

Running head: Time and Money in Prosocial Behavior

Differences in Prosocial Behavior Regarding Decisions About how to Allocate Money and

Time are due to Decision-Makers' Characteristics

## Abstract

With the present study, we aim to test whether generosity is affected by the resource that is being exchanged. Are people equally generous when giving time or money? We aim to show that individuals who are prosocial, indicated by high values on social value orientation, honest-humility, and moral identity centrality, are more generous with respect to decisions about time than decisions about money. Moreover, we argue that personality variables explain more variance in time decisions than in monetary decisions because time is tied to identity to a greater extent than money is. In an experiment, participants (N = 380, 50% women) will complete questionnaires measuring social value orientation, moral identity centrality, and honesty-humility. Then opportunity cost of time will be measured, and participants will play two versions of a dictator game: a standard dictator game and a dictator game regarding time (time dictator game). We will conduct the experiment to test three hypotheses: (a) time and money are not equivalent: Participants are more generous with their time than with their money. (b) Giving time results in higher positive affect than giving money. (c) Participants' social value orientation, moral identity centrality, and honesty-humility will explain the difference between the donations of time and money, and personality traits will have a stronger impact on interpersonal time decisions than on interpersonal monetary decisions.

Differences in Prosocial Behavior Regarding Decisions About how to Allocate Money and Time are due to Decision-Makers' Characteristics

Many of the decisions we make every day are about how to allocate our resources. For example, how long do I listen to a stranger's problems on the bus? How much money do I give to a person in need? Both situations elicit a decision about the allocation of my resources, but in the first situation, my decision is about time, and in the second decision, my decision is about money. Will decisions about time and money be equivalent? Human capital theory (G. S. Becker, 1965) and even Benjamin Franklin proposed that "time is money" (Franklin, 1820, p. 1). However, empirical evidence has shown that, on a psychological level, time and money are not the same.

Whereas the values of money and time are both context-dependent (Leclerc, Schmitt, Dubé, & Dube, 1995), mentally keeping track of gains and losses (i.e., mental accounting) is easier to do for money than for time, which explains why sunk costs influence decisions about money but not decisions about time (Soman, 2001). It has been argued that the difficulty of mentally accounting for time is due to the fact that time is more ambiguous than money, and thus, whereas money is processed analytically, time is processed intuitively (Leonard Lee, Lee, Bertini, Zauberbmann, & Ariely, 2015; Saini & Monga, 2008).

Experiments investigating decisions about money and time have generally found that people are more generous with their time than with their money (Brown, Meer, & Forrest Williams, 2013; Davis, Jehli, Miller, & Weber, 2015; Ellingsen & Johannesson, 2009; Lilley & Slonim, 2014). However, people who are very generous with one are not necessarily very generous with the other—an individual's allocation decisions about time are not consistent with their allocation decisions about money (i.e., the rank order between time and money generosity is not stable, Bekkers, 2010; Davis et al., 2015). We hypothesize that certain

personality traits can explain why people differ in how much time or money they are willing to give to others. We present a registered report that provides a clear test of this hypothesis.

### **Interdependent Decisions and Prosocial Behavior**

Decisions regarding the allocation of resources that will have consequences for the decision-maker and at least one other person represent one specific case of interpersonal decisions (Bazerman, Blount White, & Loewenstein, 1995; Choshen-Hillel & Yaniv, 2011; Loewenstein, Thompson, & Bazerman, 1989; Trautmann & Vieider, 2012). Such allocation decisions depend on a person's preferences regarding their own payoffs and social preferences (Kahneman, Knetsch, & Thaler, 1986). Social preferences "refer to how people rank different allocations of material payoffs to themselves and others" (Fehr & Camerer, 2004, p. 55) and as a result reflect motives such as altruism, fairness, envy, or self-interest. Social preferences are affected by whether the consequences of the decision are interdependent or noninterdependent (Forsythe, Horowitz, Savin, & Sefton, 1994).

Interdependent decisions are decisions for which the consequences of the decision for the decider and the other affected party are determined jointly. As a result, the behavior of the decider is conditional on the decider's beliefs about the reactions of the other party. For example, the amount offered to another person in a bargaining situation depends on the decider's beliefs about whether the other will accept the offer or not.

To measure social preferences in interdependent situations, the ultimatum game is often used (Güth, Schmittberger, & Schwarze, 1982). In the ultimatum game, a proposer has to decide how to split an endowment between him- or herself and another anonymous recipient, the responder. The responder has to decide whether to accept the proposed split or not. If the split is accepted, both parties receive their respective payoff. If the split is rejected, neither receives anything. Thus, the proposer's offer depends on his or her beliefs about the

responder's aversion to inequality. The mode choice is a 50:50 split, which can reflect a preference for (a) fairness due to strategic concerns about the likelihood that the offer will be rejected or (b) fairness due to altruism (Camerer, 2003; van 'tWout & Leder, 2018).

Noninterdependent interpersonal decisions are decisions for which the outcomes of the other party depend on only the decision-maker's choices. In other words, the affected party is powerless, and the behavior of the decision-maker is unconditional. To measure unconditional social preferences, in particular altruism, the dictator game is used. In the dictator game, one participant, the so-called dictator, decides how to allocate a given endowment between him- or herself and an anonymous recipient (Engel, 2011; Leder & Schütz, 2018). Across studies, 36% of participants keep everything for themselves, 16% of participants split the given endowment 50:50, 10% give more than 50%, and 5% give the whole endowment to the recipient (Camerer, 2003; Engel, 2011). Apparently, people are less generous in noninterdependent decisions, where there is no expectation of reciprocity. In these decisions, the choice presents a measure of a person's prosociality, that is, the willingness to give away one's own resources (e.g., money, time, effort) to help others (Penner, Dovidio, Piliavin, & Schroeder, 2004).

Experiments examining prosocial behavior utilize money and time as resources in interpersonal decisions. Experiments utilizing paradigms rooted in behavioral economics mostly use monetary allocation decisions when investigating prosocial behavior (e.g., Baumert, Schlösser, & Schmitt, 2014; Ferguson, Zhao, O'Carroll, & Smillie, 2018; Gächter, 2007; Leder & Betsch, 2016; Zhao & Smillie, 2015b). Experiments in the tradition of social psychology often use helping behavior, which presents a decision about how to allocate time (e.g., Batson et al., 1988; Fessler, 2009; Mogliner, Chance, & Norton, 2012; Piliavin & Hong-Wen, 1990). Do the resources themselves influence interpersonal decision-making and prosocial behavior? This question has received only limited research attention. Before

reviewing the body of research that has examined the effect of the type of resource on interpersonal decisions, we will describe general differences between time and money.

### **Differences between Time and Money in Consumer Decision-Making**

Keeping track of losses and gains in different situations is referred to as mental accounting (Thaler & Johnson, 1990). Because the value of time is more ambiguous, and valuation in retrospect is difficult (Soman, 2001), mentally accounting for time is more difficult than mentally accounting for money. Mental accounting is used to explain the sunk cost effect, which describes the phenomenon that people invest more after losses to avoid having invested in vain (i.e., they honoring past losses in their decisions, Zeckhauser, Jayendu, & Hendricks, 1991), but this effect is usually not observed in decisions about time. However, after adding a monetary measure (e.g., hourly wage) to a time-investment task, the sunk cost effect also tends to occur in decisions about time (Soman, 2001). In addition, people tend to underestimate the time they need for holiday shopping, but they can accurately estimate the same shopping spree's expenses (Spiller & Lynch Jr., 2009).

The value of time and money are both context-dependent, which means the valuation is affected by reference points (Leclerc et al., 1995), but the value of time is more flexible than the value of money. The variation in satisfaction between losing or winning money is greater than the variation in satisfaction after winning or losing time of equal value (Leclerc et al., 1995; Okada & Hoch, 2004). This is interpreted as an indicator that the value of time can more easily be accommodated to outcomes (e.g., the value of time decreases less after losses) than the value of money. This interpretation suggests that the value of time is more ambiguous than the value of money (Okada & Hoch, 2004).

On the basis of the observation of such differences, it has been argued that the value of time is processed intuitively, whereas money relies on analytical information processing

(Leonard Lee et al., 2015; Saini & Monga, 2008). Interpersonal behavior is affected by the mode of information processing, that is, intuitive information processing results in more prosocial decisions than analytical information processing (Dickert, Sagara, & Slovic, 2011; Rand, Greene, & Nowak, 2012; Zaki & Mitchell, 2013). From this follows the idea that people might be more prosocial when making decisions about time than when making decisions about money.

### **Time and Money as Resources in Prosocial Behavior**

Thinking about money results in decreased helpfulness and more distancing from others (Vohs, Mead, & Goode, 2008), which perhaps explains why translating time into money via hourly pay results in less volunteering (Voe, 2003). When time was used as the resource in an ultimatum game, the majority of proposals were 50:50, and behavior was identical to ultimatum games reported in the literature using money (Berger, Rauhut, Prade, & Helbing, 2012). In noninterdependent settings, using time instead of money in a dictator game by asking participants to perform a real-effort task that benefitted an anonymous recipient, a study also found that participants were willing to give time to benefit anonymous others, and the opportunity costs of time were negatively correlated with donations (Danilov & Vogelsang, 2015). However, there are two reasons why these results were inconclusive with respect to the question of whether generosity differs between time and money: First, ultimatum game behavior is not a measure of generosity but conditional cooperation, and second, the time dictator game found that people were generous about giving their time, but their level of generosity was not compared with a money condition in this study.

Intentions to give time and money to charity yielded a low correlation ( $r = .24$ , Bekkers, 2010), and even when the opportunity costs of time were controlled for, people were more generous in decisions about giving time in comparison with those about giving money

(Brown et al., 2013; Davis et al., 2015; Ellingsen & Johannesson, 2009; Lilley & Slonim, 2014).

In a real-effort task, participants had to adjust sliders in a computerized task and were paid according to the time they spent working (Brown et al., 2013). Three conditions were compared: (a) a *money and time condition*, in which participants worked for their own payoffs or charity and could also donate money at the end of the task; (b) a *time only condition*, in which participants could work on the task for charity or their own payoff; and (c) a *money condition*, in which participants worked only for their own payoff and could donate a sum of money at the end of the experiment. Participants' average final donation was higher in the two time conditions than in the money condition because they were working more for charity than for themselves. Furthermore, participants preferred to give time even when the wage structure suggested that working for themselves and donating later would be more efficient.

However, this tendency to be more generous with time than with money was observed not only in decisions regarding charities (Brown et al., 2013; Lilley & Slonim, 2014) but also in interpersonal decisions (Davis et al., 2015; Ellingsen & Johannesson, 2009). When participants made decisions about time or monetary payoffs for themselves and others, it was found that they were more generous about their time decisions than their monetary decisions (Davis et al., 2015; Ellingsen & Johannesson, 2009).

However, decisions about time and money were not consistent on the individual level as shown by a study in which participants had to divide 60 seconds of time spent with one of their hands immersed in ice water and money between themselves and another anonymous participant in a variation of the dictator game (Davis et al., 2015). In this study, participants knew that only one of the decisions would be carried out, which allowed the authors to compare the two decisions for each individual participant. Participants were about 50% more generous when giving time than when giving money. When controlling for the opportunity

cost of time by including the wage for the task in the regression, the effect that people were more generous with time than with money prevailed. Importantly, the increase in generosity was not equal across participants but was driven by a subset of the sample (20%-30%). However, in order to figure out how this subsample differed from the other participants, individual differences would need to be investigated in more depth.

Whereas results from decisions regarding charity and decisions affecting another individual may seem similar, the studies utilized different designs, which could present a confound. The studies comparing donations of time and money to charity (Brown et al., 2013; Lilley & Slonim, 2014) involved real-effort tasks that required tedious work for about 40 min. In the studies in which interpersonal decisions were examined, participants either (a) made a decision about waiting time after the experiment as an investment to gain a monetary payoff, which was the endowment in an ultimatum game in the experiment (Ellingsen & Johannesson, 2009) or (b) had to immerse one of their hands in cold water for a short period of time (maximum of 60 seconds, Davis et al., 2015). In the case of (a) the decision in the ultimatum game is only indirectly about time and future waiting time after the experiment might be discounted because it is a future price to pay (Frederick, Loewenstein, & O'Donoghue, 2002). In the case of (b) the time expenditure for the other is short and results in a relatively high payoff for the other. We aim to test, whether generosity in giving time as observed in decisions regarding charity, will also be observed in interpersonal decisions when the time and money given requires tedious work and the decision is directly about time. By doing so, decisions about time and money will be directly comparable.

Prosocial behavior can be motivated by the desire to increase the welfare of another (i.e., pure altruism, Batson et al., 1995) or by the desire to feel good about oneself (i.e., impure altruism, Baumann, Cialdini, & Kendrick, 1981). Behavior guided by impure altruism is motivated by self-interest, such as the induction of positive feelings and happiness (Alden

& Trew, 2013; Dunn, Aknin, & Norton, 2008, 2014). Thus, giving has a hedonistic value for the giver, and improving the welfare of the other is a means rather than an end (Andreoni, 1990; Konow & Earley, 2008). Even when individual contributions do not increase the joint welfare of all individuals, contributions to the public good are explained by impure altruism, or the so-called warm glow of giving (Andreoni, 1990). It is argued that giving time helps people feel better (induces a warm glow) and as such is individually more valuable than giving an equal amount of money (Brown et al., 2013; Davis et al., 2015; Reed et al., 2015). Because the value of time is adjusted according to the context to a greater degree than money. For example, 10 min of waiting are valued differently than 10 min spent reading the news (Festjens, Bruyneel, Diecidue, & Dewitte, 2015; Leclerc et al., 1995), giving time to others might render time more valuable and might result in greater satisfaction than using the same amount of time for oneself. Lilley and Slonim (2014) identified a smaller effect of donation matching when time was involved. It seems people are more willing to give time than money because this helps them feel good. *We thus propose that individuals are more generous when giving time than when giving money and experience more positive affect when giving time than when giving money.* Furthermore, as elaborated above, the increase in generosity does not seem to be universal but is rather driven by a subset of individuals. We propose that interindividual differences explain differences between decisions about time and money.

### **Interindividual Differences Relevant for Interdependent Decisions: Social Value Orientation, Honesty-Humility, and Moral Identity Centrality**

In interpersonal decisions such as the ones described above, self-interest (i.e., maximizing personal payoff) and altruism (e.g., maximizing others' payoffs) are in conflict. Seminal work (Messick & McClintock, 1968) proposed that 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 between

one's own personal payoff and another person's, and (c) *individualism*, a social motive satisfied by maximizing personal payoffs with no regard to the other person. These social motives are captured by an individual's social value orientation (Van Lange, Otten, De Bruin, & Joireman, 1997). Social value orientation captures the weight individuals assign to consequences for themselves and others in interpersonal decisions (Van Lange et al., 1997).

Social value orientation is linked to more basic traits (Hilbig, Glöckner, & Zettler, 2014), in particular to one facet from the HEXACO personality model (Ashton & Lee, 2007): honesty and humility (Baumert et al., 2014; Hilbig et al., 2014; Hilbig & Zettler, 2009; Zhao & Smillie, 2015a). Honesty-humility represents one dimension in the HEXACO personality model that reflects an individual's tendency to be fair and honest toward another individual even when no sanctioning is possible (Ashton & Lee, 2007).

Moral identity represents a self-schema that reflects how an individual connects his- or herself to others. Moral identity contains traits that come to mind when individuals describe how they act in their relationships with others, for example, describing themselves as cooperative and forgiving (Aquino & Reed, 2002; Reed & Aquino, 2003). It has been shown that the influence of moral identity on behavior depends on situational cues (Aquino, Freeman, Reed, Felps, & Lim, 2009) and the chronic availability of moral identity, which differs between individuals and is referred to as moral identity centrality (Aquino & Reed, 2002; Narvaez, Lapsley, Hagele, & Lasky, 2006; Reynolds & Ceranic, 2007).

All three interindividual differences are assumed to reflect aspects of the prosocial personality (Baumert et al., 2014; Hilbig et al., 2014), and we propose that decisions about time can be explained to a greater degree by these three interindividual differences than decisions about money.

### **Interindividual Differences and Time and Money Donations**

Social value orientation has been found to be correlated with donations to charity in some studies (Bekkers, 2007a; Van Lange, Bekkers, Schuyt, & Van Vugt, 2007) but not in others (Baumert et al., 2014). It has also been correlated with giving money in dictator games (Hilbig et al., 2014; Hilbig & Zettler, 2009). When volunteering and donations were assessed together, a prosocial value orientation predicted volunteering but not donations (Bekkers, 2010). Across studies, social value orientation has been found to be correlated with actual volunteering (Batson, Eklund, Chermok, Hoyt, & Ortiz, 2007; McClintock & Allison, 1989; Van Lange, Schippers, & Balliet, 2011), self-reported past volunteering (Bekkers, 2007b), and intentions to volunteer (Bekkers, 2010). Taken together, social value orientation's link with monetary donations seems weaker than its link with donating time by volunteering.

Honesty-humility has been shown to be a source of prosocial behavior across a multitude of situations (Ashton & Lee, 2007; Hilbig et al., 2014; Zhao & Smillie, 2015a), and like social value orientation, it has been found to be positively related to giving money in dictator games (Baumert et al., 2014; Hilbig, Thielmann, Hepp, Klein, & Zettler, 2015; Hilbig & Zettler, 2009). However, whether or not honest-humility is related to giving time in interpersonal decisions is still an open question.

Moral identity centrality has been found to be positively associated with volunteering (Fagin-Jones & Midlarsky, 2007; Frimer, Walker, Dunlop, Lee, & Riches, 2011; Matsuba & Walker, 2004, 2005), which can be explained to some extent by the observation that individuals for whom moral identity is central tend to experience moral behavior as more elevating than individuals with low moral identity centrality (Aquino, McFerran, & Laven, 2011). Moreover, intentions to donate time tend to be more strongly affected by personal norms and identity than intentions to give money (Lichang Lee, Piliavin, & Call, 1999). Furthermore, when moral identity centrality is high, the opportunity costs of time have been found to be positively correlated with the giving of time, which shows that particularly costly

helping is experienced as positive and rewarding by these individuals, and they would rather give time than money (Reed et al., 2015). However, studies have yet to test whether the effect of moral identity centrality on prosocial behavior is moderated by the resource that is being exchanged.

Apparently, interindividual differences in social value orientation (Messick & McClintock, 1968) and moral identity centrality (Reed & Aquino, 2003) influence the different valuations of time and money as gifts. The preference for time over money as a gift is moderated by moral identity centrality (Reed et al., 2015), and higher moral identity centrality preserves the willingness to give time even if opportunity costs increase (Lichang Lee et al., 1999; Reed et al., 2015). Social value orientation has consistently been found to be correlated with self-reported past volunteering (Baumert et al., 2014; Bekkers, 2007b; McClintock & Allison, 1989), but in another study, prosocial value orientation was predictive of only the intention to give time, not money (Bekkers, 2010). Although it has been observed in some studies that social value orientation is correlated with self-reported donations (Van Lange, Bekkers, Schuyt, & Van Vugt, 2007) as well as actual donations (Bekkers, 2007a), such findings were not observed in another study (Baumert et al., 2014). Apparently, the relation between SVO and giving time is clearer/stronger than between SVO and giving money.

Time is a very personal resource (Foa & Foa, 2012) that is particularly tied to an individual's identity (Reed et al., 2015). Thus, we propose: *The type of resource moderates the effects of social value orientation, honesty-humility, and moral identity centrality on interpersonal allocation decisions.* We expect that interindividual differences in prosociality will be better predictors of time decisions than they will be of monetary decisions. From this prediction also follows the idea that inconsistency between time and money decisions should be explained by interindividual differences in social value orientation and moral identity

centrality because individuals with prosocial personality traits derive more pleasure from giving time than from giving money, and this difference should attenuate differences between individuals' choices.

### **The Present Study**

In the present study, we plan to compare interpersonal decisions about time and money in the same individual. Whereas previous studies have focused on giving money or time to charity (Brown et al., 2013; Lilley & Slonim, 2014), the tasks that participants were asked to fulfill differed, and we will use very parallel procedures. By using the same tedious task to give money and to give time in the dictator game, the experiment will allow us to rule out the possibility that different ways to gain time and money could result in different decisions (Davis et al., 2015; Ellingsen & Johannesson, 2009). Furthermore, we will assess interindividual differences to test whether the inconsistencies between decisions involving money and time depend on the decision-makers' characteristics.

All participants of an online study will first complete a survey for assessing social value orientation (Murphy, Ackerman, & Handgraaf, 2011), honesty-humility (K. Lee & Ashton, 2018), and moral identity centrality (Aquino & Reed, 2002). Then participants will have to decide how much time and money to give to an anonymous other person (as in the standard dictator game). The time, as well as the money that people can give, will be generated in a real-effort task, and the decisions about giving time and money will be made before the task to rule out effects of the task on decision-making. To compare participants' time costs, opportunity costs will be measured with an incentivized method. At the end of the real-effort task, the PANAS (Watson, Clark, & Tellegen, 1988) will be used to measure the affect associated with giving time or giving money.

We will test three hypotheses: In decisions about giving time to another person, people will be more generous than when giving money (Hypothesis 1). (b) Giving time will result in more positive affect than giving money (Hypothesis 2). (c) The difference between the two types of decisions will be explained by interindividual differences (Hypothesis 3a). Aspects of a prosocial personality will have a stronger impact on decisions about giving time than giving money (Hypothesis 3b).

## **Method**

### **Design**

The study will be carried out as an online study. Participants will be recruited by the Leibniz Institute for Psychology Information (ZPID). First, participants will complete questionnaires for assessing social value orientation (Murphy et al., 2011), honesty-humility (K. Lee & Ashton, 2018), and moral identity centrality (Aquino & Reed, 2002). Participants will make two decisions: one decision about time and one decision about money. The order of the two decisions will be counterbalanced across participants. Participants will be told that a coin toss will determine which one of their decisions will be carried out. The within-subject design will allow us to test the consistency of social preferences in decisions about time and money.

### **Sample Size**

We used GPower (Faul, Erdfelder, Lang, & Buchner, 2007) to estimate the necessary sample size. We estimated the power of our study for the hypothesis that personality moderates the effect of resource type by computing a z-test to compare the inequality of two dependent Pearson *r*s.<sup>1</sup> We aimed for a power of 0.8 and an alpha of .01 to correct for the

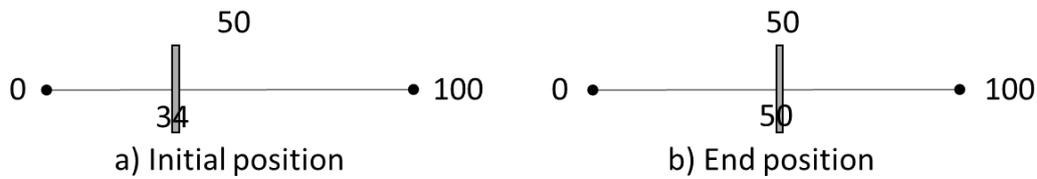
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<sup>1</sup> We are aware that a simulation of the necessary power could also be carried out using an F test for the difference in the adjusted  $R^2$ . However, information about the expected change in  $R^2$  is even more scarce than information about the possible correlations. For this reason, we decided to use the convenient and less complex test. Furthermore, no standard procedure to estimate power for mixed-level models is available.

effect of multiple tests. Because we only found studies that published results for social value orientation and time as well as monetary decisions, we used these correlations as estimates of the effect size in question. We expect the correlation between giving time and giving money to be around  $r = .2$  (Bekkers, 2010), the correlation between time and a personality variable to be around  $r = .4$  (based on values provided in the paper of McClintock & Allison, 1989), and the correlation between a personality variable and money to be around  $r = .2$  (based on relationship of hypothetical SVO with costly donations). To detect this difference between both correlation coefficients, we need a sample of  $N = 361$ . This sample will also result in sufficient power ( $> .80$ ) for testing Hypotheses 1 and 2. The power analysis protocols can be found in the Appendix A.

### **Materials and Measures**

**Real-effort task.** In the real-effort task, participants will view 10 sliders per page and will be asked to adjust them to a given value that will be randomly determined. Participants will be told that they have 30 s per page to adjust all the sliders and that the page will then reload. If the participant does not adjust all the sliders, then no working time will be accumulated, and the time spent on that page will be deducted from the final working time. Participants will be alerted if they have not adjusted all sliders after 25 s have passed. If participants do not adjust all the sliders in one block, the time allotted to this block is not deducted from the overall working time. This means that if participants do not adjust sliders, their work time does not decrease. An example of the slider is shown in Figure 1.



*Figure 1.* Example of the sliders in the real-effort task. Sliders are adjusted by clicking on them and then moving the cursor to the specified position and clicking on it.

In the monetary tasks, the task will end after 15 min. In the time tasks, the task will end depending on the participant's decision.

**Opportunity cost of time.** Identical to other studies comparing money and time (Ellingsen & Johannesson, 2009; Lilley & Slonim, 2014), we will use a Becker-DeGroot-Marschak auction to elicit the wage that participants want to receive for participating in the real-effort task (G. M. Becker, DeGroot, & Marschak, 1964), reflecting participants' opportunity cost of time. Participants will be asked to state the amount of money that they would like to request for performing the real-effort task for 15 min. Participants will be told that their requested wage will be compared with a random number drawn from a distribution of offers for the same task. If their requested wage is smaller or equal to the randomly chosen number, the participants will work on the task for the agreed-upon wage. If their requested wage is larger than the random number, the experiment will end.

**Decision-making task.** In the decision-making task, two roles exist: the decider and the recipient. Participants will play both roles: First, they will be a decider and later a recipient, but they will not be told that they will have to switch roles. Participants will be informed about the existence of both roles, and they will be assigned the role of a decider before they make their decision about giving money and time.

Participants will be asked to make two decisions, which are presented in a counterbalanced order: one decision about how to split money between themselves and a

recipient (i.e., the money treatment) and one decision about how long to work on the task to help a recipient shorten his working time (i.e., the time treatment). Participants will then be told that one of their decisions will be randomly selected and played out. Deciders and recipients will be matched on the basis of the following procedure: Deciders whose time decision is selected will receive an additional payoff at the end of the experiment in the role of the recipient of a decider for whom the money decision was selected. Deciders whose money decision is selected (i.e., deciders who will have to work for 15 min) will end their task early on the basis of the decider's allocation in the time treatment.

**Money treatment.** In the money treatment, participants have to state how much of their earnings they want to give to another randomly matched participant in the other group. The decision they make will be binding and carried out after the task is completed. The decision will be measured on an 11-point scale, and the steps will be the result of splitting their requested payoff into 11 discrete payoff distributions (see *Figure 2* for an example)<sup>2</sup>.

For me	5.00€	4.50€	4.00€	3.50€	3.00€	2.50€	2.00€	1.50€	1.00€	0.50€	0.00€
For other	0.00€	0.50€	1.00€	1.50€	2.00€	2.50€	3.00€	3.50€	4.00€	4.50€	5.00€

*Figure 2.* Measure of the split of the earnings from the real-effort task for an individual whose requested final payoff is 5.00€.

**Time treatment.** In the time treatment, participants have to state how long they want to work to benefit another anonymous participant in the other group. The decision will determine the duration of the real-effort task for them, and the longer they work, the less another randomly matched anonymous participant will have to work to finish his or her task and receive a payoff. Participants will be told that they have to decide how long they want to work on a task, and they will choose a point on an 11-point scale where the minimum is working 0 min and the maximum is working 15 min. By dividing 15 min into 11 equidistant intervals, the

<sup>2</sup> Participants who stated that their requested payoff is \$0 were asked to assume that they would receive a final compensation of \$10. Then they had to split these \$10, this special case was used so that a measure of altruism was still feasible for participants requesting a payoff of \$0.

steps are 1 min 30 s (see

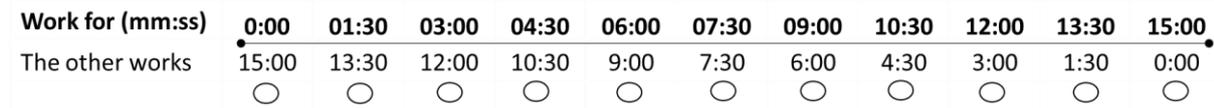


Figure 3).



Figure 3. Measure of time given to the recipient.

**Social value orientation.** Social value orientation (SVO) reflects the individual valuation of outcomes for other people as well as the valuation of relative payoff differences. SVO will be measured with the 6-item version of the SVO slider measure (Murphy et al., 2011). Participants will be asked to indicate their preferences for hypothetical distributions of money *between* themselves and another person in a set of non-constant-sum dictator games. High values in the slider measure indicate high social value orientation (i.e., high prosociality).

**Honesty-Humility.** The honesty-humility dimension of the HEXACO model reflects the tendency to act in accordance with fairness principles, sincerity, greed-avoidance, and modesty (Ashton & Lee, 2007). We will use the HEXACO-60, a short personality inventory validated by Lee and Ashton ( $\alpha = .81$ , K. Lee & Ashton, 2018) (Examples of items are: “I wouldn’t use flattery to get a raise or promotion at work, even if I thought it would succeed” or “If I knew that I would never get caught, I would be willing to steal a million dollars”).

**Moral identity centrality.** An individual’s self-concept and the relative importance placed on its moral traits is reflected in moral identity centrality (Aquino & Reed, 2002). We will measure individuals’ moral identity centrality using the 13-item measure from Aquino and Reed ( $\alpha = .86$ ; Aquino & Reed, 2002).

**Positive and negative affect.** The positive and negative affect scale (i.e., PANAS; Watson et al., 1988) will be used to measure positive and negative affect during the real-effort task once after participants have worked on the task for 1 min 30 s.

### **Procedure**

The study will be carried out online, and participants will be recruited by the *Leibniz Institute for Psychology Information (ZPID)* via Mturk. Participants will be paid \$5 for participating, and they will be instructed that they will be able to receive additional payoffs from a real-effort task. After the general instructions, participants will be asked to complete three questionnaires for assessing social value orientation, honesty-humility, and moral identity centrality.

After participants complete the questionnaires, the real-effort task will be explained, and participants' opportunity cost of time will be elicited. Participants will then be told that for the next task, they will have to play one of two roles: decider or recipient. They will then be assigned the role of decider. The decider has to make two decisions with consequences for themselves and another randomly assigned anonymous participant.

Next, participants will be asked to decide how they want to split their final earnings and how long they are willing to work for the recipient. Before making a decision, participants will be informed that one of their decisions will randomly be selected and carried out. After participants make their choices, the wage for the real-effort task will be determined. If a participant's wage is higher than the determined wage, the experiment ends. If the wage is equal to or lower, they will receive their selected wage and continue with the task. The experiment ends when participants finish the task. They will then receive their final payoffs and will be informed how much they earned in the role of a recipient (for the timeline of the study, see *Figure 4*).

Timeline in minutes	+3	+20	+25	+27	+30	+31	+32.5	+40 (max)
General Instructions	Questionnaires	Instruction Real Effort task	Elicit opp. cost	Decision (order counterbalanced across N)	Determine if wage requested <= random number	Real Effort task – randomly determined which		End
Demographic Information	HEX			Time	Yes	Work for other	PANAS	Payoff Information
Consent	MIC			Money	Yes	Work for payoff	PANAS	Payoff Information
	SVO				No → End			

*Figure 4.* Timeline of the study.

All instructions and measures presented in the order in which they will appear in the study can be found in the Appendix B. The final instructions and measures will be in German.

## Results

**Exclusion criteria.** We will exclude participants' data from the analysis if they agree to carry out the real-effort task but then leave the study or simply pass the time without working on the task and therefore do not accumulate the time or money as they had agreed to do before the task.

**Transformations.** In line with previous research (Davis et al., 2015), we will compute a generosity index based on the proportion of time or money given to the other. For the money, allocation generosity is equal to the proportion of the total monetary endowment that was given to the other participant. For the time allocation, generosity is equal to the proportion of the total time that the other person spent working on the task. To be able to compare money and time decisions that account for the opportunity cost of time, we will transform the time decisions into monetary values. The wage per second, which reflects the opportunity cost of time, will be multiplied by the amount of time the participant decided he or she would work for other expressed in seconds to derive a common scale for both resources.

**Computation of scales.** Scales will be computed according to the instructions for each measure. For social value orientation, the SVO Angle will be computed (for details see

Murphy et al., 2011). For the honesty-humility facet from the HEXACO model, scale scores will be computed as means across all items on a facet after recoding the reverse-keyed items (K. Lee & Ashton, 2018).

**Dependent variables.** The dependent variable for all the tests will be the donation to the recipient. Because all the donation decisions will be made on the same slider, the scores will be directly comparable. The scores will range from 0 to 10, and for time and money, 0 will represent a donation of zero and 10 the maximum donation.

**Analysis plan.** To test the hypothesis “time is not money,” a paired *t* test will be computed for the generosity index for time and money. To control for participants’ opportunity costs of time to account for the difference, we will compute a repeated-measures ANCOVA with opportunity cost as a covariate.

To test the hypothesis that giving time feels better than giving money, we will compute an independent *t* test to compare the positive affect participants experienced during the real-effort task with respect to their own payoff versus with respect to the work they did to reduce the amount of work the recipient had to do.

To test the hypothesis “Giving time is more closely tied to personality than giving money is,” two mixed model regressions will be compared, and the change in the adjusted  $R^2$  will be computed. All models will contain participants’ ID as a random effect to account for the repeated measures. Model 1 will only additionally contain the main effects of SVO, honesty-humility, moral identity centrality, and the treatment. Model 2 will also contain an interaction between the respective interindividual difference variable (SVO, honesty-humility, and moral identity centrality) and the treatment factor type of resource. The comparison of the adjusted  $R^2$  will allow us to test whether the model accounting for the interaction between the

treatment and personality will yield a better fit, which would indicate that the personality variables are better predictors of time than the monetary decisions.

**Exploratory analysis.** As an exploratory analysis, we will examine the relations between positive affect and the giving of the two resources. Affect may mediate the effect of personality on generosity moderated by the type of resource.

## Discussion

### Limitations

The present study will test the difference between giving time and giving money in interpersonal decisions and whether interindividual differences are more important for decisions about giving time than decisions about giving money. The results need to be treated with care when extrapolating to real-world prosocial behavior, which is based on giving time, and prosocial behavior, which is based on giving money. For example, working as a volunteer in a charity is one way to give time, but volunteering is often carried out in a specific organizational context, linked to relationships, and extends over longer periods of time (Penner et al., 2004). Furthermore, the decision to give time or money on one occasion probably differs from decisions to give time or money over extended periods of time as suggested by findings that spontaneous one-time helping and planned long-term helping have different antecedents (Greitemeyer, Fischer, Kastenmüller, & Frey, 2006). Further research is needed to test how the present results can be extended to giving time and money over extended periods of time and volunteering.

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