no costs to external validity
- In some cases, internal validity can be decreased with no gain (possibly a loss) to external validity



# The Basic Model

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$$Y = \beta X + \gamma(X * W) + U$$

$Y$  = outcome of interest

$X$  = treatment variable

$W$  = vector of interactive covariates

$\beta, \gamma$  = the parameters for the marginal effect of an intervention on  $X$

$U$  = causes of  $Y$  which are independent of  $X$  and  $W$

# The Basic Model (example)

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$$Y = \beta X + \gamma(X * W) + U$$

$Y$  = outcome of interest (headache intensity)

$X$  = treatment variable (aspirin intake)

$W$  = interactive covariates (interactive other medication)

$\beta, \gamma$  = the parameters for the marginal effect of an intervention on  $X$

$U$  = causes of  $Y$  which are independent of  $X$  and  $W$  (head banging?)

# Three kinds of idealization

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- Homogenization with respect to  $U$  (other causes)
- Homogenization with respect to  $W$  (interactive other medication)
- Homogenization with respect to  $W$  (compliance)



# The Basic Model (example)

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$$Y = \beta X + \gamma(X * W) + U$$

$Y$  = outcome of interest (headache intensity)

$X$  = treatment variable (aspirin intake)

$W$  = interactive covariates (interactive other medication)

$\beta, \gamma$  = the parameters for the marginal effect of an intervention on  $X$

$U$  = causes of  $Y$  which are independent of  $X$  and  $W$  (head banging?)

# How can we improve?

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- Framework (Mullers?)
- Additional evidence
  - Relevant covariates (and goals for extrapolating this)
  - Relation between distributions of covariates and effects
  - Distribution of covariates in target and experimental populations

# How can we improve?

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- Framework (Mullers?)
- Additional evidence
  - Relevant covariates and goals for extrapolation (Mechanistic Evidence)
  - Relation between distributions of covariates and effects (Mechanistic Evidence)
  - Distribution of covariates in target and experimental populations (Observational Evidence)



# How can we get this additional evidence?

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- Subgroup analysis
- Factorial experiment
- Collect more data on possible covariates during trials

# Thank you

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