Advice and behavior in a dictator game:

An experimental study

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Abstract

We experimentally study the effects of advice on decision-making in a dictator game. We elicit advice from participants whose earnings are not affected by the dictators. In the three treatments, participants receive either no advice, selfish advice, or fair advice before making decisions. Compared to not receiving any advice, we find that participants who receive selfish advice behave significantly more selfishly, while those who receive fair advice do not appear to be affected. Such an asymmetric effect of selfish and fair advice can be potentially explained by the "moral wiggle room" channel: people tend to make use of selfish advice as an excuse to act in their self-interest, whereas they ignore fair advice as it is in conflict with their personal interests.

Keywords: advice, dictator games, moral wiggle room, laboratory experiment.

JEL codes: C91, D63, D83

1. Introduction

In various domains of life, people value the advice of others and may take this into account when making their own decisions. For example, advice from experts or more-experienced others can help solve complex computational problems (Biele et al., 2009; Çelen et al., 2010), or can help a group of people collaborate in a more efficient manner (Kuang et al., 2007; Chaudhuri et al., 2009). In these examples, decision-makers benefit from advice largely because they learn to improve their decisions. However, at other times, decision-makers may value the advice of others not because they need to improve their decisions in complex problems, but because they are faced with moral dilemmas in which they are torn between pursuing personal welfare and the welfare of others. In this study, we investigate the direct effect of advice in the moral dilemmas because of its widespread presence in our lives. For example, team leaders who have the right to allocate a project bonus may feel torn between sharing the bonus with their teammates and keeping the bonus to themselves. People who witness a crime may feel hesitant to report it to the police because doing so will cost them their time.

Existing studies on the effect of advice in moral dilemmas have mostly focused on the strategic provision and use of advice in moral decision-making (Coffman and Gotthard-Real, 2019; Shalvi et al., 2019). That is, advisors are often motivated to provide selfish advice. The decision-makers may have a strategic reason to make use of this selfish advice, such as to appear less moral to their opponents to gain monetary payoff (Coffman and Gotthard-Real, 2019), or they may strategically choose advisors who provide them with "convenient information" to make a selfish decision (Shalvi et al. 2019). Though the results of these studies perhaps suggest that selfish advice can lead to more selfish behavior, this study is novel in investigating the direct effect of advice without the presence of any strategic motives. Moreover, to identify the underlying channel, we examine the effects of both selfish and fair advice.

Another independent line of research has focused on the "moral wiggle room" in decision-making. Most of these studies adopt the context of dictator games. Several

earlier studies on dictator games indicate that the majority of participants do not strictly pursue personal interests but assign an average amount of 20% to their receivers (see Camerer 2011, chapter 2). However, participants exhibit more self-interested behavior when the relationship between their actions and the resulting outcomes is uncertain (Dana et al., 2007). That is, when given the choice to remove the uncertainty between actions and resulting outcomes, many participants choose to remain ignorant. They take advantage of such ignorance as "moral wiggle room" to behave selfishly while maintaining the illusion of fairness. Several later studies have extended the design of Dana et al. (2007) and confirmed that their findings remain robust when there is no default option (Larson and Capra, 2009), and when the default condition is different (Grossman, 2014). Finally, some other studies explore the effect of moral excuses on reciprocal behaviors in trust games and moonlighting games. (Van der Weele et al., 2014; Regner, 2018).

Since uncertainty can be viewed as a situational justification to behave selfishly, this study is novel in proposing that receiving immoral advice can also serve as moral wiggle room for people to behave more immorally. When faced with a moral dilemma, people may hesitate to act selfishly or immorally because of reasons such as shame and guilt (Elster, 1998; Charness and Dufwenburg, 2006; Tangney et al., 2007), self-image (Bénabou and Tirole, 2006; Ploner and Regner, 2013; Brocas et al., 2021), and responsibility (Hamman et al., 2010; Bartling and Fischbacher, 2012). In these cases, people may have an excuse or feel relieved to behave selfishly or immorally if they receive a piece of advice that encourages them to do so.

We examine the impact of advice from advisors without economic interests in a binary dictator game. In such a game, the selfish option yields 50 points to the decision-maker (dictator) and zero points to the other player (receiver), and the fair option yields 40 experimental points for both players. We set the fair option as the default state, and dictators choose between maintaining the default state or choosing the selfish option. We conduct baseline, fair advice, and selfish advice treatments in the experiment. Participants in the baseline treatment choose between the fair and the selfish options that determine their earnings. Compared to baseline, dictators in the

two advice treatments are asked to make an unincentivized intention, then receive one piece of advice whose type corresponds to the treatment. Finally, they make the decision that determines their earnings. All advice is elicited before the main treatments. Advisors are informed about the dictator games and then provide one piece of advice freely, suggesting either the selfish or the fair option with supporting reasons. Their payoffs are fixed and unrelated to the decisions made by participants who receive advice in later treatments.

Our results show that the impact of selfish advice is significant, but fair advice has no effect on the participants' decisions. In baseline, 23.7% of participants choose the selfish option, which is similar to 26% in the baseline of Dana et al. (2007). In the fair advice treatment, 32.4% of participants make a selfish decision, which is not significantly different from 23.7% of participants in the baseline. This result is consistent with Schram and Charness (2015), as they find that fair advice alone does not lead people to behave more fairly. In contrast, in the selfish advice treatment, 57.5% of participants choose selfish decisions. The difference from the baseline is significant. The data indicates that participants are more likely to take selfish advice as an excuse to act selfishly and ignore fair advice. Thus, the asymmetric effect of fair advice and selfish advice can be seen as the result of a moral "wiggle room" channel. Further, though the intentions of participants made before receiving advice are unincentivized, they provide some evidence on the underlying channel of the effect of advice. When the advised actions participants receive are the same as their intended actions, they never change, keeping their original intended actions. However, when advised actions conflict with intended actions, participants often flip their choices in the direction of the advice. This result indicates that participants who hesitate to make decisions may follow the advice.

The main contribution of this paper is to demonstrate that people tend to use selfish advice as a convenient excuse to behave more selfishly, while they tend to ignore fair advice as it does not serve their personal interests. This study is novel in investigating how advice from advisors without economic interests affects participants' behaviors in a moral dilemma through a channel that is similar to "using

uncertainty as moral wiggle room" (Dana et al., 2007). This finding deepens our understanding of decision-making in moral dilemmas by comparing the effects of selfish and fair advice in such situations. One important real-world implication is that providing advice to people in moral dilemmas may have an alarming effect: While many people will make use of advice suggesting immoral or selfish behaviors to conduct immoral actions that they are already tempted to do before receiving the advice, they will likely ignore the advice that suggests moral or fair behavior. Therefore, providing advice in such situations may hurt social welfare because people tend to only hear what they wish to hear.

The remainder of this paper is organized as follows. Section 2 discusses the related literature. Section 3 introduces the experimental design, procedure, and hypotheses. Section 4 presents the results of this study and Section 5 concludes.

2. Related literature

Our study draws from the literature on "moral wiggle room." In a binary dictator game, Dana et al. (2007) introduce uncertainty between the actions and the resulting outcomes of dictators' decisions. They find that when given the choice to remove the uncertainty between actions and payoffs, dictators tend to choose not to reveal the payoffs of each action and behave in a significantly more self-interested manner following this. Participants take advantage of this uncertainty as "moral wiggle room" to maintain the illusion of fairness when choosing an action that maximizes their personal payoffs but may hurt others. Larson and Capra (2009) verify the robustness of Dana et al. (2007) by making both options equally costly to access (no default options) in a double-blind setting. Grossman (2014) studies the effect of the default option in such a situation by varying the default condition, as in Dana et al. (2007). In his experiment, in addition to the uncertain default, as in Dana et al. (2007), he also designs a treatment without any default option and one in which the default option is to reveal the payoffs of each action. Grossman (2014) finds that when dictators must actively choose either to reveal the payoffs or remain ignorant, the rate of participants

who choose to remain ignorant is reduced by nearly half, compared to the treatment in which they must actively choose to reveal the underlying payoffs. When people must click to not reveal the payoffs, the rate of participants who choose to remain ignorant drops even further. Van der Weele et al. (2014) study reciprocal behavior with one of the moral wiggle room manipulations in Dana et al. (2007). By applying such manipulation to the second-mover in the trust game, they find that reciprocal behavior is not affected by the presence of moral wiggle room.[1] Regner (2018) adds a proceeding stage to the dictator game of Dana et al. (2007), in which the receiver can decide between a safe outside option and entering the dictator game. He finds that in such a trust game, participants also behave more selfishly with the inclusion of moral wiggle room manipulation. In our experiment, we introduce a different type of moral wiggle room manipulation: Instead of introducing uncertainty between actions and payoffs, we always keep the relationship between actions and payoffs transparent; however, before they make choices, we provide participants with a piece of advice that suggests that they make a selfish action. The intuition of such a manipulation is that, by learning a piece of advice that suggests selfish behavior, participants can find it easier to choose a selfish action without hurting their self-image, as they are "advised" to do so.

There are many experimental studies on the effect of advice on behavior. First, according to the type of games, studies have been conducted on the effect of advice in complex computational problems (Biele et al., 2009; Çelen et al., 2010), coordination games (Kuang et al., 2007; Chaudhuri et al., 2009), and moral decisions (Schram and Charness, 2015; Coffman and Gotthard-Real, 2019; Shalvi et al., 2019). Second, based on the sources of advice, research examines intergenerational games in which the advice is given by predecessors who have already experienced the game (Schotter and Sopher, 2003; Schotter and Sopher, 2007) or games in which advice is given by peers who may or may not have experience with the game (Wakolbinger and Haigner, 2009; Schram and Charness, 2015). Third, according to the economic interests of the

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[1] Regner (2018) suggests that one possible reason for the lack of moral wiggle room effect in Van der Weele et al. (2014) is the high selfish rate in their baseline, which leaves no room for moral wiggle room to work.

advisors, the advisors can either benefit from the actions of decision-makers who receive the advice (Kuang et al., 2007; Shalvi et al., 2019), or have their earnings remain unaffected by the actions of decision-makers (Kuang et al., 2007; Schram and Charness, 2015).[2] In our study, we use advice from peers without economic interests and study the effect of such advice in a dictator game.

Our study is most closely related to papers on the effect of advice on moral behavior. In most of these studies, the earnings of the advisors are affected by the choices of the decision-makers who receive the advice. Wakolbinger and Haigner (2009) use a tax-evasion experiment to study the impact of advice from peers. In the tax-evasion game, participants can increase their expected earnings by misreporting the tax they are required to pay. They find that after receiving advice from peers who have played the same game, participants exhibit a higher level of misreporting and therefore evade taxes more severely. This is partly because the advisors are incentivized to provide advice that encourages cheating. Compared to Wakolbinger and Haigner (2009), advisors in our study never play the game themselves; therefore, decision-makers are affected merely by the advice given by a third party who is not involved in the game, without being driven by the effect of conformity to peers. Coffman and Gotthard-Real (2019) design a novel game in which a decision-maker can improve his own earnings at the expense of his group members. However, in most treatments, when the group members receive a low payoff, they cannot know if it is caused by nature or the selfish choice of the decision-maker, and these group members can choose to punish the decision-maker upon learning their payoffs. In some treatments, decision-makers can additionally receive a piece of advice from an advisor. Coffman and Gotthard-Real (2019) find that the availability of advisors induces decision-makers to act more selfishly, and the other group members, upon receiving a low payoff, choose to punish the decision-makers less, whether or not they are informed about the underlying selfish actions of the decision-makers. These results indicate that advised selfish actions are more tolerated, and this is partially

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[2]There is evidence showing that in some circumstances, advice from agents without economics interests is more effective. In a pure coordination game, Kuang et al. (2007) find that advice from an advisor with economic interest is less effective than the same advice that is given by a neutral party.

because people perceive the advised selfish actions to be less immoral than the non-advised ones. Compared to Coffman and Gotthard-Real (2019), the decision-makers in our study cannot use selfish advice strategically because the receivers cannot punish them. Therefore, the effect of selfish or fair advice in our study cannot be attributed to strategic reasons. Shalvi et al. (2019) use a binary dictator game with uncertainty that is similar to that in Dana et al. (2007), but the receiver is a charity. The advisors in their game have complete information on the consequences of each option in the game and can decide whether to deliver it to dictators. They find that when dictators can choose the type of advisor according to their past advice-giving behaviors, selfish dictators are more likely to choose advisors who tend to share irrelevant information and hence behave more selfishly. We differ from Shalvi et al. (2019) in that we remove the uncertainty between actions and the resulting outcomes for decision-makers. That is, decision-makers always have complete information about the game. Therefore, if they are affected by the advice, it cannot be attributed to uncertainty or changes in beliefs about the relationship between actions and outcomes, but rather to a channel in which they use advice itself as moral wiggle room.

Very few experimental papers examine the effect of advice given by advisors without economic interest on moral behaviors, and the most relevant to ours is Schram and Charness (2015). In a dictator game, Schram and Charness (2015) first elicit advice from peers whose earnings are not affected by dictators. In their experiment, they vary whether dictators receive such a piece of advice and whether their decisions are publicly announced in the lab after they make a choice. They find that dictators tend to follow the advice they receive only when decisions are publicly observable. It is worth noting that, in their experiment, the dictators almost always choose the relatively selfish actions at the baseline, and they almost always receive advice that suggests that they be generous. Their results indicate that, to induce more generous behavior, it is insufficient to solely provide fair advice. In our study, we also study the effect of advice from advisors whose earnings are not affected by decision-makers in a dictator game. However, we differ from Schram and Charness (2015) in that we are primarily interested in the effect of selfish advice on dictators' choice, and

we also include a treatment of fair advice as a control.

3. Experimental design and procedures, and hypotheses

3.1 Treatment design

We employ a between-subjects design. There are three treatments: baseline, fair advice, and selfish advice. The fair advice and selfish advice treatments are collectively referred to as advice treatments. In the baseline treatment, participants play a one-shot binary dictator game with a fair option and a selfish option. In the advice treatments, the dictators additionally receive a piece of advice before making their decisions, and the advice either suggests that they choose the fair option or the selfish option.

Before running the main experimental treatments, we first conduct an independent advice-eliciting experiment. During this experiment, independent participants are recruited as advisors. The participants are informed about the dictator game to be played in future experiments and are asked to provide advice to the dictators in future experiments. We encourage them to imagine what they would do if they were dictators. They are free to suggest either the selfish option or the fair option, as well as any supporting reasons. Personal information that may reveal the advisor's identity is prohibited from being included in the advice. They always receive a fixed payment that is independent of the content of their advice. Each piece of advice is handwritten on a piece of paper and is later scanned into a digital photocopy version to be used in future experiments. The fair (selfish) advice explicitly suggests that dictators choose the fair (selfish) option. Fair advice is used in the fair advice treatment, and selfish advice is used in the selfish advice treatment. Since all the advice is very explicit about which option to take, we make use of all the advice.

For the main experiment, we recruit participants who are not enrolled in the advice-eliciting experiment, and each of them participates in only one of the three treatments. In all treatments, participants are randomly assigned into pairs to play a binary dictator game. They are either assigned the role of the dictator (decision-maker)

or the role of the receiver. Each role is phrased in a neutral manner and represented by colors in the experiment, where the dictator is assigned the color red, and the receiver is assigned to the role of yellow. Each dictator chooses between the two options, where the fair option (40,40) yields 40 points for both players, and the selfish option (50,0) yields 50 points for the dictator and zero points for the receiver. We frame the fair option as the default option, that is, subjects are faced with a status quo (40,40), and the dictators have to actively choose to take the entire points of the receivers to gain an additional 10 points for themselves. It is a one-shot game. Table 1 displays the settings of all treatments.

Table 1 Summary of Treatments

Treatment	Advice	Intention	Decision	Number of participants
Baseline	✕	✕	✓	76
Fair advice	✓	✓	✓	74
Selfish advice	✓	✓	✓	80

The two types of advice (fair or selfish) each dictator receives in the advice condition is randomly selected from the pool of the corresponding type of advice. To track how dictators change their decisions after reading the advice, we also elicit the intentions of the dictators before they receive the advice. Note that when eliciting their intended actions, the participants are not incentivized. That is, their intended choices are completely irrelevant to their final earnings or receivers' earnings, and the decision-makers are fully aware of this. Therefore, in the data analysis, we use such elicited intentions with caution, as they may not reveal the unbiased counterfactual choices subjects make had they not received any advice. To summarize, the process in the advice treatment is as follows: First, dictators provide their intended actions before receiving advice. Second, each dictator receives a piece of advice, which is a scanned copy of the original paper form. Third, after reading the advice, the dictators

can decide between the selfish and fair options, which determine the final earnings.

The goal of our experimental design is to investigate the effect of fair and selfish advice on decision-making in a moral context where people have to choose between maximizing personal benefits and collective welfare. The baseline treatment serves as the benchmark for the experiment. By comparing the fair advice and selfish advice treatments to the baseline, we can ascertain whether each type of advice can influence decision-making in such a dictator game. Next, by comparing the magnitude of the treatment differences (difference between fair advice and baseline vs. difference between selfish advice and baseline), we can indicate which type of advice has a stronger influence on behavior.

At the end of the experiment, we conduct a short survey to collect participants' demographic information and how they make decisions or perceive their opponents' decisions.

3.2 Procedures

The experiment was conducted at Shanghai University of Finance and Economics. Subjects were recruited from the subject pool of the Economic Lab via Ancademy.[3] We recruited 256 participants in total, with 26 participating in the advice-eliciting experiment, and 76, 74, and 80 participating in the baseline, fair advice, and selfish advice treatments, respectively. Most participants were undergraduate students from various fields.

In the advice eliciting experiment, we conducted two sessions, with 13 participants in each session (26 participants in total). Participants were seated at random by the experimenters. The same experimenter read the instructions aloud to them (see Appendix A for the instructions), they were then asked to write down their advice using pen and paper. For the content of the advice, we encouraged them to make their advice explicit if possible, suggesting that future dictators make either a selfish or a fair choice. We also encouraged them to provide reasons to support their suggestions. Each participant received a fixed payment of CNY 35 (equivalent to

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[3] Ancademy is a (recruiting) platform for social sciences experiments.

approximately USD 5). The 26 pieces of advice, were classified into two types: 10 out of 26 suggested that the dictator make a selfish move (selfish advice) and 16 suggested otherwise (fair advice).

After the advice-eliciting experiment, we conducted the main experiment with three treatments. The main experiment was between-subject, and we simultaneously conducted multiple treatments in each session to control for session effect. We ran seven sessions in total, and among them four consisted of the baseline treatment, five consistied of the fair advice treatment, and five consisted of the selfish advice treatment. Each piece of advice was used 2-4 times in the experiment, and the frequency was determined by chance. The experiment was computerized using z-Tree (Fischbacher, 2007) and conducted in Chinese.[4] Upon arrival at the laboratory, participants were randomly assigned a card indicating their table number and seated in the corresponding cubicle. The instructions were displayed on their computer screens. Participants earn experimental currency through points in the experiment, and every point was worth CNY 0.50.

After completing the experiment, each receiver learned the decisions of the matched dictator and, hence, their final earnings. Participants received their earnings in cash inside an envelope, and were informed that they would be paid in this manner at the beginning of the experiment. This was to rule out their image concerns during the payment stage. The average earnings were CNY 32 (equivalent to around USD 5), including a show-up fee of CNY 15 (around USD 2). Each session lasted between 20 and 30 minutes.

3.3 Hypotheses

We develop hypotheses regarding the effect of advice on dictators' decisions based on our experimental design.

First, according to the literature on social learning, people tend to imitate what others would do in the same situation and try to conform to the norm (Wakolbinger and Haigner, 2009; Schram and Charness, 2015). Second, there is evidence that

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[4]The experimental instructions are provided in Appendix A.

people tend to follow advice from an advisor whose income is affected by the decisions of the advisees (Schotter and Sopher, 2003; Wakolbinger and Haigner, 2009). In our experiment, advice is given by advisors who cannot profit from the decisions of the advisees. From the literature on social learning and on the effect of strategic advice, we expect that participants will also be affected by non-strategic advice, that is, they are more likely to take the advised action.

Hypothesis 1A: Compared to the baseline, participants in the fair advice treatment are more likely to choose the fair option.

Hypothesis 1 B: Compared to the baseline, participants in the selfish advice treatment are more likely to choose the selfish option.

Research indicates that many people tend to take advantage of uncertainty as "moral wiggle room" and tend to behave more selfishly or immorally in a moral context, such as dictator games (Dana et al., 2007). The underlying logic being when people can make use of excuses, they feel better about themselves even if they make decisions that are potentially detrimental to others or society (Dana et al., 2007; Regner, 2018). According to this line of research, we hypothesize that, when advised to take a selfish action, people can use it as an excuse and behave more selfishly, without hurting their self-image. This is similar to the "moral wiggle room" channel. However, when advised to take a fair action, people cannot use it as an excuse to behave selfishly, as they do not need an excuse to behave in a fair manner. Comparing the effect of selfish and fair advice, the social learning channel is present in both types of advice, whereas the "moral wiggle room" channel can only work through selfish advice. Therefore, we propose the second hypothesis:

Hypothesis 2: The impact of selfish advice is stronger than that of fair advice.

4. Results

4.1 Treatment differences: Effect of advice on decisions
We start by examining how the decisions of participants differ in each treatment.

Table 2 presents the distribution of dictators' decisions for each treatment. Hypotheses 1a and 1b predict that participants are more likely to choose the advised choice. To test the hypotheses, we compare the rates of selfish choices across the three treatments.

Table 2 Distribution of decisions in each treatment

Treatment	Decision		Test equal to Baseline	Test equal to Fair advice
	Fair	Selfish		
Baseline	76.3% (29/38)	23.7% (9/38)		
Fair advice	67.6% (25/37)	32.4% (12/37)	$p=0.4021$	
Selfish advice	42.5% (17/40)	57.5% (23/40)	$p=0.0026$	$p=0.0283$

Notes: p-values are from two-sided Mann-Whitney tests.

First, we compare the fair advice and baseline. Of the 38 dictators in the baseline treatment, only 9 (23.7%) make a selfish choice. In the fair advice treatment, 12 out of 37 (32.4%) subjects make a selfish choice. In contrast to Hypothesis 1a, participants who receive fair advice are marginally less likely to make a fair choice than participants at baseline (67.6% vs. 76.3%). However, the difference is not significant (two-sided Mann-Whitney test, $p=0.4021$). Therefore, we reject Hypothesis 1a and conclude that fair advice fails to induce a higher rate of fair choices in our setting. This could be due to two reasons. First, providing fair advice is not sufficient to affect behavior in dictator games. This is consistent with the findings of Schram and Charness (2015). In a laboratory study, they find that providing fair advice is not sufficient to induce social norms, and it only becomes effective when the dictator's decision also becomes public. Second, one may worry that this could be due to a relatively high rate of fair choices in the baseline treatment, therefore leaving little room for participants to act fairly when receiving a piece of fair advice. However, given that participants are even slightly less likely to make a fair choice after receiving fair advice, we can be somewhat confident in concluding that fair advice fails to shift behavior toward a fair direction.

Result 1a: *Inconsistent with Hypothesis 1a, fair advice fails to induce a higher rate of*

fair choices.

Next, we compare the rate of selfish choices in the baseline and selfish advice treatments. In the selfish advice treatment, 23 out of 40 (57.5%) participants make a selfish choice. In contrast, 9 out of 38 (23.7%) participants choose the selfish option in the baseline. The difference is statistically significant (two-sided Mann-Whitney test, p=0.0026). Participants who receive selfish advice behave in a more self-interested manner, which is consistent with Hypothesis 1b.

Result 1b: Consistent with Hypothesis 1b, selfish advice induces a significantly higher rate of selfish choices.

Comparing Result 1b with Result 1a, we find that while selfish advice almost doubles the rate of selfish choices (from 32.4% to 57.5%), fair advice does not appear to affect behavior at all. This comparison is significant. This result provides direct evidence that the impact of selfish advice is much stronger than that of fair advice, which supports Hypothesis 2. This indicates that the channel of social learning is not sufficient to explain why selfish advice has such a pronounced effect on behavior. Rather, the moral wiggle room channel seems to have kicked in. Participants use selfish advice as an excuse and make selfish decisions without hurting their self-image.

Result 2: Consistent with Hypothesis 2, the impact of selfish advice is stronger than that of fair advice.

Finally, for the sake of completeness, we compare the behavior of the two advice treatments; 32.4% and 57.5% of participants make a selfish choice after receiving the fair and selfish advice, respectively. The difference is significant as well (two-sided Mann-Whitney test, p=0.0283).

4.2 Intentions, advice, and decisions

In this section, we further investigate the relationship of "intentions" (intended actions before receiving advices), type of the advice, and the final decisions made by the dictators. In this way, we can ascertain how participants update their actions according

to the advice they receive.

First, we compare the elicited intentions of participants in the advice treatments with the decisions made in the baseline treatment. These choices can be compared because they are all made before the participants receive any advice. However, they are also different by design: the decisions made at baseline are incentivized as they determine the participants' final earnings; the intentions in the advice treatments are not. Table 3 presents the intentions in the two advice treatments and the decisions at the baseline. The first line indicates the rate of selfish choices at baseline. In the second line, we pool the intentions in the fair and selfish advice treatments together. Overall, there are a total of 77 participants in the pooled advice condition, and 34 (44.2%) of these participants make a selfish choice. This rate is significantly higher than the rate of 23.7% at baseline (two-sided Mann-Whitney test, p=0.0336). The third and fourth lines present the rate of selfish choices in each of the advice treatments. As can be seen from the table, the rate is 56.8% for the fair advice and 32.5% for selfish advice treatments, which also significantly differ (two-sided Mann-Whitney test, p=0.0334). These results indicate that the elicited data on intentions is not a stable measure and is perhaps quite noisy. Therefore, we use it only for within-subjects analysis.

Table 3 Decisions in Baseline and Intentions in Advice treatments

Treatment	Choice type	Selfish Rate	p-value
Baseline	Decision	23.7% (9/38)	(Baseline vs. Pooled advice)
Pooled advice	Intention	44.2% (34/77)	0.0336
Fair advice	Intention	56.8% (21/37)	(Fair advice vs. Selfish advice)
Selfish advice	Intention	32.5% (13/40)	0.0334

Notes: p-values are from two-sided Mann-Whitney tests.

Next, we turn to within-subjects decision updating in the advice treatments by comparing individual intentions before receiving advice and decisions after receiving advice. Table 4 presents the rate of selfish choices in both intentions and decisions in each of the advice treatments. In the fair advice treatment, 21 out of 37 (56.8%)

participants report a selfish intended action, but only 12 of the 21 make a selfish choice after receiving fair advice.[5] This rate of selfish choice changes from 56.8% (21 out of 37) to 32.4% (12 out of 37) and is highly significant (signrank test, p=0.0027). In the selfish advice treatment, 13 out of 40 (32.5%) participants report a selfish intended action, but all of them and another 10 participants make a selfish choice after receiving the selfish advice.[6] The rate of selfish choice changes from 32.5% (13 out of 40) to 57.5% (23 out of 40) and is also highly significant (signrank test, p=0.0016).

Table 4 Intentions and decisions in the advice treatments

Treatment	Intention Selfish Rate	Decision Selfish Rate	p-value within-subjects
Fair advice	56.8% (21/37)	32.4% (12/37)	0.0027
Selfish advice	32.5% (13/40)	57.5% (23/40)	0.0016

Notes: The p-values are from the within-subjects signrank tests between intentions and decisions.

Overall, we can conclude that in both the advice treatments, intentions, advice, and decisions have the following relationship: When intentions and advised actions are the same, participants never change their mind, and they retain their original intended actions as their final decisions. However, when intentions and advised actions are in conflict, participants often change toward the direction of advice and flip their choices in the final decisions. In both treatments, approximately 40% of the participants (9 out of 21 in the fair advice, 10 out of 27 in the selfish advice) change their decisions when their intended actions and advised actions are different. This relationship naturally leads to a shift toward more selfish behavior in the selfish advice and a shift towards less selfish behavior in the fair advice treatments. This observation is consistent with Hypotheses 1a and 1b.

However, we should bear in mind that our data on intended actions are not

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[5]In Table 5 in Appendix B, we show that in the fair advice treatment, all the 12 participants who make a selfish choice after receiving advice also intend to make a selfish action before receiving advice.
[6]In Table 5 in Appendix B, we show that in the selfish advice treatment, all the 13 participants who report a selfish intended action also make a selfish decision. Moreover, another 10 participants switch from a fair intended action to a selfish decision after receiving advice.

incentivized and seem to be noisy. Therefore, this analysis only serves as supporting evidence to our main results in Section 4.1. This can be summarized as participants seem to maintain a certain level of consistency within their own choice data; that is, if they receive a piece of advice that is consistent with their intended action, they have no reason to change their decisions in the end.

Result 3: *At the individual level, when intended actions are the same as the advised actions, participants always keep their decisions. When the intended actions are different from the advised actions, they often change their decisions.*

4.3 Discussion

As we find in section 4.2, the distributions of intentions are significantly different between the selfish advice and fair advice treatments. This may raise potential concern in interpreting our finding that fair advice fails to induce a higher rate of fair choices (Result 1a), because one may worry that this is partially due to a significantly higher rate of selfish intentions in the fair advice treatment compared to the other treatments. We have two arguments to resolve this concern. First, as we mentioned before, the choices of intended actions are unincentivized, and are only elicited to help understand the channel of the effect of advice. Therefore, such unincentivized choices can be used in a similar manner as survey data, and shall not be treated the same way as the incentivized choices. Second, Schram and Charness (2015) already find that fair advice alone cannot lead to either more selfish or more generous behaviors in a very similar setting compared to ours, and our finding on fair advice is consistent with theirs. Combining both of these arguments, we think it is safe to conclude that, while we find strong evidence that selfish advice significantly increases the rate of selfish choices, we do not find such evidence for the effect of fair advice.

5. Conclusion

In this study, we reveal that when people are in a moral dilemma, such as in our binary dictator game, receiving advice from peers with no financial payoff at stake can largely affect their behaviors. When receiving advice that suggests a selfish

decision, people are much more likely to make a selfish choice. In contrast, when receiving advice that suggests a fair decision, people tend to ignore the advice. We believe that such an asymmetric effect can be explained by a "moral wiggle room" channel. That is, selfish advice can be used as a convenient excuse for people to perform a selfish action without feeling bad about themselves. This study is the first to demonstrate the effectiveness of selfish advice through this channel. Our findings can potentially be extended to decision making in other moral or social contexts. From a social welfare perspective, our findings suggest that providing advice to people in such situations may not always be welfare-enhancing and should be conducted with caution.

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Appendix A. Experimental Instructions

In this appendix, we provide the experimental instructions that are translated from the original Chinese version.

Instructions (All treatments)

Welcome to this experiment on decision-making. Please read the following instructions carefully. The experiment will last for about 30 minutes. During the experiment, do not communicate with other participants in any means. If you have a question at any time, please raise your hand, and an experimenter will come and assist you privately.

At the beginning of the experiment, you will be randomly allocated into a group of two participants. Each participant sits behind a private computer and all decisions are made on the computer screen. It is an anonymous experiment. Experimenters and other participants cannot link your name to your desk number, and thus will not know the identity of you or of other participants who made the specific decisions.

During the experiment, your earnings are denoted in points. You will have 30 points as a show-up fee at the beginning of the experiment (i.e., you will have minimal earnings of 30 points). The rest of your earnings depend on your own choices or the choices of other participants. At the end of the experiment, your earnings will be converted to RMB at the rate: 2 points of income = ￥ 1. After the experiment, your total earnings will be paid to you in cash privately.

At the beginning of the experiment, you will be randomly allocated into a group of two participants. Two participants in each group are assigned roles "Red" and "Yellow". The assignment of roles is completely random. This experiment is completely anonymous. No one will know which participant is in your group and others will not know if you are in their group. Similarly, no one knows your role, and nor will you know the roles of the other participants.

Only Red players will make decisions today. The earnings of the Yellow players completely depend on the decisions of the Red players. In the experiment, each Red player only makes one single decision.

Player Red faces the following decision scenario: In the beginning, Player Red and Player Yellow own 40 points respectively. Then, Player Red will face the following options:

Option 1: Both of them maintain their current amount of points. That is, Player Red receives 40 points, and Player Yellow receives 40 points.

Option 2: Player Red takes away the 40 points of Player Yellow to gain an additional 10 points for himself or herself. That is, Player Red receives 50 points, and Player Yellow receives 0 points.

There is no uncertainty in the experiment, which means that when Player Red makes the decision, the earnings of the two players are finalized and the experiment ends. At the end of the experiment, Player Yellow will be informed of the choice made by the matched Player Red.

Part 1 (Two Advice treatments)

Considering that it might be difficult for Player Red to make decisions in this situation, we recruited a group of students at our university recently to provide advice for Player Red. The students who gave the advice took part in an anonymous pen-and-paper experiment, in which they offered advice and reasons for the Red players' decision-making in today's experiment, without making any experimental decisions themselves. The students who gave the advice were paid a fixed amount of money for the experiment, which was independent to the decisions of the Red players today.

Before making the final decision, each Red player will randomly receive a piece of advice we've collected (each player may receive the same or different advice); We didn't perform any adjustments with the advice we collected, all the advice ware scanned into pictures and presented to the Red players. After reading a piece of advice, Player Red will make the final decision.

[Player Red]

You are randomly assigned as Player Red by the computer. Before you see the advice, we want to know which choice you're inclined to make at the moment.

Attention! It's just a tendency that is irrelevant to the income you'll earn from this experiment. In other words, only the final decision after you read the advice will determine the income you and the Player Yellow will earn; Final decisions later can be the same or different from your current inclination.

Prefer Option 1: Both you and the Player Yellow maintain the existing points. That is, you receive 40 points, and Player Yellow receives 40 points.

Prefer Option 2: You take away the 40 points of Player Yellow to gain an additional 10 points. That is, you receive 50 points, and Player Yellow receives 0 points.

The advice drawn by the computer is as follows. Please read it carefully.

[Insert picture of advice]

Next, please make your final decision.

Part 2 (All treatments)

[Player Red]

You are randomly assigned as Player Red by the computer. Next, please make your choice.

Option 1: Both you and Player Yellow maintain the existing points. That is, you receive 40 points, and Player Yellow receives 40 points.

Option 2: You take away the 40 points of Player Yellow to gain an additional 10 points for yourself. That is, you receive 50 points, and Player Yellow receives 0 points.

[Player Yellow]

You are randomly assigned as Player Yellow by the computer (that is, you don't have to make any decisions). Now, please wait for Player Red in your group to make a decision.

(When Player Red makes the decision, the page updates as follows.)

Player Red has already chosen Option 1, and you gain an additional point of 40 in this experiment.

Player Red has already chosen Option 2, and you gain an additional point of 0 in this experiment.

[All players]

At the end of the experiment, your total incomes in this experiment equal the show-up fee plus the additional incomes you earned in the experiment and divided by 2. Your incomes will be converted to RMB at the rate: 2 points of income = ￥ 1.

$$\text{Your total earnings（RMB）} = \text{Your total incomes (points)} / 2$$

Instructions (Advice-eliciting)

Welcome to this experiment on decision-making. Please read the following instructions carefully. The experiment will last for about 30 minutes. During the experiment, do not communicate with other participants in any means. If you have a question at any time, please raise your hand, and an experimenter will come and assist you privately.

Each participant sits in a separate seat, and the experiment will be done with pen and paper. The experiment is completely anonymous, meaning that neither the experimenters nor the other participants know your decisions. You will get ￥ 15 as a show-up fee today, and an additional fixed amount of ￥20 after completing the experiment. After the experiment, your total earnings will be paid to you privately.

First, we are going to talk about a future experimental scenario, in which we will recruit some students. Your role today is to advise future participants and help them make decisions. You will not make decisions yourselves.

The experimental scenario to be carried out in the future is as follows: The subjects come into the lab, and every two participants are randomly matched together and assigned roles Red or Yellow. The roles of the two people are completely random. The experiment is completely anonymous. Subjects do not know who the other group member is, only that they are sitting in the lab.

Only the Red player in the experiment will make a decision that determines the earnings of himself/herself and the earnings of the matched Yellow player in the

experiment. Each Red player makes one single decision during the entire experiment. Player Red faces the following decision scenario: In the beginning, Player Red and Player Yellow own 40 points respectively. Then, Player Red will face the following options:

Option 1: Both of them maintain their current amount of points. That is, Player Red receives 40 points, and Player Yellow receives 40 points.

Option 2: Player Red takes away the 40 points of Player Yellow to gain an additional 10 points for himself/herself. That is, Player Red receives 50 points, and Player Yellow receives 0 points.

The conversion ratio between points and RMB income is 2:1. There is no uncertainty in the experiment, which means that when Player Red makes the decision, the earnings of the two players are finalized and the experiment ends. At the end of the experiment, Player Yellow will be informed of the choice made by the matched Player Red.

[What you need to do]

Since it may be difficult for the Red player to make such a choice, we would like you to advise Player Red on what to do, that is, to help the Red player choose between Option 1 and Option 2.

You can make any suggestion, such as suggesting the Red player maintain their points (Option 1) or take the points of the other to increase her own earnings (Option 2). No matter what advice you give, you will be paid the same amount. Also, your advice is anonymous and we will put them in an envelope at the end of the experiment. To ensure anonymity, please do not disclose any personal information related to your identity (such as your name, student number, etc.) in your advice.

When giving advice, you could imagine what you would do if you were a Red player. Then, you can give advice based on the choices you will make (or not, of course). When giving advice, make sure to also provide your reasons, such as maximizing personal benefits, freedom of choices, behavioral norms, psychological

feelings, or any other perspectives.

We welcome any suggestions: no matter you suggest Option 1 or Option 2. So, you don't have to worry about the advice your give, as there is no right or wrong advice. We will randomly use the advice you give today in the future experiments.

Now, on the paper in front of you, please write down your advice and your reasons for the Red players. After finishing your advice, please fold your paper with advice and put it in the envelope. Please return the envelope to us to receive your earnings in today's experiments.

Appendix B. Supplemental tables and figures

Table 5 The number of subjects by intention and decision in the advice treatments

Treatment	Fair advice		Selfish advice	
	Decision		Decision	
Intention	Fair	Selfish	Fair	Selfish
Fair	16	0	17	10
Selfish	9	12	0	13

Notes: each cell shows the number of subjects with the corresponding intentions (row) and decisions (column) in each treatment.