Old and new aspects of respondent behavior in SP analysis

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(joint work with Mitesh Kataria and Elina Lampi)

Old and really old aspects of respondent behavior in SP analysis

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Biases, biases and biases

Starting point bias
Hypothetical bias
Enumerator bias
Range bias
Scope bias
Scale bias
Anchoring bias
Status-quo bias
Part-whole bias
Right hand side bias
Left hand side bias
Strategic bias
Compliance bias
Importance bias

Effects, effects, effects

Order effects
Sequencing effects
Demand effects
Learning effects
Fatigue effects
Framing effects
Endowment effects
Payment vehicle effects
Context effects
Non-attendance effects

Why all these biases and effects?

Nature of stated preferences?

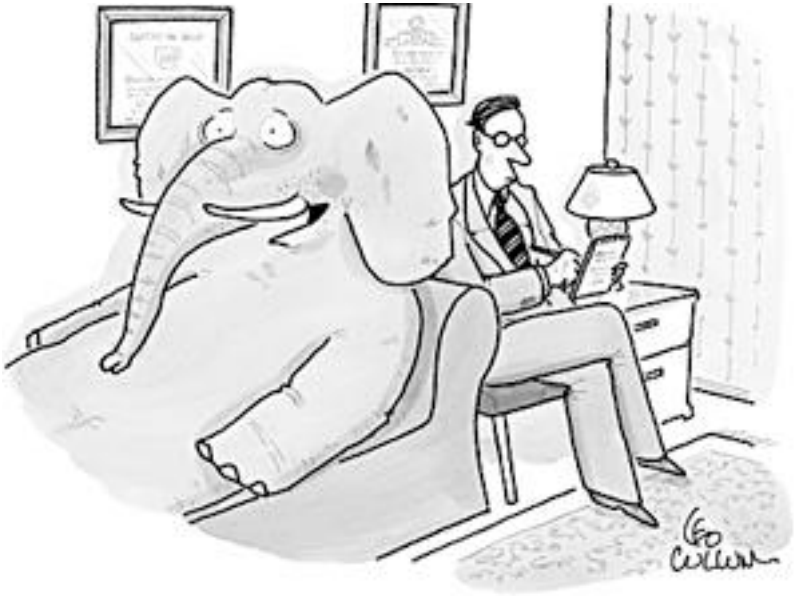
Human nature?

Publication bias?

The elephant in the room according to others?: "Hypothetical bias"

Most obvious concern among economists. Often they will know one or two studies, like Seip and Strand (1992):

> "The results show a rather poor correspondence between hypothetical and actual MWTP, since only 6 out of 64 who stated that they were willing to pay the membership fee in stage 1, actually paid this voluntarily in stage 2."



"I'm right there in the room, and no one even acknowledges me."

The professions' response: type A

The professions' response: type B

Develop ex-ante / ex-post methods to reduce "hypothetical bias": cheap-talk script, oath-script, time-to-think, certainty-calibration, budget reminder, opt-out reminder, inferred valuation, lie detector (later today!)

Often done within SP without real control, but not always. Rather often behavioral science aspects on respondent behavior.

➔ Focus on the scenario but also ex-post analysis

The professions' response: type C

"We design consequential surveys and using standard economic theory we can show that certain response formats are incentive compatible"

Often done with experiments, with real control. Often a standard economic theory aspect on respondent behavior

➔ Focus on scenario itself, and the response format

Note: B and C are partly, but only partly, incompatible.

Problems with the ex-ante / ex-post methods

Empirical evidence is mixed, in particular for scripts such as cheap talk and oath.

Problem with generalizing findings, for example exactly how to write a script, cut-off / weights with certainty questions etc

Some evidence that the effect depends on the choice format (so consequentialism could matter)

Things the consequential approach “ignores”

Ignores a number of differences between the survey situation and the corresponding real situation.

Ignores potential differential effects of deviations from standard economic theory

1. Differences between survey situation and real situation?: What is the real situation?

This will depend on the situation:

- Voting for a PG: real is the voting booth
- Purchase of private goods: real is store, internet etc
- Donations: real is actually giving money in person / through bank account
- Asked about preferences for policy: real is ?? (voting in general, “if the person was in charge”)

But in general:

- Differences in scrutiny
- Differences in learning
- Differences in context: where is the decision made, discussion with others, observation of others, observed by others

Simple lesson from experiments and surveys: all the above factors matters, sometimes a lot.

Thus we should even perhaps expect a difference between a survey situation and real behavior.

This even for a consequential survey.

2. Differential effects of deviations from standard economic theory

Behavioral aspects such as altruism, conformity, status, and inequality aversion affect both stated and actual behavior.

But not obvious that the effects are the same

➔ The role of these factors might explain a difference between stated and real behavior. Not the least if the contexts are different (which they are).

What is needed?

Real and survey situations that are very similar (coming later today!).

A better understanding of the role of norms, scrutiny, learning etc (coming later today!). And an awareness and acknowledgment of the potential importance of these:

both for SP in general

but also for the choice of for example response format

Common sense

Now over to the new thing

What do you want from me?
Demand effects in stated preference surveys

Fredrik Carlsson, Mitesh Kataria and Elina Lampi

Preliminary results, please don't quote

The real elephant in the room: experimenter demand effect

"HONESTLY? I PREFERRED WHEN WE DIDN'T TALK ABOUT THE ELEPHANT"

Experimenter demand effects in experimental economics

Zizzo (2010, Experimental Economics):

> "Experimenter demand effects refer to changes in behavior by experimental subjects due to cues about what constitutes appropriate behavior (behavior 'demanded' from them)."

Cognitive EDE

When identifying the task (through instructions) and deciding, cues about what constitutes appropriate behavior may influence behavior

Social EDE

Social pressure by the experimenter (or peers) - explicit or implicit - through instructions and cues.

Famous examples

Milgram’s experiments involving electric shocks

Hawthorne effect: worker productivity increased when they were part of a sociological study

Cognitive EDE: examples

Framing effects: picture of recipient or not in dictator game (Burnham), use the word tax or not (Baldry)

Choice set: extend dictator game to a taking frame (Bardsley, List)

Social EDE: examples

Rewards presented in public (Ball et al)

Strong cues about what is the appropriate behavior (Branas-Garza): “REMEMBER that he is in your hands”

What is done in experimental economics?

Anonymity when possible (difficult with more complex interactions)

Context free language

Between session and between subject designs (makes objective less clear)

Filler questions (ask about something very different)

But overall: very hard to deal with

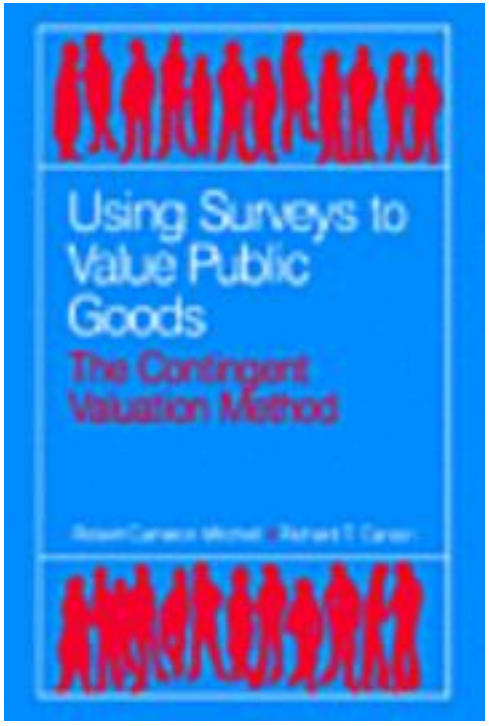
Note: ”Demand effects” exists outside lab and survey situation

Individuals often care about what others are doing for a number of reasons:

- Information
- Status
- Conformity
- Inequality aversion

This information affect their behavior.

This is of course not new….. It was already in the bible



Incentive to misrepresent responses

B. Compliance bias

1. Sponsor bias: where a respondent gives a WTP amount that differs from true WTP amount in an attempt to comply with the expectations of the sponsor
2. Interviewer bias: where a respondent gives a WTP amount that differs from true WTP amount in an attempt to please or gain status in the eyes of the interviewer**.**

Implied value cues

C Relational bias: where the description of the good presents information about its relationship to other public or private commodities that influence a respondents' WTP

D. Importance bias: where the act of being interviewed or some feature of the instrument suggests to the respondent that one or more levels of the amenity has value

Experimenter demand effects in a SP study

Respondents infer from the fact that they are being asked questions about a particular topic that it is important, and in addition that the researcher and related organizations cares about the outcome of the survey.

In particular for a consequential survey

In other words:

- Difficult to not provide cues in the scenario
- Why would you ask me questions about something that you yourself think is unimportant.

What is going on in an SP survey?

1. A focus on a certain environmental problem
Respondents will focus on the problem at hand, and not on other environmental (public) goods. In particular if they "suffer" from mental accounting.

➔ Neutral and objective scenario is important (but hard!)
➔ Important to stress that the public good that is studied is one of many public goods (but will that be sufficient?)

2. Respondents are scrutinized in a way that rarely happens outside survey / lab

Respondent may want to answer in certain ways to (i) signal who they are to themselves, (ii) signal to others who they are, (ii) satisfy the researcher.

➔ Important to stress anonymity etc (rather straightforward)
➔ Important to get them to understand that we don't care what they answer! (how?)

Suggestion 1: Reduce cues by putting the environmental good into context

Explain that there are several environmental problems. Good if they are described as well.

Be explicit that they might as well have been asked about another environmental problem.

Suggestion 2: Tell them explicitly that we "don't care", and want to know what they think

Tell respondents that:

- We want to know what they think, and not what they think others (like experts) think should be done.

In addition

- Follow up question on the scenario to make sure that they understand that the fact that they are being asked about a particular good does not mean that this necessarily is the most important good.

A choice experiment on water quality in Sweden

Choice experiment to measure WTP for improvement in water quality: local (county) and national (Sweden).

In total 4 000 respondents (different treatments)

Web-panel, 50% recruited via phone and 50% self-recruited

6 counties in Sweden (with different levels of water quality)

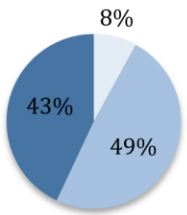
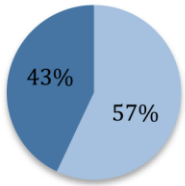
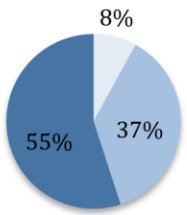
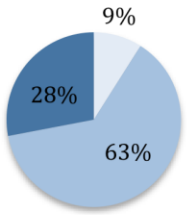
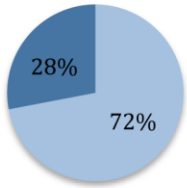
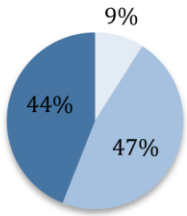
Five attributes:

- Share of local water with low quality (in 12 years)
- Share of local water with high quality (in 12 years)
- Share of national water with low quality (in 12 years)
- Share of national water with high quality (in 12 years)
- Cost: annual cost per household for 12 years

6 choice sets + instructional choice set as warm-up

Choice 1. Choose between these three alternatives for water quality in your county and Sweden in 12 years

	Low quality	Medium quality	High quality

	Alternative A (same as today)	**Alternative B (improved)**	**Alternative C (improved)**
Status in your county and local area in 12 years			
Status in Sweden in 12 years			
Increased cost per year for you and other households during 12 years	0 kr	100 kr per year in 12 years	350 kr per year in 12 years

I choose ☐ Alternative A ☐ Alternative B ☐ Alternative C

Treatments and control

1. Control with Oath script

2. Explicit acknowledgment of alternative environmental problems + Oath

3. Demand script & learning question + Oath

Oath

After instructional choice set:

“You will now make six choices similar to the example. It is very important that the answers are truthful. Hand on heart, can you promise to answer the following question thoughtfully and completely truthfully?”

☐ Yes

☐ No

Substitutes

We begin with talking about the 16 environmental goals the Swedish government has set up. Then we list them all, with a short description.

Then we say that it is impossible to answer questions about all environmental goals and that they have been selected to answer about two goals related to water quality.

Substitutes: the table

Miljökvalitetsmål	Definition
1. Begränsad klimatpåverkan	Halten av växthusgaser i atmosfären ska i enlighet med FN:s ramkonvention för klimatförändringar stabiliseras på en nivå som innebär att människans påverkan på klimatsystemet inte blir farlig.
2. Frisk luft	Luften ska vara så ren att människors hälsa samt djur, växter och kulturvärden inte skadas.
3. Bara naturlig försurning	De försurande effekterna av nedfall och markanvändning ska underskrida gränsen för vad mark och vatten tål.
4. Giftfri miljö	Förekomsten av ämnen i miljön som har skapats i eller utvunnits av samhället ska inte hota människors hälsa eller den biologiska mångfalden.
5. Skyddande ozonskikt	Ozonskiktet ska utvecklas så att det långsiktigt ger skydd mot skadlig UV-strålning.
6. Säker strålmiljö	Människors hälsa och den biologiska mångfalden ska skyddas mot skadliga effekter av strålning.
7. Ingen övergödning	Halterna av gödande ämnen i mark och vatten ska inte ha någon negativ inverkan på människors hälsa, förutsättningar för biologisk mångfald eller möjligheterna till allsidig användning av mark och vatten.
8. Levande sjöar och vattendrag	Naturlig produktionsförmåga, biologisk mångfald, kulturmiljövärden samt landskapets ekologiska och vattenhushållande funktion ska bevaras, samtidigt som förutsättningar för friluftsliv värnas.
9. Grundvatten av god kvalitet	Grundvattnet ska ge en säker och hållbar dricksvattenförsörjning samt bidra till en god livsmiljö för växter och djur i sjöar och vattendrag.
10. Hav i balans samt levande kust och skärgård	Kust och skärgård ska ha en hög grad av biologisk mångfald, upplevelsevärden samt natur- och kulturvärden. Särskilt värdefulla områden ska skyddas mot ingrepp och andra störningar
11. Myllrande våtmarker	Våtmarkernas ekologiska och vattenhushållande funktion i landskapet ska bibehållas och värdefulla våtmarker bevaras för framtiden.
12. Levande skogar	Skogens och skogsmarkens värde för biologisk produktion ska skyddas samtidigt som den biologiska mångfalden bevaras samt kulturmiljövärden värnas.
13. Ett rikt odlingslandskap	Odlingslandskapets och jordbruksmarkens värde för biologisk produktion och livsmedelsproduktion ska skyddas samtidigt som den biologiska mångfalden och kulturmiljövärdena bevaras och stärks.
14. Storslagen fjällmiljö	Fjällen ska ha en hög grad av ursprunglighet vad gäller biologisk mångfald, upplevelsevärden samt natur- och kulturvärden. Särskilt värdefulla områden ska skyddas mot ingrepp och andra störningar.
15. God bebyggd miljö	Städer, tätorter och annan bebyggd miljö ska utgöra en god och hälsosam livsmiljö. Byggnader och anläggningar ska lokaliseras och utformas på ett miljöanpassat sätt och så att en långsiktigt god hushållning med mark, vatten och andra resurser främjas.
16. Ett rikt växt- och djurliv	Den biologiska mångfalden ska bevaras och nyttjas på ett hållbart sätt, för nuvarande och framtida generationer. Arter ska kunna fortleva i långsiktigt livskraftiga bestånd med tillräcklig genetisk variation. Människor ska ha tillgång till en god natur- och kulturmiljö med rik biologisk mångfald.

Demand script

Before instructional choice set

Why is your opinion important?

In this survey it is important that you consider what you think about the water quality in Sweden and in your county. You should also consider if you are willing to pay for improvements and if so how much. Water quality is one of many environmental goals in Sweden. Remember we want your opinion, not the experts. So don’t answer what you think we or other experts think one should do, instead we want to know what you think. There is no right or wrong answer, as long as you answer what you think. Ask yourself this: do I think the water quality is good as it is today, or do I think we would invest in actions to improve the water quality. It is only you that can answer the question about your views given the information you have received.

After instructional choice set

“According to the information in this survey, improved water quality is the most important environmental goal in Sweden

☐ True
☐ False
☐ Don’t know

[After answer show the following text]

The statement is false. Sweden has many environmental goals and it is up to you to decide what goals you think are important.”

Results

Is there a demand effect on expectations?

Responses to question “According to the information in this survey, improved water quality is the most important environmental goal in Sweden”

	Control	Substitutes	Demand (before)	Demand (after)
True	54 %	58 %	52 %	21 %
False	8 %	9 %	14 %	64 %
Don’t know	38 %	33 %	34 %	15 %

Strong demand effect on expectation that does not go away completely by the script and the question.

Demand effect on expectations: Correlation with what?

	Control	Substitutes	Demand (before)	Demand (after)
Age				
- True	0.004***	0.003***	0.001	0.002***
- False	-0.001***	-0.001***	-0.001**	-0.004***
- Don't k.	-0.003***	-0.001	0.000	0.001*
Gender				
- True	0.036	0.008	-0.006	-0.002
- False	-0.071***	-0.038*	-0.049*	-0.019
- Don't k.	0.035	0.030	0.055	0.021
University				
- True	-0.081***	-0.016	-0.049	-0.073**
- False	0.043***	0.069***	0.030	0.162***
- Don't k.	0.038	-0.053	0.019	-0.089***
Income				
- True	0.005	0.004	0.007	0.012
- False	-0.002	-0.004	-0.013	-0.011
- Don't k.	-0.003	-0.000	0.006	-0.002

Econometric analysis of SP responses

Simple LCM model with three classes with no restrictions.
Separate models for each treatment.

	Control	Substitutes	Demand script
	Class 1: "Traders"		
Expected signs Neg. status-quo	63 %	69 %	71 %
	Class 2: "Changers"		
Neg. status-quo Negative cost Other varies	26 %	22 %	21 %
	Class 3: "Opt-outers"		
Pos. status-quo Neg. cost some Other varies	11 %	9 %	8 %

MWTP results

	Control	Substitutes	Demand script
Low loc.	-16***	-23***	-7*
	(3.3)	(5.0)	(4.0)
High loc.	27***	26***	13***
	(3.4)	(4.0)	(2.3)
Low nat.	-29***	-7	4
	(9.7)	(11.6)	(8.7)
High nat.	34***	31***	18***
	(5.1)	(5.3)	(3.0)

Control vs. substitutes:

- Mixed differences, but also no statistically significant differences

Control vs. demand script:

- Lower MWTP with demand script, and statistically significant differences at at least the 5 % level.

Overall results

Explicit mentioning of substitutes
➔ No difference with control: same demand effect on expectations and similar WTP

Demand script + question
➔ Difference with control: smaller demand effect on expectations and lower WTP
➔ Large differences in WTP (factor 2 for most attributes)

Sources for the difference?

Main source: A large shift from “True” and “Do not know” to “False” on the control question.

➔Higher probability for Class 1 (the “traders”) (from 63 to 71%)
➔Lower WTP in Class 1 with demand script:

	Control	Substitutes	Demand script
Low loc.	-25***	-30***	-13*
	(5.4)	(6.6)	(3.5)
High loc.	40***	36***	19***
	(5.9)	(5.8)	(2.5)
Low nat.	-30***	-6	-1.7
	(14.1)	(14.6)	(9.7)
High nat.	58***	47***	30***
	(8.8)	(7.5)	(3.4)

Discussion

Experimenter demand effects occur in experiments

We argue that they occur in stated preference studies as well

If our script works, the evidence suggest that the demand effect is very strong

Implications?

Further evidence that what we say and what we do in the survey matter.

If we are concerned we do have a suggestion on how to at least limit the effects

Link to hypothetical bias?

- If, I say if, demand effects are smaller in the corresponding real situation then this could be an explanation for the difference.
- But this is not at all obvious