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Scale manipulation in dictator games☆

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ABSTRACT

We let subjects estimate behavior and expectations of others before they play dictator games, and only vary the quantitative scales for their estimates. Our data show that this manipulation may significantly affect economic decisions: dictators who are presented a scale with a higher midpoint transfer on average more than dictators who are presented a scale with a lower midpoint. The effect is stronger and significant in a treatment where dictators are asked to guess the average transfer expected by the recipients, compared to a treatment where they are asked to guess average transfers. Our experiment suggests that scale manipulation can be used in laboratory social interaction to systematically affect specific beliefs and to study their causal effects on behavior.

1. Introduction

Studies from psychology provide evidence that preferences and beliefs need often be constructed, and that the construction process can be manipulated by priming, anchoring, framing and similar techniques to influence information processing (Selten, 1998; Dufwenberg et al., 2011; Kahneman, 2011; Ellingsen et al., 2012; Mussweiler and Ockenfels, 2013). In a study which is probably closest to ours, Schwarz et al. (1985) asked participants questions about their daily television consumption and manipulated the time categories that were presented to the subjects. It turned out that subjects were sensitive to the manipulation: reported TV consumption increased if the scale showed higher categories. Bertrand and Mullainathan (2001) discuss the influence of such cognitive factors on the reliability of answers in survey studies and its implications for economic research. One potential explanation for the sensitivity toward scale variations is that respondents extract information from the scale offered together with the survey question. In particular, the midpoint of the scale might be interpreted as the respective norm in the population, and the endpoints as extremes.[1] In line with this reasoning, previous studies found that the effect of such manipulations becomes weaker or vanishes if subjects have more relevant information available (see Schwarz and Bienias, 1990).

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[1] The effect is related to "anchoring effects" in the sense that economic decisions are sensitive toward exogenously induced reference values (see, for example, Ariely et al., 2003; Bergman et al., 2010; Fudenberg et al., 2012).

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In this study we go beyond survey answers and psychological judgment tasks to investigate whether scale manipulations can also be used as a tool to eventually manipulate *economic behavior* in the laboratory. We do so by looking at dictator game choices, which are not confounded by strategic concerns.

Specifically, we conduct dictator games in which, prior to the actual decision, dictators estimate behavior and expectations of others by ticking values in numeric scales with different midpoints.[2] The previous research suggests that the different scales affect the perceived giving norm applicable to the dictator game. In fact, many studies show that generosity and cooperative behavior are guided by perceived norms (see, for example, Fischbacher et al., 2001; Azar, 2004, 2007; Shang and Croson, 2009; Chen et al., 2010; Fischbacher and Gächter, 2010; Krupka and Weber, 2013). We thus hypothesize that the different scales affect the willingness to give in a dictator game.

Two kinds of manipulable reference standards for giving suggest themselves in the context of dictator games. For one, average behavior of dictators (Krupka and Weber, 2009, Iriberri and Rey-Biel, 2013). Second, the expectation of the recipients (Battigalli and Dufwenberg, 2009). To the extent those standards do affect one's willingness to give, varying an inexperienced dictator's perception of those standards by scale manipulations will show up in the distributions of givings.

Our data show that an upwards shift of the midpoint of the numeric scale indeed moves behavior into the expected direction: dictators tend to transfer more on average when exposed to a higher reference scale compared to subjects who are exposed to a low reference scale. This effect is stronger and significant in a treatment where dictators are asked to guess the average transfer expected by the recipients.

2. Experiment design

We manipulated reference scales in a classroom dictator game (Forsythe et al., 1994) with altogether 320 subjects (business and economics students from two bachelor courses in economics at the University of Cologne). The task of the dictator was to allocate an amount of 10 Euros between herself and an anonymous recipient in the respective classroom. Before they decided about the allocation, dictators had to provide an estimate about the average amount sent by all *dic*tators (our treatment *DI_NORM*) or the average transfer expected by the *re*cipients (our treatment *RE_NORM*). The estimated value had to be ticked in a numeric scale with increasing Euro values. This scale was manipulated in a similar way as in the study by Schwarz et al. (1985). In the low reference condition (*LOW_REF*) the reference scale started with "0 Euros" and increased by 1-Euro increments to "larger than 3 Euros", whereas in the high reference condition (*HIGH_REF*) the respective lowest (highest) category was "smaller than 3 Euros" ("larger than 5 Euros"). Table 1 provides an overview of the scales and wording of the estimation question in both experimental treatments.

Table 1
Wording of the estimation question in the experimental treatments.

DI_NORM: the average rounded amount that A [the dictator] sends to B [the recipient] is:
RE_NORM: the average rounded amount that B [the recipient] expects from A [the dictator] is:

Scale of the *LOW_REF* condition	Scale of the *HIGH_REF* condition
☐ 0 Euros	☐ Smaller than 3 Euros
☐ 1 Euros	☐ 3 Euros
☐ 2 Euros	☐ 4 Euros
☐ 3 Euros	☐ 5 Euros
☐ Larger than 3 Euros	☐ Larger than 5 Euros

After providing their guesses, dictators decided about the amount to be sent to the recipient.

We employed a full 2×2 between-subjects design. Written instructions were distributed to the participants in the classrooms, in which dictators had to fill in their estimates and decisions (see Appendix). The instructions contained a receipt with an individual identification number. After the experiment, we randomly matched a dictator and a receiver and assigned the payoffs according to the dictator's choice. In the next lecture, subjects presented their receipts to the experimenters and received their payoffs in closed envelopes to ensure anonymity.

3. Results

We hypothesized that the higher scale induces higher estimates and subsequently higher transfers. This effect is expected among dictators with no previous experience with the game, who supposedly have no firm belief about what can be expected in this context. As argued in the Introduction, one rationale for the effectiveness of scale manipulation is that the reference scale reveals information about the relevant norm in the population. Therefore, dictators who are uncertain about the amount to be sent should be sensitive toward the signal conveyed by the scale. On the contrary, subjects with prior experience in the

[2] The fact that we elicit beliefs prior to the actual game might by itself influence decisions of dictators (see Croson, 2000, and Gächter and Renner, 2010, for related evidence from dilemma games). However, this effect occurs in all experimental conditions and should therefore not systematically affect the influence of the scale manipulations.