

# Is Survey Instability Due to Respondents who Don't Understand Politics or Researchers Who Don't Understand Respondents?<sup>1</sup>

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Introduction

## Modeling the Survey Data Generation Process

The Causes of Effects of Survey Instability

Empirical Evidence

Conclusions

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    - for survey bias:  $\pi_t \equiv \pi_t(Z_t)$
  - Instability:  $C_1 \neq C_2$ , with “assumptions”:

# Binary Survey Response Model (1 person, time $t = 1, 2$ )

- Preferences (unobserved)

$$\rho_t = \begin{cases} 1 & \text{w.p. } \tau_t \\ 0 & \text{w.p. } 1 - \tau_t \end{cases}$$

- Choices (observation mechanism)

$$C_t = \begin{cases} \rho_t & \text{if } \pi_t > 0.5 \\ 1 - \rho_t & \text{if } \pi_t \leq 0.5 \end{cases} \quad (\text{rational})$$

or

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- Covariates
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- no material changes:  $\tau_1 = \tau_2 \implies X_1 = X_2$
- no memory:  $C_1 \perp\!\!\!\perp C_2 \mid \tau_1 = \tau_2$

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$\tau_t \in \{0, 1\} \rightsquigarrow \rho_t$  is fixed

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$\pi_t$  is **known** to respondent

- 
- **No instability** (unless  $\pi_1 \neq \pi_2$ ), but an important baseline

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- 
- Differences from Rational Choice
    - **Empirical**, not rational, observation mechanism
    - “Irrational”: less likely to get your preference
    - **Strong supporting evidence**: In humans, ants, bees, fish, pigeons, primates

## Special case 3: Swapping error (most plausible)

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- Differences from Probability Matching
    - $\pi_t$  unknown
    - Observationally equivalent

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- Differences from Probability Matching
    - $\pi_t$  unknown
    - Observationally equivalent
    - Same strong empirical evidence

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- Observationally equivalent
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- Consistent with rationality
- (Respondent variability generated at choice level)

## Special case 4: Random Utility

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$$C_t = \rho_t \quad (\text{rational with } \pi = 1)$$

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- Differences from previous models
    - **Preferences:** Random (contrary to the evidence)
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    - Mathematical convenience  $\nRightarrow$  empirical validity

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- **Math'l justification for discrete choice models** (logit, probit)
- **Mathematical convenience**  $\Rightarrow$  empirical validity
- **(Wrong, but not terrible if effects  $\gg$  respondent variability)**

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**The Causes of Effects of Survey Instability**

Empirical Evidence

Conclusions

# The Source of Respondent Variability

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(The “Causes of Effects” of Survey Instability)

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↑  
more uncertain

Survey instability

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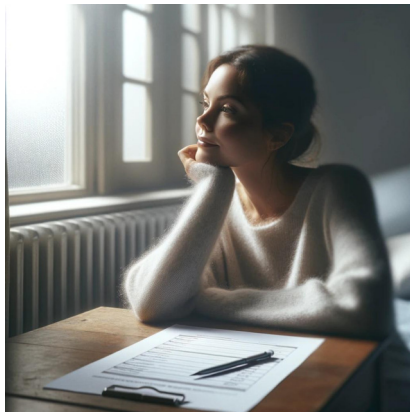
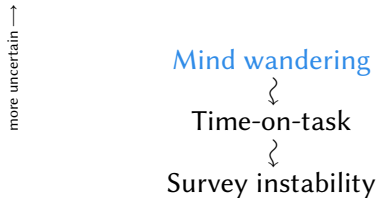
Time-on-task  
↓  
Survey instability



Time limitations  $\leadsto$  randomly different survey responses

# The Source of Respondent Variability

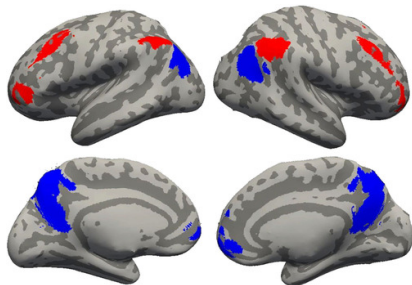
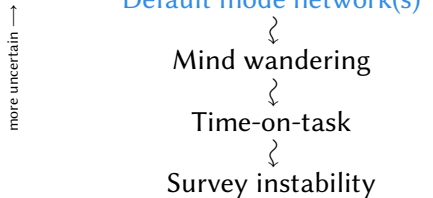
(The “Causes of Effects” of Survey Instability)



50% of waking hours  
Random: onset, duration, content  
“Attention is an achievement”

# The Source of Respondent Variability

(The “Causes of Effects” of Survey Instability)



- Default Mode Network (DMN)
- Central Executive Network (CEN)

(Figure: Bauer et al., 2020)

Humans are not “attention control machines”

Multiple connected networks, released from outside attention  
~> random mind wandering

# The Source of Respondent Variability

(The “Causes of Effects” of Survey Instability)

Evolutionary optimization

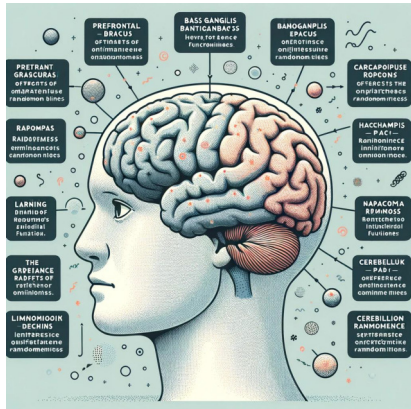
“Default mode network(s)”

Mind wandering

Time-on-task

Survey instability

↑ more uncertain



Randomness may be an evolved (optimized) feature, not a bug  
(Figure: hallucinated by DALL-E)

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# An Experimental Platform

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- Problems

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# An Experimental Platform

- **Problems**
  - “no material changes” & “no memory” assumptions conflict
  - Previous research: separate surveys months apart  $\rightsquigarrow$  sample attrition  $\rightsquigarrow$  more assumptions
- **Solutions**
  - **Build on:** Clayton et al. (2024)

# A Binary Choice Conjoint Question

(Ono and Burden, 2018)

Please carefully review the two potential candidates running for election to the U.S. House of Representatives, detailed below.

	Candidate 0	Candidate 1
Race/Ethnicity	Hispanic	Asian American
Age	52	60
Favorability rating among the public	70%	34%
Position on immigrants	Favors giving citizenship or guest worker status to undocumented immigrants	Opposes giving citizenship or guest worker status to undocumented immigrants
Party affiliation	Republican Party	Democratic Party
Position on abortion	Abortion is not a private matter (pro-life)	Abortion is a private matter (pro-choice)
Position on government deficit	Wants to reduce the deficit through tax increase	Wants to reduce the deficit through tax increase
Salient personal characteristics	Really cares about people like you	Really cares about people like you
Position on national security	Wants to cut military budget and keep the U.S. out of war	Wants to maintain strong defense and increase U.S. influence
Gender	Female	Female
Policy area of expertise	Education	Foreign policy
Family	Single (divorced)	Married (no child)
Experience in public office	12 years	4 years

If you had to choose between them, which of these candidates would you vote to be a member of the U.S. House of Representatives?

# An Experimental Platform

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  - “no material changes” & “no memory” assumptions conflict
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  - No difference for: Burn-ins, attention checks, distractors

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Please carefully review the two potential candidates running for election to the U.S. House of Representatives, detailed below.

	Candidate 0	Candidate 1
Race/Ethnicity	Hispanic	Asian American
Age	52	60
Favorability rating among the public	70%	34%
Position on immigrants	Favors giving citizenship or guest worker status to undocumented immigrants	Opposes giving citizenship or guest worker status to undocumented immigrants
Party affiliation	Republican Party	Democratic Party
Position on abortion	Abortion is not a private matter (pro-life)	Abortion is a private matter (pro-choice)
Position on government deficit	Wants to reduce the deficit through tax increase	Wants to reduce the deficit through tax increase
Salient personal characteristics	Really cares about people like you	Really cares about people like you
Position on national security	Wants to cut military budget and keep the U.S. out of war	Wants to maintain strong defense and increase U.S. influence
Gender	Female	Female
Policy area of expertise	Education	Foreign policy
Family	Single (divorced)	Married (no child)
Experience in public office	12 years	4 years

If you had to choose between them, which of these candidates would you vote to be a member of the U.S. House of Representatives?

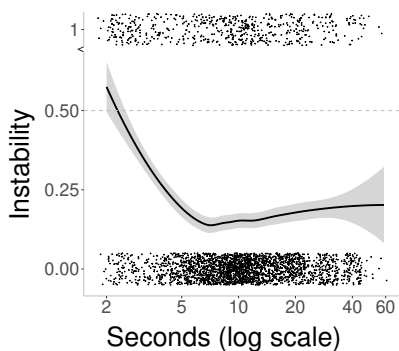
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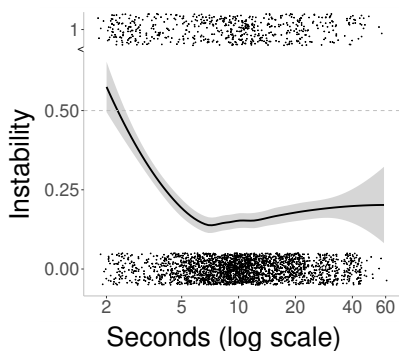
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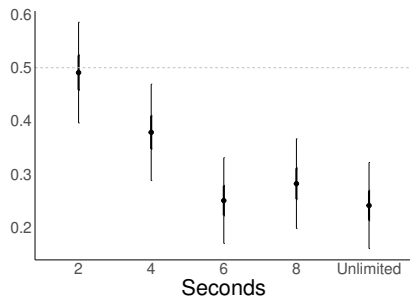
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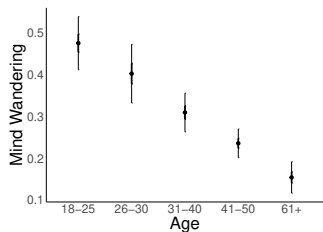
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(b) Experimental

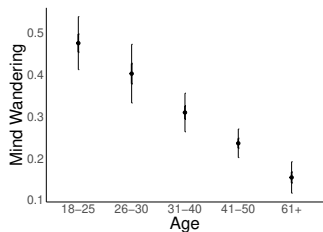
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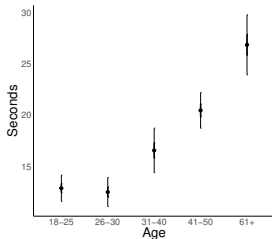


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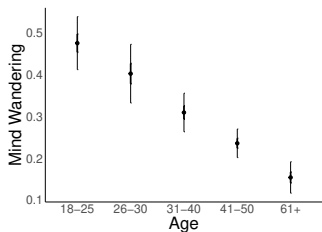


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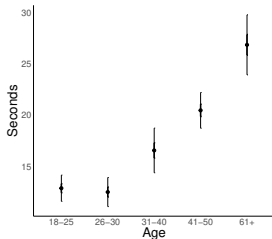


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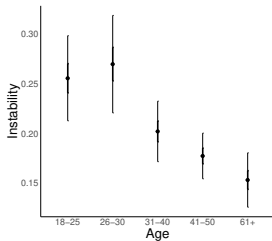
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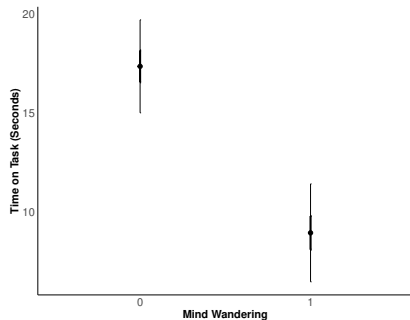
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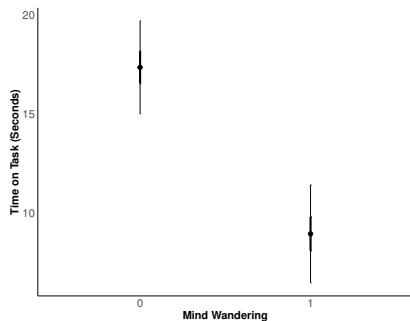
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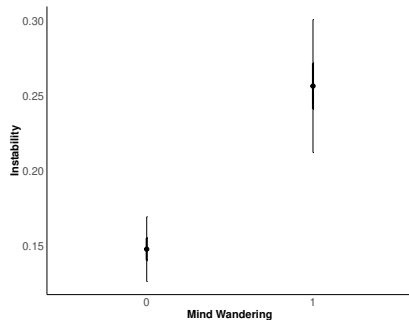


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Slides, data, paper (to come)

GaryKing.org