



Willingness to participate in in-the-moment surveys triggered by online behaviours

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Introduction

Memory error

Surveys, a fundamental tool of empirical research in social sciences...

... but suffer **measurement and representation errors**_[1] → wrong conclusions + implementation of non-optimal policies.

Memory error → major source of error in social science data_[2].

Definition: difficulties to recall data related to events of interest_[3] for researchers, also motivations and feelings_{[4][5]}.

About how we remember

Four major classes of memory problems^[2]:

1. Non-encoding

We may never form a representation of an even in our memory

2. Post-encoding errors

Errors introduced after the original encoding.

3. Retrieval failures

We cannot remember the information that is there.

4. Reconstruction errors

We fill in missing details based on our general knowledge.

Factors that increase the chances of suffering memory errors:

- Many events of the same category (e.g., supermarket visits)
- Low distinctiveness
- Low emotional impact
- Short duration
- Non-rehearsal (time spent thinking or talking about the event).

Online events, severely affected

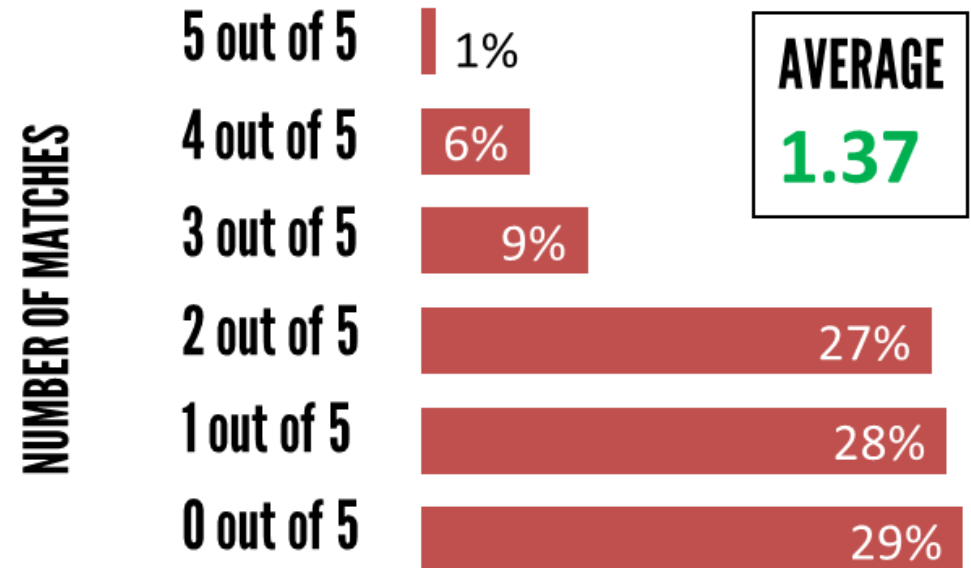
Webs surveys, severely affected by memory errors.

Online events that may be of interest to researchers, such as reading papers, posting on social media or purchasing a product, are characterized by...

1. High repetition of “insignificant” events (low distinctive).
2. Low emotional impact
3. Short duration (sometimes, while doing some other things).

Example: recalling website visits.

RECALL OF LAST 5 VISITED WEBSITES PC [6]



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- TIME!

The effect of time

Time reduces the accessibility to a memory. Several functional forms have been proposed to describe the amount of information retained as time passes [2].

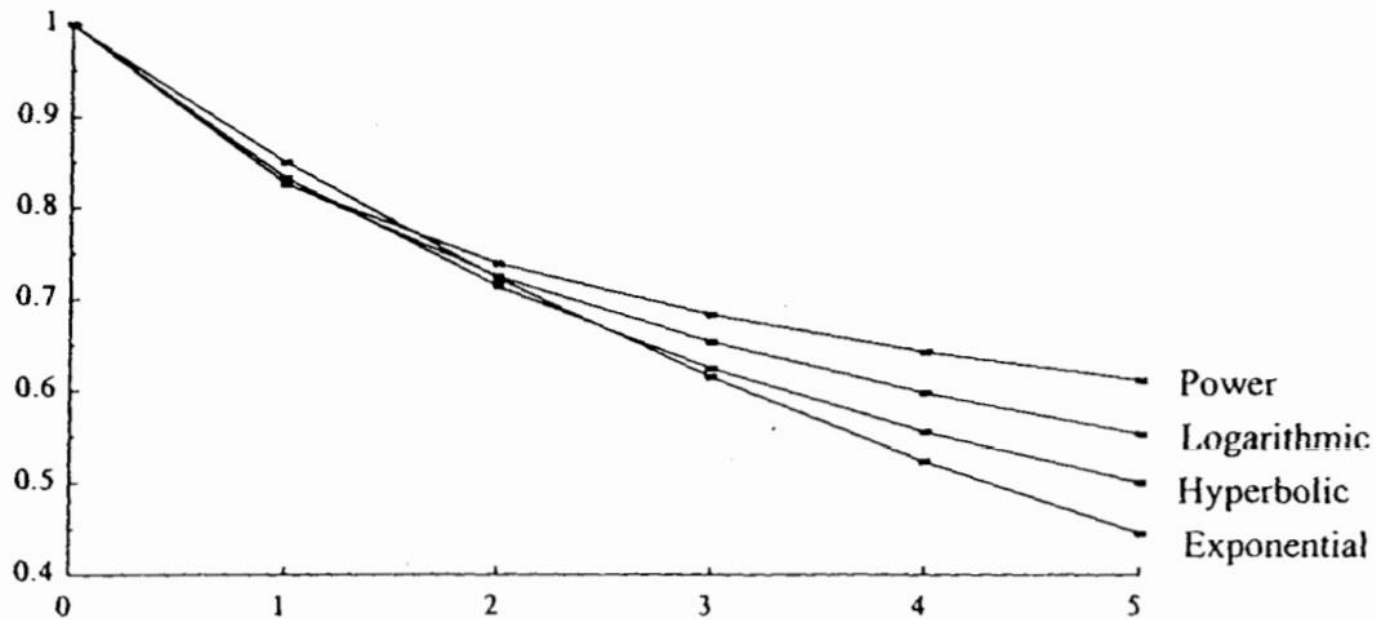


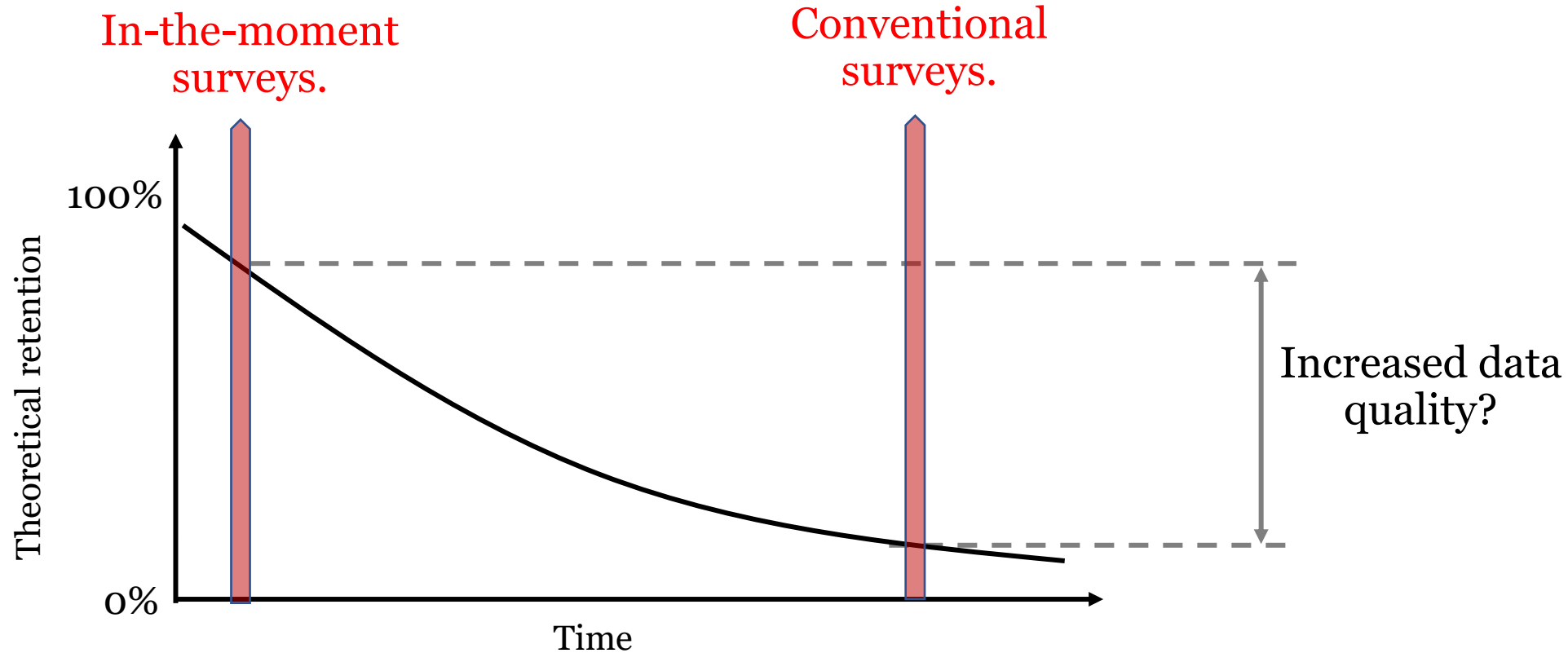
FIG. 3.2. Theoretical retention curves. The four curves demonstrate the similar shapes of the four functions when the key parameters are deliberately set to produce similar predictions.

But all the models have two things in common:

- Forgetting **increases monotonically**.
- Forgetting occurs **rapidly at first, and then slow down**.

In-the-moment surveys

Surveying a sample of individuals **right in the moment** – or short time after – an event of interest happens may reduce memory errors.



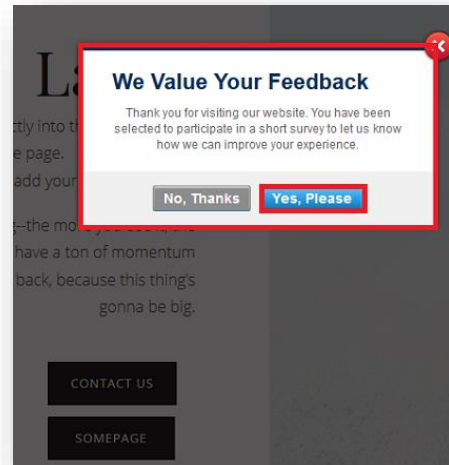
In-the-moment surveys

Existing in-the-moment surveys

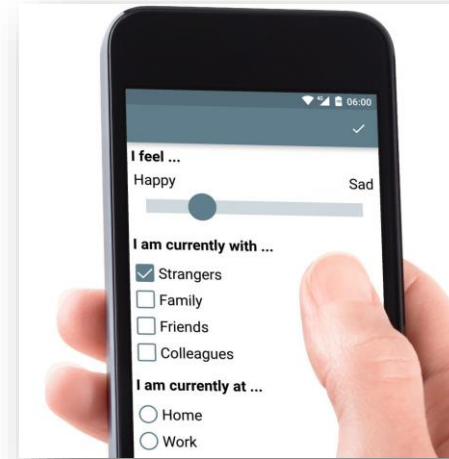
In-the-moment surveys are used nowadays (and were used in the past):



Satisfaction surveys in public transportation.



Online satisfaction surveys.



Experience Sampling Method



Coincidental surveys: “are you listening to the radio?” instead of “did you listen to radio last week?”

Existing in-the-moment surveys

BUT, these in-the-moment surveys correspond to very specific situations where (1) the **detection** of individuals experiencing the event of interest and (2) the **feasibility of surveying** them are particularly **convenient**.

AND,

1. In general, “one-shot” surveys (not allowing follow-up)
2. No control on the sample composition.

Alternatives: passive data

Observing instead of asking avoid memory recall errors. Example:



METER DATA

Installing software (“meter”) on the browsing devices of a sample of individuals to record their online activities.

Online behaviours



GEOLOC DATA

An app installed on the smartphones of a sample of individuals to track GPS information (locations, frequent routes...)

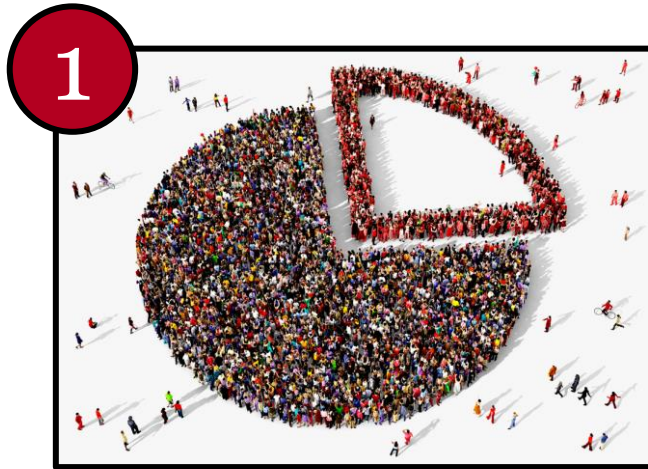
Offline behaviours

But Passive data cannot solve the whole problem by itself.

1. Also affected by **errors**_[7].
2. **Not all objective information** can be recorded.
3. **Subjective information cannot be observed** directly.

New type of surveys: Opt-in online panel + passive + in-the-moment

To overcome existing limitations of conventional surveys and passive data, I propose **a new type of in-the-moment surveys.**



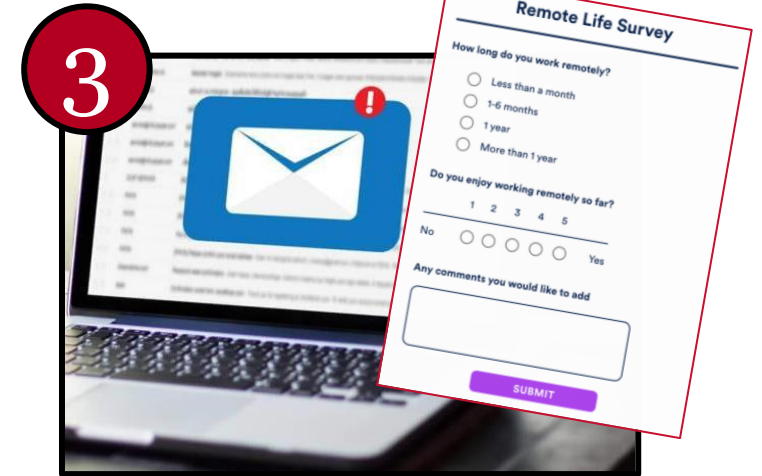
1 Opt-in online panels

Communities of people that voluntarily participate in research activities in exchange of reward.



2 Passive measurement

Some panel members accept to install software in their devices to be tracked → observing behaviours.



3 In-the-moment survey

When an event of interest is detected (e.g., visiting a political party Facebook page) a survey is sent.

Potential use cases

Examples of potential uses of these new in-the-moment surveys triggered by metered data:

FAKE NEWS

Nyhan and Reifler (2018)^[8] used **meter data to research consumption of fake news**: do Trump's supporters read more fake news? Surveys used only to profile participants.



In-the-moment surveys answer:

- “Do you give credibility to this news?”
- “Read this fact-checking information, do you still give credibility to...?”

ONLINE PURCHASES

Netquest (panel provider) is tracking online purchases using metered data (product, price, retailer...).

In-the-moment surveys could answer:

- “Why are you buying this product?”
- “Which alternatives did you consider?”
- “Are you satisfied with the purchase process?”

Research problem

Are in-the-moment surveys triggered by metered data feasible?

In-the-moment surveys should be beneficial for **researchers**, but that is only possible if such surveys are also acceptable for **participants**.

Research questions

RQ1. To what extent are members of a metered panel **willing to participate** in in-the-moment surveys triggered by metered data under different conditions?

RQ2. What are the **main factors influencing the willingness to participate** in in-the-moment surveys triggered by metered data and to what extent?

RQ3. Are there **significant differences in the willingness to participate among panellists** with different profiles (sociodemographic characteristics, attitudes towards social media and surveys, BIG5 personality traits, past experience participating in conventional web surveys and sharing metered data)?

RQ4. What are the **main reasons to participate or not stated** by the panellists?

RQ5. What **invitation methods** panellists would accept to participate? Which ones, among those accepted, they think they would see first?

Literature review

Willingness to participate

In-the-moment surveys triggered by metered data

- Very little previous research: Revilla and Ochoa (2018): pop-up invitation on PC
→ Only 18 participants.

Conventional surveys / additional research tasks

- Social exchange theory applied to survey research (Dillman et al., 2009) : people participate in surveys when they expect and trust the perceived rewards outweigh the expected costs.
- Known factors: required effort, privacy concerns, incentives, interest in the topic, sponsor, panel reputation, sociodemographic and attitudinal variables...
- Willingness to participate in additional research tasks (e.g., sharing sensor data): a lot of variation (11.8% to 73.7%) depending on the task, country and panel.

What can be expected compared to a conventional survey?

Costs

- Accepting and installing “fast” invitation methods
- Interruptions (?)
- Time pressure

Rewards

- Relevance / interest in the topic
- Additional incentives

Trust

- Metered panellists, already sharing sensitive information...
BUT
- In-the-moment surveys could raise awareness

- Expected willingness to participate was unclear.
- **Privacy concerns** and **sensitivity to be interrupted** are expected to play an important role.

Methods and data

Research questions vs methods and data

RESEARCH QUESTIONS

RQ1. Willingness to participate.

RQ2. Factors influencing the willingness to participate.

RQ3. Significant differences among panellists.

RQ4. Reasons to participate or not.

RQ5. Invitation methods.

METHODS

**CHOICE BASED
CONJOINT ANALYSIS
(CBC)**

OPEN QUESTIONS

CLOSED QUESTIONS

DATA

Opt-in online metered panel in Spain (Netquest).

- N=804.
- Quotas on gender, age and education.

Choice Based Conjoint (CBC)

Key element of this research.

Method used to assess the willingness to participate and to what extent different factors contribute to it_[10].

Choice tasks instead of direct questions.

- Originally developed for commercial research.
- Recently become popular also in political sciences.
- The effect on willingness to participate for each factor is estimated by offering random combinations of attributes and analyzing the answers.

Several questions like this one are shown to participants:



Attributes and levels

Attributes/levels to be combined in the CBC Analysis as they are expected to affect the willingness to participate:



Length of the interview

1 min
5 min
10 min
15 min
20 min



Max. time to participate

15 min
30 min
1 h
2 h
6 h
12 h



Incentive level

X 1 (normal)
X 1.5
X 2
X 3
x 4



Online activity*

- Using social media
- Reading online contents
- Watching online videos
- Looking for information.
- Shopping online.

** Participants were also asked to evaluate each activity in terms of privacy concern and sensitivity to interruptions (after the conjoint).*

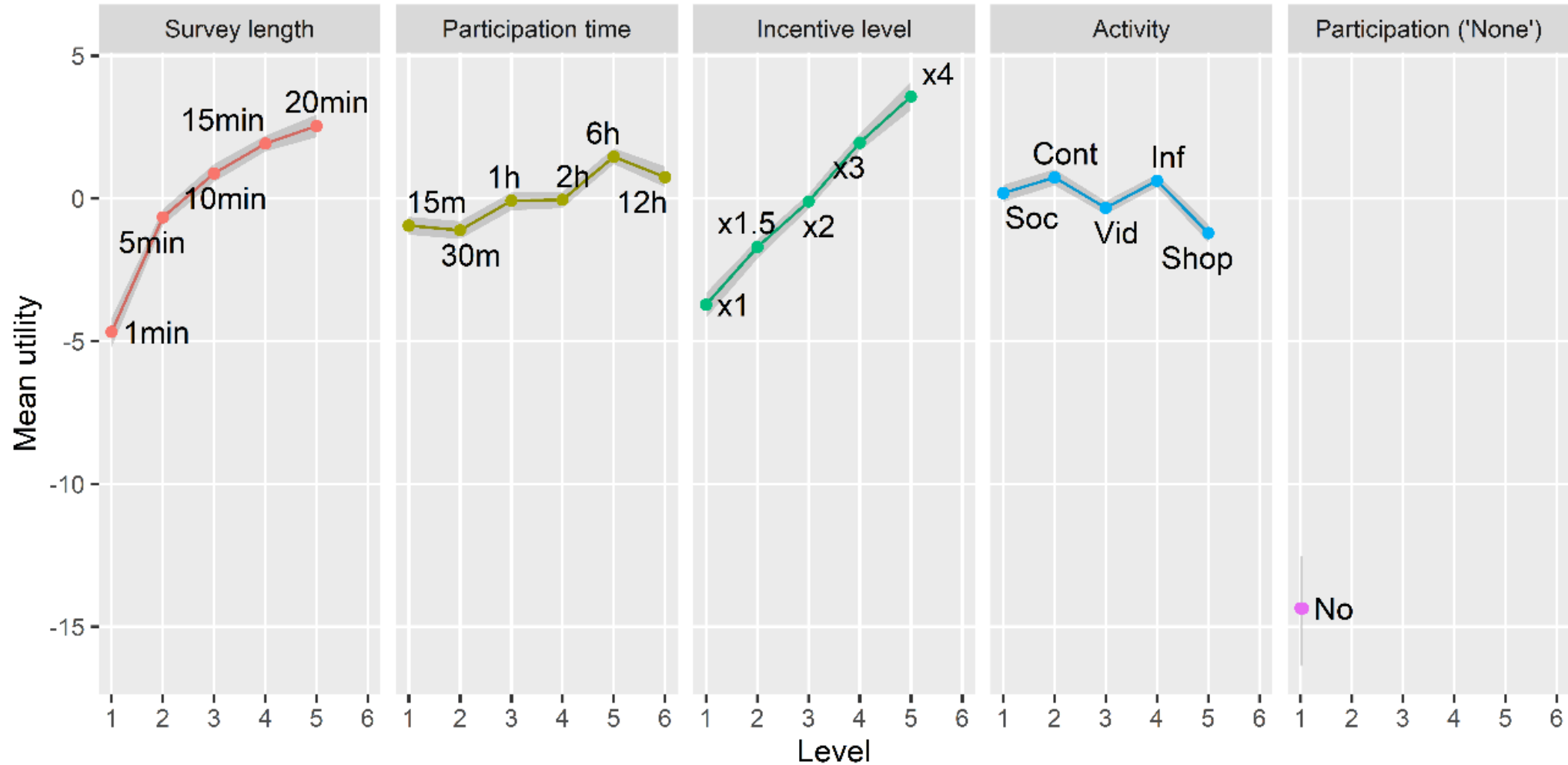
Results

Results

Factors influencing the willingness to participate (RQ2)

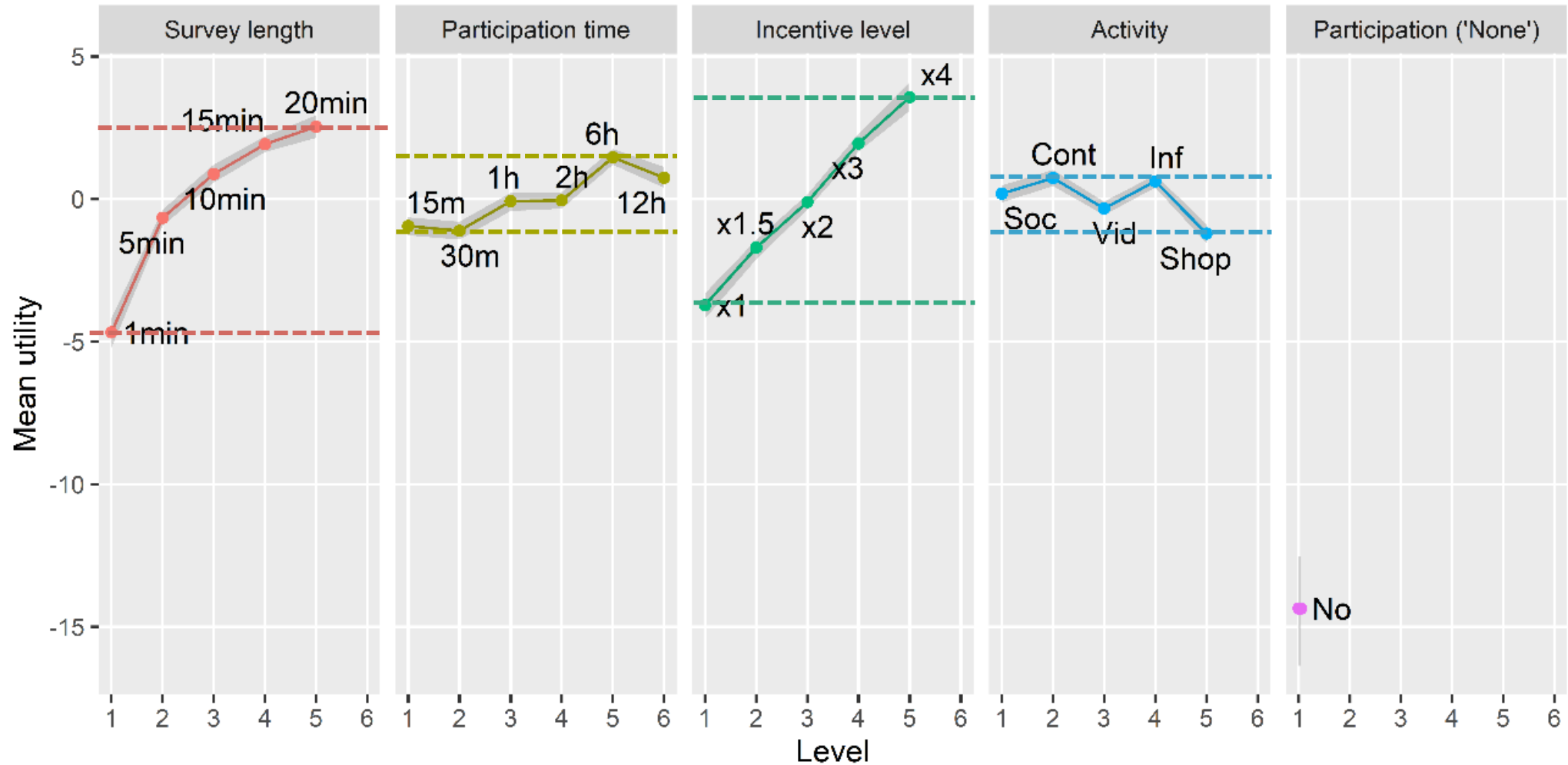
Factors influencing the willingness to participate

Attribute-level utilities



Factors influencing the willingness to participate

Importance of attribute (variation of each attribute over total variation)



Factors influencing the willingness to participate

Importance of attributes

Attribute	Importance (share)	Percentile	
		5th	95th
Survey length	37.7%	35.6%	39.8%
Participation time	13.7%	11.5%	15.8%
Incentive	38.2%	35.9%	40.2%
Activity	10.4%	8.2%	12.8%
	100.0%		

- Incentive level is the most important attribute.
- Survey length is also highly relevant, maybe because it affects the total incentive.
- Participation time and activity, much less relevant.

Results

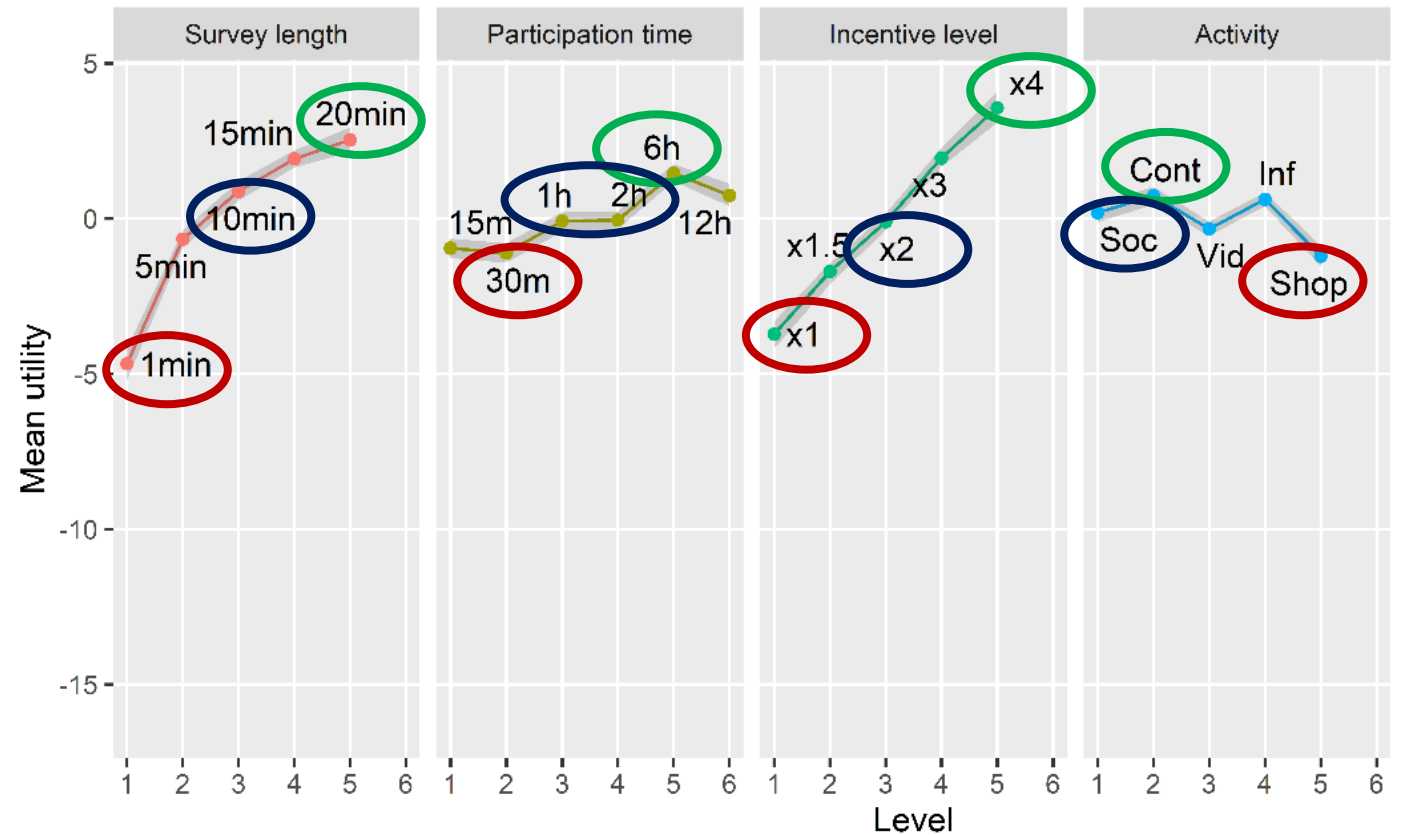
Levels of willingness to participate (RQ1)

Levels of willingness to participate

Explored scenarios

Three different scenarios were explored:

- 1. Best scenario.** Attribute-levels with highest utilities.
- 2. Worst scenario.** Attribute-levels with lowest utilities.
- 3. Average scenario.** Levels with median utility within each attribute.



Levels of willingness to participate

Scenario	Willingness to participate (mean)	Percentile	
		5 th	95 th
Best	94.7%	93.7%	95.8%
Average	93.2%	91.8%	94.6%
Worst	68.5%	63.0%	73.7%

- Overall high levels of willingness to participate.
- The average scenario, very close to the best one.
- Event in the worst scenario, almost 7 out of 10 people are willing to participate.

Results

Differences among panellists (RQ3)

Differences among panellists

	Covariates	Levels	No. of significant differences		
			Utilities	Importance	Willingness
Sociodemographic	Gender	2	0/22	0/4	0/3
	Age	3	5/66	2/12	1/9
	Education	3	16/66	2/12	4/9
	Household size	3	10/66	2/12	3/9
Attitudes	Social media	2	3/22	0/4	0/3
	Survey privacy	2	2/22	0/4	0/3
	Survey safety	2	2/22	1/4	0/3
BIG5 personality traits	Agreeableness	2	0/22	0/4	2/3
	Conscientiousness	2	1/22	0/4	0/3
	Extraversion	2	3/22	0/4	0/3
	Neuroticism	2	4/22	1/4	0/3
	Openness	2	4/22	0/4	1/3
Experience	log(part. in surveys)	3	1/66	2/12	0/3

- Very few differences among groups (main one: Education, Household size, Agreeableness and Openness).
- The differences in willingness to participate are very limited.

Results

Reasons stated by panellists (RQ4)

Reasons stated by panellists to participate or not

Reasons for...

... participating (N=740)

N

Incentive	58.5%
I like sharing opinions	12.6%
I like taking surveys	12.6%
I have available time	12.6%
Other convenient features	12.3%
Shorter surveys	10.5%

... **NOT** participating (n=140)

N

Lack of time	70.0%
Privacy concerns	20.0%
Interruption concerns	16.0%
Not developing triggering activities	8.0%

Results

Invitation methods (RQ5)

Invitation methods

Definition: messaging system (e.g. email or SMS) + participant's device (e.g., smartphone or PC).

Would you accept to be invited to participate in an in-the-moment survey by means of...

- *(Email-smartphone)* ... an email received on your smartphone, activating the instant notification?
- *(Email-tablet)*... an email received on your tablet, activating the instant notification?
- *(App-smartphone)* ... an instant message sent by a Nicequest app installed on your smartphone?
- *(App-tablet)*... an instant message sent by a Nicequest app installed on your tablet?
- *(WhatsApp-smartphone)*... a message sent by WhatsApp to your smartphone?
- *(WhatsApp-tablet)* ... a message sent by WhatsApp to your tablet?
- *(SMS)*... an SMS?
- *(Popup-PC)* ... a pop-up window shown on your PC while browsing?

Invitation methods

Acceptance: $\frac{\text{panellists accepting a method}}{\text{panellists offered method}}$

Coverage: $\frac{\text{panellists accepting a method}}{\text{total panellists}} \approx \textit{Acceptance} \times \textit{Device use}$



Device	Regular use
Smartphone	99%
PC	83%
Tablet	46%

Invitation methods

Acceptance and coverage

Invitation method	No. Accept	N	Acceptance (%)	Coverage (%)
App-smartphone	685	786	87.2	86.3
Email-smartphone	645	786	82.1	81.2
WhatsApp-smartphone	492	786	62.6	62.0
SMS	457	792	57.7	57.6
Popup-PC	400	566	70.7	50.4
App-tablet	267	367	72.8	33.6
Email-tablet	254	367	69.2	32.0
WhatsApp-tablet	162	367	44.1	20.4

Invitation methods

Combined coverage

No. of methods	Invitation method	Combined Coverage (%)	Incremental Coverage (%)
1	App-smartphone	86.3	86.3
2	+ Email-smartphone	91.6	5.3
3	+ Popup-PC	95.1	3.5
4	+ SMS	96.3	1.3
5	+ WhatsApp-smartphone	96.7	0.4
6	+ Email-tablet	97.0	0.3
7	+ App-tablet	97.0	0.0
8	+ WhatsApp-tablet	97.0	0.0

Invitation methods

Invitation methods that would be seen first (“fast” methods)

Method	No. First/No. Accept		Share
	No. First	(%)	(%)
App-smartphone	243	35.5	33.7
WhatsApp-smartphone	204	41.5	28.3
Email-smartphone	123	19.1	17.1
Popup-PC	74	18.5	10.3
SMS	47	10.3	6.5
App-tablet	12	4.5	1.7
Email-tablet	11	4.3	1.5
WhatsApp-tablet	7	4.3	1.0

79.1%

95.9%

Limitations

Limitations of this research

- Differences between **stated preferences** and **actual behaviors**_[11], despite using a conjoint analysis.
- In particular, respondents often produce a positive intention bias when offered with something new_[12].
- Researched focus on metered panellists, in a particular panel and country.
- CBC sensitive to the selection of attributes and levels, specially for importance of attributes.
- Triggering activities = just 5 examples.
- **Experimental research is needed**, but results from this research are needed to design an experiment.

Conclusions

Summary

- Overall high levels of willingness to participate (68.5% - 94.7%).
- Survey duration does not seem to be perceived as a major problem.
- The kind of online activity triggering surveys and the time allowed to participate do not seem to be key (they may be relevant in terms of actual participation).
- Incentives are highly valued by panellists and may be an effective lever to motivate panellists to overcome difficulties.
- No big differences among participants in terms of willingness to participate.
- A combination of invitation methods could be a good approach to maximize coverage while offering fast alternatives. Methods based on smartphones should be prioritized.

This research suggests that in-the-moment surveys on metered panels should be feasible.

However, practical issues may affect the actual participation.

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Thanks!

Questions?

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