Preregistration:
Experimental Comparison of Mediation Procedures

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Abstract

This preregistration describes a laboratory experiment to be conducted at the University of Zurich. The experiment investigates the welfare impact of two mediation procedures. We describe the experimental design, the variables of interest, the hypotheses, and sample size.

1 Design

We use a mediation laboratory experiment in order to study the effectiveness of two different mediation procedures. In each round, participants are paired up (Player 1 and Player 2) and have to select a final option out of seven. The final option will yield certain monetary values according to one of four different preference profiles. There are two different procedures, implemented in a between-subject design, to select one final option.

The first procedure, "Shortlisting" (SL; de Clippel et al., 2014), is a simple mechanism in which Player 1 sends a shortlist of only 4 options out of 7. Then Player 2 chooses the final option of this list of 4 options.

The second procedure, the "Compromise Rule of k Names" (CRK; Barberà and Coelho, 2022) has two additional steps. First, Player 1 chooses the length of the shortlist (between 4 and 7 options). Second, Player 2 decides who sends the shortlist (Player 1 or Player 2). Third, the chosen player sends the shortlist of the announced length to the other player. Fourth, the other player (who did not send the shortlist) then chooses the final option.

Participants are split into groups of 4. Within a group, and for each preference profile, each participant plays as Player 1 and as Player 2 against each other group member. That means a participant plays 6 times in a group with the same preference profile. All interactions for a preference profile take place in a consecutive block, followed by the next block until all 4 preference profiles are played. In total, each participant plays 24 rounds.

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Table 1: Preference Profiles for Player 1 and Player 2.

	Player 1	Player 2			
CHF	All Profiles	Profile 1	Profile 2	Profile 3	Profile 4
36	a	d	f	d	f
30	b	g	g	b	c
24	c	a	d	a	b
18	d	c	c	g	a
12	e	e	a	e	d
6	f	f	b	f	e
0	g	b	e	c	g

This means that, for each profile, within each group there will be twelve interactions (games). For each particular round, players do not know the identity of the opponent within the group, but they know that they are matched within a group of four.

Additionally, there will be practice trials where participants play against (predetermined) decisions from a fictitious opponent. Practice trials are not paid.

The four preference profiles assign the seven options for Player 1 and Player 2 to monetary values from 0 CHF to 36 CHF in steps of 6 CHF (see Table 1). The earnings will be the payment from one of the 24 rounds (randomly selected) plus an additional show-up fee of 12 CHF.

2 Hypotheses

The main goal of the study is to investigate different mediation procedures. Specifically, we ask whether the two procedures described above lead to different outcomes.

All hypotheses are profile-specific, i.e. there will be a separate test for each profile: $1, 2, 3, 4$

Hypotheses H2a,b rely on the Unanimity Compromise Set (Barberà and Coelho, 2022). Hypotheses H3a,b rely on the following notion of fairness, derived from Sprumont (1993) and Kibris and Sertel (2007). For each outcome of each game, the *fairness of the outcome* is the minimum across both players of the number of options that are strictly worse than the outcome (a larger number indicates higher fairness).

(H1a) For profiles 1 and 2, SL will more often lead to subgame perfect equilibrium outcomes than CRK.

(H1b) For profiles 3 and 4, CRK will more often lead to subgame perfect equilibrium outcomes than SL.

(H2a) For profiles 1 and 2, SL will more often lead to outcomes that belong to the Unanimity Compromise Set than CRK.[1]

(H2b) For profiles 3 and 4, CRK will more often lead to outcomes that belong to the Unanimity Compromise Set than SL.

[1]For Profile 1, the SPE outcome of both procedures coincides and is the only element in the Unanimity Compromise Set. Hence, Hypotheses (H2a) and (H1a) are the same for this profile.

(H3a) For profiles 1 and 2, outcomes will be fairer under SL than under CRK.

(H3b) For profiles 3 and 4, outcomes will be fairer under CRK than under SL.

Summarized reasoning: (H1a,b) SL is easier to understand and play than CRK. Along the lines of de Clippel et al. (2014), however, SPE outcomes will be less frequent when they are not in the UCS.

(H2a,b) The CRK equilibrium outcome always belongs to the Unanimity Compromise set. This property is not satisfied by the SL. However, for profiles 1 and 2, the SL equilibrium outcome does belong to the Unanimity Compromise Set, and this method is easier to understand and play than CRK.

(H3a,b) The subgame perfect equilibrium outcome of CRK is an ordinal maximin alternative. However, under profiles 1 and 2, the SL equilibrium outcome is also an ordinal maximin alternative, and this method is easier to understand and play than CRK.

3 Main Outcomes and Statistical Analysis

The unit of observation is the set of 12 games (for a fixed profile and mediation procedure) played by a matching group of 4 participants. The main outcomes (variables) are as follows.

- For H1a,b: Proportion (out of 12) of games where the outcomes agree with those of subgame perfect equilibria.
- For H2a,b: Proportion (out of 12) of games where the outcomes belong to the Unanimity Compromise Set.
- For H3a,b: Average (over the 12 games) of the fairness measure of the outcomes.

The variables are always indexed by matching group, preference profile, and mediation procedure. That is, for each treatment (mediation procedure), there is one value for each matching group and preference profile.

Each hypothesis will be tested using a non-parametric, between-subject rank-sum test (Mann-Whitney-Wilcoxon), where the variables are as given above. That is, there will be a test for each preference profile, comparing the variables across mediation procedures.

4 Sample Size

Each individual, independent observation corresponds to a group of 4 participants. We will run sessions with 36 invited subjects each until we have at least 67 (group) observations for each treatment, which means 134 groups for a total of 536 participants.

This sample size ensures at least enough power (0.8) to find a medium effect size (0.5) for our hypotheses. The sample size is calculated using G*Power (Faul et al., 2009).

References

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