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## Acceptance of collective decisions: An experimental study using the mind game and scales of short-run affective state

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**Acceptance of collective decisions**  
**– an experimental study using the mind game and scales of short-run affective state**

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**Abstract**

We run an experiment on the impact of involvement and outcome favorability on the acceptance of collective decisions. It involves 763 students at the Poznan University of Economics and Management. The collective decision chooses one out of four projects to improve students' study conditions. We measure acceptance by their behavioral and affective response to the decision using the mind game and psychological scales of short-run affective state. We find strong support for outcome favorability for both measures: Subjects whose preferences are not aligned with the collective decision cheat more in the mind game and report a less positive affective state after learning about the outcome of the collective decision than subjects with aligned preferences. We find no differences in the level of cheating across treatments that differ in subjects' involvement. Using the mind game, our paper links the experimental studies on the acceptance of collective decisions to the literature on tax compliance.

JEL: D72, D82, H26, C90

Keywords: democratic decision making, experiment, legitimacy, mind game, mood scales,  
tax compliance, Kant

## 1. Introduction

Prosperous societies build on a foundation of complex infrastructure and other high-quality public services. To maintain and further develop this foundation, these societies must make many collective decisions. As these decisions are hardly ever unanimous, modern societies have to rely on the acceptance of public decisions, even among those who disagree (Esaiaasson et al., 2012). Thus, the question what drives acceptance of collective decisions is an important one.

Numerous scholars from different disciplines have addressed this question using surveys and experiments (Esaiaasson et al., 2012; Werner & Marien, 2022). These studies often find subjects' acceptance of collective decisions to depend on the procedure through which the decision is reached: The higher citizens' involvement in the decision, the more likely they are to accept the decision (e.g., Anand, 2001; Esaiaasson et al., 2012; Liu et al., 2020). Moreover, they provide evidence for outcome favorability. Accordingly, acceptance of collective decisions is higher among subjects whose preferences are aligned with the collective decision (Persson et al., 2013; Šerek et al., 2022). While the existing studies differ in a number of important features, they have one thing in common (see the literature review in section 2): The degree to which subjects accept the collective decision is elicited using survey questions) with Likert-like scales.

In this paper, we provide an experimental study on the acceptance of collective decisions that uses two alternative measures of citizens' acceptance. The first measure refers to the behavioral reaction to the collective decision. Specifically, we use the mind game— a variation of the coin-flip task (Jiang, 2013; Shalvi & De Dreu, 2014). It asks subjects to flip a digital coin multiple times, guess beforehand what the outcome of the coin toss will be, and later report the number of cases the guess was correct. Played after the outcome of the collective decision is announced, the mind game gives subjects the chance to express their (lack of) acceptance of the decision by overreporting the number of correct guesses and thereby redirecting funds from the common pool to their own private pocket. We use the number of reported correct guesses in the mind game to measure the (lack of) acceptance of the collective decision.

The idea to use the mind game was inspired by empirical studies on tax compliance (Alm et al., 1993; Cullen et al., 2021; Hunt et al., 2019). They show that the willingness to evade taxes is higher among citizens whose preferences are not aligned with the current government. We argue that extracting rents from the common pool by cheating on the mind game in our experiment closely resembles the evasion of taxes in real life. Thus, the mind game captures a behavioral response to collective decision that is politically important yet received little attention in the literature on the acceptance of collective decisions so far.

Next to subjects' behavioral reactions to collective decisions, we capture their affective reaction. Specifically, we measure subjects' short-run affective state right after learning about the outcome of the collective decision using scales widespread in psychology (Mackinnon et al., 1999). The use of these scales is inspired by the previous experimental studies (Konow, 2010)(Bischoff & Krauskopf, 2015). In particular, Bischoff and Krauskopf (2015) show that they are capable of capturing the frustration of subjects who are outvoted in a collective decision. This closely relates to the concept of outcome favorability. Thus, affectivity-scales are a suitable means to measure subjects' acceptance of collective decisions through their affective response.

Our experimental study involved 763 students from the Poznan University of Economics and Business (Poland). Its results can be summarized as follows: Subjects' acceptance of the collective decision does not depend on the level of their involvement: The amount of funds subjects extract in the mind game does not differ between the treatment where subjects themselves vote on the preferred project and treatments in which the collective decision is made by others. At the same time, we find strong support for the impact of outcome favorability: Subjects whose preferences are not aligned with the collective decision extract more funds in the mind game than subjects with aligned preferences. Moreover, we find the short-run affective state to be higher among subjects whose preferences are aligned with the collective decision compared to subjects with non-aligned preferences. Finally, we test whether subjects support to Kant's Categorical Imperative influences their behavior in the mind game. We do not find an unconditional effect but we find Kantian subjects (who adhere for Kant's Categorical

Imperative) to extract less funds than non-Kantian subjects when their preferences are aligned with the collective decision.

The paper proceeds as follows. Section 2 reviews the relevant literature. Section 3 presents the hypotheses and the experimental setup. The results are presented in Section 4 and discussed in Section 5. Section 6 concludes.

## **2. Literature review**

Numerous empirical studies investigate the impact of these two factors - involvement and outcome favorability – on the acceptance of collective decisions (for a recent review, see e.g. Esaiasson et al., 2017; Werner & Marien, 2022). Some authors use survey experiments. They develop scenarios of collective decisions on topics like unemployment insurance (Esaiasson, 2010), tax policies (Niesiobędzka & Kołodziej, 2020), budget cuts (Porumbescu & Grimmelikhuijsen, 2018) or environmental policies (Liu et al., 2020). Subjects are randomly assigned to different treatments that describe different procedures for reaching the collective decision and are asked to assess the legitimacy, fairness or acceptance of the collective decisions. Most of these studies support the notion that involving subjects in the process of reaching the collective decision increases their acceptance of the decision. Some studies also take an explicit look at the acceptance of collective decisions among the losers, i.e. those subjects whose preferences are not aligned with the collective decision, and find evidence for the impact of outcome favorability (e.g., Niesiobędzka & Kołodziej, 2020).

In the context of our paper, the survey experiment by (Gilljam et al., 2009) is particularly interesting: They approach secondary school pupils in Sweden and confront them with hypothetical decision-making tasks on three salient issues, including “how to spend money from pupil fundraising activities [...] on helping children in developing countries, on a school trip, or on an even split between both” (Gilljam et al., 2009, p. 76). The modes of decision-making involved direct voting by students, decisions by the student council (elected by students), and by the teaching staff. They find the acceptance of the procedure of decision making to be higher when pupils are more actively involved. At the same time, the mode of decision-making has little influence on pupils’ acceptance of the decision itself.

In the studies reviewed above, the collective decisions are hypothetical. There are a number of experimental studies in which the collective has material consequences for the subjects (Arnesen, 2017; Esaiasson et al., 2021; Persson et al., 2013). Here, subjects are mostly university students or pupils who decide whether a certain per capita endowment is donated for a charitable purpose or used for their own benefit (e.g., a party after the examination period). The experiments involve different treatments that differ in the extent to which subjects are involved in the above-mentioned decision. For example, (Šerek et al., 2022) use two treatments – one in which subjects vote on the allocation of funds and another treatment in which the decision is made by an expert. The existing experiments use survey questions similar to those used in the survey-based studies to measure subjects' acceptance of the collective decision. They find a systematic effect of outcome favorability on acceptance while there is less support for the impact of involvement (see also the experimental studies reported in Esaiasson et al. (2019) and Werner and Marien (2022)).

While the existing studies differ in method, the subject of the collective decision, and other aspects, they all employ survey question(s) to elicit subjects' acceptance of the collective decisions. The main contribution of this paper is to employ two measures of acceptance that refer to subjects' behavioral and affective responses to the collective decision.

The behavioral response is measured using the mind game – a variation of the coin-flip task (Jiang, 2013; Shalvi & De Dreu, 2014). In the mind game, subjects flip a coin in private a pre-defined number of times. Before tossing the coin, they guess the outcome – again in private. At the end of the game, they report the number of cases in which their guess was correct. As the probability of exposure is zero, subjects are not restrained from cheating by privacy concerns, attitudes towards risk, or other factors that occur if the experimenter can observe whether a subject cheated (Kajackaite & Gneezy, 2017; Parra, 2024). There is evidence that cheating in the mind game in the lab is statistically significantly correlated with other forms of cheating in the field (Potters & Stoop, 2016). Additionally, Gächter and Schulz (2016) showed a strong link between intrinsic honesty, as measured in laboratory experiments, and the prevalence of rule violations at the country level, including corruption, tax

evasion, or political fraud. Given the advantage of a mind game in measuring the intrinsic cost of dishonesty without participants feeling observed (Kajackaite & Gneezy, 2017), it is recognized as a valuable proxy for studying politically relevant cheating in real-world contexts.

To measure subjects' acceptance of collective decisions by their affective reaction, we employ scales developed by psychologists to elicit subjects' short-run affective state. These scales elicit the way an individual feels at the moment (Mackinnon et al., 1999). They are widely used in psychological studies but less widespread in economic experiments (for an exception, see (Konow, 2010) Konow, 2010; Bischoff and Krauskopf, 2015). Bischoff and Krauskopf (2015) compare individual and collective decisions to donate to charity. Their main research question asks whether there is a warm glow from giving collectively. Bischoff and Krauskopf (2015) argue that affectivity-scales are a suitable measure to capture warm glow. They test whether the change in affective state among subjects increases in the amount of their endowment (individually or collectively) donated to a charity helping children in need. They find this effect for individual donations but not for collective donations. Among the subjects who had the option to donate collectively, they find a negative impact of being outvoted on subjects' short-run affective state.

### **3. Hypotheses and experimental set-up**

We run an experiment to test whether subjects' acceptance of collective decisions depends on their level of involvement and on whether or not the outcome of the collective decision is aligned with their individual preferences. Analogous to previous studies, our main hypotheses read as follows.

#### **H1: Involvement and acceptance:**

Subjects exhibit more acceptance of a collective decision if their individual involvement in the decision is higher.

#### **H2: Outcome favorability and acceptance:**

Subjects whose preferences are aligned with the collective decision exhibit more acceptance of the collective decision than subjects with non-aligned preferences.



[Table 1 about here]

We test these hypotheses in an experimental study involving students at the Poznan University of Economics and Business (PUEB). Table 1 presents the stages of an experimental session. While stages B, D and F are directly related to the issue of the collective choice, stages A, C and E elicit other information. In stage B, subjects are asked to imagine that the university provided every student at PUEB with 20 PLN ( $\approx 5$  €) earmarked for improving study conditions at this university. Four projects are proposed for this purpose (see table 2). Subjects are asked to name the percentage of funds to spend for each project. They are informed that this is a purely hypothetical task with no real-life consequences. Later in the experiment, we will use the answers to this question to infer whether or not subjects' individual preferences are aligned with the collective decision in the experiment.

[Table 2 about here]

In stage D, participants are assigned randomly to three different groups (equivalent to three treatments). In each group, subjects are informed that 20 PLN per group member is placed in a group fund that can be used to improve study conditions at PUEB. They are informed that the decision on how to use the money in this group fund is reached during the current experimental session. To this end, one of the four projects in table 2 is chosen for each group. This collective decision applies to all funds allocated to the group. It is important to note that the collective decision refers to up to 20 PLN per group member but not necessarily to the full 20 PLN per member. Subjects are informed about this without explicit information about what happens with the rest. At the same time, it is emphasized that the collective decision will be executed and thus has real-life consequences.

The mode of making the collective decision differs across groups/treatments. Following Gilljam et al. (2009), we use three treatments. In treatment T-VOTE, the collective decision is reached by majority voting among group members. After a majority is reached, subjects are informed about the project chosen. The groups assigned to treatment T-COUNCIL are informed that the collective decision has been made by the student council at PUEB by majority vote. Treatment T-RECTORATE is identical to treatment T-COUNCIL, except for the fact that a collective decision has been made by the university's

Rectorate (again by majority vote). Both groups are informed about the project chosen by the student council or rectorate respectively.

In stage F, subjects play the mind game: In our case, every subject is asked to toss a virtual coin five times. For every coin toss he/she predicts correctly, he/she receives 2 PLN taken from the 20 PLN initially allocated to the group fund for him/her. Before each coin toss, he/she is asked to make a prediction in his/her mind about whether a coin toss would result in a head or a tail. After the coin has been tossed five times, subjects report the number of coin tosses for which their prediction was correct. The screen where subjects enter this information states the project chosen in the collective decision and which committee made the decision. Moreover, it clearly reports the monetary consequences of entering a certain number of correct guesses – both for the subject and for the project (see Table 3).

[Table 3 about here]

We use the number of correct guesses reported by a subject in the mind game as a measure of his/her acceptance of the specific collective decision in his/her group. The underlying logic is the following: The less acceptable a collective decision is in the eyes of an individual, the less likely this individual is to accept its material consequences. One way to circumvent the material consequences is cheating. In our experiment, subjects who do not accept the collective decision have the possibility to over-report the number of correct guesses in the mind game and thereby reduce their individual contribution to an unacceptable decision.

Hypothesis H1 states that acceptance of the collective decision increases in the degree of involvement. Thus, we expect to observe less cheating, and thus, a lower number of reported correct guesses in treatments with higher involvement. In treatment T-VOTE, involvement is high because the subjects themselves decide by majority vote how to use the funds. Thus, they are directly involved in the collective decision. In treatment T-COUNCIL, involvement is lower. They are not directly involved. They do not choose the project themselves but their involvement is merely indirect – through the election to the university council. In treatment T-RECTORATE, subjects are not involved at all – neither directly

nor indirectly. Thus, involvement is absent in this treatment. Using the reported number of correct guesses in the mind game as indicator for acceptance, hypothesis H1 translates into the following prediction.

**H1' (Involvement and acceptance):**

Reported number of correct guesses in treatment T-VOTE

<

Reported number of correct guesses in treatment T-COUNCIL

<

Reported number of correct guesses in treatment T-RECTORATE

Hypothesis H2 translates as follows:

**H2' (Outcome favorability and acceptance):**

The reported number of correct guesses is lower for subjects whose own preferences are aligned with the collective decision than for subjects with non-aligned preferences.

Next to cheating on the mind game, we measure subjects' acceptance of collective decisions by their affective reaction to the collective decision. The result by Bischoff and Krauskopf (2015), reported in section 2, suggests that the impact of outcome favorability on acceptance of collective decisions can be measured using psychological affectivity scales. Accordingly, hypothesis H2 translates as follows:

**H2'' (Outcome favorability and acceptance):**

Subjects whose own preferences are aligned with the collective decision report a more positive short-run affective state after learning about the collective decision than subjects with non-aligned preferences.

We use the PANAS-inventory applied by Bischoff and Krauskopf (2015) to measure subjects' positive short-run-affective state right after they are informed about the outcome of the collective decision (stage E, table 1). The PANAS-inventory provides subjects with a list of five adjectives that describe how one can feel and asks them to state the degree to which they feel this way right now on a 5-point

scale (Mackinnon et al., 1999). The answers are aggregated to derive an indicator for subjects' (positive) affective state (e.g., Bischoff and Krauskopf, 2015).

Of course, we cannot exclude the possibility that differences in short-term affective state reported after the collective decision result from differences that existed before the experimental session started. To control for this, it is necessary to elicit subjects' affective state twice – once before the event of interest and once immediately afterward (e.g., Bischoff and Krauskopf, 2015). In most cases, the same scale is used twice. This is not feasible in our experiment because our experimental sessions take only 15 minutes, while the suggested minimum time between two consecutive elicitations is 20 minutes. Thus, we use the Pick-A-Mood inventory at the beginning of the session (stage A, table 1). Like the PANAS-inventory, it asks subjects to rate their current affective state using a set of adjectives and a 7-point scale [from -3 to +3] (Desmet et al., 2016). The aggregate score on this scale is used to control for the affective state at the beginning of the session.

This study was conducted at Poznan University of Economics and Business (PUEB) during the first week of the Winter Term 2023. The experiment involves eight sessions. Each session was run in a lecture hall at the beginning of a regular lecture. In each lecture, subjects were randomly assigned to the three treatments.<sup>1</sup> Students were informed that they have the chance to participate in an economic experiment (duration  $\approx$  15 minutes) in the course of which they can earn a show-up fee of 5 PLN ( $\approx$ 1.25

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<sup>1</sup> At the start of the experiment, each student was given a strip of paper. This strip of paper contains a link and its equivalent QR code to an Otree online waiting room and information on collecting payment after the experiment ends. An experimenter introduced herself and asked students who wanted to join to visit the link on the slip of paper. A session starts after everyone has successfully logged in to the online waiting room and ends after participants gave the final number of correct predictions report to the mind game. Participants were instructed to come to a designated office in the upcoming week to pick up their payoffs in cash privately. To prevent overmatching participants, we carefully selected various lectures. We joined each class at the beginning of the lectures, ensuring that the lecturers were available. At the commencement of each experiment, we provided a brief explanation of the aims and objectives, as well as the compensation participants could receive for their involvement. Simultaneously, we distributed QR codes that allowed participants to access the virtual environment for the experiment and participants were randomly assigned to the treatments during the experiments. To maintain controlled conditions, we blocked the classroom doors and did not permit anyone else to enter until the conclusion of the experiment. Throughout the experiments, our primary goal was to create uniform conditions. Three team members observed the participants, promptly addressing any technical issues or questions that arose and one team member observed the participants' progress in the virtual environment. Upon completion of the experiment by all participants, we expressed our gratitude to both the participants and the lecturers for their invaluable contributions to the research. Subsequently, we exited the classrooms.

€) plus an additional payoff of up to 20 PLN ( $\approx 5$  €). They were informed that participation is voluntary and communication is prohibited during the experiment. Participants were given the chance to leave if they do not want to participate. This option was only chosen by very few students. The remaining students were handed a paper strip with a QR code that takes them directly to the instructions. The experiment was programmed using OTree (Chen et al., 2016).<sup>2</sup>

#### 4. Results

A total of 763 participants completed the experiment and all questions in the survey. Table 4 provides descriptive statistics for the subjects by treatment. The personal characteristics do not show any differences across treatments. The same holds for their support for Kant's Categorical Imperative (voiced using a 10-point Likert scale), their trust in other people, student representatives, and university authorities at PUEB (each on a 4-point Likert scale), or their affectivity score voiced at the beginning of the experiment.

[Table 4 about here]

Table 5 describes the share of funds allocated to the four projects in the hypothetical task (stage B). We use subjects' responses to this question to develop a measure of preference alignment. Accordingly, a subject is defined as having non-aligned preferences if the project he/she allocates the highest share of funds to is not the project chosen in the collective decision. While this is not a perfect measure, it predicts subjects being outvoted in treatment T-VOTE in 76 percent of all cases.<sup>3</sup>

[Table 5 about here]

The project chosen for treatment T-COUNCIL and T-RECTORATE is based on decisions made by the actual student council and rectorate a few weeks before the experiment. The student council chose project 2 while the rectorate chose project 4. Under treatment T-VOTE, a majority is reached in the

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<sup>2</sup> Full instructions are reported in Appendix A.

<sup>3</sup> Alternatively, we could have installed a purely hypothetical voting task in at this stage. We did not do so because this would have caused massive frustration among those subjects who were to be confronted with collective decisions made by others.

first round in six sessions. Projects 2 and 3 were selected three times each. Run-off elections yield a majority for project 2 in the remaining two sessions.

Table 6 reports the descriptive statistics for the reported number of correct guesses in the mind game, the PANAS-score in stage E, and the share of subjects for whom the collective decisions are not aligned with their individual preferences. The share of subjects whose preferences are aligned with the collective decision is significantly lower for treatment T-RECTORATE while it does not differ across the other two treatments. This is due to the fact that the Rectorate chose a project that was not popular among subjects. The average short-run affectivity score stated after the collective decisions does not differ across treatments. The same holds for subjects' behavior in the mind game: The number of correct guesses subjects reported is approximately 3.2 in all three treatments (see also Figure 1). This markedly exceeds the expected number of 2.5 – indicating that subjects cheated in all three treatments while the degree of cheating does not differ. This suggests that hypothesis H1' is not supported.

[Table 6 about here]

[Figure 1 about here]

In next step, we run multiple regressions to explain differences in the reported number of correct guesses across treatments and subjects and thereby formally test hypotheses H1' and H2'. We use a tobit-regression because the dependent variable is censored in the interval [0,5]. To test for hypothesis H1', we include dummy variables marking the treatments T-COUNCIL and T-RECTORATE (with T-VOTE as the base category). To test hypothesis H2', we create a dummy variable *non-aligned* that takes on the value 1 for all subjects confronted with a collective decision that is not aligned with their preferences (0 else).

We control for subjects' gender and age. This information is elicited in the experimental questionnaire (stage C, table 1). The questionnaire also asks subjects about their adherence to the well-known Categorical Imperative proposed by Immanuel Kant (1724-1804). Accordingly, an individual shall "[...] *act only on that maxim through which you can at the same time will that it should become a universal*

*law*” (Kant, 1907: 88). Given that the Categorical Imperative strictly forbids lying (Carson, 2010), we expect the reported number of correct guesses to be lower for subjects who adhere to Kant’s Categorical Imperative than for subjects who do not. A dummy variable marks subjects who chose a value of 7 or higher on a 10-point Likert scale as *Kantian*. The regression results are presented in Table 7. Standard errors are clustered at session level.

[Table 7 about here]

The baseline specification (column 1) yields a significantly positive coefficient for subjects with non-aligned preferences. The coefficients for the treatments and for Kantian subjects are insignificant. Among the control variables, we find a negatively significant coefficient for male subjects. In column 2, we add the short-run affectivity score reported right before the mind game. The corresponding coefficient is significant at the 10 percent level. The other variables’ performance remains unchanged. In column 3, we add three additional dummies marking subjects with much or very much trust in other people, student representatives, and the university authorities, respectively. We find a negatively significant coefficient for trust in student representatives, and the coefficient for short-run affectivity score becomes significant at the five percent level. The other results remain stable.

Given that the dummy variable for non-aligned preferences may not perfectly measure misalignment with the collective decision, we test the robustness of our results using an alternative measure. This measure (“difference hypothetically preferred - chosen”) represents the difference between the highest share of the budget a subject assigns to one of the four projects in the hypothetical task and the share this subject assigned to the project chosen in the collective decision. This is 0 for all subjects that the dummy “non-aligned” so far marks as aligned with the collective decision (non-aligned = 0). Among those marked as non-aligned, the average difference is 29.3 percentage points. This measure is built on the assumption that the difference in funding shares captures the intensity with which the higher-funded project is preferred. We rerun the models reported in columns 1-3 in Table 7 using this measure instead of dummy for non-aligned preferences. The variable is significantly negative in all models, and the other variables perform as before.

In sum, we find support no support for the impact of involvement (H1'), while the role of outcome favorability (H2') is clearly supported. The coefficient (and a marginal effect of identical size) show that the effect is economically relevant: Subjects whose preferences are not aligned with the collective decision extract 0.5 PLN more than subjects with aligned preferences – other things equal. This is ten percent of the expected value of 5 PLN. A similar effect size emerges for the average value of the alternative measure for non-aligned preferences used in models 4-6.

To test whether the impact of aligned preferences differs across treatments, we extend the baseline model by introducing the interaction of treatment dummies and the dummy for non-aligned preferences. The margin plot does not exhibit any differences across treatments (see figure 2). Next, we interact the dummy, marking Kantian subjects with the dummy for non-aligned preferences. The corresponding margin plot shows a significantly lower reported number of correct guesses for Kantian subjects if their preferences are aligned with the collective decision (see Figure 3). At the same time, there is no difference for subjects with non-aligned preferences.

[Figure 2 & 3 about here]

The study by Persson et al. (2013) on the acceptance of collective decisions and the study on tax compliance by Hunt et al. (2019) argue that trust in the decision-making body has a moderating effect. In our experiment, this refers to the student council and the rectorate. Thus, we interact the trust in student representatives with the T-COUNCIL-treatment and the trust in university authorities with the T-RECTORATE-treatment (see figure 4). The margin plots do not show any significant effects.

[Figure 4 about here]

Finally, we turn to the affective response to the collective decision. Following Bischoff and Krauskopf (2015), we run OLS regression and use the short-run affectivity score as the dependent variable (see table 8). The short-run affectivity score represents the sum of points subjects assign to the five positive adjectives of the PANAS-inventory on the Likert scale. The baseline model contains the treatment dummies, the dummy marking non-aligned preferences, and the short-run affectivity score elicited at



the beginning of the experiment. The dummy marking non-aligned preferences and the initial short-run affectivity score are significantly positive. These results remain stable if we add the Kantian dummy and the subjects' gender and age. In this model, male subjects are found to have a higher short-run affectivity score. As in Table 7, the results do not change if we use the variable "difference hypothetically preferred -chosen" instead of the dummy for non-aligned preferences. In sum, our results clearly support hypothesis H2'', stating that collective decisions have a negative impact on subjects' short-run affective state if their preferences are not non-aligned with this decision.

[Table 8 about here]

## 5. Discussion

Our results show that subjects' behavior in the mind game and their affective responses to the collective decision depend on whether or not the collective decision is aligned with their individual preferences. We find more cheating and a significantly lower short-run affectivity score among subjects with non-aligned preferences. Both results clearly support hypothesis H2 (outcome favorability). At the same time, we find no treatment effects and thus no support for hypothesis H1 (involvement). While the support for H2 is in line with the vast majority of previous experimental studies (see section 2), the lack of support for H1 is only partly in line with the existing studies – especially the survey-based ones (see section 2). (Gilljam et al., 2009) offer a possible explanation. In their survey, high involvement clearly goes along with more acceptance of the *procedure* of the collective decision but less so for its *outcome*. The questions in most other previous studies measure acceptance using questions that at least partly refer to the procedure. Contrary to that, the mind game as well as the SRA scales in our experiment clearly refer to the consequences of the collective decision. In that respect, our results are in line with Gilljam et al. (2009), while they do not contradict the results of other previous survey-based studies.

Our experiment contributes to the existing literature in multiple ways. The main contribution of our paper is to apply two new measures to capture subjects' acceptance of collective decisions. The fact that our results are largely in line with those of earlier experiments strengthens both our and previous

research. From a methodological perspective, our study demonstrates that psychological scales of short-run affectivity can provide additional insights in experimental studies. The same holds for scales that elicit subjects' philosophical views – in particular, their view on Kant's Categorical Imperative. While Kantian subjects do not behave as predicted, their behavior differs distinctly from that of non-Kantians. These behavioral differences between Kantians and non-Kantians have also been found in other contexts (e.g., Bischoff and Krauskopf 2015). Roemer (2015) shows they are important for collective action. To the best of our knowledge, we are the first to link the Kantian Imperative in a mind game. We believe that exploring the role of subjects' adherence to this view in mind games and related games is a promising alley for future research.

By applying the mind game, our experiment relates the literature on the acceptance of collective decisions to the literature on tax compliance. Tax evasion is an immanent analogy to cheating in the mind game: The less acceptable a collective decision is in the eyes of a taxpayer, the more likely this taxpayer is to evade taxes (e.g., Alm et al., 1993; Cullen et al., 2021; Hunt et al., 2019). The fact that we find more cheating in the mind game when collective decisions are not in line with individual preferences provides additional backing for the notion that tax evasion is related to the acceptance of collective decisions and those who are not aligned with these decisions are less willing to contribute to the common cause (e.g., Hunt et al., 2019; Cullen et al., 2021). Our results suggest that this effect exists regardless of whether citizens are directly involved in choosing between policies – e.g., through referenda – or only indirectly involved by voting for representatives.

Our study is not without limitations. Most importantly, our measures for alignment between individual preferences and collective decisions are indirect. We cannot exclude the possibility that a person who assigned the highest share of funds to a certain project A in the hypothetical task actually prefers another project if only one project can be funded. At the same time, the fact that our measure proves correct for more than 75 percent of the subjects in treatment T-VOTE – together with the performance of our alternative measure – clearly indicates that our way of identifying non-aligned preferences is valid. Alternatively, we could have asked subjects in their hypothetical decision to name the most

preferred project. However, this would imply massive frustration for all subjects in treatment T-COUNCIL and T-RECTORATE – especially for subjects with non-aligned preferences. We are convinced that this frustration would have triggered more intense behavioral and affective responses. In that sense, our measure of non-aligned preferences leads to more conservative estimates for the effect of outcome favorability than the above-mentioned alternative.

## **6. Conclusion**

We present an experimental study to test whether acceptance of collective decisions depends on their involvement in the decision and on whether or not the outcome is aligned to their individual preferences (outcome favorability). Unlike earlier studies, we do not measure acceptance using a questionnaire. Instead, we use their behavioral response in the mind game and their affective response is expressed using affectivity inventories from psychology. Both measures support the notion that outcome favorability drives public acceptance, while we find no effect of involvement.

Our results strengthen the results of previous studies that measured acceptance of collective decisions using survey questions. From a methodological perspective, it demonstrates that using psychological scales of subjects, short-run affectivity scales can easily be incorporated in experimental studies and deliver additional insights. Finally, our study points to a link between the literature on tax compliance and the literature on acceptance of collective decisions. Taking a closer look at this link may be a fruitful alley for future research.

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## Tables

**Table 1: stages of the game**

Stage	Element	Treatment-specific
A	Eliciting subjects short-run affective state using the Pick-A-Mood inventory	
B	Hypothetical decision on how to allocate funds	
C	Questionnaire (biodata, beliefs and attitudes)	
D	Collective decision	X
E	Eliciting subjects short-run affective state using the PANAS-ventory	
F	Mind game	

**Table 2: Possible measures to fund through the collective funds**

Nr.	Measures
1	Additional funds for the annual competition for the best master's or bachelor's thesis
2	Scholarships (800-1000 Zloty per student) for study or internships abroad
3	Online access to important standard textbooks
4	Financial support for selected study circles

**Table 3: Screen for reporting the result of the mind game**

Report your outcomes using the form below. Your performance in the coin-flip task determines your individual payoff from the experiment and your contribution to the option:

<Collective decision: Project chosen> <Decision-maker: Student Council/Rectorate/Vote>

- ☐ 0 correct predictions - your contribution is 20 Zloty, you earn extra 0 Zloty
- ☐ 1 correct predictions - your contribution is 18 Zloty , you earn extra 2 Zloty
- ☐ 2 correct predictions - your contribution is 16 Zloty , you earn extra 4 Zloty
- ☐ 3 correct predictions - your contribution is 14 Zloty , you earn extra 6 Zloty
- ☐ 4 correct predictions - your contribution is 12 Zloty , you earn extra 8 Zloty
- ☐ 5 correct predictions - your contribution is 10 Zloty , you earn extra 10 Zloty

**Table 4: Descriptive statistics on the subjects by treatment**

Variable	Obs	Mean	Std. dev.	Min	Max
<b>T-VOTE</b>					
age (years)	237	20.77	1.66	17	28
share males	237	0.43	0.50	0	1
share first-year students	237	0.29	0.46	0	1
share non-Polish mother tongue	237	0.07	0.25	0	1
support for Categorical Imperative	237	6.37	1.68	1	10
SRA (Pick-a-mood scale, stage A)	237	2.04	4.38	-10	11
share high trust in others	237	0.34	0.48	0	1
share high trust in student representatives	237	0.51	0.50	0	1
share high trust in univ. authorities	237	0.54	0.50	1	4
<b>T-COUNCIL</b>					
age (years)	266	20.71	1.67	17	30
share males	266	0.47	0.50	0	1
share first-year students	266	0.27	0.44	0	1
share non-Polish mother tongue	266	0.06	0.25	0	1
support for Categorical Imperative	264	6.41	1.80	1	10
SRA (Pick-a-mood scale, stage A)	266	1.70	4.87	-12	12
share high trust in others	264	0.39	0.49	0	1
share high trust in student representatives	264	0.47	0.50	0	1
share high trust in univ. authorities	264	0.53	0.50	1	4
<b>T-RECTORATE</b>					
age (years)	253	20.67	2.32	17	47
share males	253	0.44	0.50	0	1
share first-year students	253	0.26	0.44	0	1
share non-Polish mother tongue	253	0.06	0.23	0	1
support for Categorical Imperative	253	6.32	1.85	1	10
SRA (Pick-a-mood scale, stage A)	253	1.23	4.49	-12	11
share high trust in others	253	0.31	0.46	0	1
share high trust in student representatives	253	0.48	0.50	0	1
share high trust in univ. authorities	253	0.52	0.5	1	4



**Table 5: share of funds allocated to the four projects in the hypothetical task (stage B)**

<b>Project</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
Additional funds for the annual competition for the best master's or bachelor's thesis	756	13.64	10.08	0	60
Scholarships (800-1000 Zloty per student) for study or internships abroad	756	35.46	17.99	0	100
Online access to important standard textbooks	756	32.05	20.09	0	100
Financial support for selected study circles	756	18.84	12.72	0	100

**Table 6: Descriptive statistics on the decisions and responses by treatment**

Variable	Obs	Mean	Std. dev.	Min	Max
<b>T-VOTE</b>					
reported number of correct guesses	237	3.24	1.29	0	5
affectivity-score (PANAS, stage E)	237	10.56	3.68	5	20
share non-aligned preferences	237	0.47	0.50	0	1
difference hypothetically preferred -chosen [% points]	237	11.03	19.16	0	100
<b>T-COUNCIL</b>					
reported number of correct guesses	266	3.12	1.28	0	5
affectivity-score (PANAS, stage E)	266	10.32	3.92	5	21
share non-aligned preferences	266	0.85	0.35	0	1
difference hypothetically preferred -chosen [% points]	266	29.84	22.25	0	100
<b>T-RECTORATE</b>					
reported number of correct guesses	253	3.18	1.21	0	5
affectivity-score (PANAS, stage E)	253	10.28	3.73	5	21
share non-aligned preferences	253	0.58	0.49	0	1
difference hypothetically preferred -chosen [% points]	253	14.15	20.91	0	100

**Table 7: Tobit-regression results on the reported number of correct guesses in the mind game**

model	1	2	3	4	5	6
T-COUNCIL	-0.238 (0.206)	-0.240 (0.207)	-0.242 (0.201)	-0.295 (0.233)	-0.296 (0.233)	-0.295 (0.228)
T-RECTORATE	-0.135 (0.215)	-0.132 (0.217)	-0.136 (0.213)	-0.133 (0.215)	-0.129 (0.217)	-0.132 (0.214)
non-aligned preferences	0.224** (0.101)	0.245** (0.104)	0.251** (0.103)			
difference hypothetically preferred - chosen				0.00769** (0.00301)	0.00803*** (0.00294)	0.00811*** (0.00297)
Kantian	-0.203 (0.138)	-0.211 (0.137)	-0.199 (0.133)	-0.191 (0.137)	-0.198 (0.136)	-0.184 (0.131)
male	-0.199** (0.101)	-0.219** (0.103)	-0.235** (0.107)	-0.202** (0.100)	-0.222** (0.102)	-0.238** (0.107)
age (ln)	0.434 (0.510)	0.456 (0.506)	0.475 (0.481)	0.388 (0.540)	0.407 (0.541)	0.433 (0.518)
high trust in others			-0.0136 (0.140)			-0.0279 (0.144)
high trust in student representatives			-0.297** (0.121)			-0.291** (0.118)
high trust in univ. authorities			0.189* (0.112)			0.200* (0.111)
affectivity score (PANAS, stage E)		0.0212* (0.0121)	0.0237** (0.0108)		0.0217** (0.0110)	0.0239** (0.00982)
Constant	2.160 (1.384)	1.873 (1.313)	1.841 (1.196)	2.314 (1.485)	2.037 (1.422)	1.981 (1.324)
Observations	756	756	754	756	756	754

Robust standard errors in parentheses (\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1)

**Table 8: OLS-regression results on affectivity-score (PANAS, stage E) voiced after being informed about the collective decision**

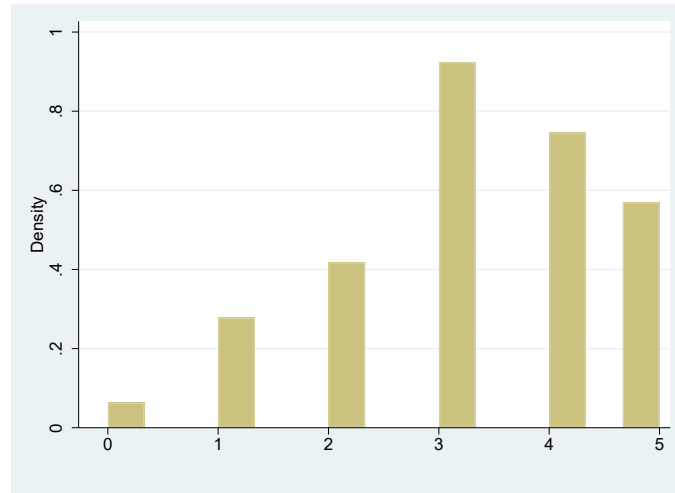
Variables	model	1	2	3	4	5	6
T-COUNCIL		0.0991 (0.236)	0.118 (0.237)	0.137 (0.251)	0.0389 (0.244)	0.0482 (0.243)	0.0490 (0.248)
T-RECTORATE		-0.0985 (0.244)	-0.0892 (0.244)	-0.0620 (0.281)	-0.152 (0.241)	-0.146 (0.240)	-0.124 (0.274)
non-aligned preferences		-0.786*** (0.182)	-0.809*** (0.176)	-0.888*** (0.166)			
difference hypothetically preferred - chosen					-0.0126*** (0.00353)	-0.0126*** (0.00354)	-0.0135*** (0.00350)
Kantian			0.329 (0.291)	0.296 (0.288)		0.284 (0.291)	0.253 (0.290)
affectivity score (Pick-a-mood scale, stage A)		0.148*** (0.0293)	0.145*** (0.0293)	0.139*** (0.0300)	0.146*** (0.0292)	0.144*** (0.0291)	0.138*** (0.0297)
male				0.860*** (0.228)			0.833*** (0.240)
age (ln)				-0.566 (1.129)			-0.435 (1.116)
Constant		10.65*** (0.177)	10.48*** (0.258)	11.86*** (3.372)	10.42*** (0.160)	10.26*** (0.222)	11.23*** (3.286)
Observations		762	762	756	762	762	756
R-squared		0.043	0.045	0.058	0.039	0.040	0.053

Robust standard errors in parentheses (\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1)

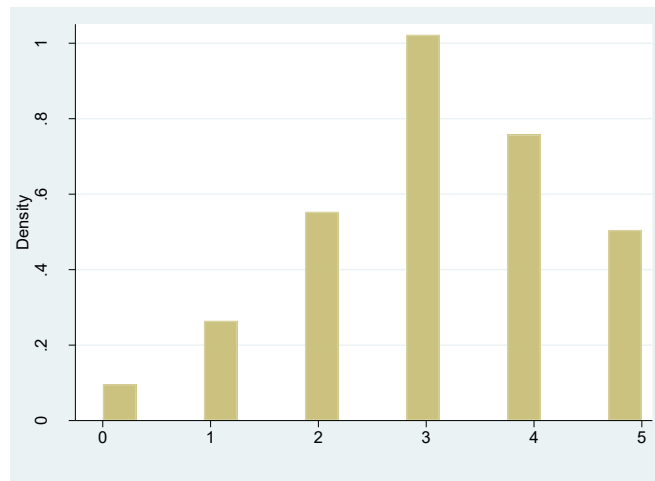
## Figures

**Figure 1: Histogram of reported number of correct guesses in the mind game (by treatment)**

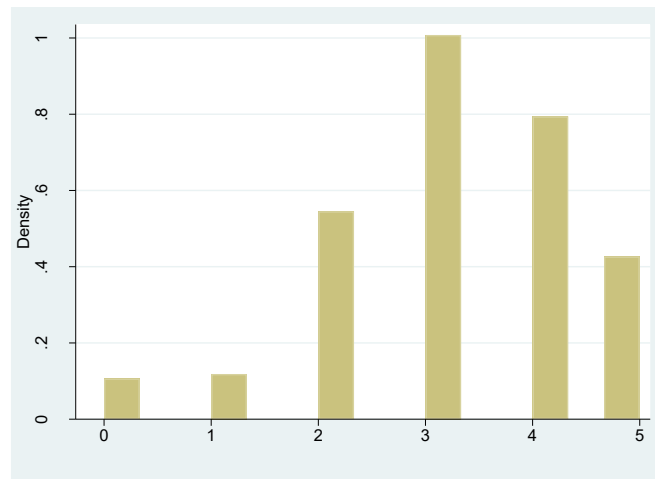
*1a) Treatment T-VOTE*



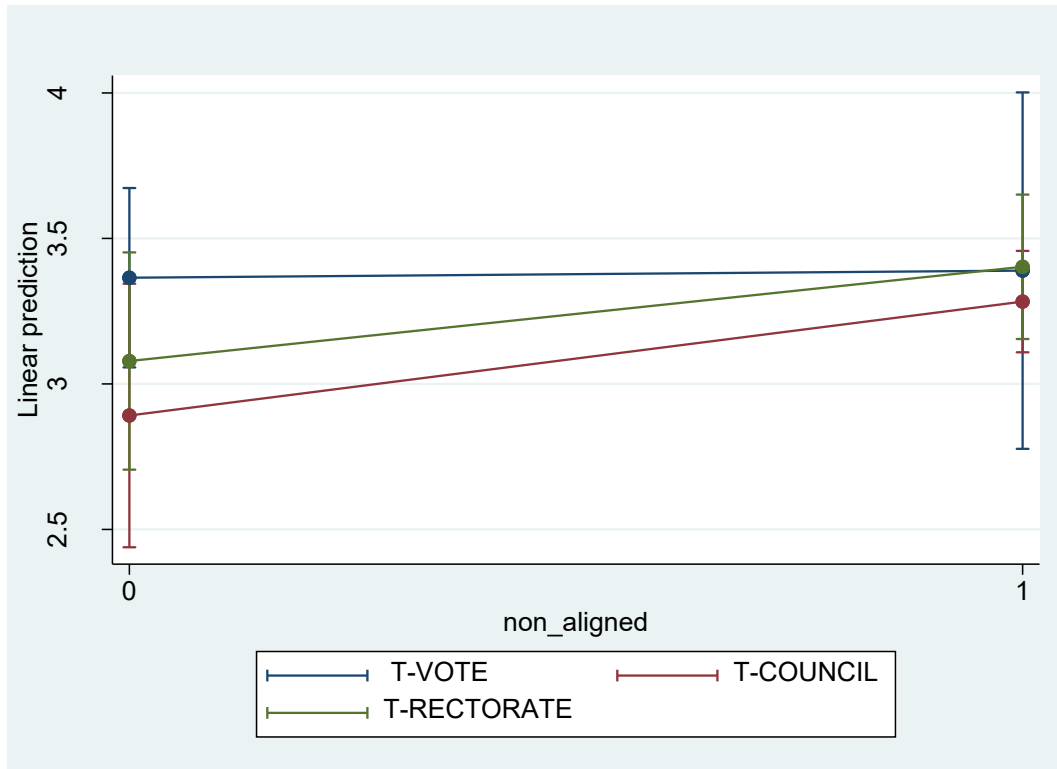
*1b) Treatment T-COUNCIL*



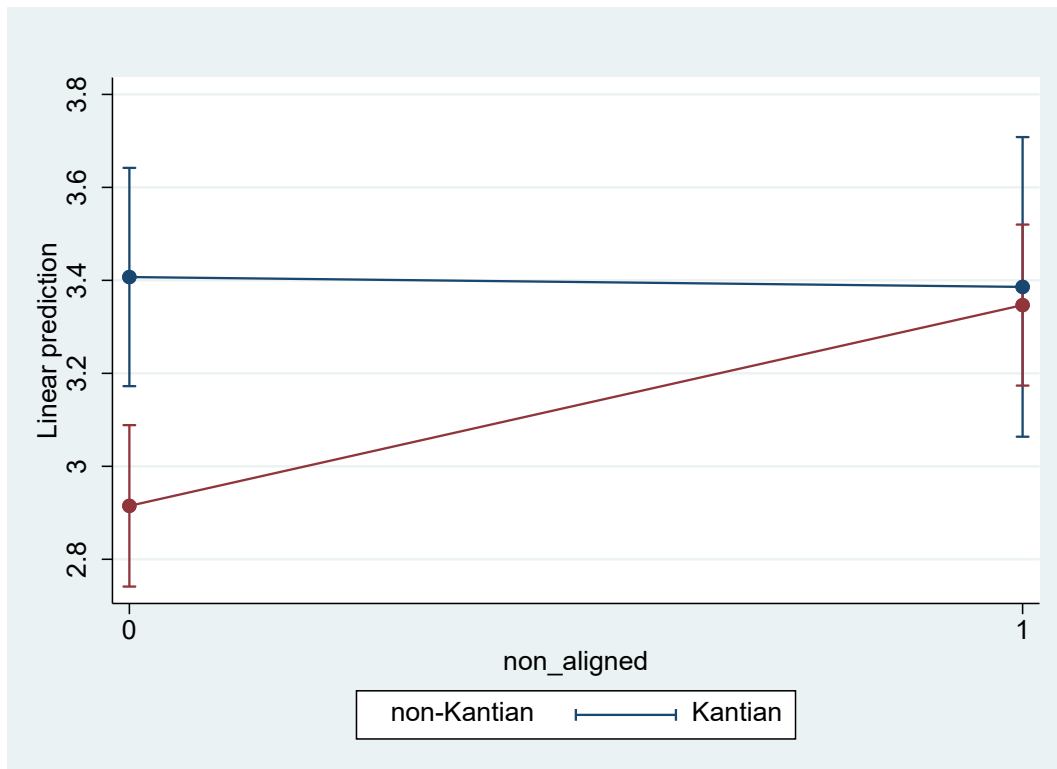
*1c) Treatment T-RECTORATE*



**Figure 2: Margin effect of non-aligned preferences on the reported number of correct guesses by treatment**

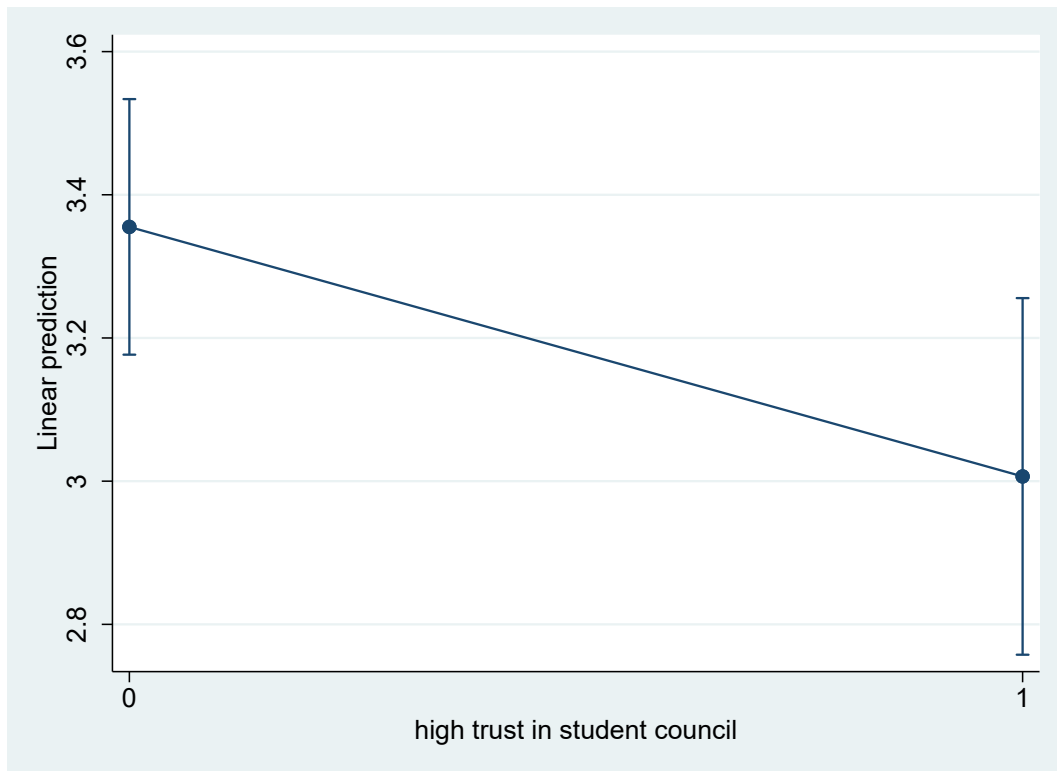


**Figure 3: Margin effect of non-aligned preferences on the reported number of correct guesses for Kantian and non-Kantian subjects**

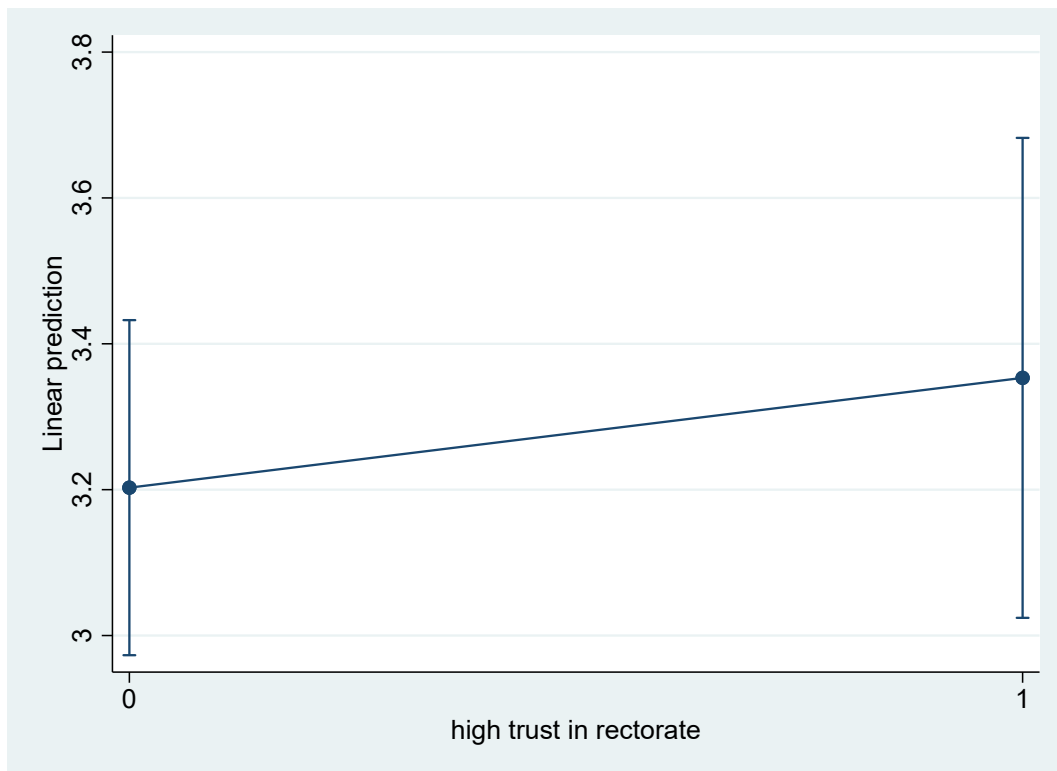


**Figure 4: Margin effect of non-aligned preferences on the reported number of correct guesses for subjects with high and low trust in the decision-making committee**

*4a) Treatment T-COUNCIL – student council*



*4b) Treatment T-RECTORATE – rectorate*





## APPENDIX

### Instructions

[] = indicate the participant actions, e.g., choices, radio-buttons, button to click

(Esaïasson et al., 2012) = Indicate the phrase that is exclusively employed in the respective treatment, [Student Council], [Rectorate], [Voting].

<> = Indicate illustrations or adaptive results, e.g., pictures, timers, voting result

<-- --> = Comments

### *Instructions of the Experiment (translated from Polish)*

Welcome

Today, we invite you to take part in an economic experiment. The experiment is part of a research project of doctoral students at the Poznan University of Economics and Business (PUEB).

By participating in this experiment, you support their research.

The experiment will take about 20 minutes.

Every participant who takes part and answers all questions receives a show-up fee of 5 Zloty.

In addition, there is the chance to earn another 10 Zloty during the experiment.

The outcome of the experiment has an impact on the study conditions at PUEB.

Please do not talk to your fellow students during the experiment.

--Next page--

How do you feel at this moment? – Likert scale

Absolutely not similar – Absolutely similar

☐-3 ☐-2 ☐-1 ☐0 ☐1 ☐2 ☐3

Tense <picture\_tense>

Irritated <picture\_irritated>

Sad <picture\_sad>

Bored <picture\_bored>

Excited <picture\_excited>

Cheerful <picture\_cheerful>

Relax <picture\_relaxed>

Calm <picture\_calm>

--Next page--

### Hypothetical exercise

Assume that the university provided every student at PUEB with 20 Zloty. This money is earmarked for improving study conditions at this university. It can be spent on the following options:

(I) Additional funds for the annual competition for the best master's or bachelor's thesis

(II) Scholarships (800-1000 Zloty per student) for study or internships abroad.

(III) Online Access to important standard textbooks.

(IV) Financial support for selected Study Circles.

How should this money be distributed (in percentage?)

Please note that your answer is purely hypothetical. It does not have any real-life consequences.

Please make sure that all of the options below add up to 100. You only need to fill in the number without the percentage sign "%".

I) Funds for a competition for a master's or bachelor's thesis:

%

(II) Scholarships for studies and internships abroad:

%

(III) Online textbooks:

%

(IV) Support for Scientific Clubs:

%

--Next page--

Please answer the following questions

What phase of study are you currently in? [Bachelor/Master/Others]

Did you vote in the last election for the student council? [Yes/No]

What is your gender? [Male/Female/Diverse]

What is your age?

What is your mother tongue?

Do you work to fund your study? [Yes/No]

--Next page--

Please answer the following questions

The philosopher Immanuel Kant (1724-1804) proposed the well-known Categorical Imperative: An individual shall "[...] act only on that maxim through which you can at the same time will that it should become a universal law." (Tatarkiewicz, Historia filozofii), meaning that you should act a certain way only if you're willing to have everyone else act the same way too.

What do you think, to what degree should people follow this guideline when making decisions in their everyday lives? – Likert scale

Never follow it - Always follow it

☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10

How much do you trust in: – Likert scale

☐ No Trust - ☐ Little Trust - ☐ Much Trust - ☐ Very Much Trust

Other people

Student Council

University Authorities

--Next page--

## Introduction

For every participant of today's experiment, there are 10-20 Zloty from public sources. The exact amount is determined later in this experiment. This money is earmarked for improving study conditions at the PUEB. It can be spent on the following options:

- Additional funds for the annual competition for the best master's or bachelor's thesis
- Scholarships (800-1000 Zloty per student) for study or internships abroad
- Online Access to important standard textbooks
- Financial support for selected Study Circles

The question is: What should the 10-20 Zloty per student be spent on?

We randomly divided all participants in today's experiments into 3 groups of about equal size.

Please do not communicate with each other when answering the upcoming questions.

If you have a problem, please raise your hand so the experimenter can help you.

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<-- Rectorate and Student Council Treatments -->

(Rectorate: Rectorate) (Student Council: Student Council) Decision

For the 10-20 Zloty per student in your group, we asked the Rectorate of the Poznan University of Economics to make the decision on what the money is spent. These were the options:

- Additional funds for the annual competition for the best master's or bachelor's thesis
- Scholarships (800-1000 Zloty per student) for study or internships abroad

- Online Access to important standard textbooks
- Financial support for selected Study Circles

The Rectorate decided as follows:

For every member of your group, 10-20 Zloty are spent on the following option:

(Rectorate: Financial support for selected Study Circles)

(Student Council: Scholarships (800-1000 Zloty per student) for study or internships abroad}

Note: The decision now has real-life consequences. For every student participating in your group, 10-20 Zloty per person will be spent on the option named above.

<-- End of Rectorate and Student Council Treatments -->

<-- Majority Voting Treatment -->

Majority Voting

<Timer>

In your group, the decision about how to spend the 10-20 Zloty per student is made in majority voting.

The option that receives the absolute majority of votes is chosen and the 10-20 Zloty of every group member is spent on this option. In

case there is no majority, the two options that receive most votes will enter a run-off election. In the unlikely case of a tie, one of the two

options is chosen at random.

Note: The decision now has real-life consequences. The decision reached in your group will be executed. For every student participating in your group, 10-20 Zloty per person will be spent on the option that receives the majority.

Now please cast your vote.

What should the 10-20 Zloty per member of your group be spent on?

- ☐ Additional funds for the annual competition for the best master's or bachelor's thesis
- ☐ Scholarships (800-1000 Zloty per student) for study or internships abroad
- ☐ Online Access to important standard textbooks
- ☐ Financial support for selected Study Circles
- ☐ White vote

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Vote Result

Your group reached the following decision by majority voting.

For every member of your group, 10-20 Zloty are spent on the following option:

<Vote Result>

Note: The decision now has real-life consequences.

For every student participating in your group, 10-20 Zloty per person will be spent on the option named above.

<-- End of Majority Voting Treatment -->

<-- Repeat Voting as in the previous page if the result is a tie -->

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How do you feel now – given what happened in the experiment so far? --Likert's scale

☐ Very slightly or not at all ☐ A little ☐ Moderately ☐ Quite a bit ☐ Extremely

Upset

Hostile

Alert

Ashamed

Inspired

Nervous

Determined

Attentive

Afraid

Active

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Testing for your device

Before we continue with the last part of the experiment, we would like to test if your device can see the coin below and flip it by clicking the button "Flip Coin".

<picture\_1\_Zloty\_coin>

[Flip coin]

Can you see the coin and flip it by clicking "Flip Coin"?

☐ Yes

☐ No

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## INSTRUCTIONS

A few minutes ago, you were informed that 10 - 20 Zloty per member in your group will be spent on the following option:

<Vote Result or Decisions> <Decision-maker: Student Council/Rectorate/by Voting>

The exact amount of money spent this way depends on your performance in the upcoming coin-flip task.

The task involves predicting coin flips. The results of this coin flip determine the amount of Zloty that you individually take out of the common pool funding the option above.

You will be asked to toss a virtual coin 5 times. By clicking on the button "Flip Coin" on the screen, the coin is tossed.

Before EACH toss, predict which side of the coin will be face-up. Think of the prediction in your head only and remember it. You can make just one of two possible predictions:

"I predict Heads will be face-up."

or

"I predict Tails will be face-up."

Please make this prediction in your head, do not communicate your prediction to anyone, including your teacher, and toss the coin. Repeat this process 5 times in total.

If you correctly predict the coin toss all 5 times, then report 5.

If you correctly predict the coin toss 4 times, then report 4.

Similarly, 3 correct predictions report 3; 2 correct predictions report 2; 1 correct prediction report 1.

If you do not correctly predict any of the 5 coin tosses, then report 0.

Only the first 5 coin tosses will be counted.

The first toss starts the first time you click on the "Flip Coin" button (excluding screen transition).

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Please answer the following questions

(Coin\_displayed\_success: picture\_1\_Zloty\_coin)

(Coin\_displayed\_fail: coinflip result in text)

Please make a prediction in your head, then complete your coin toss (by clicking the button "Flip Coin") now, repeat this process 5 times in total.

You can use other methods to track the number of correct predictions (e.g. using left/right fingers)

Report your outcomes using the form below. Your performance in the coin-flip task determines your individual payoff from the experiment and your contribution to the option:

<Vote Result or Decisions> <Decision-maker: Student Council/Rectorate/by Voting>

☐ 0 correct predictions - your contribution is 20 Zloty, you earn extra 0 Zloty

- ☐ 1 correct predictions - your contribution is 18 Zloty , you earn extra 2 Zloty
- ☐ 2 correct predictions - your contribution is 16 Zloty , you earn extra 4 Zloty
- ☐ 3 correct predictions - your contribution is 14 Zloty , you earn extra 6 Zloty
- ☐ 4 correct predictions - your contribution is 12 Zloty , you earn extra 8 Zloty
- ☐ 5 correct predictions - your contribution is 10 Zloty , you earn extra 10 Zloty

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#### CLOSING

Thank you for participating in the experiment.

Keep your card. You will need it when paying your individual remuneration from the experiment. You can pick remuneration on the date indicated by the experimenters on the card with the code. Just show up with your card, and you will sign the cash withdrawal receipt.