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Self-interest or joint welfare? Person and situation factors in interpersonal decisions about time

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Abstract

While previous research on interpersonal decisions has focused on individual differences or situational determinants, in this paper, we looked at the interplay of situation and personality in decisions that are characterized by a conflict between self-interest and joint welfare. In an online experiment, 185 participants made decisions about the allocation of their own work time and the work time of another anonymous participant. Agency and uncertainty were manipulated between subjects, and social value orientation as well as dispositional envy were assessed. Participants chose between an option that maximized participants' joint welfare and an option that maximized personal payoffs. The results pointed to an interaction between personality and situational forces: Uncertainty moderated the effect of social value orientation, and agency moderated the effect of envy on decisions. Taken together, the results provide evidence that the effect of individual differences in interpersonal decisions depends on the situation. Implications for team work are discussed in situations where a group potentially benefits disproportionally more from an individual's relatively higher effort than the individual who exerts the effort.

1 | INTRODUCTION

When individuals work together on a project, they have to decide how much time they should invest in the task, and importantly, how much to invest relative to others. For example, say Tim and Tom are working together and Tim is more proficient at the task than Tom. Tim knows that if he works for 2 hr, Tom will have to work for 1 hr. However, Tom will have contributed only 1 hr, which will be 1 hr less than Tim will have contributed. Alternatively, Tim could work for 1.5 hr to finish the task and then Tom would have to work for 2.2 hr. Thus, Tim faces a decision between two options: In order to finish the task, (a) he can work for 2 hr and Tom can work for 1 hr, a joint welfare-maximizing option or (b) he can work for 1.5 hr and Tom can

work for 2.2 hr, a selfish option. Option A maximizes the joint payoff by minimizing the joint effort but the option also results in more work for Tim and disadvantageous inequality regarding his individual effort in comparison with Tom's. Option B maximizes Tim's payoff by minimizing his individual effort. However, the inequality of effort is lower for Option B than for Option A. Would Tim be willing to use his proficiency advantage to maximize their joint welfare by choosing Option A, or would he favor self-interest by choosing Option B?

The decision about how to allocate time in an interpersonal task represents an interpersonal decision because it has consequences for the decision maker and at least one other person (Choshen-Hillel & Yaniv, 2011; Loewenstein, Thompson, & Bazerman, 1989; Trautmann & Vieider, 2012). Whereas past empirical studies that

were grounded in behavioral economics have examined decisions about the allocation of money, we were interested in decisions about the allocation of working time. Theories have not been specific about the resource in question because decisions reflect motives that are aimed at maximizing utility rather than money (Fehr & Schmidt, 1999). Time and money are usually assumed to be substitutes for each other (Becker, 1965), and therefore, we used past research on decisions about money to derive predictions for decisions about time. We thus also wanted to test whether theorizing about decisions about how to allocate money could be generalized to decision about how to allocate time. Interpersonal decisions regarding time have been examined in dictator games (Davis, Jehli, Miller, & Weber, 2015; Noussair & Stoop, 2015), ultimatum games (Berger, Rauhut, Prade, & Helbing, 2012; Ellingsen & Johannesson, 2009), and helping (Danilov & Vogelsang, 2015). Findings have supported Becker's (1965) claim that behavior in decisions about time resembles behavior in decisions about money. However, previous studies have not determined the conditions under which an option that maximizes joint welfare at personal cost is preferred to an option that yields a higher payoff and advantageous inequality to the decision makers. In the present study, we focused on interpersonal decisions about time and investigated how situational and individual differences affect decisions in favor of self-interest or joint welfare maximization.

1.1 | Situational differences in interpersonal decisions: Agency and uncertainty

Research has shown that humans particularly dislike inequality in outcomes when the inequality is to their disadvantage (Fehr & Schmidt, 1999; Loewenstein et al., 1989; Schmitt et al., 2009; Tricomi, Rangel, Camerer, & O'Doherty, 2010). In bargaining situations, inequality aversion results in the rejection of low offers (i.e., offers that result in disadvantageous inequality for the decision maker) even if it results in a zero payoff for everyone (Brandstätter, Güth, & Kliemt, 2010; Güth & Kocher, 2014). Conflicting with this notion of inequality aversion is the finding that people engage in prosocial behavior by increasing another's welfare, even if it is costly to themselves (for a review, see Penner, Dovidio, Piliavin, & Schroeder, 2004) and seek to maximize joint payoffs even if this puts them in a disadvantageous position relative to others (Charness & Rabin, 2002; Engelmann & Strobel, 2004). The apparent inconsistency in empirical findings can be resolved when considering situational differences, namely agency and uncertainty.

Low agency decisions are decisions in which individuals say which option they prefer, but they cannot determine which option is chosen. By contrast, high agency decisions are decisions in which individuals determine the outcome (Choshen-Hillel & Yaniv, 2011). Previous studies have shown that in low agency decisions, participants liked options that maximized their personal payoffs and disliked options with disadvantageous personal outcomes even when these maximized the joint payoff (Fehr & Schmidt, 1999;

Loewenstein et al., 1989; Tricomi et al., 2010). By contrast, in decision situations that are characterized by high agency, participants preferred to maximize joint payoffs even when their own payoff suffered a relative disadvantage (Charness & Rabin, 2002; Engelmann & Strobel, 2004). The studies above focused on decisions about how to allocate tangible goods (e.g., erasers or money; Choshen-Hillel & Yaniv, 2011, 2012; Shaw, Choshen-Hillel, & Caruso, 2016), but it is possible to assume that agency will also be an important factor when it comes to decisions about time.

Beyond agency, many interpersonal decisions involve uncertainty. For example, people may be wondering whether the time they spend doing community work will really make a difference. Uncertainty in this case reflects uncertainty about the effect of one's actions on others and whether the intentions of the decision maker cannot be inferred upon by the affected passive party (Andreoni & Bernheim, 2009; Dana, Weber, & Kuang, 2007). High uncertainty has been shown to result in more selfish choices, whereas low uncertainty tends to result in decisions that are more prosocial and less selfish (Dana, Cain, & Dawes, 2006; Dana et al., 2007). Results can be explained by the power of social norms: When decision makers determine outcomes, they are typically motivated to appear fair in the eyes of the affected party and therefore behave in a way that is in line with joint welfare. However, when uncertainty obscures intentions because outcomes for the recipient depend on other random factors, decision makers tend to maximize their payoffs at the cost of the other (Andreoni & Bernheim, 2009). Again, the studies above were about money, but we expected similar results for decisions about time. Thus, uncertainty presents an important situational factor that should also influence interpersonal decisions when it comes to decisions about time.

1.2 | Individual differences in interpersonal decisions: Social value orientation and dispositional envy

According to Messick and McClintock (1968), three social motives guide interpersonal decisions: (a) cooperation, a social motive satisfied by maximizing joint payoffs, (b) competition, a social motive satisfied by maximizing the difference in personal payoffs in comparison with another person, and (c) individualism, a social motive satisfied by maximizing personal payoffs regardless of the other person. These social motives are captured by an individual's social value orientation (SVO; Van Lange, Otten, De Bruin, & Joireman, 1997). SVO reflects the weight individuals assign to the consequences that an interpersonal decision has for themselves and others (Van Lange et al., 1997). High SVO (i.e., a stronger prosocial orientation) is positively related to choices that maximize joint outcomes, whereas low SVO is associated with choices that maximize personal payoffs (Balliet, Parks, & Joireman, 2010; Baumert, Schlösser, & Schmitt, 2014; Fung, Au, Hu, & Shi, 2012; Hilbig & Zettler, 2009; McClintock & Allison, 1989). Furthermore, prosocial

individuals are more likely to volunteer time for a collective good than selfish or competitive types (McClintock & Allison, 1989; Van Lange, Schippers, & Balliet, 2011). Therefore, SVO reflects individual differences in the behavioral component of interpersonal decisions.

Individual differences in the affective component of interpersonal decisions are reflected by envy. Envy plays an important role when people are confronted by another person who has an advantage over themselves. In interpersonal decisions, this is the case when the option that maximizes the joint payoff yields a relative disadvantage for the self (Fehr & Schmidt, 1999). Research has revealed individual differences in the tendency to envy others for what they have (so-called dispositional envy; Rentzsch & Gross, 2015; Smith, Diener, & Hoyle, 1999). Individuals high in dispositional envy tend to react with intense, negative feelings when encountering a disadvantage relative to another person (Rentzsch, Schröder-Abé, & Schütz, 2015). The effect of dispositional envy on interpersonal decisions with real consequences has yet to be investigated.

1.3 | Interaction between the situation and individual differences in interpersonal decisions

Previous research has focused on either situational (e.g., Andreoni & Bernheim, 2009; Choshen-Hillel & Yaniv, 2011, 2012; Dana et al., 2007) or individual differences (e.g., Brandstätter & Güth, 2002; Hilbig, Glöckner, & Zettler, 2014; McClintock & Allison, 1989) and their effects on interpersonal decisions. We argue that the effect of individual differences on interpersonal decisions depends on situational contingencies. We will investigate person x situation interactions and propose that uncertainty and agency will moderate the effect of SVO as well as envy on interpersonal decisions.

First, we propose that situational uncertainty about the impact of decisions will moderate the effect of SVO on interpersonal decisions. Empirical (Dana et al., 2006, 2007) and theoretical work (Andreoni & Bernheim, 2009) has suggested that under low uncertainty, people behave in a prosocial manner; however, when uncertainty is high, prosocial behavior is shown by only a few people. In particular, we hypothesized that in situations with low uncertainty (i.e., situations in which the consequences of one's actions are clear), the social norm to maximize joint outcomes would exert a strong influence. Thus, independent of their SVO, most participants would choose the joint welfare-maximizing option. In highly uncertain situations (i.e., situations in which the consequences of one's actions are less clear), however, the social norm should be less binding because participants could argue that outcomes are uncertain. Our reasoning has found support from the finding that in interpersonal decisions involving risk (Leder & Betsch, 2016) or uncertainty about the amount of resources to be distributed (De Kwaadsteniet, Van Dijk, Wit, & de Cremer, 2006), social preferences predict choice. Thus, we hypothesized that only when individuals are strongly motivated to benefit the other, namely, if

they have high SVO, will the choice be in favor of the option to maximize joint outcomes.

Second, we hypothesized that the effect of agency would moderate the effect of dispositional envy in interpersonal decisions. On average, humans dislike options resulting in disadvantageous inequality even when such options result in a higher joint payoff (e.g., Loewenstein et al., 1989). To account for the observation that humans prefer to receive nothing over being worse off than others, social preference theories (Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999) include envy as a parameter in an individual's utility function. However, no previous empirical studies have measured envy in decisions makers and how this emotion actually affects choice. As individuals differ with respect to their preferences for disadvantageous inequality, and thus, dispositional envy (e.g., Kirchsteiger, 1994; Rentzsch & Gross, 2015), individuals high in dispositional envy should choose a joint welfare-maximizing option less often when a conflict between self-interest and joint welfare exists. We hypothesized that with high agency, dispositional envy would be associated with a lower likelihood of choosing a joint welfare option over an option that maximizes personal payoffs.

1.4 | The present study

The example of Tim and Tom presents a typical situation in the organizational context in which inequality aversion and self-interest are in conflict with a prosocial motive to maximize joint welfare. Option A minimizes joint working time at personal cost and results in disadvantageous inequality, and Option B minimizes one's own working time. Would Tim choose Option A or Option B? To answer this question, the present study utilized theories about social preferences in the context of working time and tested how individual differences in the decision maker influence such decisions depending on the characteristics of the situation.

We carried out an online study in which people made a decision about their workload and the workload of another anonymous participant. We varied situational agency and uncertainty about the consequences between subjects. The task was ecologically valid because participants' decisions about working time were directly related to their time-based compensation. We used two options: One option maximized joint payoffs and the other option was selfish. On the basis of previous research, we expected that agency would result in a greater willingness to choose the joint welfare-maximizing option. Under conditions of high agency, dispositional envy was expected to be associated with a lower likelihood of choosing a joint welfare option over a selfish option. Thus, individuals high in dispositional envy should behave in line with self-interest when an actual conflict between self-interest and joint welfare exists. Furthermore, in situations yielding uncertainty about consequences for others, people should prefer to maximize their personal payoffs. We argue that this effect is due to the presence of less binding social norms because participants can

argue that outcomes are uncertain. Thus, we hypothesized that under conditions of uncertainty, only individuals who are strongly motivated to benefit others (i.e., those high in SVO) should favor the option to maximize joint outcomes.

2 | METHOD

2.1 | Participants and design

Participants were 185 psychology students (M_{Age} = 22.0, SD_{Age} = 4.5, 81% women) who received 30 min of course credit for their participation. Participants were recruited through announcements on billboards, in classes, and on the online recruitment system ORSEE (Greiner, 2015). The sample size was determined by the goal to have at least 40 participants in each treatment cell. After reaching this goal, sampling stopped. No participant was excluded from the analysis. Participants were randomly assigned to one of four conditions resulting from orthogonal variation in agency (high vs. low) and uncertainty (high vs. low). The dependent variable was a single decision between a joint welfare-maximizing option and a selfish option with respect to how to allocate working time.

2.2 | Materials

2.2.1 | Choice behavior

Choice behavior was measured with participants' decision between two options. We adapted the payoff matrix from Choshen-Hillel and Yaniv (Study 2, 2011), but we used time instead of money as a resource. Each option was presented as a one-sentence statement about how long the participant and another randomly matched participant would have to work to receive the 30 min of course credit. Option 1 was an option that maximized participants' joint welfare by minimizing their joint working time: "I have to work for 20 min on this online study to get 30 min course credit, while the other participant has to work for 10 min for the same credit." Option 2 was an option that was selfish in that it maximized the decision maker's individual payoff by minimizing the decision maker's individual effort: "I have to work for 19 min on this online study to get 30 min of course credit, while the other participant

has to work for 23 min for the same credit" (see Table 1 for more details). At the end of the study, participants were debriefed and informed that their decisions had no consequences.

According to the theory of social preferences (Fehr & Schmidt, 1999), the selfish option should on average be preferred over the joint welfare-maximizing option (the dominance of this option for 70% of the types of social preferences as suggested using the parameters and utility function from Fehr & Schmidt, 1999; for mathematical proof, see the Appendix).

2.2.2 | Agency

Agency was manipulated in line with Choshen-Hillel and Yaniv (2011). In the *high agency condition*, participants were asked to decide between Options 1 and 2 and thus determine how long they and the other randomly matched participant would have to work to fulfill the requirements and receive 30 min of course credit. In the *low agency condition*, participants faced the same two options but indicated which option they considered more satisfying.

2.2.3 | Uncertainty

Uncertainty was manipulated by changing the wording of the options. The word "might" ("vielleicht" in German) was introduced before all the time statements that referred to the workload of the randomly matched other person in the high uncertainty condition. The *high uncertainty condition* read: "I have to work for 20 min on this online study to get 30 min of course credit, while the other participant *might* have to work for 10 min for the same credit." The *low uncertainty condition* read: "I have to work for 20 min on this online study to get 30 min course credit, while the other participant has to work for 10 min for the same credit" (examples are based on the joint welfare-maximizing option; the same wording applies to the selfish option with altered numerical values).

2.2.4 | Social value orientation

SVO was assessed with the social value orientation slider measure (SVO slider; Murphy, Ackerman, & Handgraaf, 2011). Participants

TABLE 1 Payoff structure for decision options for participants and a randomly matched participant from the other group

	For me (min)	For the other (min)	Joint working time (min)	Difference between decision maker relative to other (min)
Option 1 (joint welfare maximizing)	20	10	30	+10
Option 2 (selfish)	19	23	42	−4
Option 1 versus. Option 2	−1	+13	+12	

Note: Working time in the column "For me" depicts the participant's working time. Working time in the column "For the other" depicts the other participant's working time. Lower values correspond to the better outcome, because they minimize time spent on the task.

made six decisions about how to split a given amount of money between them and another hypothetical person by clicking on one of nine different options (for an example item see Figure 1).

The SVO index is computed by first computing the mean allocation to the self $\overline{A_s}$ across all six items and the mean allocation to the other $\overline{A_o}$. Then 50 is subtracted from both means, and finally, the inverse tangent of the ratio between the two means is computed.

$$SVO° = \arctan\left(\frac{\overline{A_o} - 50}{\overline{A_s} - 50}\right) \quad (1)$$

According to Murphy et al. (2011), the angles represent idealized SVO types: "Altruists would have an angle greater than 57.15°; prosocial types would have angles between 22.45° and 57.15°; individualists would have angles between –12.04° and 22.45°; and competitive types would have an angle less than –12.04°" (p. 773). In the present study, we used the continuous SVO angle. Higher SVO values indicate higher prosocial motivation.

2.2.5 | Dispositional envy

Dispositional envy was assessed with the 15-item Domain-Specific Envy Scale (DSES; Rentzsch & Gross, 2015). Responses to the DSES were rated on 7-point Likert scales ranging from 1 (*not at all*) to 7 (*very much*), Cronbach's alpha (α) = .91.

2.3 | Procedure

In the beginning, participants were informed that they would be asked to answer a number of personality questionnaires and would be given course credit in exchange for 30 min of their time. Furthermore, they were informed that two groups of participants existed and that the groups differed in their workload. Participants than faced a decision between two options describing the workload for the participant him- or herself and an anonymous participant from the other group. After participants made their choice, they completed the standard SVO slider measure (Murphy et al., 2011), a questionnaire for assessing dispositional envy (Rentzsch & Gross, 2015), and a questionnaire for assessing locus of control, which was not part of this study. The study took approximately 20 min.

3 | RESULTS

We first examined the difference between the conditions and calculated the proportion of choices in favor of the joint welfare-maximizing option. Choice was affected by agency but not uncertainty. In the high agency condition, 82.4% of participants preferred the joint welfare-maximizing option in comparison with 64.5% in the low agency condition, $\chi^2 = 7.29, df = 1, p = .007, \varphi = .20$. In the high uncertainty condition, 73.4% of participants preferred the joint welfare-maximizing option, whereas 73.6% in the low uncertainty condition preferred it, $\chi^2 = .001, df = 1, p = .97, \varphi < .01$.

Next, we computed a logistic regression with the R-package lme4 (Bates, Mächler, Bolker, & Walker, 2015) to account for the binary outcome variable. We first entered all predictor variables (i.e., agency, uncertainty, SVO, envy) into a regression to analyze the unique main effect of each predictor on participants' choice (1 = joint welfare-maximizing option, 0 = selfish option) and also tested their interaction. In addition, four separate models were run to examine the impact of SVO moderated by agency (0 = low,
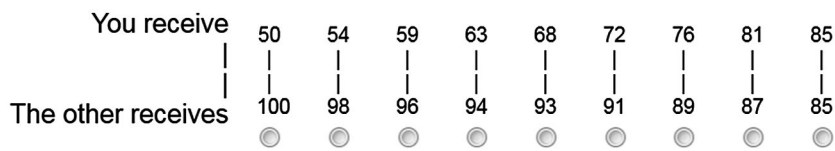

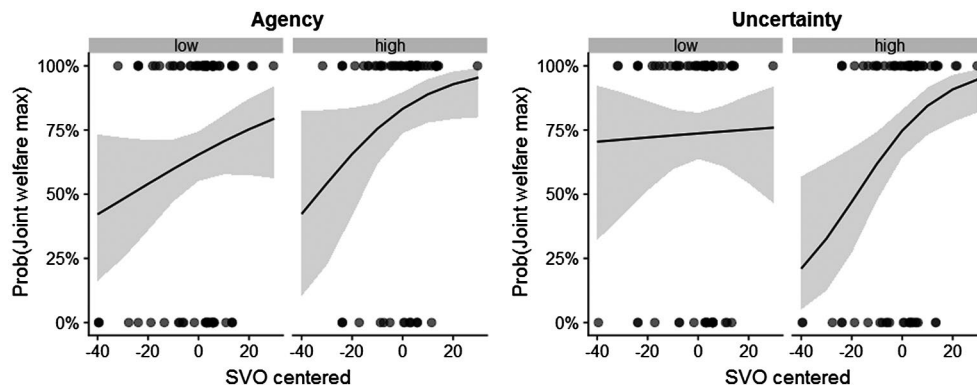**FIGURE 1** Example of the SVO measure used in the present study

FIGURE 2 Plots depict the likelihood of a joint welfare-maximizing choice predicted by individual's social value orientation in each experimental condition. Bars represent 95% confidence intervals. Grids depict Agency and Uncertainty high and low, respectively
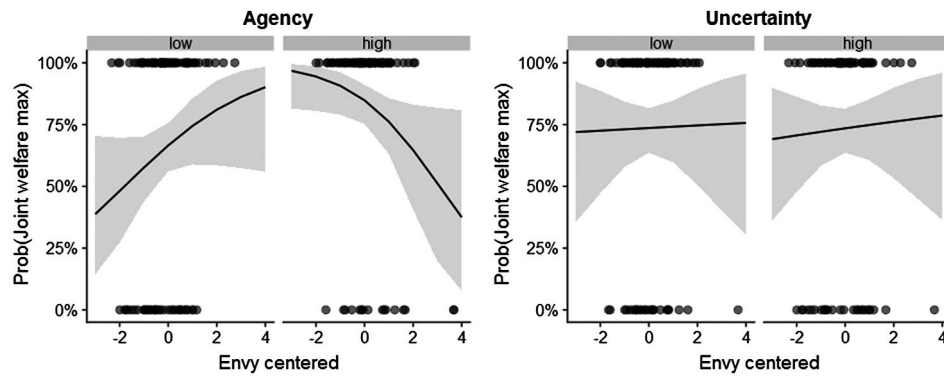
FIGURE 3 Plots depict the likelihood of a joint welfare maximizing choice predicted by individual's envy in each experimental condition. Bars represent 95% confidence intervals. Grids depict Agency and Uncertainty high and low, respectively

TABLE 2 Regression models for the experimental effects and interaction effects of experimental factors and person variables

	Probability of a joint welfare-maximizing choice				
	Main effects	Agency × SVO	Agency × Envy	Uncertainty × SVO	Uncertainty × Envy
	(1)	(2)	(3)	(4)	(5)
Agency	.91* (.20, 1.62)	.97** (.25, 1.68)	1.03** (.28, 1.79)		
Uncertainty	.08 (−.61, .76)			.06 (−.62, .74)	−.01 (−.66, .65)
SVO	.03* (.005, .06)	.02 (−.01, .06)		.004 (−.04, .04)	
Envy	.06 (−.29, .41)		.38 (−.07, .84)		.03 (−.45, .51)
SVO*Agency		.02 (−.03, .08)			
Envy*Agency			−.94** (−1.64, −.24)		
SVO*Uncertainty				.06* (−.0001, .11)	
Envy*Uncertainty					.04 (−.61, .70)
Constant	.61* (.03, 1.20)	.64** (.21, 1.07)	.69** (.24, 1.13)	1.03*** (.56, 1.50)	1.03*** (.56, 1.49)
Observations	185	185	185	185	185
Log likelihood	−100.51	−100.26	−99.56	−102.06	−106.89
Akaike Inf. Crit.	211.02	208.51	207.13	212.12	221.78

Note: N = 185. The table presents unstandardized regression coefficients and 95% CIs.

*p ≤ .05; **p < .01; ***p < .001.

1 = high) and moderated by uncertainty (0 = low, 1 = high) as well as the impact of envy moderated by agency and moderated by uncertainty on the joint welfare-maximizing choice, respectively. To improve the interpretability of the model results, all continuous predictor variables were grand mean centered, respectively, before running the models. Unstandardized regression coefficients (denoted as *b*s in the current manuscript) for binary outcomes correspond to log-odds ratios. To facilitate the interpretation of the results, the predicted values were transformed into predicted probabilities using the inverse logit function. The plotted regression slopes are depicted in Figure 2 for the effect of the experimental conditions with SVO and Figure 3 for the effect of the experimental conditions with envy.

In the current experiment, we found evidence of a medium-sized positive effect of agency, $b = 0.91$, $z = 2.52$, $p = .01$, 95% CI [0.204, 1.618], but no effect of uncertainty, $b = 0.08$, $z = 0.22$, $p = .83$, 95% CI [−0.608, 0.759], on the rate of joint welfare-maximizing choices. The

odds ratio of a joint welfare-maximizing choice in the high agency condition was 2.5 compared with the low agency condition (see the results of the logistic regression for the main effects model in Table 2). No interaction between the experimental factors agency and uncertainty was observed, $b = 0.37$, $z = 0.513$, $p = .60$, 95% CI [−1.05, 1.79], and we dropped the interaction term of agency and uncertainty from the model for the other analyses. Furthermore, we found a main effect only for SVO, $b = 0.03$, $z = 2.73$, $p = .006$, 95% CI [0.005, 0.06], but not for envy $b = 0.06$, $z = 0.34$, $p = .74$, 95% CI [−0.288, 0.408], indicating that participants high in SVO chose the joint welfare-maximizing option more often than participants low in SVO did.

3.1 | Social value orientation in context

We found an interaction between SVO and uncertainty, $b = 0.06$, $z = 2.06$, $p = .05$, 95% CI [−0.001, 0.12]. In the high uncertainty

condition, higher SVO increased the likelihood of the joint welfare-maximizing choice, $b = 0.06$, $z = 2.93$, $p = .003$, 95% CI [0.02, 0.10]. In the low uncertainty condition, SVO did not affect the likelihood of the joint welfare-maximizing choice, $b = 0.004$, $z = .20$, $p = .84$, 95% CI [−0.04, 0.04]. Figure 2 depicts the regression curves that resulted for each experimental condition.

The results showed that the effect of SVO was moderated by the degree of uncertainty. When uncertainty was low, the choices were in favor of the joint welfare-maximizing option in general, independent of SVO. On the other hand, when uncertainty was high, participants with lower than average SVO preferred the selfish option (i.e., maximizing personal payoffs), whereas individuals with average or high SVO chose the joint welfare-maximizing option. The interaction between SVO and agency was not significant, $b = 0.02$, $z = 0.82$, $p = .41$, 95% CI [−0.03, 0.08], indicating that agency did not influence the impact of SVO on the probability of choosing the joint welfare-maximizing option.

3.2 | Envy in context

Examining the impact of envy revealed a significant interaction between envy and agency, $b = −1.08$, $z = −2.92$, $p = .004$, 95% CI [−1.81, −0.35]. In the high agency condition, higher envy decreased the likelihood of a joint welfare-maximizing choice, $b = −0.56$, $z = −2.07$, $p = .039$, 95% CI [−1.09, −0.03]. In the low agency condition, the link between envy and the likelihood of the joint welfare-maximizing choice was not significant, $b = 0.38$, $z = 1.65$, $p = .099$, 95% CI [−0.07, 0.84]. Figure 3 depicts the regression function for each experimental condition.

The results showed that the effect of envy was moderated by agency. When agency was high, participants with lower scores in dispositional envy chose the joint welfare-maximizing option more often, whereas participants with higher than average dispositional envy more often preferred the selfish option (i.e., maximizing personal payoffs and avoiding disadvantageous inequality). The interaction of envy and uncertainty was not significant, $b = 0.04$, $z = 0.132$ $p = .89$, 95% CI [−0.61, 0.70], indicating that uncertainty had no effect on the impact of envy on the joint welfare-maximizing choice.

4 | DISCUSSION

In line with previous research, agency increased the likelihood of joint welfare-maximizing choices (Choshen-Hillel & Yaniv, 2011) such that participants were willing to work for longer and face disadvantageous inequality. This shows that agency affects decisions about time in a manner that is similar to how it influences decisions about money. This result, along with previous findings examining interpersonal decisions about time (Berger et al., 2012; Danilov & Vogelsang, 2015; Davis et al., 2015; Noussair & Stoop, 2015) provides further support that theories of social preferences can be applied to decisions about time in interpersonal decisions.

Besides exerting a main effect, agency also brought out the effect of envy on choices. Envy did not have an effect on decisions when agency was low, but it did result in choosing options that would result in higher payoffs to the self when agency was high. This suggests that dispositional envy is associated with selfish decisions that have tangible consequences, whereas in situations of low agency, dispositional envy does not matter when it comes to interpersonal decisions about time. This finding is in line with previous studies showing that in hypothetical decisions that exemplify a low agency situation, individual differences mattered less than in decisions with real payoffs (i.e., high agency situations; Ferguson, Zhao, O'Carroll, & Smillie, 2019; Hilbig, Thielmann, Hepp, Klein, & Zettler, 2015; Zhao, Ferguson, & Smillie, 2017). Importantly, however, by inspecting absolute values in the present study, we found that the interaction effect was located in individuals low in dispositional envy in particular. Low dispositional envy seems to result in interpersonal decision behavior that is sensitive to situational variables. Individuals low in dispositional envy chose to behave prosocially (i.e., they chose to maximize joint welfare) when their behavior affected others, whereas individuals high in dispositional envy disliked disadvantageous inequality in general and did not behave differently whether the consequences were brought on by themselves or not. Thus, our study fits into a novel line of research that links personality and economic games (Baumert et al., 2014; Hilbig & Zettler, 2009; Ruch, Bruntsch, & Wagner, 2017) by presenting an important avenue to better understand how and when personality affects behavior.

In line with the literature (Fung et al., 2012; Hilbig & Zettler, 2009), SVO was positively associated with the likelihood of choosing the joint welfare-maximizing option. However, it is important to note that the impact of individual differences on social decisions depended on the situation. The uncertainty of the outcome of the interpersonal decision affected the impact of SVO in social decisions. Only when uncertainty was high did SVO predict the decision. In the high uncertainty condition, higher SVO led to more choices in favor of joint welfare-maximization, even if this led to higher personal costs. Our finding shows that SVO seems particularly relevant in situations that allow for moral wiggle room (Dana et al., 2007), whereas in a situation with low uncertainty, the situational pressure to behave prosocially is strong, and individual differences do not have an impact. Only individuals high in SVO maximized joint welfare under uncertainty, whereas those low in SVO did not.

The current research suggests that uncertainty about the interdependence of outcomes can be an important situational factor that can influence the relevance of SVO for decisions. It is important to note that in the current study, we used a special kind of uncertainty. We manipulated uncertainty by varying the certainty about whether the payoffs to the other were contingent upon the outcomes for the decision maker. Our results are in line with a previous study in which certainty about the size of the resource was varied (De Kwaadsteniet et al., 2006). Both findings diverged from a recent paper in which high uncertainty about the self particularly affected "the nice guys" in a negative way, that is, individuals high in SVO became less prosocial (Pfattheicher & Böhm, 2018). In the study by

Pfattheicher and Böhm (2018), however, the object of uncertainty was the self as described in uncertainty identity theory by Hogg (2007). Apparently, the specific aspect of uncertainty in a given situation makes a difference, that is, the contingency of the payoffs, the size of the resources, or the decision maker's self-knowledge.

In the current study, participants faced a choice that would result in a higher joint payoff that would allow another person to free ride (i.e., that person could exert less effort to fulfill the quota). Research on social dilemmas regarding effort in groups has found that individuals are averse to enabling other group members to free ride by working more than them, which was termed the sucker effect (Kerr, 1983). One reason for the sucker effect is that people dislike inequitable outcomes (Schnake, 1991). Contrary to the sucker effect, Williams and Karau (1991) observed that members in a group are willing to contribute more and compensate for others, an effect that they termed social compensation. Past studies carried out in the group context found that goal setting, group size, and expectation were important moderators when the sucker effect or social compensation occurred (Kerr, 1983; Latané, Williams, & Harkins, 1979; Robbins, 1995; for a review, see Simms & Nichols, 2014; Williams & Karau, 1991). The current study adds to the literature on the question of whether group members are willing to exert more effort than other group members to maximize joint welfare by suggesting that personality and situations matter. Under specific situational circumstances, individuals high in SVO and low in dispositional envy are willing to contribute more effort than others if their increased effort maximizes joint welfare.

4.1 | Limitations and directions for future research

In the present study, we used an ecologically valid design in which participants made decisions about time, in particular about how long they would have to work to obtain course credit. However, we do not know whether our results will generalize to interdependent social decisions in general because all previous studies on interdependent social decisions have focused on money rather than time (e.g., Charness & Rabin, 2002; Choshen-Hillel & Yaniv, 2011; Hilbig & Zettler, 2009; Loewenstein et al., 1989). Future research should directly compare interpersonal decisions about time and money to validate the present findings.

The option that maximized individual payoffs was also associated with the minimizing of inequality, and the increase in joint payoffs was disproportionally larger than the loss in individual payoffs in the second option. This resulted in two limitations: First, our findings may be restricted to situations in which the joint gain is disproportionally larger than the personal loss, and second, inequality aversion could have resulted in choices that are now considered selfish. However, in situations where differences in proficiency exist, more time allocated by one participant (the more proficient one) results in greater output for the group. If the same person reduces his or her effort to avoid facing a disadvantageous comparison, the necessary input of the other less proficient participant would be larger. For this reason, removing the payoff inequalities in the selfish option or making the payoff inequalities symmetrical for both options in the present study would change the nature of the decision situation and reduce the practical significance of the present study.

In the present study, participants made real decisions about their personal time, but the effects may depend on the specific rewards and costs. In the present study, participants only made one decision. It is possible that different situations could also elicit different responses. Future research should determine whether the effects found in our study are robust even under different distribution schemes. Furthermore, the sample consisted of university students, had a restricted age range, and was comprised predominantly of women. Thus, future research should investigate whether the present findings generalize to community samples and the general population.

4.2 | Conclusion

The current study showed that personality and situational forces interacted regarding decisions about allocations of time between oneself and another person. Uncertainty moderated the effect of SVO, and agency moderated the effect of dispositional envy in interpersonal decisions. Taken together, the study presents evidence that situations and personality alone do not determine interpersonal decision making, but their effects can only be understood if we attend to the interaction of individual differences and situations. The present study shows that decisions to sacrifice personal resources to improve the collective outcome is affected by decision maker's characteristics, specifically dispositional envy and SVO. Importantly, the effect of these characteristics is dependent on the situation. Agency moderates the effect of envy. Differences in dispositional envy are particularly relevant in situations of high agency, but not low agency. Uncertainty about the consequences of ones actions for the collective outcome moderates the effect of SVO and differences in SVO are particularly relevant in situations yielding high uncertainty. Thus, when self-interest and joint welfare are in conflict, the effects decision makers' characteristics depend of agency and uncertainty given in a specific situation.

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APPENDIX

To derive our prediction that only prosocial orientation predicts a decision in favor of the efficient option, consider the comparison of the options used in the present study based on the utility function and parametrization as proposed by Fehr and Schmidt (1999).

TABLE A1 Assumptions about the distribution of preferences (see Fehr & Schmidt, 1999, p. 844)

Distribution of αs in responders		Distribution of βs in proposers	
α	Proportion (%)	β	Proportion (%)
0	30	0	30
0.5	30	0.25	30
1	30	0.6	40
4	10		

Players are denoted i and j, and x represents their respective payoffs for an option (x_i, x_j). To capture considerations of fairness, the utility function uses two parameters, α and β. The parameter α_i captures the negative weight assigned to disadvantageous inequality by player I (i.e., his or her degree of envy), and β_i captures the negative weight assigned to advantageous inequality (i.e., i's degree of kindness). Both parameters reflects an individual's social preferences.

TABLE B1 Prediction of choice of i between options x^I and x^{II}

Social preferences of i		Utility of Options x^I, x^{II}		
α_i	β_i	$U_i(x^I)$	$U_i(x^{II})$	Choice
0	0	−19	−20	x^I
0	0.25	−20	−20	x^{II}
0	0.6	−21.4	−20	x^{II}
0.5	0	−19	−25	x^I
0.5	0.25	−20	−25	x^I
0.5	0.6	−21.4	−25	x^I
1	0	−19	−30	x^I
1	0.25	−20	−30	x^I
1	0.6	−21.4	−30	x^I
4	0	−19	−60	x^I
4	0.25	−20	−60	x^I
4	0.6	−21.4	−60	x^I

Fehr and Schmidt (1999) argued that inequality in general reduces the overall utility of an option. The utility function for the two-player case is given on p. 822:

$$U_i(x) = x_i - \alpha_i * \max(x_j - x_i, 0) - \beta_i * \max(x_i - x_j, 0), i \neq j$$

We used two options x^I and x^{II}:

$$x^I = (-19, -23)$$

$$x^{II} = (-20, -10)$$

The parameters α and β are distributed in the population, and Fehr and Schmidt (1999) provide a table (see Table A1) presenting the values for a large population of previous studies using ultimatum games to assess α on the basis of the responses of the responders and β based on the offers of the proposers.

We used all combinations of α and β as parameters in the utility function and found that only when i does not care about being worse off than j (i.e., $\alpha_i = 0$) and at the same time suffers from being better off than j (i.e., $\beta_i = \{.25, 0.6\}$), he or she chooses x^{II}, in all other cases, x^I dominates x^{II}. From this follows that at the most, 30% of the participants would choose x^{II} over x^I (see Table B1).