



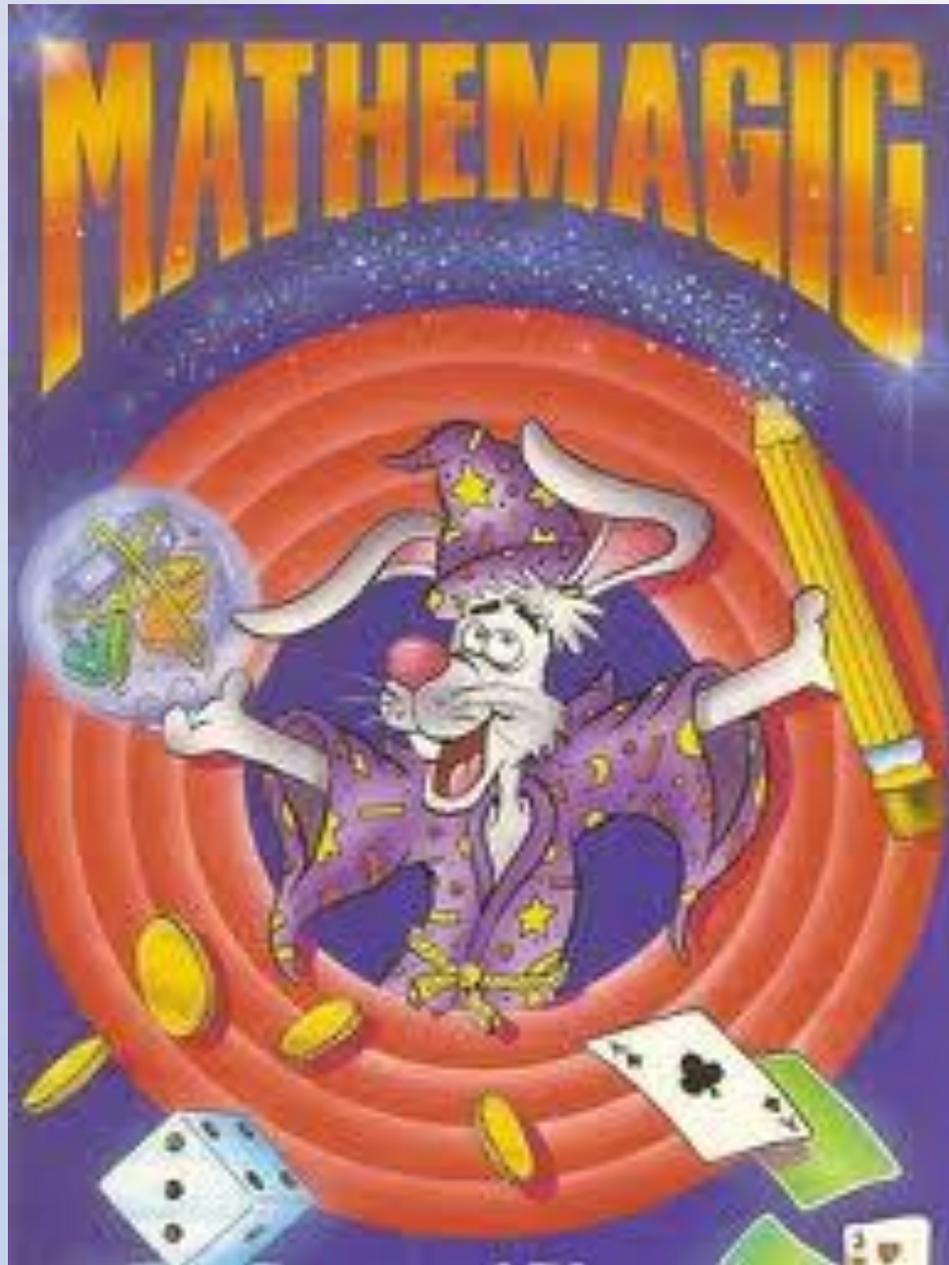
Gaming the System: Inaccurate Responses to Randomized Response Technique Items

Ashley Richards & Elizabeth Dean

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Outline

- Overview of Randomized Response Technique (RRT)
- Evaluating the RRT
- Our research:
 - How well do respondents comply with the RRT?
 - How enjoyable is the RRT?
- Recommendations for future implementations & tests of the RRT

Randomized Response Technique (RRT)

- Heads

Was your father born in October?

- Tails

Have you ever, even once, used any form of cocaine?

Why use the RRT?

- Greater respondent privacy
 - → More honest reporting of sensitive behaviors
- Increased interactivity

Gamification

- Survey = game or challenge
- Competition
 - Respondent vs. other respondents
 - Respondent vs. the clock
- Rewards or feedback

Does it work?

- We can't tell for sure
 - “More is better” assumption
- General belief: RRT works, because it increases reports
- Doubts about the RRT:
 - May increase ALL reports (Holbrook & Krosnick, 2010)
 - 26% noncompliance (Edgell et al., 1982)
 - Could be accidental or deliberate

Inaccurate Responding with the RRT

Question 1: Was your father born in October? (YES)

Question 2: Have you ever, even once, used any form of cocaine? (NO)

- If randomizer says to answer Question 1, my response is Yes.
 - What if the interviewer thinks I've used cocaine?!?
 - I'll just say No...

Research Questions

- Do respondents...
 - Understand the procedure?
 - Follow the instructions?
 - Enjoy the process?

- Conducted research in a virtual world
 - First, gauged comprehension
 - Then, checked for intentional misreporting

Second Life



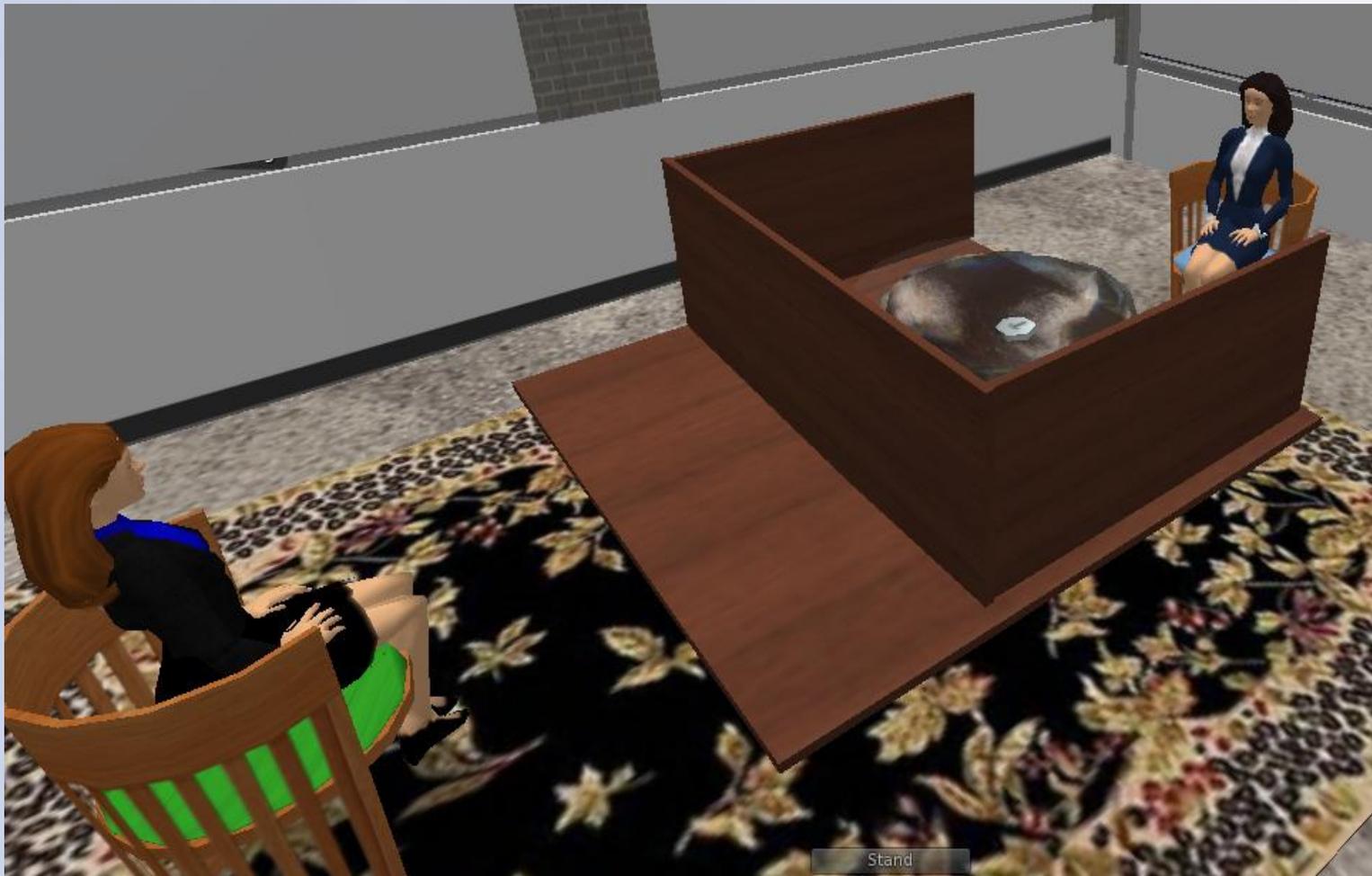
Second Life



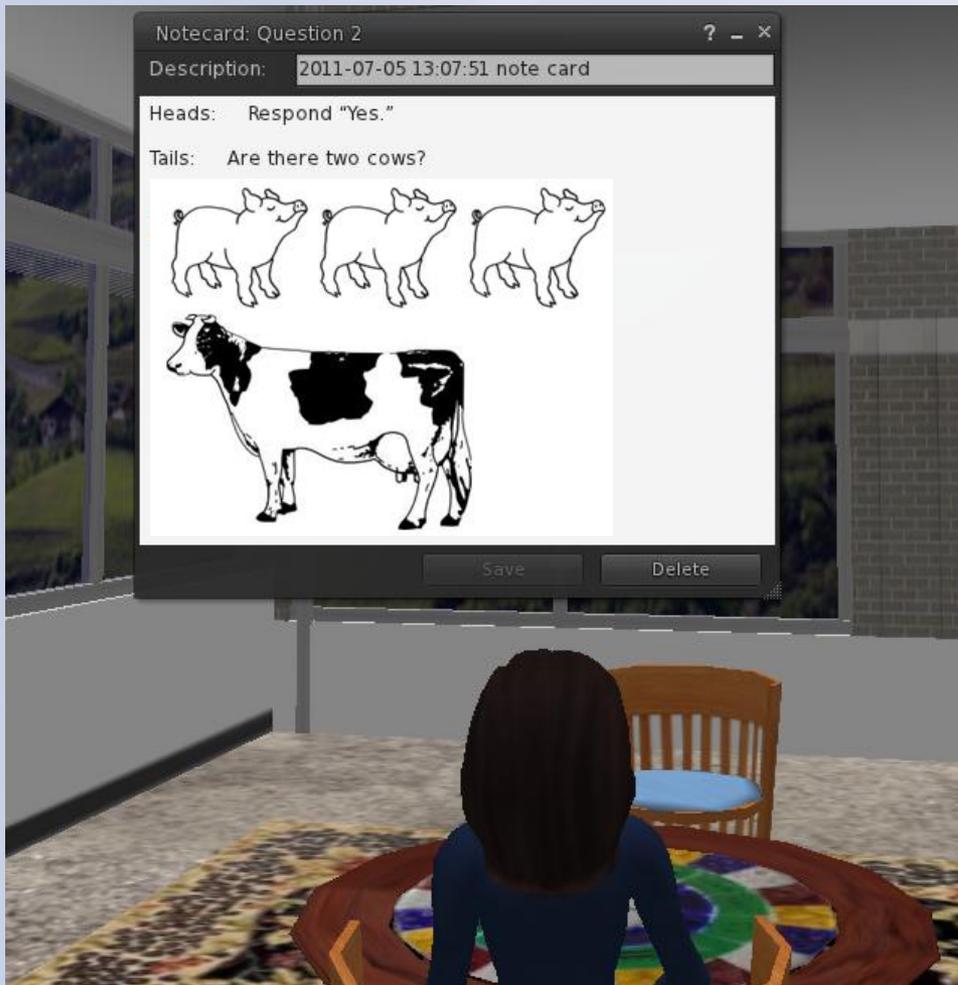
Study Design

- $n = 75$
- 10-item survey (all RRT items)
- Second Life: 3 modes of interview
 - In-person (avatar to avatar)
 - Voice only (avatars in separate rooms)
 - Web
- R flipped coin, but outcome was discretely predetermined by interviewer

Second Life

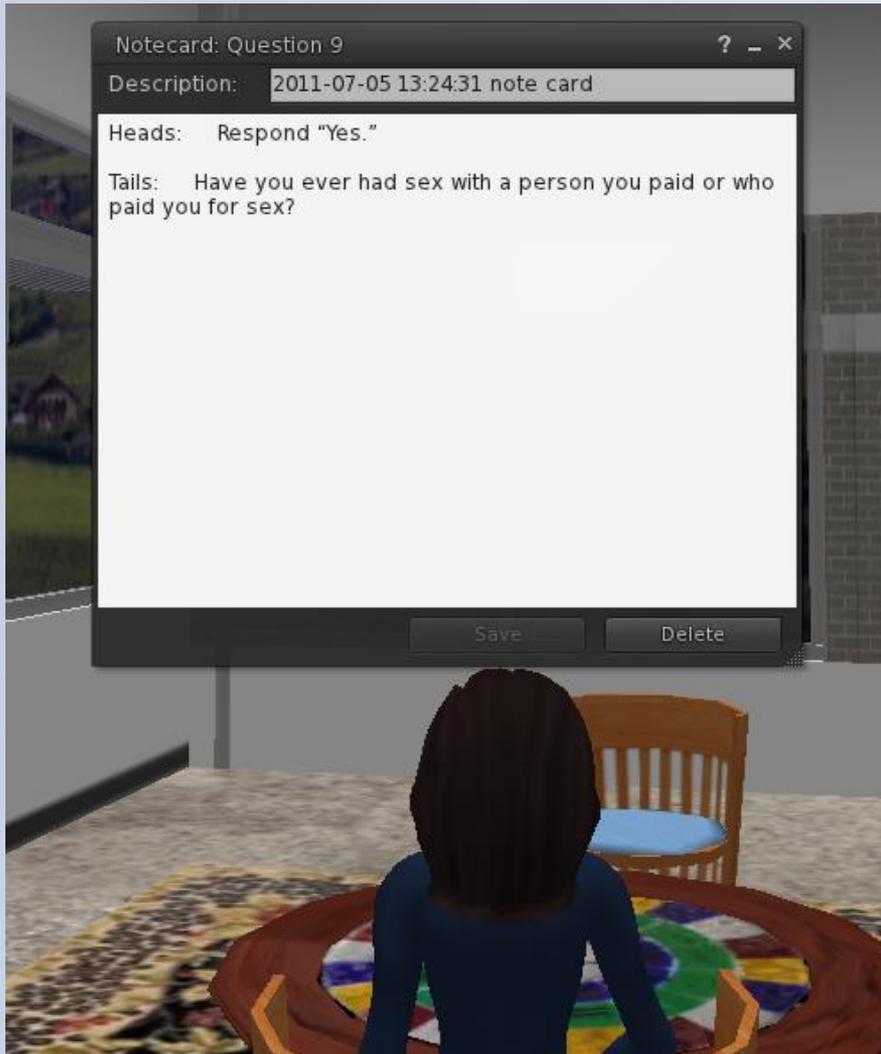


Results: Comprehension



- Asked 2 “understanding items”
- 12% answered one understanding item incorrectly ($p < .01$)

Results: Undesirable Responses (1 of 4)



- Asked 4 “undesirable response items”
- Paid for sex item:
 - Coin was Heads
 - Correct response was Yes
 - After excluding Rs who missed an understanding item, 6% still answered incorrectly ($p < .05$)

Results: Undesirable Responses (2 of 4)

It was difficult not responding as myself to one of the questions, “have you ever paid for sex?” I think it is...

I wanted to say "of course not!" but put the yes down to be a good sport.

Results: Undesirable Responses (3 of 4)

- Belief in God item:
 - Coin was Heads
 - Correct response was No
 - After excluding Rs who missed an understanding item, 12% still answered incorrectly ($p < .01$)



Results: Undesirable Responses (4 of 4)

I was unsure if my answers to some questions would be misinterpreted and cause the results of it to be taken as the wrong answer.

For instance, there was a question, "Heads: Do you believe in God? Tails: answer No." It flipped to tails, so I was forced to answer no, but no is not my answer for the heads question.

Results: Debriefing

(1 of 2)

In surveys such as this one, many people find that it is difficult to answer the right question every time. How about you? How much of the time do you think you answered the question you were supposed to answer, based on the coin flip?

	Self-Report	Actual ¹
Always	84%	67%***
Usually, sometimes or rarely ²	16%	33%***
Never	0%	0%

*** $p < .001$

¹Calculation excludes 2 items whose correct responses are unknown

²Response options were presented separately but are collapsed in

this table

Results: Debriefing

(2 of 2)

- 2 Themes:
 - Why would researchers ask questions like this?!?
 - Enjoyed coin toss
 - 10 specifically described the survey as “fun” and/or “interesting”

“I found it to be an interesting format. I routinely take online polls and surveys for a couple organizations. Yours seemed to involve me more, and require me to pay closer attention than those I’m used to.”

Discussion

- **Key Finding**
 - Respondents enjoyed answering RRT questions, but did not always answer the right question
- **Limitations**
 - Sample size
 - Nonprobability sample of SL users
 - Possibility of interviewer error setting coin flip
- **Impact of Second Life context on results**
 - Is RRT responding in a virtual world generalizable to the real world?
 - How do SL respondents differ?

Recommendations

- Remain skeptical of the RRT in any setting.
 - If respondents don't understand or follow the RRT in SL, they probably won't in real life either.
- Consider alternatives to the RRT
 - Direct questioning?
 - e.g. Crosswise Model (Yu, Tian, & Tang, 2008)
- Use Second Life as a survey lab
- Interactivity and fun do not necessarily mean better methods or better data

Join the conversation!

Contact Me:
Ashley Richards
ashrichards@rti.org



SurveyPost

blogs.rti.org/surveypost

twitter 

@SurveyPost

More Information

Ashley Richards

Survey Methodologist

919.541.8050

ashrichards@rti.org

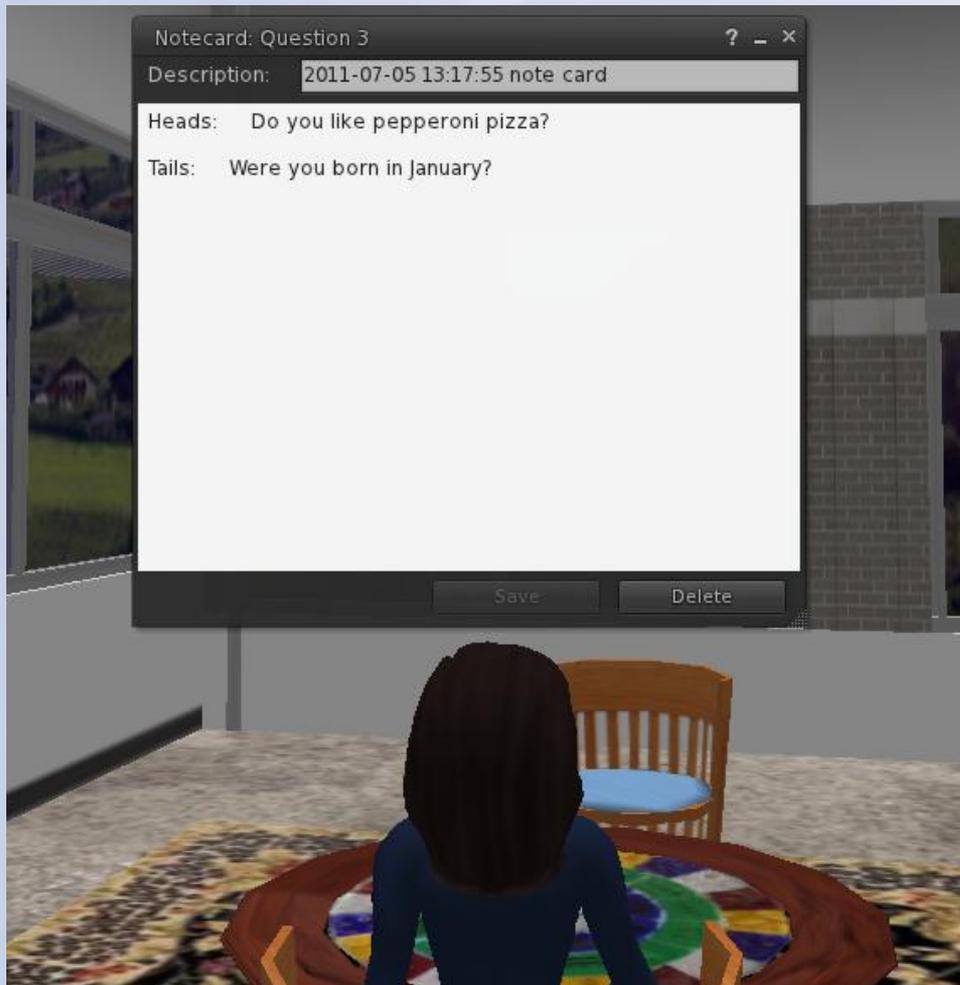
Elizabeth Dean

Survey Methodologist

919.541.7445

edean@rti.org

Results: Comprehension



- Asked 1 “birthday item”
 - Coin flip was Tails
- 8.5% are expected to have been born in January
- 11% responded “Yes”
($p = .73$)

Calculating the sensitive behavior

	Yes	No	TOTAL
Dad's bday in Oct.	$= 1/12(1/2(X+Y))$ (STEP 3)	$= 11/12(1/2(X+Y))$	$= 1/2 (X+Y)$ (STEP 2)
Ever used cocaine	$= X -$ $(1/12(1/2(X+Y)))$ (STEP 4)	$= Y -$ $(11/12(1/2(X+Y)))$	$= 1/2 (X+Y)$
TOTAL	X	Y	$= X + Y$ (STEP 1)

- We know how many people said Yes (X) and No (Y).
- First, we calculate how many people said yes because their dad was born in October (assume randomizer was 50/50)
- The estimated # who used cocaine = Total Yes (X) – Total dad's bday in Oct. $(1/12(1/2(X+Y)))$