

# Valuing Time Over Money Predicts Happiness After a Major Life Transition: A Pre-Registered Longitudinal Study of Graduating Students

Ashley V. Whillans  
Elizabeth W. Dunn

Working Paper 19-048



# Valuing Time Over Money Predicts Happiness After a Major Life Transition: A Pre-Registered Longitudinal Study of Graduating Students

Ashley V. Whillans  
Harvard Business School

Elizabeth W. Dunn  
University of British Columbia

**Working Paper 19-048**

Copyright © 2018 by Ashley V. Whillans and Elizabeth W. Dunn

Working papers are in draft form. This working paper is distributed for purposes of comment and discussion only. It may not be reproduced without permission of the copyright holder. Copies of working papers are available from the author.

Valuing Time Over Money Predicts Happiness After a Major Life Transition:  
A Pre-Registered Longitudinal Study of Graduating Students

Ashley V. Whillans  
Harvard Business School

Elizabeth W. Dunn  
University of British Columbia

Word Count: 5,382

Corresponding Author:  
Ashley Whillans  
437 Baker Library  
Harvard Business School  
[awhillans@hbs.edu](mailto:awhillans@hbs.edu)  
1-617-495-6587

**Abstract**

When making major life decisions—such as choosing what to do after graduation—is it better to prioritize time or money? In a pre-registered longitudinal study of 1,232 graduating university students, respondents who valued time over money chose more intrinsically rewarding activities and were happier one year after graduation. These results remained significant controlling for baseline happiness, potential confounds such as materialism and socioeconomic status, and when using alternative model specifications. These findings extend prior research by showing that the tendency to value time over money is not only predictive of daily consumer choices, but also of major life decisions. Additionally, this research clarifies the direction of the observed associations between valuing time and money and happiness, showing that valuing time over money uniquely contributes to well-being, in part by encouraging intrinsic motivation. Together, this work sheds new light on whether, when and how valuing time shapes happiness.

*Keywords:* Time, Money, Trade-offs, Happiness, Career Decision-Making

Many North Americans feel increasingly pressed for time (DeVoe & Pfeffer, 2011; Perlow, 1999) and report worrying about not having enough money (Rheault, 2011). In representative surveys, a large proportion of Americans (41%) report that they do not have enough time to do all of the things that they want to do. A large proportion of respondents also report that unexpected expenses are a primary source of worry (43%; Gallup, 2017). Although people desire to have more time and money, there are few opportunities to gain both. Instead, people are often forced to make trade-offs between these valuable resources. For example, people frequently confront difficult decisions such as whether to work more hours and make more money (vs. spending more time with their children), whether to live in a more expensive apartment closer to work (vs. spending more time stuck in traffic each day), or whether to pay someone else to complete disliked tasks on their behalf (vs. completing disliked tasks on their own). Each day and across many years, the decisions people make about having more free time at the expense of having less money may hold critical implications for subjective well-being.

Although wealth offers the potential for people to spend their time in happier ways, such as by living in a more expensive apartment closer to the office, survey data suggests that wealthier individuals often spend more of their time engaging in activities that are less enjoyable, such as commuting and shopping (Kahneman et al., 2006). Relatedly, research suggests that there is a hydraulic relationship between financial wealth and feelings of time stress, such that rising incomes produce a rising sense of time scarcity. Across diverse cross-cultural contexts such as Europe, Asia, and America, people who earn more money report feeling more pressed for time (Hamermesh & Lee, 2007). In a large-scale survey of over 30,000 working adults living in the United States, respondents were asked to report their income as well as their feelings of time stress over the course of three consecutive years. Specifically, respondents reported how

often they felt rushed and how often they felt pressed for time (DeVoe & Pfeffer, 2009).

Controlling for individual and job-related characteristics, such as the number of hours worked each year, when respondents' income increased so too did their feelings of time stress.

This research suggests that giving up discretionary income to have more free time might promote happiness. Consistent with this idea, spending money on time-saving purchases—such as by spending money to outsource cooking, shopping, and housecleaning—is linked to higher levels of life satisfaction (Whillans et al., 2017). In an experimental study, working adults reported greater end-of-day happiness after being assigned to spend a \$40 payment on a time-saving (vs. material) purchase because time-saving purchases reduced feelings of time stress (Whillans et al., 2017). This research provides initial evidence that giving up money to have free time promotes well-being, at least for individuals with additional income at their disposal.<sup>1</sup> This research fits with a growing literature showing that how people spend their money may be at least as important for happiness as how much money they make (Dunn, Aknin & Norton, 2008; Dunn, Aknin & Norton, 2014; Dunn, Gilbert, & Wilson, 2011; Frank, 2004). While past research has focused almost exclusively on how people spend money, trade-offs that do not involve spending, such as working fewer hours for less money, might also shape subjective well-being.

Researchers have started to explore this possibility by examining whether broadly prioritizing time over money in the context of everyday life might also promote greater subjective well-being (Herschfield, Barnea & Mogilner, 2016; Mogilner, 2010; Mogilner, Whillans & Norton, 2018; Whillans & Dunn, 2018; Whillans, Weidman & Dunn, 2016). To this

---

<sup>1</sup> While people who lack discretionary income or are struggling to make ends meet are unlikely to confront the question of whether to give up money to have more time, a large proportion of people living in developing countries have a non-trivial amount of discretionary income that they could spend in these ways (e.g., OECD Economic Survey; Canada and United States, 2018).

end, researchers have developed the Resource Orientation Measure (ROM; Whillans, Weidman & Dunn, 2016). The ROM is a single item measure that asks individuals whether they value time more than money or money more than time. The simple, single item format of this measure minimizes participant burden while simultaneously allowing researchers to understand people's broad preferences to prioritize time over money (vs. focusing on specific spending decisions).

Prior research has found evidence that this single-item measure demonstrates strong psychometric properties (Whillans, Weidman & Dunn, 2016). Demonstrating discriminant validity, participants' responses to the ROM are distinct from materialism, material striving, socioeconomic status, social desirability, conscientiousness, and current feelings of time and material affluence (Whillans, Weidman & Dunn, 2016). Demonstrating test-retest reliability, participants' responses to the ROM are consistent over a 3-month period (Whillans, Weidman & Dunn, 2016), during which time stable constructs should show no true change (Chmielowski & Watson, 2008). Demonstrating construct validity, participants' responses to the ROM predict hypothetical consumer decisions, such as whether respondents choose a more expensive direct flight vs. a cheaper indirect flight. Responses to the ROM also predict in the moment decision making, such as whether individuals choose a housecleaning voucher vs. a cash prize in a lottery (Whillans, Weidman & Dunn, 2016).

Most critically for the current investigation, participants' responses to the ROM are reliably linked to subjective well-being. Across six studies ( $N=4,690$ ), individuals who broadly prioritized time (vs. money) on the ROM felt more satisfied with their lives, reported more frequent positive emotions, and reported less frequent negative emotions. These results held controlling for materialism and material striving as well as for other potential confounds such as age, number of children living at home, household income, number of hours worked, and

conscientiousness. The effects of prioritizing time over money also held controlling for how pressed for time and money respondents felt in the moment.

Moreover, these findings are robust across samples: valuing time has been associated with higher well-being in studies of college students, working adults recruited from Canada, and nationally representative samples of working Americans (Whillans, Weidman & Dunn, 2016; Whillans & Dunn, 2018). Attesting to the reliability of these results, these findings have also been replicated in an independent investigation. Across six studies of Americans ( $N=4,413$ ), respondents were asked whether they would rather have more time or more money (Herschfield, Mogilner, & Barnea, 2016). In these studies, individuals who reported that they would prefer to have more time (vs. more money) reported greater life satisfaction, greater positive affect, and lower negative affect. Once again, these effects held controlling for demographic characteristics as well as for the amount of discretionary time and money that individuals had available.

Prior research suggests that the tendency to prioritize time over money is a generalizable, replicable, and previously unrecognized predictor of subjective well-being. However, almost nothing is known about why this association exists. Scholars have argued that this association is driven by the fact that people who value time over money make better decisions about how to spend their time (e.g., such as by spending more time socializing; Whillans & Dunn, 2018). However, it is also possible that happier people might also have better options for how to spend free time, such as more diverse hobbies or higher quality relationships, and therefore prioritize time more than money. It is also possible that there are third variables that explain these associations. The best way to explore these competing possibilities, and to unpack the association between chronically prioritizing time over money and subjective well-being, is to track individuals during a major life transition (i.e., college graduation). If the perspective of past



research is correct, respondents who value time should emerge from this major life transition happier than respondents who value money in part by making decisions associated with greater happiness, such as choosing a career that involves fewer working hours and more time off.

In addition to shaping the decisions that individuals make, time and money orientations might also shape *why* people make these decisions. People who value time over money may prioritize goals that are personally relevant and meaningful (Mogilner, 2010). Specifically, people who value time over money might prioritize intrinsically motivated goals when making major life decisions, which could explain their greater happiness. This proposition is based on research showing that money is a quintessential source of extrinsic motivation (Kasser & Ryan, 1993). In contrast, focusing on time has been shown to promote interest in social and prosocial activities (Mogilner, 2010; Whillans & Dunn, 2018), which tend to be more intrinsically motivated. Pursuing intrinsically motivated goals, in turn, puts people on a long-term trajectory of increased well-being (Sheldon, 2008). In one study, students who successfully strove toward intrinsically motivated goals during their freshman year were more likely to experience sustained changes in well-being over the course of college (Sheldon, 2008). Intrinsic motivation should, in turn, explain why people's chronic time orientations encourage positive shifts in well-being.

As stated above, to detect the long-term effect of individuals' time and money orientations on major life decisions and well-being, it is important to study people who are undertaking critical decisions in their lives. To this end, we recruited over a thousand graduating college students and examined how students' initial proclivity to value time over money predicted their feelings and career choices a year after graduation. We deliberately focused on career selection because it is one of the most critical decisions that people face in their life time (Hodkinson & Sparkes, 1997) and is a powerful predictor of well-being (Marum et al, 2014).

## Method

### Pre-Registered Hypotheses

Following the reporting standards proposed by Simmons, Nelson, & Simonsohn (2011), we report all exclusions and every measure given. Based on the effect sizes documented in past research (Herschfield, Barnea & Mogilner, 2016; Whillans, Weidman & Dunn, 2016), we set a minimum sample size of 200 graduating students with the goal of recruiting as many graduating senior students as possible in order to examine our key hypotheses of interest.

We pre-registered our hypotheses through the Open Science Framework (OSF; [https://osf.io/xpt2j/?view\\_only=218faee2eec541afb769ac4f00a494ba](https://osf.io/xpt2j/?view_only=218faee2eec541afb769ac4f00a494ba)). Our data and syntax are publicly available through the OSF:

[https://osf.io/c28xa/?view\\_only=8dccc7a8397c4d80b432d24556f71a30](https://osf.io/c28xa/?view_only=8dccc7a8397c4d80b432d24556f71a30). We pre-registered three main hypotheses through the OSF as follows:

H1: Students who value time over money before graduation (at Time 1) will report greater subjective well-being (SWB) one year after graduation (at Time 2).

H2: Students who value time over money before graduation (at T1) will be more likely to pursue intrinsically motivated activities one year after graduation (at T2).

H3: Any effect of valuing time over money before graduation (at T1) on the happiness that students report one year after graduation (at T2) will be at least partially mediated by intrinsically motivated activity pursuit.

We also pre-registered additional analyses to ensure that our results held controlling for gender, age, family socioeconomic status (SES), and materialism.

As described above, it was our goal to collect as many graduating student participants as possible. Thus, we used multiple methodologies to recruit participants. Sometimes these

methodologies restricted the number of measures that we could include (i.e., short surveys implemented by our university). Given this data collection strategy, we only pre-registered analyses for measures that we were able to collect across all data collection opportunities.

### **Participants & Procedure**

**Data collection overview.** To test our hypotheses, we recruited graduating college students from a large public university in Vancouver, Canada. See Table 1 for the demographic characteristics of the sample. Between August 2014 and June 2016 (T1), three thousand senior undergraduate students completed a validated measure of time and money trade-offs—the Resource Orientation Measure (ROM)—described in detail in the Introduction ( $N=3,271$ ). Students either completed this measure as part of a larger, annual survey of graduating students that was run by the university (21%) or they completed this measure while participating in other ongoing research in our department (79%). In September, 2017 (T2), we invited all consenting students to complete a brief follow-up survey in exchange for the chance to win prizes.

More than one-thousand graduating students completed both surveys ( $N=1,232$ ). As described above, because we recruited participants using various strategies, there was variability in how much time had elapsed between the T1 and T2 surveys. On average, students completed the two surveys 439.33 days apart ( $SD=83.03$ ) and 98.5% of the sample completed the survey between 12-24 months after graduation. Importantly, the amount of time between the T1 and T2 surveys was not significantly associated with our key measures of interest ( $ps \geq 0.130$ ), therefore this variable is not discussed further (See Tables 2 and 3 for relevant correlation tables).

**T2 Survey overview.** As part of the T2 survey, respondents completed several well-being measures and reported on “their current primary activity.” Students reported whether they were employed part-time, full-time, attending graduate school, completing an internship, or

spending the majority of their time completing another activity (see below for more detail).

Students then reported their primary motivation for completing this activity, their gender, the highest educational attainment of their parents, a short 3-item materialism scale (Kasser, 2002), and they once again completed the ROM (Whillans, Weidman, & Dunn, 2016; in this order).

## Measures

**Resource Orientation Measure (ROM; T1 & T2).** At T1 and T2, we examined whether students prioritized time or money by implementing the Resource Orientation Measure (ROM). This measure requires respondents to read a short paragraph describing two individuals and then presents respondents with a binary choice where they are asked to choose which individual is most like themselves (Whillans, Weidman & Dunn, 2016). The choices are presented as follows:

**Tina** values her **time** more than her money. She is willing to sacrifice her money to have more time. For example, Tina would rather work fewer hours and make less money, than work more hours and make more money.

**Maggie** values her **money** more than her time. She is willing to sacrifice her time to have more money. For example, Maggie would rather work more hours and make more money, than work fewer hours and have more time.

The identifiers of the characters and the pronouns that are used in these vignettes are matched to the participants' gender (Tina/Tom and Maggie/Michael); for people who did not report gender, the names and pronouns used in the vignettes are displayed as gender neutral (Morgan/Taylor).

**Subjective well-being (T1 & T2).** We focused on subjective well-being as the key outcome variable of interest. Subjective well-being (SWB) refers to a person's evaluation of how happy they are and includes both global cognitive assessments of the quality of one's life, as well

as measures of emotional experiences (Diener, 1984). SWB is typically defined as high life satisfaction, high feelings of positive affect, and low feelings of negative affect (Diener, 1999).

To capture subjective well-being, respondents reported on their overall life satisfaction by answering the question, “Taking all things together, how happy would you say you are?” on a scale from 0 = *Not at all* to 10 = *Extremely* (Jowell, 2007). Next, participants completed the Cantril Ladder (Cantril, 1965), reporting where they currently stand in life on a ladder spanning from the worst possible to the best possible life imaginable (from 0 = *Bottom Rung* to 10 = *Top Rung*). We selected these questions because they are brief measures that are used extensively in large-scale survey research to capture the cognitive component of subjective well-being (SWB). To capture the affective component of SWB, we asked participants to rate their positive and negative affect in the last four weeks using the Schedule for Positive and Negative Affect (SPANE; Diener et al., 2009; PA,  $\alpha = 0.84$ ; NA,  $\alpha = 0.86$ ).

We pre-registered that we would combine the cognitive component (satisfaction with life) and affective components (PA and reverse-scored NA) into a single subjective well-being composite if we observed a correlation above 0.50 between these measures. The correlations were over 0.50 ( $r_s > 0.56$ ), thus, we standardized and combined these measures to create a Subjective Well-Being (SWB) composite. For most of the participants recruited through ongoing lab studies, we were able to collect the same measures of SWB at Time 1. As described above, we only pre-registered analyses for which we expected to collect data from all of our data collection opportunities. We therefore report our results that include T1 SWB in the main text while noting that the full results that include T1 as a covariate were not pre-registered.

**Activity (T2).** After reporting well-being, participants selected their current primary activity from a list we provided. We created this list based on research from our university

showing that graduates most commonly engage in full-time or part-time employment, graduate or professional school, service or volunteer activities, internship, travel or gap years (Alma Matter Society, 2015). We also allowed participants to report engaging in ‘other’ activities.

**Activity Motivation (T2).** Participants were then asked to report on their primary motivation for engaging in their primary activity. To assess activity motivation, students completed two items adapted from Sheldon, Ryan, Deci and Kasser (2004). Students responded to the question of “why are you engaged in these behaviors” on two sliding scales ranging from 0 = *Because someone told me to* to 100 = *Because I really identify with the activity* and 0 = *Because you would feel guilty if you didn’t* to 100 = *Because of the enjoyment this activity gives you*. Consistent with our pre-registered analytic plan, we combined participants’ responses to these two items to form a composite measure indicating intrinsic activity motivation ( $\alpha = 0.84$ ).

**Control variables (T2).** Consistent with our pre-registered analysis plan, and with other recent research on this topic (Whillans et al., 2017), we repeated our main analyses controlling for gender (1 = female), family SES, and materialism. We asked students to report their parents’ education based on research showing that parental education is a more reliable predictor of family SES compared to students’ reports of their parents’ occupation or income (e.g., Bottia et al., 2018). We assessed materialism by asking participants to complete the three highest loading items from the Material Values Survey (Richins, 2004;  $\alpha = 0.76$ ). While previous research has shown that the ROM is distinct from materialism (Whillans, Weidman & Dunn, 2016), we included a short measure of materialism to ensure that this was the case. Because this measure was of subsidiary interest, we originally planned to ask only a subset of our sample to complete it, but given the brevity of our final questionnaire, we were able to ask all participants to complete the materialism items. In our pre-registration, we also indicated that we would include

age as a covariate in our analyses. However, due to a programming error, we failed to collect age data from the first 410 respondents who completed the T2 survey. Because the age range in this sample was highly restricted (over 90% of the sample was between the ages of 21-25 at T2), the models we report in text exclude age as a covariate in order to maximize power. Analyses that include age as a covariate, yield statistically equivalent results. See Tables 4c & 5c.

## Results

### ROM

At T1, 61.7% of respondents valued time more than money; whereas 38.3% of respondents valued money more than time. We observed nearly the identical split at T2 with 61.5% of respondents valuing time more than money and 38.5% of respondents valuing money more than time. Respondents' general orientation to value time over money (or to value money over time) was moderately stable during the study,  $r = 0.44$ ,  $Kappa = 0.44$  (0.03), Approximate  $T = 14.33$ ,  $p < 0.001$ . These results confirm past studies by showing that participants' responses to the ROM represent a relatively stable orientation that is sensitive to change depending on personal and situational circumstances (Whillans, Weidman & Dunn, 2016).

### Hypothesis 1: Subjective Well-being

As per our pre-registered analytic plan, we first examined whether students who prioritized time over money at T1 reported greater SWB at T2. As predicted, students who valued time over money at T1 reported significantly higher SWB at T2 ( $M = 0.29$ ,  $SD = 2.43$ ) compared to students who valued money over time ( $M = -0.32$ ,  $SD = 2.55$ ),  $t(1,231) = 4.19$ ,  $p < 0.001$ ,  $d = 0.24$ , 95%CI [0.32, 0.89]. Reported in regression, students who valued time more than money reported significantly greater SWB at T2 ( $\beta = 0.12$ ,  $p < 0.001$ ). Following our pre-registered analytic plan, we first examined whether these results held controlling for our key

demographic variables of interest: gender (1 = female) and family SES. Controlling for these covariates, students who valued time more than money at T1 reported greater SWB at T2 ( $\beta = 0.12, p < 0.001$ ). After adding materialism into the model, this result was unchanged: students who valued time more than money at T1 reported significantly greater SWB at T2 ( $\beta = 0.12, p < 0.001$ ). In this model, materialism did not predict SWB ( $\beta = 0.02, p = 0.489$ ). See Tables 4a-d for the full regression models with and without covariates. When we controlled for T1 SWB, the effect of valuing time over money on T2 SWB also remained significant ( $\beta = 0.07, p = 0.009$ ). See Table 4d. These results provide evidence that the effects of valuing time over money on T2 subjective well-being could not be explained by T1 subjective well-being. Stated differently, respondents upward trajectories of well-being at T2 were partially explained by T1 orientations.

### **Hypothesis 2: Intrinsic Activity Motivation**

Next, we examined whether students were more likely to pursue intrinsically motivated activities after graduation if they valued time over money. As predicted, students who valued time over money at T1 were more likely to pursue an intrinsically motivated primary activity at T2 ( $M = 69.34, SD = 22.29$ ) as compared to students who valued money over time ( $M = 64.56, SD = 24.59$ ),  $t(922.22) = 3.44, p = 0.001, d = 0.36, 95\%CI [2.05, 7.52]$ . Reported in regression, students who valued time reported significantly higher intrinsic motivation ( $\beta = 0.10, p < 0.001$ ). Controlling for gender, family SES, and materialism, this effect remained significant ( $\beta = 0.10, p = 0.001$ ); in this model, materialism did not predict activity motivation ( $\beta = 0.04, p = 0.183$ ). See Tables 5a-d. As shown in Table 5d, the effect of valuing time (T1) on intrinsic motivation at T2 also remained significant after controlling for T1 SWB ( $\beta = 0.07, p = 0.046; N = 850$ ).

### **Hypothesis 3: Mediation of SWB By Activity Motivation**



Our pre-registered mediational analyses showed that the relationship between valuing time over money and well-being was partially explained by intrinsically motivated activity pursuit. Respondents who valued time over money at T1 reported significantly higher subjective well-being at T2,  $B = 0.61$  (0.15), 95%CI [0.32, 0.89], and significantly higher intrinsically motivated activity pursuit at T2,  $B = 4.79$  (1.36), 95%CI [2.12, 7.45]. After controlling for intrinsically motivated activity pursuit, valuing time over money was less strongly predictive of subjective well-being  $B = 0.15$  (0.07), 95%CI [0.01, 0.28]. Upon testing the significance of the indirect effect using bootstrap estimation with 10,000 samples, the indirect coefficient was significant  $B = 0.11$  (0.03), 95%CI [0.05, 0.17]. These results held controlling for gender, family SES, and materialism,  $B = 0.11$  (0.03), 95%CI [0.05, 0.17]. These results also held controlling for T1 SWB,  $B = 0.09$  (0.02), 95%CI [0.06, 0.20].

### **Additional Analyses**

**ROM predicting T2 activities.** On an exploratory basis, we examined whether responses to the ROM at T1 predicted the activities that respondents chose to complete at T2. When using the ROM to predict students' T2 primary activity, the overall omnibus chi-square was significant,  $\chi^2 = 28.46$ ,  $p < 0.001$ . Respondents who valued time over money at T1 were more likely to report attending graduate or professional school after graduation (13.8%) as compared to respondents who valued money over time (8.7%),  $p < 0.001$ . Furthermore, respondents who valued time at T1 were significantly less likely to be employed full-time at T2 (18.7% vs. 28.4%),  $p < 0.001$  as compared to respondents who valued money. These results suggest that people's responses to the ROM at T1 were a significant predictor of *what* primary activities respondents chose to complete after graduation in addition to why they chose to engage in these activities.

**Alternative SEM approach.** Although we pre-registered the use of multiple regression, some scholars argue that structural equation models (SEM) are preferable when making claims about whether a key predictor variable can predict an outcome above and beyond other conceptually related variables (e.g., Westfall & Yarkoni, 2016). Because valuing time over money is theoretically distinct from materialism, but shares some conceptual overlap, we used SEM and repeated our primary analyses examining the association between valuing time over money at T1 on SWB and activity motivation at T2, controlling for materialism. Using SEM, we obtained results that were consistent with the multiple regression results reported above, providing further evidence for the robustness of our primary findings (see SOM for SEM results)

### **General Discussion**

In a well-powered pre-registered longitudinal study, students' chronic orientations to prioritize time over money at the end of university predicted their life choices and feelings one year following graduation. Students who valued time over money were more likely to pursue intrinsically motivated activities, which in turn predicted greater subjective well-being. The salutary effects of valuing time over money before graduation predicted happiness a year later, even after controlling for baseline happiness, although these analyses relied on a subset of participants ( $N=829$ ), were not pre-registered, and should be interpreted with some caution. Whereas recent research has documented a robust cross-sectional relationship between valuing time over money and happiness, the present work provides the first window into how this relationship unfolds during a critical life transition, namely students' career decisions following graduation.

By tracking students over time and examining how students' time and money orientations predict major life decisions and well-being, this research adds important nuance to emerging

research examining time and money trade-offs and subjective well-being. These data shed light on whether, when, and how chronically prioritizing time over money shapes happiness. In contrast to past research, which has focused either on hypothetical choices (Herschfield, Barnea & Mogilner, 2016; Whillans, Weidman & Dunn, 2016) or daily time-use decisions (Whillans & Dunn, 2018), the current research shows that chronic orientations to prioritize time over money predict major life decisions with the potential to fundamentally shape the trajectory of people's lives. In doing so, this research illuminates one pathway by which time orientation shapes well-being—encouraging individuals to make decisions that are associated with greater happiness.

These data also provide the first evidence that valuing time over money predicts subjective well-being by shaping people's underlying motivations. Specifically, people who were chronically oriented to value time over money were more likely to choose careers for intrinsically (vs. extrinsically) motivated reasons, which in turn predicted greater subjective well-being the year following graduation. Building on these findings, future research should examine whether time vs. money orientations fluctuate over the course of one's lifetime. Throughout this paper, we have argued that people's stated proclivity to value time over money represents a stable orientation. Supporting this argument, people's responses to the ROM show stability over 2-week and 3-month testing intervals (Whillans, Weidman & Dunn, 2016). In the current research, graduating students' responses to the ROM demonstrated stability over a one-year period. Yet, based on these data, we cannot rule out the possibility that people's orientations shift over longer time periods. Prior research suggests that older individuals are more likely to value time over money (Whillans, Weidman & Dunn, 2016). These findings are consistent with the Socioemotional Selectivity Theory, which asserts that when people see their time as limited they are more likely to focus on emotional goals (Carstensen, Isaacowitz & Charles, 1999). These

findings are consistent with research showing that when people are at the end of an experience, they become more engaged in their daily lives and experience greater happiness (Bhattacharjee & Mogilner, 2013; Kurtz, 2008; Layous, Kurtz, Chancellor & Lybomirsky, 2018). Following from these results, future work should delineate the specific developmental periods where it is most adaptive to prioritize time over money.

Additional research could also examine how time and money orientations shape other major decisions, such as whether to reduce work hours after having children or when to retire. It is also possible that time and money orientations influence more mundane decisions that affect happiness, such as the decision to pay for help with time-consuming tasks. Because psychological flexibility substantively contributes to well-being (Kashdan & Rottenberg, 2010), these studies would allow for the examination of the novel hypothesis that flexibly changing one's time-vs.-money orientations to match the needs of the situation might result in the greatest well-being benefits. Building on these results, it would also be worthwhile to examine the etiology of these orientations, such as by examining whether parents, peers, social or cultural contexts shape time and money orientations and their associations with subjective well-being.

We have argued that people's general orientations to prioritize time over money shapes major life decisions, with downstream consequences for happiness. Consistent with this argument, people who value time over money are more likely to choose careers for intrinsically (vs. extrinsically) motivated reasons, predicting greater happiness. These findings provide the first evidence that people's general orientations predict decision making, with long-term implications for happiness. It is worth noting that associations between the ROM and career choices were small, suggesting that people's general orientations do not completely explain people's decisions. These findings are consistent with research showing that the extent to which

people's intentions and orientations predict their behavior depends on situational circumstances (Ajzen & Fishbein, 1973; Kenrick & Funder, 1988; Funder, 2006). The overall association between the ROM and subjective well-being was also small in this study (Cohen, 1992). Yet, the magnitude of this effect is consistent with a great deal of existing research, which typically reveals rather diminutive relationships between individual psychological variables and the broad and multiply-determined construct of subjective wellbeing (e.g., Lyubomirsky, Sheldon & Schkade, 2005). Furthermore, it is notable that in our sample of graduating students, the association between the brief measure of time-money trade-offs and SWB was nearly double the size of previously established factors, including parental income and materialism.

Past research has established a reliable correlation between people's chronic orientation to prioritize time over money. This paper provides the first empirical evidence that time and money orientations shape happiness by influencing major life decisions, and in particular, by encouraging people to make intrinsically (vs. extrinsically) motivated career decisions. In doing so, these findings help to clarify the fact that time and money orientations shape well-being at least in part by shaping the way that people think about and make major decisions in their lives.

Because valuing money more than time has negative implications for well-being, it would be useful to examine whether it is possible to shift people's orientations. Research suggests that in-the-moment reminders of money can lead people to act in unethical ways, such as by encouraging cheating and by encouraging participants to steal money from experimenters (Gino & Pierce, 2009; Gino & Mogilner, 2014). In contrast, in-the-moment reminders of time can reverse these deleterious effects by reminding people of their core values (Gino & Mogilner, 2014). These findings suggest that it is possible to shift people's attention toward time or money with potential implications for downstream behavior. Together with the research presented here,

these findings point to the possibility that college may provide a critical developmental window that could fundamentally shape students' time and money orientations. By encouraging students to take certain courses at university (such as courses that focus on the importance of time vs. material affluence), these courses could shape the happiness trajectory students experience.

Time and money are two of the most valuable resources that people possess. An abundance of research has examined the relationship between subjective well-being and discretionary time (e.g., Kasser & Sheldon, 2008) and money (e.g., Kahneman & Deaton, 2010) available. Going beyond this focus, our work uses a newly developed measure (ROM) to show that how people navigate trade-offs between time and money holds important implications for the happiness that people derive—not only from their days—but possibly from their entire lives.

**Table 1.** Demographic characteristics of respondents who completed T1 and T2.

| <b>Variables</b>                   |  |
|------------------------------------|--|
| Percent Female T2                  | 71.9%  |
| Md, age T2                         | 20.63 ( <i>SD</i> =4.15)   |
| Family SES                         | 4.03 ( <i>SD</i> =1.88); Corresponds with “completed a master’s degree”  |
| Primary Activity T2                | <ul style="list-style-type: none"> <li>▪ Full-time employment (24.3%)</li> <li>▪ Part-time employment (23.0%)</li> <li>▪ Graduate or Professional School (12.8%)</li> <li>▪ No activities (5.2%)</li> <li>▪ Service Trip (3.9%)</li> <li>▪ Travel or gap year (2.6%)</li> <li>▪ Unpaid internship (1.7%)</li> <li>▪ Other – Self-defined by participant (26.6%)</li> </ul> |
| Motivation for Primary Activity T2 | 67.51 ( <i>SD</i> =23.30)  |

**Table 2.** Correlation table of response delay between T1 and T2 surveys and key outcomes.

| Correlation of Response Delay and Each of the Following Variables |         |
|---|---------|
| 1. T2 ROM (1=Time Oriented)                                       | -0.05   |
| 2. T2 SWB   | 0.01    |
| 3. Activity Motivation  | -0.03   |
| 4. Age  | -0.09*  |
| 5. Gender (1=Female)  | -0.17** |
| 6. Parents Education  | 0.03    |
| 7. Materialism  | -0.04   |

Note = Age correlation is based on smaller sub-sample of N=823.

+ $p \leq 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 3.** Correlation table of all variables examined at T1 and T2.

|                             | 1.     | 2.       | 3.      | 4.       | 5.       | 6.    | 7.       | 8.    | 9.   |
|-----------------------------|--------|----------|---------|----------|----------|-------|----------|-------|------|
| 1. T1 Time Oriented (1=Yes) |        |          |         |          |          |       |          |       |      |
| 2. T2 SWB                   | 0.12** |          |         |          |          |       |          |       |      |
| 3. T2 SWL                   | 0.10** | 0.77***  |         |          |          |       |          |       |      |
| 4. T2 PA                    | 0.06*  | 0.79***  | 0.59*** |          |          |       |          |       |      |
| 5. T2 NA                    | -0.06* | -0.75*** | -0.47** | -0.56*** |          |       |          |       |      |
| 6. Activity Motivation      | 0.10** | 0.41***  | 0.41*** | 0.33***  | -0.28*** |       |          |       |      |
| 7. Age                      | 0.05   | 0.04     | 0.04    | 0.05     | -0.04    | 0.02  |          |       |      |
| 8. Gender (1=Female)        | -0.04  | -0.05    | -0.006  | -0.003   | 0.11***  | -0.04 | -0.06+   |       |      |
| 9. Parents Education        | 0.05   | 0.003    | 0.01    | -0.02    | -0.02    | 0.06* | 0.02     | -0.02 |      |
| 10. Materialism             | -0.06* | 0.01     | 0.04    | 0.01     | 0.02     | 0.04  | -0.13*** | -0.04 | 0.04 |

+ $p \leq 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$



**Table 4a.** T1 ROM predicting T2 SWB with pre-registered covariates (gender, parent education, materialism)

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i>   | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|----------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.12    | 0.61     | 0.15      | < 0.001                      |                            |                          |          |
| Gender (1 = female)     | -0.05   | -0.26    | 0.16      | 0.093                        |                            |                          |          |
| Parent Education        | -0.01   | -0.01    | 0.04      | 0.783                        |                            |                          |          |
| Materialism             | 0.02    | 0.004    | 0.006     | 0.489                        |                            |                          |          |
|                         |         |          |           |                              | <i>F</i> (4, 1,230) = 5.29 | < 0.001                  | 0.13     |

**Table 4b.** T1 ROM predicting T2 SWB with other demographic covariates (gender, parent education, age)

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i> | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|--------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.11    | 0.60     | 0.18      | 0.001                        |                          |                          |          |
| Gender (1 = female)     | -0.04   | -0.25    | 0.21      | 0.230                        |                          |                          |          |
| Age                     | 0.03    | 0.02     | 0.03      | 0.381                        |                          |                          |          |
| Parent Education        | 0.02    | 0.03     | 0.05      | 0.539                        |                          |                          |          |
|                         |         |          |           |                              | <i>F</i> (4, 821) = 3.49 | 0.008                    | 0.13     |

**Table 4c.** T1 ROM predicting T2 SWB with other demographic covariates (gender, parent education, age) and materialism

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i> | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|--------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.11    | 0.56     | 0.19      | 0.003                        |                          |                          |          |
| Gender (1 = female)     | -0.04   | -0.25    | 0.21      | 0.232                        |                          |                          |          |
| Age                     | 0.03    | 0.02     | 0.03      | 0.454                        |                          |                          |          |
| Parent Education        | 0.02    | 0.03     | 0.05      | 0.545                        |                          |                          |          |
| Materialism             | -0.03   | -0.07    | 0.07      | 0.346                        |                          |                          |          |
|                         |         |          |           |                              | <i>F</i> (5, 820) = 2.96 | 0.012                    | 0.13     |

**Table 4d.** T1 ROM predicting T2 SWB with demographic covariates (gender, parent education), materialism, T1 SWB

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i>  | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|---------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.07    | 0.39     | 0.15      | 0.009                        |                           |                          |          |
| Gender (1 = female)     | -0.02   | -0.13    | 0.17      | 0.454                        |                           |                          |          |
| Parent Education        | 0.004   | 0.006    | 0.04      | 0.882                        |                           |                          |          |
| Materialism             | -0.005  | -0.001   | 0.005     | 0.854                        |                           |                          |          |
| SWB T1                  | 0.57    | 0.57     | 0.03      | < 0.001                      |                           |                          |          |
|                         |         |          |           |                              | <i>F</i> (5, 850) = 86.93 | < 0.001                  | 0.58     |

**Table 5a.** T1 ROM predicting T2 activity motivation with pre-registered covariates (gender, parent education, materialism)

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i> | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|--------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.10    | 4.67     | 1.36      | 0.001                        |                          |                          |          |
| Gender (1 = female)     | -0.04   | -1.84    | 1.47      | 0.210                        |                          |                          |          |
| Parent Education        | 0.06    | 0.69     | 0.35      | 0.049                        |                          |                          |          |
| Materialism             | 0.04    | 0.07     | 0.05      | 0.183                        |                          |                          |          |
|                         |         |          |           |                              | $F(4, 1,230) = 5.00$     | 0.001                    | 0.13     |

**Table 5b.** T1 ROM predicting T2 activity motivation with demographic covariates (gender, parent education, age)

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i> | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|--------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.09    | 4.37     | 1.62      | 0.007                        |                          |                          |          |
| Gender (1 = female)     | -0.03   | -1.47    | 1.85      | 0.428                        |                          |                          |          |
| Age                     | 0.009   | 0.06     | 0.22      | 0.799                        |                          |                          |          |
| Parent Education        | 0.04    | 0.42     | 0.41      | 0.309                        |                          |                          |          |
|                         |         |          |           |                              | $F(4, 821) = 2.36$       | 0.052                    | 0.11     |

**Table 5c.** T1 ROM predicting T2 activity motivation with covariates (gender, parent education, age) and materialism

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i> | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|--------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.08    | 3.92     | 1.68      | 0.020                        |                          |                          |          |
| Gender (1 = female)     | -0.03   | -1.50    | 1.85      | 0.417                        |                          |                          |          |
| Age                     | 0.003   | 0.020    | 0.219     | 0.929                        |                          |                          |          |
| Parent Education        | 0.04    | 0.41     | 0.41      | 0.322                        |                          |                          |          |
| Materialism             | -0.04   | -0.64    | 0.64      | 0.315                        |                          |                          |          |
|                         |         |          |           |                              | $F(5, 820) = 2.05$       | 0.070                    | 0.11     |

**Table 5d.** T1 ROM predicting T2 activity motivation with covariates (gender, parent education, age), materialism, T1 SWB

|                         | $\beta$ | <i>B</i> | <i>SE</i> | <i>P value for predictor</i> | <i>F value for model</i> | <i>P value for model</i> | <i>R</i> |
|-------------------------|---------|----------|-----------|------------------------------|--------------------------|--------------------------|----------|
| ROM (1 = time oriented) | 0.07    | 2.69     | 1.63      | 0.046                        |                          |                          |          |
| Gender (1 = female)     | -0.02   | -1.19    | 1.79      | 0.507                        |                          |                          |          |
| Parent Education        | 0.03    | 0.29     | 0.40      | 0.468                        |                          |                          |          |
| Materialism             | -0.04   | -0.67    | 0.62      | 0.275                        |                          |                          |          |
| SWB T1                  | 0.26    | 2.22     | 0.30      | < 0.001                      |                          |                          |          |
|                         |         |          |           |                              | $F(6, 818) = 11.09$      | < 0.001                  | 0.28     |

### References

- Ajzen, I., & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behavior. *Journal of personality and Social Psychology*, 27(1), 41.
- Alma Mater Society. (2015). Academic experience survey report. Retrieved from <http://www.ams.ubc.ca/wpcontent/uploads/2015/07/Academic%20Experience%20Survey%20Report%202015%20Final.pdf>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497–529.
- Bhattacharjee, A., & Mogilner, C. (2013). Happiness from ordinary and extraordinary experiences. *Journal of Consumer Research*, 41(1), 1-17.
- Bottia, M. C., Mickelson, R. A., Giersch, J., Stearns, E., & Moller, S. (2018). The role of high school racial composition and opportunities to learn in students' STEM college participation. *Journal of Research in Science Teaching*, 55(3), 446-476.
- Cantril, H. (1965). Pattern of human concerns. New Brunswick, NJ: Rutgers University Press.
- Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American psychologist*, 54(3), 165.
- Chmielewski, M., & Watson, D. (2009). The impact of transient error on trait research. *Journal of Personality and Social Psychology*, 97(1), 186.
- DeVoe, S. E., & Pfeffer, J. (2011). Time is tight: How higher economic value of time increases feelings of time pressure. *Journal of Applied Psychology*, 96(4), 665.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542.
- Diener, E. (1999). Introduction to the special section on the structure of emotion. *Journal of Personality and Social Psychology*, 76(5), 803.

- Diener, E., & Biswas-Diener, R. (2002). Will money increase subjective well-being? *Social Indicators Research*, 57(2), 119-169.
- Diener, E., Ng, W., Harter, J., & Arora, R. (2010). Wealth and happiness across the world: material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. *Journal of Personality and Social Psychology*, 99(1), 52.
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D. W., Oishi, S., & Biswas-Diener, R. (2009). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research*, 97(2), 143-156.
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, 319(5870), 1687-1688.
- Dunn, E. W., Aknin, L. B., & Norton, M. I. (2014). Prosocial spending and happiness: Using money to benefit others pays off. *Current Directions in Psychological Science*, 23(1), 41-47.
- Dunn, E. W., Gilbert, D. T., & Wilson, T. D. (2011). If money doesn't make you happy, then you probably aren't spending it right. *Journal of Consumer Psychology*, 21(2), 115-125.
- Easterlin, R. A. (1995). Will raising the incomes of all increase the happiness of all?. *Journal of Economic Behavior & Organization*, 27(1), 35-47.
- Frank, R. H. (2004). How not to buy happiness. *Daedalus*, 133(2), 69-79.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American psychologist*, 56(3), 218.
- Funder, D. C. (2006). Towards a resolution of the personality triad: Persons, situations, and behaviors. *Journal of Research in Personality*, 40(1), 21-34.

- Gino, F., & Mogilner, C. (2014). Time, money, and morality. *Psychological Science, 25*(2), 414-421.
- Gino, F., & Pierce, L. (2009). The abundance effect: Unethical behavior in the presence of wealth. *Organizational Behavior and Human Decision Processes, 109*(2), 142-155.
- Hamermesh, D. S., & Lee, J. (2007). Stressed out on four continents: Time crunch or yuppie kvetch?. *The review of Economics and Statistics, 89*(2), 374-383.
- Hershfield, H. E., Mogilner, C., & Barnea, U. (2016). People who choose time over money are happier. *Social Psychological and Personality Science, 7*(7), 697-706.
- Hodkinson, P., & Sparkes, A. C. (1997). Careership: a sociological theory of career decision making. *British Journal of Sociology of Education, 18*(1), 29-44.
- Jebb, A. T., Tay, L., Diener, E., & Oishi, S. (2018). Happiness, income satiation and turning points around the world. *Nature Human Behaviour, 2*(1), 33.
- Jowell, R. (2007). European Social Survey 2006/2007. Round 3: Technical Report. City University, Centre for Comparative Social Surveys, London.
- Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*(38), 16489-16493.
- Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science, 312*(5782), 1908-1910.
- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(7), 865-878.
- Kasser, T., & Ahuvia, A. (2002). Materialistic values and well-being in business students. *European Journal of Social Psychology, 32*(1), 137-146.

- Kasser, T. & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a life aspiration. *Journal of Personality and Social Psychology*, 65(2), 410.
- Kasser, T., & Sheldon, K. M. (2009). Time affluence as a path toward personal happiness and ethical business practice: Empirical evidence from four studies. *Journal of Business Ethics*, 84(2), 243-255.
- Kenrick, D. T., & Funder, D. C. (1988). Profiting from controversy: Lessons from the person-situation debate. *American Psychologist*, 43(1), 23.
- Kurtz, J. L. (2008). Looking to the future to appreciate the present: The benefits of perceived temporal scarcity. *Psychological Science*, 19(12), 1238-1241.
- Layous, K., Kurtz, J., Chancellor, J., & Lyubomirsky, S. (2018). Reframing the ordinary: Imagining time as scarce increases well-being. *The Journal of Positive Psychology*, 13(3), 301-308.
- Lindqvist, E., Östling, R., & Cesarini, D. (2018). *Long-run Effects of Lottery Wealth on Psychological Well-being* (No. w24667). National Bureau of Economic Research.
- Lucas, R. E., & Schimmack, U. (2009). Income and well-being: How big is the gap between the rich and the poor? *Journal of Research in Personality*, 43(1), 75-78.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: the architecture of sustainable change. *Review of General Psychology*, 9(2), 111.
- Marum, G., Clench-Aas, J., Nes, R. B., & Raanaas, R. K. (2014). The relationship between negative life events, psychological distress and life satisfaction: a population-based study. *Quality of Life Research*, 23(2), 601-611.
- Mogilner, C. (2010). The pursuit of happiness: Time, money, and social connection. *Psychological Science*, 21(9), 1348-1354.

- Mogilner, C., Whillans, A., & Norton, M. I. (2018). Time, money, and subjective well-being. *Handbook of Well-Being. Noba Scholar Handbook series: Subjective well-being. Salt Lake City, UT: DEF publishers.*
- Park, L. E., Ward, D. E., & Naragon-Gainey, K. (2017). It's all about the money (For Some): Consequences of financially contingent self-worth. *Personality and Social Psychology Bulletin, 43*(5), 601-622.
- Pfeffer, J., & DeVoe, S. E. (2009). Economic evaluation: The effect of money and economics on attitudes about volunteering. *Journal of Economic Psychology, 30*(3), 500-508.
- Perlow, L. A. (1999). The time famine: Toward a sociology of work time. *Administrative Science Quarterly, 44*(1), 57-81.
- Rheault, M. (2011). Lack of money tops list of Americans' financial worries. Gallup Poll: Consumption Habits. Retrieved from <http://www.gallup.com/poll/148625/lackmoney-tops-list-americans-financial-worries.aspx>
- Richins, M. L. (2004). The material values scale: Measurement properties and development of a short form. *Journal of Consumer Research, 31*(1), 209-219.
- Sheldon, K. M. (2008). Assessing the sustainability of goal-based changes in adjustment over a four-year period. *Journal of Research in Personality, 42*(1), 223-229.
- Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin, 30*(4), 475-486.
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*(11), 1359-1366.

- Smeets, P., Bekkers, R., Whillans, A. V., & Norton, M. (2018). Time Use and Happiness of Millionaires. *In prep.*
- Westfall, J., & Yarkoni, T. (2016). Statistically controlling for confounding constructs is harder than you think. *PloS one*, *11*(3), e0152719.
- Whillans, A. V., & Dunn, E. W. (2018). Valuing time over money is associated with greater social connection. *Journal of Social and Personal Relationships*, 0265407518791322.
- Whillans, A. V., Dunn, E. W., Smeets, P., Bekkers, R., & Norton, M. I. (2017). Buying time promotes happiness. *Proceedings of the National Academy of Sciences*, 201706541.
- Whillans, A. V., Weidman, A. C., & Dunn, E. W. (2016). Valuing time over money is associated with greater happiness. *Social Psychological & Personality Science*, *7*(3), 213-222.



### **Structural Equation Modelling**

As discussed in text, SEM analysis was conducted in order to replicate the suggested model, which proposed that valuing time over money before graduation (T1) would predict subjective well-being after graduation (T2) controlling for materialism. In light of recent calls to model measurement error (Westfall & Yarkoni, 2016), we fixed the error associated with the ROM at  $\alpha=0.60$  based on research showing that this is the approximate test-retest reliability of the ROM over a 3-month interval (Whillans, Weidman, & Dunn, 2016).

In the SEM analyses, we used four goodness of-fit indices: the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Generally, values higher than 0.90 for the CFI and the TFI indicate an acceptable fit (Hoyle 1995; Schumacher & Lomax, 1996a&b), and values lower than 0.08 for the RMSEA as well as the SRMR suggest an adequate fit (Browne & Cudeck 1993; Hu & Bentler, 1999). In the model depicted in Figure 1, the statistics for the SEM model were as follows  $\chi^2 = 5387.85$ ,  $df = 1230$ , CFI = 1.00, TFI = 1.00, RMSEA = 0.001, SRMR = 0.070. Taken altogether, these statistics suggest adequate model fit.

As can be seen in Figure S1, all hypothesized links were significant. Specifically, valuing time over money at T1 positively predicted SWB at T2, whereas materialism was unrelated to SWB at T2. These results provide further evidence that valuing time over money promotes well-being beyond other related constructs, such as materialism.

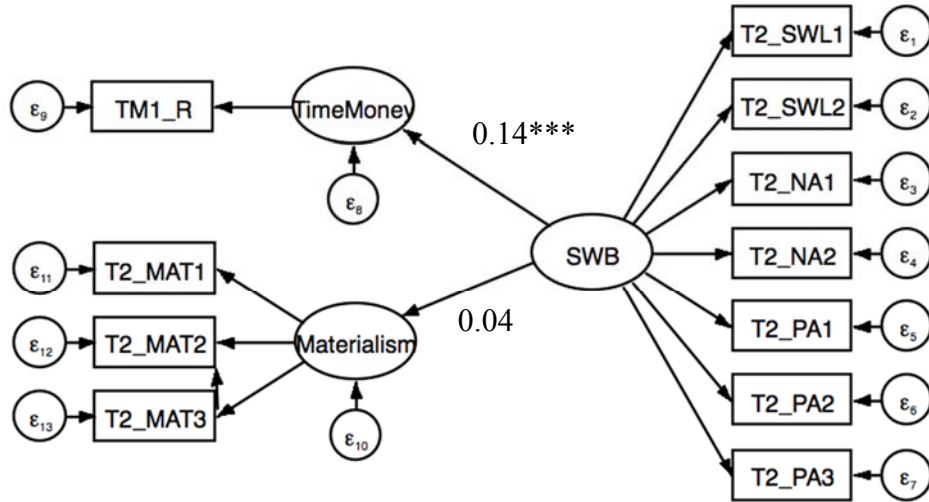


Figure S1. The final model depicting the relationship between valuing time over money, materialism, and subjective well-being.