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# Choices with Delayed Consequences: Pleasing or Fighting Future Tastes?\*

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## Abstract

Many choices concern consumption in future periods. If preferences are state-dependent, a fundamental question is whether people consider their preferences at the time of consumption or decision as more important. Assuming the first, previous studies apparently demonstrate that people systematically mispredict their future tastes. Most of this evidence, however, is also consistent with the idea that people understand, but do not approve of their future preferences. To disentangle both approaches, we conducted a framed field experiment with a commitment option. Commitment in our experiment was not a device against weak will. It was a judgment, which one planning self imposed on another planning self. The results suggest that people are not willing to neglect their preferences at the time of the decision. People may sometimes experience a conflict between two far-sighted selves. This has profound implications in the area of consumer sovereignty and questions the main justification of paternalism.

*JEL classification:* C93; D03; D90

*Keywords:* State-dependent preferences; Projection bias; Multiple selves; Commitment; Intrapersonal conflict

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# 1 Introduction

Suppose on a Saturday morning your alarm clock rings as always at 8:00 a.m. You wake up and while you are still lying in bed, you decide to turn off the timer of your alarm clock for tomorrow morning. Since tomorrow is Sunday, you think you have every right to sleep in. At some time during Saturday afternoon, however, you change your mind even though nothing unusual happened. You now think that you should seize the day and reset the alarm clock to 8:00 a.m. for tomorrow morning. Why do your decisions regarding the same matter differ? Is it because you underestimate your desire to sleep in when you reset the alarm clock in the afternoon, whereas you are more empathetic toward yourself on Sunday morning when you are still lying in bed on Saturday? Or is it because you feel a need in the afternoon to force your sluggish self out of bed the next morning, whereas you are more sympathetic with your next morning's sluggish self when you are still lying in bed on Saturday? Those are the questions we attempt to disentangle in the present study. The former focuses on a misprediction of future preferences, the latter on the imposition of a "better" judgment on a later alter ego.

Many, if not most, real life choices have delayed consequences meaning that the resulting consumption takes place in some future period. This is the case when we buy groceries for the upcoming weekend or a theater ticket for some future date, book a vacation trip for the upcoming summer, or order a good via the Internet or a catalog. However, preferences often change or systematically fluctuate over time, as the pioneering work of Loewenstein and his coauthors has shown (see, e.g., Loewenstein 1996, 2000, for a discussion of systematic fluctuations of tastes). The crucial question is whether, in such situations, people consider their preferences at the time of consumption or at the time of the decision as more important. Or, in other words, whether they aim at pleasing their future or current tastes.

In economics, the traditional view is that the relevant preferences are those that prevail at the time of consumption, not at the time of the decision (see, e.g., Read and Van Leeuwen 1998; Loewenstein et al. 2003).<sup>1</sup> But when real people make choices with delayed consequences, they seem to be overly influenced by their current tastes and do not take into account their future preferences to the full extent. Based on the assumption that people aim at pleasing future tastes in those situations, a common and by now widely accepted interpretation of such behavior is that people systematically mispredict their future preferences. This misprediction is sometimes referred to as an *empathy gap* (e.g., Loewenstein 1996, 2000; Loewenstein and Schkade 1999) or *projection bias* (e.g., Loewenstein et al. 2003; Conlin et al. 2007; Busse et al. 2014). The latter term underlines the view that current preferences are illegitimately projected to another state for which a decision is to be made. People seem to understand the direction

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<sup>1</sup>Read and Van Leeuwen (1998), for instance, write that "[w]hen current decisions have delayed consequences, the preferences that should be relevant are those that will prevail when the consequences occur" [p. 189].

in which their taste will change but systematically underestimate the magnitude of this change (Loewenstein et al. 2003).

However, to the best of our knowledge, it has never been tested explicitly whether people indeed aim at pleasing future tastes when they make choices with delayed consequences. After all, people might not always agree with their changed future tastes. Moreover, in daily or recurrent decision situations, the projection-bias explanation of state-dependent behavior is somewhat less compelling since unawareness of the current misprediction is a necessary condition of the model.<sup>2</sup> If people were aware of their bias, they would, of course, either change their prediction or possibly postpone their choice. But can people be unaware of their bias in situations which they experience over and over again? For instance, if a person books her summer vacation trip during the winter and due to projection bias chooses an overly warm destination,<sup>3</sup> could projection bias be the cause for a similar choice the following winter? Would we not expect that the person will realize next winter that the hot weather conditions during her last summer vacation made her feel miserable?<sup>4</sup>

Previous evidence is consistent with projection bias. But it is also in line with the idea that people try to impose a “better” judgment on a later alter ego. People may understand their preferences in a different state well, but simply do not approve of these preferences. This imposition of a better judgment can be understood as a *sympathy gap* or *conflict of selves*. Whereas the empathy gap is the ineffective attempt to please future tastes, the sympathy gap is the attempt to fight them. Thus, the two conceptions of state-dependent behavior basically differ in their assumption of whether real people consider their preferences at the time of consumption or at the time of the decision as more important.

To distinguish between the two possible causes of state-dependent behavior we conducted an experiment with a commitment option. In the experiment, we chose a situation as mundane as possible, namely getting up early, since we conjecture that state-dependent behavior in daily or recurrent decision situations may rather be caused by a conflict of selves than projection bias. In our experiment, commitment is in line with a conflict of selves, but not with projection bias. In this context, it is important to stress that projection bias is a form of dynamically inconsistent behavior which is distinct from another dynamic inconsistency caused by present-

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<sup>2</sup>Proponents of projection bias posit that systematic mispredictions of future tastes may explain a wide range of phenomena from everyday decision making to suicide (see, e.g., Loewenstein et al. 2003). The scope of projection bias is explicitly not limited to once- or twice-in-a-lifetime experiences, like giving birth to a child or being interrogated. In these latter cases, one is likely to be ignorant about the intensity of the respective state beforehand simply because of lacking experience. According to Loewenstein et al. (2003), however, systematic mispredictions also occur in instances which we experience over and over again.

<sup>3</sup>The example is borrowed from Loewenstein et al. (2003).

<sup>4</sup>Of course, memories of past events may not be perfectly accurate. People may have problems to remember the strength and intensity of past pleasure or pain. But, regarding the example, it is not important that people accurately remember *how* miserable they felt because of the hot weather conditions. They only need to remember *that* they felt miserable to become aware of their bias.

biased preferences. The concept of projection bias therefore does not generally exclude the use of commitment devices because commitment may be a measure against present-biased preferences. To rule out this possibility, we set up an experiment where commitment against a present bias was excluded by design. Commitment in our experiment is the will to promote one *advance* choice at the cost of a systematically different *advance* choice. In other words, it is a judgment which a planner imposes on another planner. In such a situation, commitment is in line with a conflict of selves, but not with projection bias.

Again, we want to make perfectly clear that this study is *not* about commitment against present-biased preferences or weak will nor about a conflict between a rational, far-sighted self and an impulse-driven short-sighted self, as it is usually done in the economic literature. Instead, the conflict we investigate here is between two far-sighted decision-making agents within a person, both following their own rationale. Hence, we present an experimental test for a strategic conflict between two (autonomous) selves that Thomas C. Schelling often had in mind (see, e.g., Schelling 1984a,b). We also wish to emphasize that the aforementioned distinction between the empathy and sympathy gap is more than splitting hairs as it has profound political implications in the area of consumer sovereignty. With considerable political success, proponents of libertarian paternalism argue that people's inability to do what is beneficial for them causes a need for policy intervention (Thaler and Sunstein 2003). In Schelling's world of naturally conflicting desires such arguments are much more difficult to justify. If people fail to please their future tastes, an intervention could lead to a Pareto-improvement. If people, however, merely disagree with future tastes, intervention would mean to take sides. It would represent a debatable welfare judgment.

The paper unfolds in seven steps. In the next section, we sketch a formal model of projection bias, review some evidence consistent with projection bias, and point out why we think that most of this evidence is also in line with a conflict of selves. The third section explains our experimental design, and the fourth section outlines the corresponding hypotheses based on the accounts of projection bias and conflict of selves. The results of the experiment are presented in section five and discussed in section six. The last section concludes.

## 2 Related Literature

The idea that people with state-dependent preferences systematically mispredict their future tastes was formalized by Loewenstein et al. (2003). In their model, a person's instantaneous utility of consumption in period  $t$  is given by  $u(c_t, s_t)$ , where  $c_t$  is the person's consumption in period  $t$  and  $s_t$  is her state in period  $t$  capturing her tastes. Suppose this person is currently in period 1 with corresponding state  $s_1$  trying to predict her future instantaneous utility from consuming  $c_2$  in period 2 with corresponding state  $s_2$  (where  $s_1 \neq s_2$ ). This prediction is denoted

$\tilde{u}(c_2, s_2|s_1)$ . If this person had no projection bias, she would predict her future utility correctly. That is, her predicted utility would equal her true utility:  $\tilde{u}(c_2, s_2|s_1) = u(c_2, s_2)$ . If, on the other hand, this person was exposed to a projection bias as described in Loewenstein et al. (2003), she would understand the qualitative direction of the taste change, but underestimate its magnitude. That is, her predicted utility would be somewhere in between her true future utility and her utility given the current state:  $\tilde{u}(c_2, s_2|s_1) = (1 - \alpha)u(c_2, s_2) + \alpha u(c_2, s_1)$ , with  $\alpha \in [0, 1]$ .<sup>5</sup> A person with projection bias is a person with  $\alpha > 0$ , where the bias increases with  $\alpha$ . Since a person with projection bias misperceives her future utility, she may exhibit dynamic inconsistency even in the absence of present-biased preferences: she may make a systematically different choice in period 1 (for period 2) than if she were asked again in period 2.

Evidence in line with projection bias has been documented by a series of studies. While most of them used laboratory or field experiments, there are also a few studies presenting field data evidence of projection bias. In the following, we will first discuss experimental studies on projection bias and thereafter briefly review field data evidence.

In laboratory or field experiments, behavior consistent with projection bias was observed in various situations involving, for instance, hunger (Read and Van Leeuwen 1998), cigarette craving (Sayette et al. 2008), sexual arousal (Ariely and Loewenstein 2006), or pain (Read and Loewenstein 1999). Most of these studies employed a very similar procedure. Participants made an advance choice in period 1 for a predefined future period 2 with corresponding state  $s_2$ . In period 1, some participants were in the same state as in period 2 (i.e.,  $s_1 = s_2$ ) while some participants were in a different state (i.e.,  $s'_1 \neq s_2$ ). Participants were led to believe that their choice in period 1 would count, but when period 2 arrived, they could in fact remake their choice. The typical results of those studies were that participants made systematically different advance choices in state  $s'_1$  compared to  $s_1$ , and that they revised their choices more often in period 2 if the advance choice was done in state  $s'_1$ .

Consider, for instance, the classical study of Read and Van Leeuwen (1998). They conducted a field experiment where office workers made an advance choice between healthy (e.g., apples) and unhealthy (e.g., chocolate bars) snacks which they received at a designated time one week later when they were either hungry or satiated. Half of the participants made their advance choice in a hungry state, the other half in a satiated state. Directly before participants received the chosen snack at the designated time one week later, they were asked to remake their choice, but they did not know about this option at the time of their advance choice. Read and Van Leeuwen (1998) found that advance choices were indeed influenced by anticipated future levels of hunger. People who expected to be hungry next week chose unhealthy snacks more often than people who expected to be satiated. However, consistent with projection bias, advance choices were also affected by current levels of hunger. People who were currently

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<sup>5</sup>Loewenstein et al. (2003) call the linear combination of  $u(c_2, s_2)$  and  $u(c_2, s_1)$  *simple projection bias*.

hungry chose unhealthy snacks more often than those who were currently satiated. Read and Van Leeuwen (1998) therefore conclude that people erroneously projected their current tastes onto the future.

Our main caveat with this and all other experimental studies is that the intentions of participants at the time of making their advance choices remain unknown. Did participants indeed aim to please their future tastes, as assumed in those studies, or did they know their future tastes quite well, but simply disagree with them? Again, in all previous studies, participants were led to believe that their advance choices would count. After all, those choices might have been an attempt of participants to impose a better judgment on themselves in a different state. Such an imposition, however, was not enforced by the experimenters. Hence, the mere divergence of choices between different states need not mean that people mispredict their preferences. They may simply disagree with them.

Field data evidence consistent with projection bias is rare, but it exists. Most of the field data studies utilized certain weather data to show that weather conditions systematically influence people's advance choices in a way that is inconsistent with expected utility theory. For instance, Conlin et al. (2007) investigated catalog orders of cold weather items and found that the colder the weather on the order date, the more likely was a return of that item once it was received. Buchheim and Kolaska (2016) analyzed advance ticket sales for an outdoor movie theater and found that good weather (i.e., sunshine duration) increased advance ticket sales even though the weather at the time of the purchase was not predictive of the weather on the day of the movie. Busse et al. (2014) studied a large dataset of vehicle transactions and found that buying decisions of convertibles or four-wheel-drives were affected to a considerable extent by the weather condition on the day of the purchase. And, last but not least, Simonsohn (2010) even found that certain weather conditions (i.e., cloud cover) on the day of the visit of an academically demanding university affected enrollment decisions of prospective students regarding this university.

All of this evidence is well in line with the general idea of projection bias: people appear to be biased by their current utility from an item when forecasting their future utility from that item. But since unawareness of this misprediction is a necessary condition, we wonder whether projection bias is the most plausible explanation of state-dependent behavior, in particular with respect to recurrent decision situations such as catalog orders of cold-weather items or purchases of advance tickets for an outdoor movie theater.<sup>6</sup> For instance, suppose a person orders a warm winter jacket on a cold day because she overestimates its future value and returns the jacket upon delivery because the temperature increased and the person no longer overestimates the value of the jacket. So, she orders the jacket because it is nice and warm, and she returns

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<sup>6</sup>Since most people will not have extensive experience in buying convertibles or four-wheel-drives, nor in university enrollment decisions, projection bias might very well be the main cause of state-dependent behavior in those situations.

the jacket for exactly the same reason. Could this person unconsciously overvalue and order winter clothing on another cold day just to realize a few days later that this was a mistake once again?<sup>7</sup> Likewise, is it plausible that, on a sunny day, customers who have experienced rainfall during a previous show completely forgot about this experience and are equally bad in predicting the discomfort of a rainy movie night like all other customers?<sup>8</sup>

While most of the previous studies discuss alternative explanations of the field data evidence, such as biased predictions of future weather, none of them considers the possibility that people may in fact try to impose a “better” judgment on a later alter ego.<sup>9</sup> Since no previous study could potentially rule out the latter explanation and we do not want to speculate which of the possible causes of state-dependent behavior is more plausible in each case, we designed an experiment where projection bias and conflict of selves make different predictions. It should be clear by now that choice behavior alone cannot distinguish between projection bias and conflict of selves in a two-period setup (i.e., an advance choice in period 1 and the same choice again in some future period 2) since participants’ intentions during their advance choices remain unknown. One way to disentangle participants’ intentions is the provision of an explicit commitment device. If participants aim to please future tastes, they should not commit themselves to their advance choices due to uncertainty regarding the future as long as other forms of dynamic inconsistencies, such as a present bias, are excluded. In such a situation, a participant may only choose to commit herself, if she disagrees with the tastes of her future alter ego. In order to rule out commitment as a means to fight an anticipated present bias, we chose an experimental setup where each participant made two advance choices, each in a different state. In the first state, participants had the option to promote their first advance choice at the expense of their second advance choice. Thus, the first planner could use a commitment option against the second planner if they viewed things differently and the first planner was aware of that disagreement. In such a framework, commitment is informative

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<sup>7</sup>It is not necessary that the person understands how weather affects her valuation of winter clothing. She can be completely unaware of such weather effects. She only needs to remember that she was split over the value of warm clothing in the past in order to realize that something is wrong. As soon as this happens, the unconscious misprediction becomes a conscious disagreement with the future self regarding the value of warm clothing.

<sup>8</sup>Indeed, Buchheim and Kolaska (2016) find that the effect of purchase-date weather (i.e., sunshine duration) is very stable across all sets of customers, including those who have experienced rainfall during a previous show.

<sup>9</sup>Another explanation considered by some of the previous studies is salience of certain product attributes (e.g., Busse et al. 2014; Buchheim and Kolaska 2016). The idea is that weather conditions (e.g., sunshine) may direct people’s attention to specific attributes of a product (e.g., roof style of a car) and that those attributes receive higher decision weights. When the choice context changes (e.g., to snowy weather), different attributes become salient (e.g., four wheel drive) and the decision weights change. The salience effect of the choice context is considered a bias which may restrain people from maximizing consumption utility when they make choices with delayed consequences (see, e.g., Kőszegi and Szeidl 2013). Thus, like projection bias, models of salience regard the decision maker as a unified self which “should” aim to please her future tastes. Since projection bias makes this assumption particularly explicit, we always contrast the idea of a conflict of selves with projection bias. But, basically, we test whether people consider their preferences at the time of consumption or decision as more important, whatever the corresponding model.



since it reveals participants' intentions during their advance choices and allows for a distinction between projection bias and conflict of selves.

### 3 Design

Subsequently, we explain the design and procedure of our experiment. The experimental setup required participants to be informed of the entire procedure prior to their first decision. Neither deception nor any surprises were involved in the experiment.

#### 3.1 Course of Experiment

The course of the experiment and implemented treatments are depicted in Figure 1. The experiment took place over four consecutive Mondays. Every participant had to attend one session each Monday. Sessions on the first and last Mondays took place at the experimental laboratory of the Max Planck Institute of Economics in Jena, Germany. Sessions on the second and third Mondays were conducted online and participants could take part in those sessions from home or wherever they had Internet access.

Sessions on the first Monday were used for general instructions and questions (*briefing sessions* in the following). Sessions on the last Monday were used for payment of our participants (*payment sessions* in the following). There were two payment sessions: one between 6:15 and 7:15 a.m. (*early payment session* in the following), and one between 12:00 and 4:00 p.m. (*late payment session* in the following). Each participant had to come to exactly one payment session. Whether this was the early or late payment session was announced at the end of the second online session (i.e., on the third Monday of the experiment).

Participants who had to show up to the late payment session earned a fixed amount of 10 Euros for attending the experiment. Participants who had to show up to the early payment session earned between 0 and 40 Euros. Participants who came too early had to wait until the relevant time frame started. Participants who came late were sent away without payment. Participants who did not show up at the laboratory during the relevant time frame did not earn anything from the experiment. In both payment sessions, participants collected their earnings without making any further decision. Thus, once a participant was paid, he or she could leave the laboratory immediately.

#### 3.2 Decisions of Participants

All relevant decisions were made during the online sessions (i.e., on the second and third Monday). In each online session, participants were asked about their reservation wage for coming to the early instead of late payment session. We employed the Becker et al. (1964,

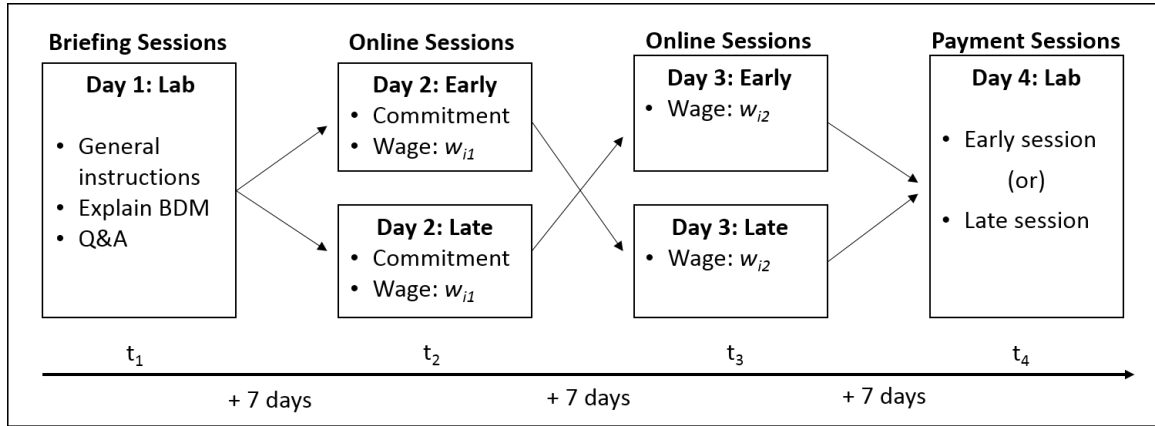


Figure 1: Course of experiment

“BDM”) mechanism to elicit participants’ reservation wages. That is, participants had to state the minimum payment in Euros (a whole number between 0 and 41) they wanted to receive for coming to the laboratory during the early instead of late payment session. For each participant, the minimum payment was compared to a random number drawn from a discrete uniform distribution between 0 and 40. If the random number was equal to or higher than the minimum payment, the relevant participant had to come to the early payment session and his or her earnings were equal to the random number. If the random number was smaller than the minimum payment, the relevant participant had to come the late payment session and his or her earnings were the fixed amount of 10 Euros.<sup>10</sup>

Since all participants had to attend two online sessions, they were asked for their reservation wage twice. For each participant, one of the two reservation wages was chosen at random to be relevant in the BDM procedure. Participants could, however, decide whether the reservation wage from their first or second online session would be more likely to be relevant. Specifically, they could choose between the following two options: (i) the reservation wage from the first online session will be relevant with probability 0.8, or (ii) the reservation wage from the second online session will be relevant with probability 0.8. This decision was made once, namely during participants’ first online session prior to stating their first reservation wage.

Notice that this decision granted each participant a stochastic commitment device.<sup>11</sup> Assigning probability 0.8 to the second reservation wage is the no-commitment or flexibility option, where a participant postpones the decisive decision to the second online session. Assigning probability 0.8 to the first reservation wage, on the other hand, is the commitment option,

<sup>10</sup>Thus, reservation wages were truncated at 0 and 41. A minimum payment of 0 made sure that the participant had to come to the early payment session. A minimum payment of 41 made sure that the participant had to come to the late payment session.

<sup>11</sup>To the best of our knowledge, a stochastic commitment device was implemented in Uhl (2011) and also used in, e.g., Augenblick et al. (2015).

where a participant prepones the decisive decision to the first online session.<sup>12</sup> The stochastic commitment device ensures incentive-compatible statements of reservation wages in both online sessions, independent of the commitment choice.

### 3.3 Treatments

The online sessions took place within two different time frames: either between 5:00 and 7:00 a.m. (*early online session* in the following) or between 10:00 a.m. and noon (*late online session* in the following). Each participant had to attend in one early and one late online session. We implemented two treatments. Half of the participants had to do the early online session first and the late online session the following week (*Early-Late* treatment in the following). The other half of the participants had to do the late online session first and the early online session the following week (*Late-Early* treatment in the following).

One day prior to each online session, participants received an e-mail with a personalized link to take part in the session. The link was only enabled during the relevant time frame on the following day. Participants were, of course, informed or reminded about that time frame in the e-mail containing the link.<sup>13</sup> During an online session they could progress at their own pace. On average, it took participants approximately 5 minutes for the first and 2.5 minutes for the second online session. However, a session had to be finished within the specified time frame. Participants who failed to do so were excluded from the experiment and did not earn anything.

### 3.4 Briefing sessions

There were six 30-minute briefing sessions with approximately 32 students in each. All briefing sessions took place in the afternoon of the first Monday of the experiment. In those sessions, each participant received written instructions about the general procedure of the experiment and, as usual, the instructions were read aloud.<sup>14</sup> Participants were reminded that they have to attend one session on each of the three upcoming Mondays to be eligible for their earnings. However, they were not yet informed about the exact time of those sessions. They only knew that they would be informed about the time of the first online session in an e-mail one day prior.

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<sup>12</sup> In the experiment, the two options were presented neutrally, without any labels. Also, on the computer screen, the flexibility option was always presented above the commitment option.

<sup>13</sup> One day prior to their first online session, participants learned of the time frame for the first time in the e-mail. One day prior to their second online session, participants were only reminded of the time frame in the e-mail, because they were informed about the entire procedure of the experiment at the beginning of the first online session.

<sup>14</sup> For instructions and screens used in the experiment, see Appendix.

In addition, the instructions informed participants that the experiment was to perform one of two tasks. The specific tasks would be outlined at the beginning of the first online session. In the briefing sessions, the two tasks were labeled neutrally as task A and task B. Participants were told that they would receive a fixed amount of 10 Euros for performing task A and a random amount between 0 and 40 Euros for task B. Moreover, they were informed that they would be asked about their minimum payment for doing task B instead of task A. The implemented BDM procedure was explained to them carefully and at length. In addition, the BDM procedure was demonstrated several times with a real urn containing numbered balls from 0 to 40 and hypothetical tasks A and B. Afterwards, participants could ask questions which were answered publicly. Once all questions were answered, the briefing session was over.

### 3.5 Procedural details

Participants were students of all majors from Friedrich Schiller University and the University of Applied Sciences in Jena, Germany. Students were invited via ORSEE (Greiner 2004). The invitation e-mail made clear that payment for the experiment required participation in four sessions. The invitation only specified the date of each session. Since we wanted to reduce selection effects as much as possible, they were not informed about the exact time of the sessions on the second, third and fourth Monday. Students were informed, however, that they should only participate in the experiment if they had no appointments before noon on each day of the sessions.

Besides possible selection effects when inviting participants, we were also concerned about the drop-out rate.<sup>15</sup> To reduce the drop-out rate, we added a lottery draw for all participants who took part in a session on each of the first three days of the experiment. Out of all participants, five were randomly selected to win an additional prize of 50 Euros each.<sup>16</sup> The lottery draw was announced in the invitation e-mail.

In total, 188 students took part in the briefing sessions. We had seven drop-outs before the first online session (five in treatment Early-Late and two in Late-Early) and another five before the second online session (two in treatment Early-Late and three in Late-Early). Thus, from 188 students who started the experiment, 176 completed both online sessions which implies a drop-out rate of only 6.4%. The mean age of those 176 students was 24.5 years, roughly 41% of

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<sup>15</sup>However, notice that drop-outs will be most likely those students who have a problem with getting up early. Thus, if we had a high drop-out rate, we may have ended up with a sample of pure early birds. Each drop-out from our experiment would therefore bias the results against a conflict of selves.

<sup>16</sup>Since all relevant decisions were made during both online sessions, we were only concerned with drop-outs until the third day of the experiment (i.e., the day of the second online session). Whether participants actually collected their payments on the fourth day of the experiment was of no peculiar interest. Also, we did not want to introduce an additional incentive for coming to the payment session besides their wage for performing the relevant task. It was therefore made clear to the participants that they could receive the lottery draw prize even if they did not come to the payment session.

them were male and the average payment was approximately 20 Euros (excluding the lottery win of 50 Euros for five participants).<sup>17</sup>

## 4 Hypotheses

The hypotheses cover two types of decisions. First, hypotheses regarding reservation wages for coming to the early instead of late payment session are presented. Second, expected commitment choices in the first online session are discussed.

Regarding reservation wages, two things are important to note. First, the experimental procedure assured that present-biased preferences could not affect reservation wages. Participation in the online sessions was mandatory and, in each online session, participants were asked for their future value of getting up early (where future refers to the last day of the experiment). Thus, the elicitation of reservation wages did not involve any kind of investment problem where discounting might have played a role.<sup>18</sup> Second, since reservation wages were the minimum payment for coming to the early *instead* of the late payment session, they can be decomposed in the fixed amount of 10 Euros for coming to the laboratory during the late payment session and a mark-up for doing this task early morning.<sup>19</sup> On the last day of the experiment, however, participants could no longer choose whether they want to come to the early or late payment session. The relevant payment session was determined and announced at the end of the second online session. Thus, on the last day of the experiment, participants could only choose between collecting their earnings during the relevant time frame or not coming at all and being paid nothing. Stated reservation wages were therefore not necessarily equal to the minimum payment required for coming to the early payment session *per se*. For instance, a participant may demand 20 Euros for coming to the early instead of late payment session. But the same participant may be willing to come to the early payment session for less than 20 Euros if the late payment session is no longer available. This design feature enabled an observation of a conflict of selves, where one planning self imposes a lower mark-up for getting up early, knowing that the future, performing self will still come to the early payment session

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<sup>17</sup>Of those 176 students, eight did not come to the payment sessions to collect their earnings (five in treatment Early-Late and three in treatment Late-Early).

<sup>18</sup>Again, both payment sessions took place on the same day: the early payment session between 6:15 and 7:15 a.m.; the late payment session between 12:00 and 4:00 p.m. So, there was a time lag of a few hours between both payment sessions. Time preferences were of no relevance for the elicitation of reservation wages as long as participants ascribed both payment sessions to one and the same consumption period. Considering that the online sessions took place one and two weeks prior to the payment sessions, we think this assumption is innocuous.

<sup>19</sup>The mark-up can be positive, negative or equal to zero. A participant who prefers the late over early payment session should state a reservation wage greater than 10 Euros (i.e., a positive mark-up). A participant who prefers the early over late payment session should state a reservation wage less than 10 Euros (i.e., a negative mark-up). And, a participant who is indifferent between the early and late payment session should state a reservation wage of precisely 10 Euros (i.e., a mark-up of zero).

once the late payment session is excluded from the choice set. For a model of projection bias, this is of no relevance since the planner would always try to predict the desired compensation for getting up early on the last day of the experiment.

#### 4.1 Reservation wages for coming to the early payment session

All of the following hypotheses are based on the premise that we successfully induced state-dependent preferences. In the experiment, we made use of the natural fluctuation of fatigue and assumed that people value sleep differently depending on the time of day. Specifically, we assumed that people have a greater desire for sleep in the early morning, when they are fatigued, than in the late morning, when they are rested. Our prediction therefore was that people would, on average, state higher reservation wages for coming to the early payment session when they are asked early compared to late morning. The best way to test this conjecture is comparing average reservation wages of the first online sessions between the Early-Late and Late-Early treatments. Here, we look at treatment differences between the first online sessions only, because reservation wages of the second online sessions may be confounded by anchoring. Our first hypothesis, where  $w_1$  denotes the average reservation wage in the first online session of either the Early-Late or Late-Early treatment, therefore is:

**H1 (State dependency between participants):**  $w_1(\text{Early-Late}) > w_1(\text{Late-Early})$

Notice that this hypothesis is about state-dependent behavior, not only about state-dependent preferences. Participants may have state-dependent preferences regarding sleep even if reservation wages between early and late sessions do not differ. This may be the case if participants have neither a projection bias nor a conflict of selves. They would thus aim to please their future tastes (i.e., their desire for early-morning sleep on the last day of the experiment), which they predict correctly, on average. If, however, we find that average reservation wages differ between early and late sessions, then participants must have state-dependent preferences *and* be exposed to either a projection bias or a conflict of selves.

A second way to test for state-dependent behavior is by comparing reservation wages between the first and second online sessions of treatment Late-Early. Here, too, the prediction was that participants state higher reservation wages for coming to the early payment session when they are asked in the early compared to the late morning. However, this is a more conservative test of state-dependent behavior since anchoring is likely to play a role when participants state their reservation wages again in the second online session. Nonetheless, our second hypothesis, where  $w_{i1}$  and  $w_{i2}$  denote the reservation wages of participant  $i$  in the first and second online sessions of treatment Late-Early, is:

**H2 (State dependency within participants):**  $w_{i1}(\text{Late-Early}) < w_{i2}(\text{Late-Early})$ 

Like H1, H2 is in line with both projection bias and conflict of selves. In the case of projection bias, a systematic increase of reservation wages from the late to early online sessions is caused by an underestimation of participants' desire for early-morning sleep when they are asked in the late morning. Of course, getting up early should be a common experience for most participants. But stating a minimum compensation for getting up early may be an unusual task. Therefore, participants may systematically underestimate their desired mark-up for getting up early when they are asked in the late morning. On the other hand, when they are asked in the early morning, their estimated minimum compensation for getting up early on the last day of the experiment should be more accurate since the present and future are characterized by similar states of fatigue. In the case of conflict of selves, a systematic increase of reservation wages from the late to early online sessions would represent a basic disagreement about the mark-up for getting up early between a rested self in the late morning and a fatigued self in the early morning. This disagreement would not be based on a misprediction of the value of early-morning sleep, but rather on a dissent on what that value ought to be.

In treatment Early-Late, on the other hand, projection bias and conflict of selves make conflicting predictions regarding reservation wage differences between the early and late online sessions. If participants experience a conflict of selves, their reservation wages in the early online session should be higher than those in the late online session, just like in treatment Late-Early. As before, the differences in reservation wages would not be based on a misprediction, but on a dissent about the value of early-morning sleep. However, if participants are exposed to a projection bias, their reservation wages should not differ between the early and late online sessions in treatment Early-Late. As long as a person aims to please future tastes, a projection bias cannot lead to systematic reservation wage differences between the two sessions of this treatment. The reason is that a person with projection bias must be unaware of her current misprediction (as mentioned before). However, a participant in the second online session, in the late morning, cannot plausibly be unaware of her current misprediction if she wants to state a different reservation wage than one week previously in the early online session. Such a participant must recognize that the relevant states in the early online session and early payment session were identical (or at least very similar). Therefore, in the second online session, she cannot plausibly hold the belief that her current prediction of the minimum compensation for getting up early is correct while she thinks that she must have been biased in the early online session. After all, she was the expert in "predicting" the value of early-morning sleep in the early online session. Consequently, if a participant in the second online session really aims to please her future tastes, the best she can do is state the same reservation wage as in the first

online session.<sup>20</sup> The only reason she may state a different reservation wage is if new information became available after the first online session. But this should not cause a systematic upward or downward correction of reservation wages. Therefore, our third hypothesis, using the same notation as before, is:

**H3.0 (Projection bias):**  $w_{i1}(\text{Early-Late}) = w_{i2}(\text{Early-Late})$

**H3.1 (Conflict of selves):**  $w_{i1}(\text{Early-Late}) > w_{i2}(\text{Early-Late})$

## 4.2 Commitment Choices

In the first online session, participants had to choose whether their stated reservation wage from the first or second online session would be relevant in the BDM procedure with a high probability. Thus, they could either bind themselves to their first reservation wage or they could choose to remain flexible and postpone the decisive decision to the second online session. Since the consequences of their stated reservation wages only unfolded in a future period (i.e., on the last day of the experiment, a week after the second online session), commitment could not be an attempt to fight an anticipated present bias. In our experiment, commitment is a judgment which a planner in the first online session imposes on another planner in the second online session. Therefore, if participants aim to please future tastes, commitment choices should not be observed in our experiment due to natural uncertainty about exogenous shocks. Participants have every reason to remain flexible until the second online session to react to new information such as updated appointments. Commitment as a means of a projection-biased planner in the first online session to fight an anticipated misprediction in the second online session is not possible either.<sup>21</sup> As explained above, in treatment Early-Late, participants in the first online session have no reason to be afraid of a misprediction in the second online session. They know that they will recognize during the second online session that their first reservation wage must have been very accurate since the states in the early online session and early payment

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<sup>20</sup> We make the assumption of identical states in the early online and early payment sessions just for ease of exposition. Since we ask participants for their value of sleep between 5:00 and 7:00 a.m., they should know best about this value when we ask them between 5:00 and 7:00 a.m. Thus, it appears obvious that when participants are asked the same question again later in the morning, they should simply repeat the value they have stated before if they aim to please their desire for early-morning sleep between 5:00 and 7:00 a.m. For the general argument, however, the two states in the early morning do not have to be identical. It is sufficient that the states in the early online session and early payment session are more similar to each other than the states in the late online session and early payment session. If this is the case, it still holds that the best guess of the preferences in the early payment session is done during the early online session. Thus, here too, participants in the late online session should simply repeat the value they have stated before if they aim to please their desire for early-morning sleep.

<sup>21</sup> As mentioned several times, a projection-biased planner must be unaware of her current misprediction. But, according to Loewenstein et al. (2003), the same person may be aware of her future tendency to mispredict (see their footnote 13).



session were identical. Likewise, in treatment Late-Early, participants in the first online session cannot be unaware of their current misprediction if they believe that they will state a different reservation wage in the second online session. They, too, must recognize that they will be in a better position to judge the value of early-morning sleep during the second online session in the early morning. If anything, participants in treatment Late-Early have an additional reason to natural uncertainty to pass the baton to their expert alter ego during next week's early online session, if they aim to please future tastes.<sup>22</sup>

In contrast, if a conflict of selves underlies behavior, there is a dissent about the value of early-morning sleep between the rested and fatigued selves. If participants are aware of that conflict, they may choose to commit themselves to their first reservation wage even in the face of reduced natural uncertainty at the time of the second online session.<sup>23</sup> In treatment Early-Late, the fatigued self in the first online session fears that the reservation wage of the rested self in the second online session is too low since the rested self values early-morning sleep less. In treatment Late-Early, the rested self in the first online session fears that the reservation wage of the fatigued self in the second online session will be too high since the fatigued self overcharges getting up early. Therefore, if participants are exposed to a conflict of selves, commitment choices should be frequently observed in either treatment. Thus, our fourth hypothesis, where  $P(\text{Commit})$  denotes the proportion of commitment choices, is:

**H4.0 (Projection Bias):**  $P(\text{Commit}) = 0$

**H4.1 (Conflict of Selves):**  $P(\text{Commit}) > 0$

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<sup>22</sup>Even in a situation without recurrent states, unlike in our experiment, commitment of a planner against another planner is difficult to reconcile with the concept of projection bias. Suppose there are three relevant periods with corresponding states  $s_t$  where  $t \in [1, 2, 3]$ . All states are different and no pair of states is more similar to each other than any other pair (i.e., there are no recurrent states). In period 1, a person can order a good which is consumed in period 3. In period 2, however, she can overrule her own choice, unless she explicitly refrained from this option in period 1. Again, projection bias requires that she is unaware of her current misprediction, but she may be aware of her future tendency to mispredict (Loewenstein et al. 2003, footnote 13). Commitment in period 1 was in line with projection bias if the person knew in period 1 that she will mispredict her tastes when she can overrule her own choice in period 2. However, this requires that the person in period 1 additionally thinks that she will have forgotten about her misprediction in period 2 when she is predicting in period 2, which seems a bit odd (for a similar remark, see footnote 7 in Conlin et al. 2007). Alternatively, the person in period 1 may be aware that she will predict differently in period 2 even though she knows in period 2 that she thought in period 1 to be biased in period 2. In other words, she knows in period 1 that she will have a different opinion about her future tastes in period 2. So, there is a dissent about predictions of tastes and the boundary between a "real" conflict of selves becomes very thin.

<sup>23</sup>So, the self in the first online session trades off commitment against flexibility. On the one hand, it values flexibility since there could be exogenous shocks such as updated appointments. On the other hand, it does not agree with the tastes of the self in the second online session. Amador et al. (2006) study the optimal trade off between commitment and flexibility in a consumption-savings model when people suffer from temptation.

Table 1: Reservation wages

|                  | Late-Early |                 | Early-Late |                 | M.W.U.<br>Test | Unpaired<br>t-Test |
|------------------|------------|-----------------|------------|-----------------|----------------|--------------------|
|                  | Obs.       | Mean<br>(SD)    | Obs.       | Mean<br>(SD)    |                |                    |
| 1st session      | 89         | 15.65<br>(6.56) | 87         | 18.01<br>(7.99) | 0.020          | 0.017              |
| 2nd session      | 89         | 17.47<br>(8.20) | 87         | 17.57<br>(7.52) | 0.671          | 0.535              |
| Signed-rank test | <0.001     |                 | 0.022      |                 |                |                    |
| Paired t-test    | <0.001     |                 | 0.017      |                 |                |                    |

*Notes:* The table shows means (standard deviations) of reservation wages in each online session of each treatment (in Euros). The last two columns display p-values of one-sided (according to H1) Mann-Whitney U tests and unpaired t-tests, respectively. The bottom two lines display p-values of one-sided (according to H2 and H3.1) Wilcoxon signed-rank tests and paired t-tests, respectively.

## 5 Results

In the following, we present the results in order of the hypotheses. Table 1 shows average reservation wages in the first and second online sessions of each treatment. In line with H1, reservation wages in the first online session were significantly higher in treatment Early-Late than in treatment Late-Early (18.01 vs. 15.65 Euros). The difference is quite substantial as the required mark-up for getting up early on the last day of the experiment was approximately 42% ( $= \frac{8.01}{5.65} \cdot 100$ ) greater when participants stated their reservation wage early compared to late morning in their first online session. Clearly, participants valued sleep differently depending on the time of day and this state dependency affected their assumed opportunity costs of getting up early on the last day of the experiment. Reservation wages in the second online session did not differ between treatments. But, as mentioned before, those reservation wages are likely to be distorted by anchoring such that a treatment comparison based on the second online sessions should be treated with caution.<sup>24</sup>

The prevalence of state-dependent behavior can be confirmed through a comparison of reservation wages between the first and second online session of treatment Late-Early (H2). As anticipated, participants in this treatment significantly increased their reservation wages from the first to the second online session ( $w_{i2} - w_{i1} = 1.82$ ). Thus, on average, participants valued sleep more in the second online session, in the early morning, and asked for a 32% ( $= \frac{7.47}{5.65} \cdot 100$ )

<sup>24</sup>Some anchoring becomes visible when comparing reservation wages between the second online session in treatment Late-Early and the first online session in treatment Early-Late. Projection bias and a conflict of selves both predict an increase of reservation wages from the first to the second online session in treatment Late-Early. However, reservation wages in the second online session of this treatment are, on average, 0.50 Euros lower than in the first online session of treatment Early-Late. This difference is not significant, however ( $p = 0.659$ , two-sided t-Test).

higher mark-up for getting up early on the last day of the experiment than one week before in the late online session.

So far, the results indicate that participants' behavior displayed state dependency, but it is not yet clear whether this was due to projection bias or conflict of selves. The first test that distinguishes between the two models of behavior is a comparison of reservation wages between the first and second online session of treatment Early-Late. Here, projection bias predicts that reservation wages do not differ systematically since participants in the second online session should have acknowledged their expertise in estimating the opportunity costs of getting up early during the first online session in the early morning (H3.0). Conflict of selves, on the other hand, postulates reservation wage differences due to a dissent about the value of early-morning sleep between the rested and fatigued selves (H3.1). Note that if anchoring played a role during the second online session, the test is biased against conflict of selves. Nonetheless, Table 1 shows that participants significantly decreased their reservation wages from the first to the second online session in treatment Early-Late ( $w_{i2} - w_{i1} = -0.44$ ). Thus, during the second online session, participants systematically adjusted their previously stated mark-up for getting up early downward, which points to a disagreement about the value of early-morning sleep, not a misprediction.

Further evidence against projection bias and in favor of conflict of selves is revealed in Table 2, where the number (and proportions) of commitment choices in both treatments are shown. Whereas commitment in our experiment was not in line with a model of projection bias, it was in accordance with conflict of selves (H4.0 and H4.1). In both treatments, the majority of participants chose the commitment option (62.9% in treatment Late-Early and 57.5% in Early-Late).<sup>25</sup> Thus, the hypothesis of projection bias is clearly rejected. If it was claimed that natural uncertainty played only a negligible role in our experiment, one may object that projection bias can capture any proportion of commitment choices between 0% (i.e., a strong preference for flexibility) and 50% (i.e., indifference between commitment and flexibility). However, even this hypothesis is rejected based on our data, as the proportion of commitment choices was significantly (marginally significantly) greater than 50% in treatment Late-Early (Early-Late).<sup>26</sup>

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<sup>25</sup>As mentioned in footnote 12, the flexibility option was on purpose always presented above the commitment option on participants' computer screens. Thus, if one of the two options stuck out, it should have been the flexibility option.

<sup>26</sup>The p-values of the corresponding exact binomial tests where  $H_0 : P(Commit) \leq 0.5$  are  $p = 0.010$  and  $p = 0.099$  for treatment Late-Early and Early-Late, respectively.

Table 2: Commitment choices

| Late-Early |                    | Early-Late |                    |
|------------|--------------------|------------|--------------------|
| Obs.       | #Commit<br>(Prop.) | Obs.       | #Commit<br>(Prop.) |
| 89         | 56<br>(0.629)      | 87         | 50<br>(0.575)      |

*Notes:* The table shows the number (proportion) of participants who committed themselves on their first reservation wage in each treatment.

## 6 Discussion

The results show that participants' behavior in our experiment exhibited profound state dependency. More importantly, the results appear to support our conjecture that, in recurrent decision situations, this state dependency might rather be caused by a conflict of selves than projection bias. In other words, our participants did not exclusively aim at pleasing their future tastes as they did not neglect their preferences at the time of their decision. This appears to be a conscious decision, not an unconscious misprediction. However, before we reflect about the implications of our findings in the next section, we discuss some concerns that could be raised regarding the results and their interpretation.

### 6.1 Reservation wages

One concern regarding the results might be that reservation wage differences in treatment Early-Late could be due to forgetfulness since we did not remind participants of their previously stated reservation wage during the second online session. So, participants would have liked to report the same value as in the early online session, but they could not remember what that value was and therefore had to rely on their valuation during the second online session. Hence, projection bias together with forgetfulness might explain reservation wage differences in treatment Early-Late. We do not think that forgetfulness was a major problem in our experiment. First of all, the experiment was rather unusual so that the procedure alone most likely grabbed participants' attention and curiosity. In addition, participants underwent an intensive briefing session which prepared them mainly for stating their minimum payment for performing (a yet unknown) task B instead of (a yet unknown) task A during the online sessions. Thus, reservation wages were in the focus of attention even before participants took part in the first online session. Finally, during the first online session, participants made not more than two decisions: one regarding the commitment option and one regarding the reservation wage. All they had to do was remembering the latter choice for one week, where this choice was a self-determined integer between 0 and 41. Aside from that, if participants in the second

online session of treatment Early-Late stated a lower reservation wage because they could not remember their reported wage from the first online session, they were essentially in the same situation as participants in the first online session of treatment Late-Early. Thus, if projection bias together with forgetfulness accounts for reservation wage differences in treatment Early-Late, reservation wages should not differ, on average, between participants in the second online session of treatment Early-Late who decreased their wages and participants in the first online session of treatment Late-Early ( $H_0 : w'_2(\text{Early-Late}) = w_1(\text{Late-Early})$ ).<sup>27</sup> However, this does not seem to be the case. Participants who decreased their wages in the second online session of treatment Early-Late stated, on average, higher wages than participants in the first online session of treatment Late-Early ( $w'_2(\text{Early-Late}) = 19.05$ ,  $w_1(\text{Late-Early}) = 15.65$ ,  $p = 0.082$ , two-sided t-Test). In sum, forgetfulness as an explanation of reservation differences in treatment Early-Late appears to be rather implausible.

Another concern might be that reservation wage differences in treatment Early-Late appear to be small ( $w_2 - w_1 = -0.44$ ) and therefore provide only weak evidence in favor of a conflict of selves. We would object to such a concern for three reasons: First, anchoring most likely played a role during the second online session and reservation wage differences between both online sessions in this treatment constitute only a lower bound of the actual conflict. Second, of course, the extent of a conflict between selves depends on the decision situation. Considering that the manipulation in our experiment was rather mild (i.e., natural fluctuation of fatigue between early and late morning), we should not be surprised to find only a “mild” conflict. Third and most important, the fact that participants significantly decreased their reservation wages during the second online session is evidence of a disagreement which cannot be explained by projection bias, whether or not this disagreement is large.

Still, the question remains why average reservation wage differences vary widely in magnitude between treatments Early-Late and Late-Early ( $|w_2 - w_1| = 0.44$  and  $|w_2 - w_1| = 1.82$ , respectively). The short answer to this question is: projection bias in treatment Late-Early. As we have noted in section 4, getting up early is a task in which most participants should have had ample experience. But probably no participant has ever thought about a price for getting up early. Thus, when we asked participants for their reservation wage for the first time during the late online session, this was precisely a situation where projection bias most likely plays a major role. In fact, the large reservation wage differences in treatment Late-Early emphasize the importance of projection bias in decision situations which we experience only occasionally. It is the recurrent decision situation in which the concept has, in our view, a fundamental problem with the unawareness condition.<sup>28</sup>

<sup>27</sup>We note that this hypothesis is based on the assumption that there is no correlation between forgetfulness and the value of early-morning sleep.

<sup>28</sup>As already indicated in footnote 20, a decision situation is recurrent if states at two different points in time are more similar to each other regarding the relevant criterion than they are to another state. The two states

## 6.2 Commitment choices

A potential concern regarding the decision to assign a high probability to the first reservation wage might be that this does not reflect a taste for commitment, but rather a tendency to “pre-crastinate”. Pre-crastination captures the idea that people sometimes prefer to incur losses rather sooner than later because they otherwise have to keep track of their future transactions (Haushofer 2015). This “keeping track” might generate a cost either in terms of real monetary consequences such as late fees or in terms of the mental effort to remember performing a task at a future date (Haushofer 2015). None of this applies to the commitment decision in our experiment. Participation in both online sessions was mandatory whether or not participants chose the commitment option, and they received a reminder of the second online session (including the personalized link) one day prior. But maybe participants wanted to prepone the decisive decision just to get it over with and to have a lower cost of deliberation during the second online session. Again, we do not think that this is plausible in our experiment. First of all, the cost of deliberation to come up with an integer between 0 and 41 as a minimum payment for getting up early appears to be small in any case. Second, each reservation wage could have been payoff-relevant even if participants chose the commitment option. Thus, both statements of reservation wages were incentive-compatible such that participants could not avoid some kind of deliberation during the second online session. And third, if participants wanted to minimize cognitive effort during the second online session, they could have planned to state the same wage as in the first session but still remain flexible to react to new information such as updated appointments. In treatment Late-Early, the inconsistency of projection bias plus pre-crastination as an explanation for commitment becomes particularly apparent. Here, participants in the first online session would not only be unaware of their misprediction, but they would also decide to get the (decisive) decision over with in order to lower their deliberation costs during next week’s online session. When they are in the second online session, however, they deliberately revalue the cost of getting up early, disagree with their last week’s valuation and considerably increase their reservation wage.

All in all it appears to us that a conflict of selves captures state-dependent behavior in recurrent decision situations better than projection bias. We neither find forgetfulness nor pre-crastination to be very convincing as alternative explanations of our results. Note that the

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do not have to be identical in order to be recurrent. For instance, consider once again the example of booking a summer vacation trip at an overly warm destination during the winter. This situation becomes recurrent, if you want to book a summer vacation trip a second time during the following winter. At this point, it is almost impossible to remain completely unaware of your last summer’s misery. In all likelihood, you will ask yourself the question of whether you really want to choose an overly warm destination again. For this to be the case, it is not necessary that the corresponding states during the summers are identical. It is sufficient that it is in general warmer in summer and you might get tired of the heat, whatever the actual temperature is in each summer.

presence of both phenomena, forgetfulness and pre-crastination, would be necessary to align our findings with projection bias.

## 7 Conclusion

Many decisions in life are choices with delayed consequences in the sense that the resulting consumption takes place in some future period. If preferences, however, are state-dependent and if the states at the time of the decision and consumption diverge, it is a fundamental question which of those preferences are considered more important by the decision maker. Based on the normative statement that preferences at the time of consumption are those that should be relevant, it is usually assumed in economics that real people exclusively aim at pleasing their future preferences when they make choices with delayed consequences.<sup>29</sup> With the help of a framed field experiment with a commitment option, we tested whether this is indeed the case and found that participants did not neglect their preferences at the time of the decision. This appeared to be a conscious decision, not a mistake. We therefore found supporting evidence of our conjecture that state-dependent behavior in daily or recurrent decision situations may rather be caused by a propensity to fight than a misprediction of future preferences. Participants seemed to lack sympathy rather than empathy for their alter ego in a different state.

Moreover, since commitment in our experiment was the attempt of a first-moving planner to impose a better judgment on a second-moving planner, we provide the first empirical evidence of a conflict between two planners within a person in contrast to many previous experiments, where commitment was always a device against weak will (see, e.g., Ariely and Wertenbroch, 2002; DellaVigna and Malmendier, 2006; Ashraf et al., 2006). Participants' widespread tendency to use the commitment option even in our experiment shows that the idea of multiple selves within a person might be more than just a metaphor as, for instance, claimed in Loewenstein (1996). If people with state-dependent preferences do not always agree with their preferences in a different state, a multiple selves approach appears to be the natural model of people's behavior. There is no normative ground to judge which of those preferences represents *the* self-interest of a person. In other words, it seems arbitrary to declare one self as the genuine or authentic self and grant this one privileged rights over any other self.

According to Elster (1985), one way to identify the authentic self, i.e., the self we should side with as friends or policy makers, may be on grounds of the ability to engage in forward-looking and strategic behavior. For him, there is typically only one self which is capable of acting strategically in binding its later (short-sighted) alter ego. While Read (2006) explicitly agrees with Elster's empirical claim, he notes that it is problematic to infer a self's authenticity

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<sup>29</sup>Again, we talk about state-dependent preferences, not time preferences. For the latter, we know that people might take measures against their preferences at the time of consumption (i.e., against present-biased preferences).

from its inclination to commit to its preferences since this view was biased against selves in pleasurable states that are incapable of acting strategically. Schelling, of course, was always concerned about the difficulty of identifying the authentic self (see, e.g., Schelling 1984a,b). For him, the “question, which is the authentic one, may define the problem wrong. Both selves can be authentic” (Schelling 1984b, p. 9). Our results clearly confirm Schelling’s view. Both selves, the rested and the fatigued, acted strategically and bound their later alter ego. So, both selves are equally authentic, even according to Elster’s criterion.

Cowen (1991) argues that the rational choice approach should move in a similar direction as management science and planning theory which nowadays deemphasize the need for command and embrace self-regulating orders. Successful self-management programs should be no less based on the effective coordination of conflictive desires than firms or economies. According to Cowen, giving up the assumption of asymmetry between selves would be an important step in this direction. Ultimately, our results support this view and cast some doubts on the naturalness with which the new paternalists take sides.



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