MOVING BEYOND THE CONTINGENT VALUATION VERSUS CHOICE EXPERIMENT DEBATE

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- help determine public's preferences
- provide estimates of economic value (for cost-benefit analysis, in litigation processes, etc.)
- are based on surveys
- use various formats

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Respondents vote on a proposed change at a specified cost.

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Respondents indicate their preference among two or more multi-attribute alternatives.

Would you be willing to pay $5 per year for the proposed program of building new hiking and bike trails?

Yes / No

Which program would you prefer?

	Program A	Program B
New hiking trails	None	100 km
New bike trails	None	250 km
Cost per year	$0	$5

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CV and CE are often described as differing in many aspects:

- the number of choice alternatives → only two in CV, any (sensible) number in CE
- the number of choice situations → typically one in CV, several in CE
- the use of attributes → no in CV, yes in CE
- information display → text in CV, table in CE

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- This is why we want to **move beyond the CV vs CE debate** (cf. the title).

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Understudied dimension

Our research question:

Does information display affect respondents' behavior?

Why is it important to study?

- Stated preference methods are of considerable research and policy interest (e.g. natural resource damage assessment). (Bishop et al. 2017)
- Can they provide valid and reliable estimates to inform decision making?
- Many studies tested convergence of estimates from "CV" and "CE".
  (e.g., Hanley et al. 1998; Cameron et al. 2002; Ryan 2004; Jin et al. 2006; Goldberg and Rosen 2007)
  - Evidence is mixed.
  - The comparisons are often not apples to apples (differ in the number of attributes, alternatives, choice tasks, in econometric methods, etc.)
  - The studies did not isolate the effect of information display.

Research design

- An induced-value lab experiment in Z-tree
- July 2017 at the University of Alberta, Canada
- Based on the study of Jacquemet et al. (2016)

Research design

Jacquemet et al. (2016) – **Table treatment**

Characteristic	Token A	Token B
Colour	Yellow	Blue
Size	Large	Medium
Shape	Triangle	Square
Cost	3.00	4.00

Which token would you like to buy?

- ○ Token A
- ○ Token B
- ○ Neither Token

Research design

Text treatment

Two Tokens are available, Token A and Token B. The colour of Token A is yellow, its size is large, and the shape of Token A is triangle. Token A costs 3.00. The colour of Token B is blue, its size is medium, and the shape of Token B is square. Token B costs 4.00.

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Size	Small	$0.50
	Medium	$2.50
	Large	$4.00
Colour	Red	$1.00
	Yellow	$1.50
	Blue	$2.00
Shape	Circle	$1.50
	Triangle	$3.00
	Square	$6.00

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- 9 choice tasks
- Earnings: 10 CAD + balance from a randomly selected choice task (0 – 9.50 CAD)
- Average earning: 16.04 CAD / 30 min; 12 sessions; 58 participants in Table, 57 in Text

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Verification:
Can we replicate the results of Jacquemet et al. (2016)?

Table: proportion (in %) of correct choices by treatment

Exp. 1 *Baseline*	Exp. 2 *Calc.*	Exp. 3 *Paid*	Exp. 4 *Paid+Calc.*	Exp. 5 *Truth*	Exp. 6 *Task*	Exp. 7 *Office*
56.3	61.6	59.9	64.9	78.3	63.7	61.6

PROFIT-MAXIMIZING RESPONSES

Probability of a profit-maximizing response

A random effects logit model

Dependent variable – A response: 1 – profit-maximizing, 0 – not

	Coefficient (St. Error)	
Text	-0.131 (0.358)	← No influence of the information display
Responded in up to 20 sec	-1.134*** (0.342)	← Lower chance of a profit-max choice for quicker responders
Round	0.115*** (0.043)	← Learning / Experience
Absolute difference in the tokens' value	0.256*** (0.049)	← Easier to make a profit-max choice when tokens differ more
Morning session	-0.617* (0.356)	← Tough mornings
Constant	1.548*** (0.404)	

Note: *** - 1% significance, ** - 5%, * - 10%.

Log-likelihood (constants only) -359.2

Log-likelihood -335.5

Probability of a profit-maximizing response in the first round

A logit model

Dependent variable – A response: 1 – profit-maximizing, 0 – not

	Coefficient (St. Error)
Text	-1.322** (0.557)
Responded in up to 20 sec	-2.135*** (0.802)
Absolute difference in tokens' value	0.215* (0.111)
Constant	1.456*** (0.559)

Log-likelihood (constants only) -57.1

Log-likelihood -49.8

← Lower chance of a profit-maximizing choice in Text

RESPONSE TIME

Quicker responses in Table

	Table	Table	Text	Text
Responded in up to 20 sec	**Yes**	**No**	**Yes**	**No**
Share of participants	21%	79%	5%	95%
Profit-max responses	71%	91%	67%	89%

More rushed responses in Table

	Table	Table	Text	Text
Calculated monetary values	**Yes**	**No**	**Yes**	**No**
Share of participants	83%	17%	75%	25%
Profit-max responses	91%	64%	90%	78%
Average time per response	40 sec	19 sec	48 sec	49 sec

← Similar.

← Even if they did not calculate, they devoted substantial time to figure out the profit-max response, and succeeded in that.

↑
When they did not calculate, they rushed through questions.

- Is it easier to oversimplify the task in Table?
- Hoehn et al. (2010) claim that tabular descriptions can sometimes oversimplify the scenario.

Response time

A random effects linear model

	Means (St. Error)	Interactions with Text (St. Error)
Round	-6.255*** (1.338)	3.819** (1.918)
Round squared	0.556*** (0.128)	-0.482*** (0.182)
Calculated monetary value	20.692*** (5.449)	-21.564*** (7.278)
Absolute difference in tokens' value	-1.285*** (0.305)	-0.076 (0.435)
No time pressure (longest response time in a session)	0.139*** (0.032)	0.044 (0.046)
Constant	26.401*** (7.015)	22.331** (9.681)

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- A non-linear effect of *Round*: Response time decreases to about the 5th round and then starts to increase.
- Calculating monetary values considerably increases response time.
- Shorter response time for a larger difference in tokens' value.
- Longer response time when others answer slowly.

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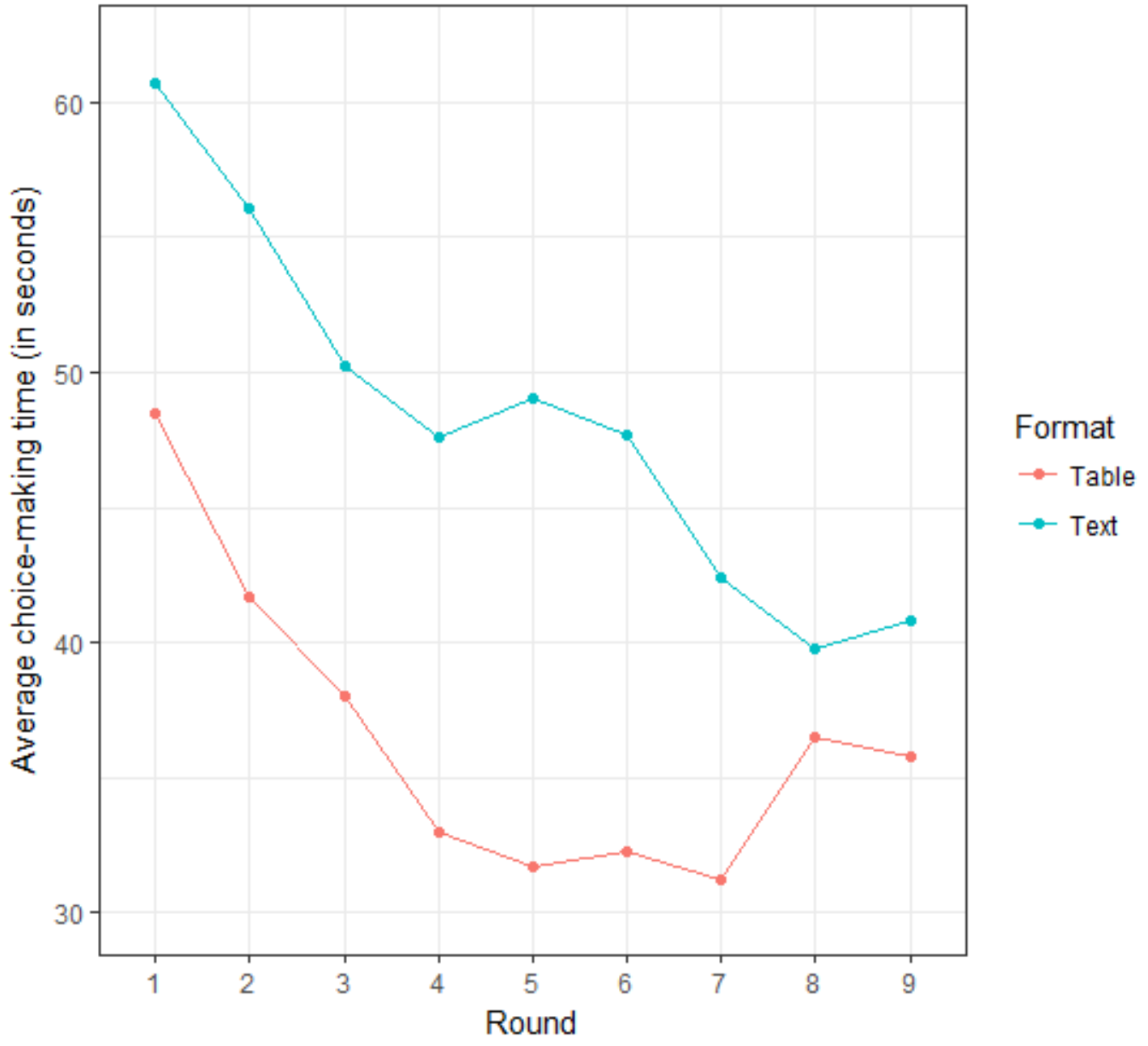
- Response time in Text differs because of differences in the influence of *Round* and *Calculated monetary value*.
- The effect of *Round* on response time in Text is weaker than in Table, and nearly linear.
- Calculating monetary value does not have an effect on response time in Text.

Response time

Divergent effects across the treatments



Findings

1) Information display does not affect the ability to provide a profit-max response.

- Except for the first round in which Text results in a significantly smaller probability of a profit-maximizing response than Table.

2) Information display affects response time.

- Quicker responses in Table.
- More rushed (quick and not-profit-maximizing) responses in Table.
- In Text, response time decreases over rounds.
  In Table, the effect is non-linear: response time decreases until about the 5th round, is constant for a while and starts to increase.

Conclusions

Does information display affect respondents' behavior?

- No, in terms of preference disclosure (except for the first choice task)

- Yes, in terms of response time

Conclusions

Does information display affect respondents' behavior?

- No, in terms of preference disclosure (except for the first choice task)

This is an encouraging result, pointing to convergent validity of "CV" and "CE".

This is important in the light of a ***single*** binary choice question being the recommended format in preference elicitation tasks.

"whatsoever things are true"

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