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Expectations and outcome: The role of Proposer features in the Ultimatum Game

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ABSTRACT

In social decision-making individuals make choices in an interactive context and their decisions may therefore be influenced by information they receive about features of the other player. These features may 'frame' the other player in particular ways and generate expectations about the outcome. This research examines the impact of information about the Proposer on the Responder's decision in the Ultimatum Game (UG).

Two-hundred and forty undergraduates played the UG after being provided with different descriptions of the Proposer's (no information, physical description, psychological description). The results show that acceptance rates are significantly influenced by both offer fairness as well as the type of description. These results support the relevance of the expectation effects due to the framing in social decision making.

1. Introduction

Social decision-making often requires us to integrate across many different aspects of the choice scenario. Some of this information may be objective (such as the amount of money discussed in a negotiation), and some information may be more subjective (such as the suspected motivations of our partners). It is well-known that information that is less relevant to a decision, such as how a problem is framed, can influence our choices (Tversky & Kahneman, 1981), but it is less well-understood how background information in social decision contexts can play a role in our choices.

In studies of the Ultimatum Game, where players must choose to accept or reject a one-time offer of a monetary division with a game partner, previous research has shown that knowledge of the alternative offers available to the Proposer can alter the decisions of the Responder (Falk, Fehr, & Fischbacher, 2003). Additionally, physical appearance (Solnick & Schweitzer, 1999), intentionality (Blount, 1995; Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003; Sutter, 2007); morality (Delgado, Frank, & Phelps, 2005) and social roles (Burnham, McCabe, & Smith, 2000; Hoffman, McCabe, Shachat, & Smith, 1994) all appear to play a part in decisions.

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The goal therefore of this study is to examine to what degree the kind of information about the Proposer may have an effect on the decisions in the Ultimatum Game, and to understand how the discrepancy between the offer amount – either fair or unfair – and the psychological features of the Proposer – positive or negative – influences decision-making.

2. Methods

2.1. Participants

Two hundred and forty undergraduates (mean age = 22.51 years, sd = 3.37) at the Università Cattolica del Sacro Cuore in Milan, Italy participated. They were tested in a quiet room in small groups of ten, and were not allowed to communicate. All participants provided appropriate informed consent, and received course credit for their participation.

2.2. Procedure

Firstly, participants were thoroughly instructed as to the nature and rules of the Ultimatum Game. The game itself presented on a printed booklet and participants provided their responses directly on it. Participants played in the role of Responder, receiving a one-time monetary offer from a partner. Prior to playing the game, participants were shown some information about their partner (the partner was always described as being of the same gender as the participant). The information about the Proposer varied across groups, with four levels of description:

1. No information (control condition).
2. Physical description (physical condition): *"Mary/Peter is 20 years old. She/he is tall with brown eyes and dark hair. She/he usually dresses in a serious fashion"*.
3. Brief positive psychological description (generous condition): *"Mary/Peter is a generous and altruistic person. She/he always takes into consideration the point of view of other people, as well as their needs. Mary/Peter thinks that respect and fairness are fundamental values in human relationships"*.
4. Brief negative psychological description (selfish condition): *"Mary/Peter is a selfish and suspicious person. She/he first takes into consideration her/his own goals and own interests. Mary/Peter thinks that ensuring one's own success is a fundamental value in human relationships"*.

Following the description, participants received the offer with respect to a division of 100 Euros (approx $150). Participants were offered either a 'fair' proposal of 40 Euros, or an 'unfair' proposal of 10 Euros.

Eight groups in total were tested, comprised of two sets of offers (fair, unfair) crossed with four levels of partner description (none, physical, generous, selfish) in a between-subjects design.

3. Results

We first conducted analyses on the decision made by the participants in the Ultimatum Game, that is, whether they accepted or rejected the proposals. Fig. 1 shows the acceptance rates across groups.

The binary decision of accepting (1) or rejecting (0) an offer was used as the dependent variable and the condition assigned to participants was coded with an 8-level categorical independent variable. To account for the dichotomous nature and non-normal distribution of the dependent variable, we conducted a logistic regression to model probability of accepting

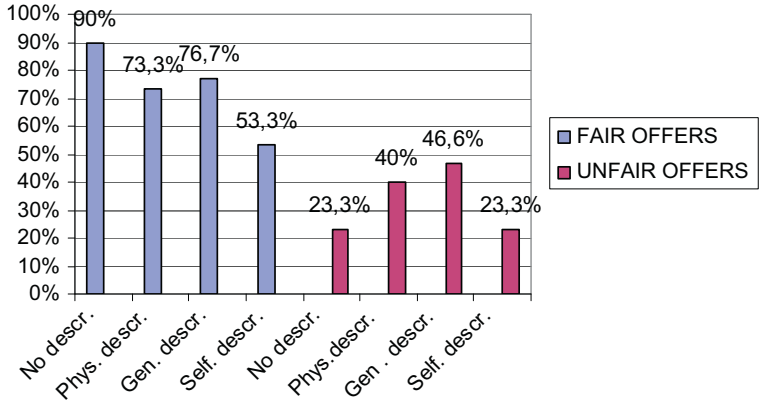

Fig. 1. Acceptance rates for each UG group.

an offer, with condition as the main predictor in the model. The model fit was adequate as demonstrated by the non-significant Hosmer and Lemeshow test of significance ($p = 0.99$; Cox & Snell's $R^2 = 0.21$). The model classified 70% of participants correctly, representing a 31% improvement in hit rate relative to the chance-level hit rate of the intercept-only model (53.3%). Participants' age and gender were not significant predictors in such model.

Seven planned contrasts (referenced to the fair and unfair no-description levels) were further used to assess differences in odds ratio between conditions. In the no-description and physical conditions receiving an unfair offer significantly reduces the odds of accepting the offer (Wald statistic = 20.6, $p < 0.001$; odd ratio = 0.03). In addition, for fair offers, a selfish Proposer description significantly reduces the likelihood of accepting an offer (Wald statistic = 8.45, $p = 0.004$; odds ratio = 0.13). However, a physical or generous description of the Proposer did no significantly change the likelihood of accepting a fair offer ($p > 0.1$). For unfair offers, a marginally significant *increase* in likelihood to accept offers was observed for a generous Proposer description (Wald statistic = 3.48, $p = 0.062$; odd ratio = 2.8). However, receiving a physical or a selfish description of the Proposer did not lead to significant changes in likelihood to accept an unfair offer ($p > 0.1$).

The odds of accepting an unfair offer relative to a fair offer were reduced in control conditions: absence of Proposer description and physical description had similar effects on acceptance of both fair and unfair offers. The psychological description of partner interacts with the fairness in an interesting way in the incoherent situations. This reflects a biasing effect of the psychological description of the character (selfish and, marginally, generous type): receiving a fair offer from a selfish partner leads to an under-valuation of the offer, thus decreasing acceptance rates of such offers, and receiving an unfair offer from a generous partner leads to an over-valuation of the offer, making it almost 3 times as likely to accept such offers.

4. Discussion and conclusion

Our results demonstrate that there is a substantial effect of the psychological features attributed to the Proposer in the Ultimatum Game in terms of the likelihood that the offer will be accepted by the Proposer. Specifically, the description provided of the Proposer appears to generate a framing effect, particularly in the 'incoherent' conditions where a fair Proposer makes an unfair offer and vice versa, with this effect likely driven by an over- or under-valuation process reflecting the quality of the Proposer description. Of particular interest was the result that the acceptance rates for a selfish partner making a fair offer were statistically indistinguishable from acceptance rates to an *unfair* offer in both the 'physical' and 'no description' conditions. This is quite surprising, as the large difference in monetary amounts between fair and unfair offers would generally lead to a large differences in acceptance rates, but it appears that the description of a partner as selfish can overwhelm even big discrepancies in offer amounts. One explanation for this curious finding is that the description of a partner as selfish has 'raised the bar' for the norm of fairness from this partner, suggesting that an offer has to be even more fair to be recognized as such by the Responder. Recent work has demonstrated that expectations can play a surprisingly important role in how we make social decisions (Sanfey, 2009), and so future studies could usefully examine this question in more detail to build a fuller picture of how expectations may interact with decisions. Analogously, we did not find significant differences between an unfair offer made by a generous Proposer and fair offers made by partners described as generous, selfish or those described physically. In this latter case therefore, it also appears that an unfair offer from a generous Proposer is not perceived very differently than a fair one, suggesting that a generous Proposer must make an egregiously unfair offer for it to be recognized a such.

An examination of the 'physical' conditions, where a irrelevant, non-predictive description of the Proposer is provided, also demonstrated interesting results. Here, people were less likely to accept fair offers, but more likely to accept unfair ones, from a partner described physically, as compared to a baseline of no description. This suggests that a provided physical description may attenuate the effect of the monetary offer itself, perhaps an interesting extension of the "dilution" effect, where the presence of nondiagnostic information dilutes the effect of diagnostic information (Tetlock, Lerner, & Boettger, 1996).

In conclusion, our results demonstrate that people's behaviour often violates the assumptions of monetary self-interest, and do so because they try to make sense of the social interaction they are involved in. Mentalizing about the motivations and rationale of the other player may underlie this, and as such deserves further research attention in the future.

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