TIME IS NOT MONEY! TEMPORAL PREFERENCES FOR TIME INVESTMENTS AND ENTRY INTO ENTREPRENEURSHIP

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Abstract

Starting a business requires investing both money and time in the hope of future financial benefits. Since investments and potential gains happen over time, the way in which individuals value the future relative to the present—i.e., their *temporal preferences*—may be an important driver behind the decision to become an entrepreneur. Whereas existing research examines temporal preferences for financial gains, we advance this research by theorizing about temporal preferences not only for money, but also for the future time commitments that entrepreneurship entails. Results from a lab-in-the-field study show that individuals who heavily discount future time investments are more likely to become entrepreneurs. In two follow-up studies, we confirm that recent startup founders discount future time investments more than salaried workers. We also provide suggestive evidence of the mechanisms at play: recent startup founders perceive the future differently than salaried workers, both viewing themselves as more agentic vis-à-vis the future and perceiving the future as more distant. We discuss the implications of temporal preferences—not only for money, but also for time—for understanding the behavioral drivers of entrepreneurship.

"In guarding their fortune, men are often closefisted, yet, when it comes to the matter of wasting time […] they show themselves to be most prodigal." (Seneca, On the Shortness of Life)

INTRODUCTION

Why do individuals self-select into entrepreneurship despite high failure rates (Kerr and Nanda 2010) and evidence that most would be better off as salaried employees (Hamilton 2000)? In examining this question, prior work has identified the roles of preference for autonomy (Roach and Sauermann 2015), human capital (Elfenbein et al. 2010), social influence (Kacperczyk 2013), as well as external economic conditions (Conti and Roche 2021). Increasingly, scholars also study behavioral drivers, focusing on overconfidence and attitudes toward uncertainty (Chen et al. 2018, Gutierrez et al. 2020, Stewart and Roth 2001).

However, one crucial element that has received less attention is the impact of *temporal preferences* on the decision to become an entrepreneur. Starting a business requires investing money and time in the hope of gaining future benefits (Sorgner et al. 2017). The delay between investments and potential gains means that individuals' temporal preferences, or how they value the future relative to the present, can impact the decision to become an entrepreneur. This resonates with the idea that entrepreneurs must "work long and hard hours, and rarely enjoy the fruits of their efforts until late in life" (Mokyr 1999, p. 19). As "an all-consuming career" (Tata et al. 2017, p. 14), entrepreneurship requires a large investment of time (Harris et al. 1999). Time affects the decision to become an entrepreneur in two ways. First, the delay before realizing monetary gains or losses matters: individuals may value outcomes realized in the future differently. Second, time is "one of the entrepreneur's most valuable resources" (McCarthy et al. 1991, p. 7): individuals may value the future *time investments* they expect to make differently.[1] This makes it crucial to understand whether entrepreneurs differ in their temporal preferences not only for *money* but also for *time*.

In this paper, we use an illustrative decision-making framework to explain how entrepreneurial entry depends on the weight individuals assign to future financial gains and time investments. We conduct three empirical studies to explore this dependence. In a lab-in-the-field study involving graduate business

[1] The literature distinguishes time as an attribute and "time as the duration that a person has to wait until she receives a consequence in intertemporal choice" (Abdellaoui and Kemel 2014, p. 1844).

students, we map temporal preferences for monetary gains and losses, and for time investments, to entrepreneurial intentions as well as occupational choices three years after the study. Individuals who heavily discount future investments of time are more likely to have high entrepreneurial intentions and to become entrepreneurs. Contrary to our prediction, we do not find that founders are more patient for future financial gains. We replicate these results in two follow-up studies, finding general support that startup founders discount future time investments more heavily than do salaried workers. This difference fades with entrepreneurial experience, as established entrepreneurs differ less from salaried workers in the way they discount time investments. We explore potential explanations for this pattern: risk attitudes, perceived resource slack, and subjective perception of time. Our evidence suggests that time perception plays an important role in evaluating future time investments, with startup founders perceiving the future differently than salaried workers. The former judge themselves as more agentic vis-à-vis the future and imagine the future as being further away, resulting in less weight assigned to time investments.

Our paper underscores that founders think differently about time. By examining temporal preferences for both money and time, we provide a more comprehensive understanding of the factors that drive people towards entrepreneurship (see, for instance, Gubler et al. 2016), which extend beyond monetary drivers. In the next section, we use an illustrative decision-making framework to explain how temporal preferences for monetary outcomes and time investments can affect the decision to become an entrepreneur. We then present the main findings from our three experiments, focusing on the differences in temporal preferences between founders and salaried workers. Subsequently, to better understand the patterns in our data, we conduct exploratory analyses of three potential mechanisms (Gelman and Imbens 2013). In the last section, we reflect on the implications of our findings for behavioral explanations of entry into entrepreneurship, including the role of founder motivation, and for the broader field of organizational research.

THEORETICAL FOUNDATIONS

Definitions

For clarity, we first define our central concepts (a glossary can be found in Table 1). Temporal preference

denotes the preference for immediate over delayed utility (Frederick et al. 2002).[2] Individuals have a stronger *preference for the present* when they place greater value on outcomes received in the short term than in the more distant future (i.e., they heavily discount outcomes received in the distant future). Temporal preferences are usually modeled using present equivalents.[3] A present equivalent captures the weight that a decision maker attaches to the value of an outcome received in the future. For instance, if an individual currently values a gain of $100 a year from now at $80, the (normalized) present equivalent of the future gain is 0.8. A present equivalent smaller (greater) than 1 implies a preference for the present (future). The higher the present equivalent, the more the future is valued.

Temporal preferences in entrepreneurship

Some research has investigated temporal aspects of entrepreneurship. For instance, Busenitz and Lau (1996) examined national cultures, theorizing that individuals from countries with long-term orientations were more likely to have an entrepreneurial mindset. Using survey methods, Bluedorn and Martin (2008) found that entrepreneurs and non-entrepreneurs differed in their temporal depth—i.e., the temporal distance into the past and future considered when contemplating an event. Zahra et al. (2004) found an association between long-term orientation and family firm entrepreneurship. Recently, scholars have started using decision tasks to measure temporal preferences (Falk et al. 2018). Andersen et al. (2014), the sole study using incentivized tasks to measure the temporal preferences of entrepreneurs and non-entrepreneurs, found that entrepreneurs were "willing to wait longer for certain rewards than the general population" (p. 342).

This nascent stream of research has so far focused only on monetary gains, thereby neglecting another critical dimension of temporal preferences: how people evaluate the future investment of time. As a scarce resource, the time spent working on a venture is "an important characteristic of the entrepreneur" (Gimeno

[2] We use the term temporal preference instead of time preference to avoid confusion with time as an attribute. As an illustration, individuals can have different temporal preferences for monetary gains and time investments.
[3] The literature also commonly uses discount factors (Cohen et al. 2020), a concept related to present equivalents. The main difference is that the latter does not require measuring the utility function. For small amounts, present equivalents are comparable to discount factors, as intertemporal utility is close to linear (Abdellaoui et al. 2018).

et al. 1997, p. 766), with the usage of time predicting venture success (Chatterji et al. 2019).[4] Entrepreneurs dedicate long hours to their business (Åstebro and Chen 2014), have lower leisure concerns (Tata et al. 2017), and have higher workloads than salaried workers (Harris et al. 1999). These longer hours could be perceived as losses of (leisure) time. Those who heavily discount future investments of time may be more willing to become entrepreneurs. In short, since gains and losses from entrepreneurship occur in the future, they will be discounted according to the decision maker's temporal preferences. These preferences can vary across gains and losses (Appelt et al. 2011, Loewenstein and Thaler 1989) as well as across money outcomes and time investments (Abdellaoui et al. 2018, Augenblick et al. 2015, Soman 1998 2004, Zauberman and Lynch 2005).

Illustrative decision-making framework

Starting a new business venture involves a considerable investment of time, and future returns are less certain than the steady paycheck received through salaried employment (Åstebro et al. 2014). Additionally, entrepreneurship typically entails a longer investment period than traditional wage work, where salaries are paid monthly. As a result, in addition to people's perceptions of and reactions to uncertainty, their discounting of future outcomes should influence their likelihood of entry into entrepreneurship. To illustrate this point, we offer a stylized example to clarify terminology and show how our study relates to the standard decision-making framework.

Suppose an individual decides at $t = t_0 \equiv 0$ to become an entrepreneur or to take a salaried job. The returns to employment are not stochastic and normalized to zero. Choosing to become an entrepreneur incurs a cost of W units of time at $t = t_1$, where W represents the extra number of hours of work required compared to traditional wage work, and yields the prospect P of obtaining an extra monetary return X at some later time $t_2 > t_1$. To capture uncertainty, this extra (relative to wage work) monetary return X is assumed to be stochastic.[5] Figure 1 visualizes the key components of the stylized example.

[4] Time may even be a more restrictive scarce factor than money. The entrepreneur's time is difficult to scale up, whereas capital constraints can be lifted by borrowing from friends, relatives, or banks, as many entrepreneurs do (see Parker 2009 for a review).

[5] X is a random variable that can take more than two values, e.g. $\{x_1, x_2, , . . , x_n\}$ that occur with probabilities $\{p_1, p_2, , . . , p_n\}$.

[Insert Figure 1 about here]

Consistent with the labor supply literature (Carroll et al. 2000, Sloof and van Praag 2010), we assume that $U(M, L)$—the instantaneous utility an individual obtains from money amount M and (leisure) time L—is separable in money and leisure time and can be written as $U(M, L) = U_M(M) + U_T(L)$. The (non-stochastic) monetary returns and the number of hours of work under salaried employment are normalized to zero, just as the corresponding utility levels are. Notation-wise, we capture this by using the lower case $u_M(.)$ and $u_T(.)$ to denote the differential utility relative to the benchmark of salaried work; $-u_T(W)$ thus reflects the instantaneous utility loss from the extra time investment while $E[u_M(X)]$ denotes the instantaneous expected utility obtained from the extra (but stochastic) monetary gains that entrepreneurship brings.[6]

However, monetary gains from and time investments in entrepreneurship are not instantaneous but occur in the future and are, therefore, discounted. The value an individual assigns to an outcome received in period t is reduced (or increased) by a discount factor $\delta(t)$. Assuming a "risk-first"[7] evaluation of a stream of (uncertain) outcomes, in which uncertain prospects are evaluated first before being discounted, the individual then opts for entrepreneurship iff:

$$\underbrace{-\delta(t_1).u_T(W)}_{\substack{\text{Value at } t_0=0 \text{ of future} \\ \text{time investments W at } t_1}} + \underbrace{\delta(t_2).E[u_M(X)]}_{\substack{\text{Value at } t_0=0 \text{ of future} \\ \text{expected monetary gains X at } t_2}} \geq 0 \qquad (1)$$

Intuitively, the tradeoff that governs occupational choice is determined by an individual's valuation of the

[6] For ease of exposition, we use an expected utility framework focusing on monetary gains to reflect the expected benefits from entrepreneurship. Prior literature suggests that – besides different attitudes toward uncertainty (Stewart and Roth 2001) – elements such as the perception of the chances of success (Koellinger et al. 2007) or the valuation of non-monetary benefits (Roach and Sauermann 2015) could affect the evaluation of the entrepreneurial prospect. To capture these elements, we could replace $E[u_M(X)]$ with E[P] in the discussion below, with E[P] denoting the evaluation of the benefits of the entrepreneurial project more broadly.

[7] Discounted Expected Utility is an example of a model classified as risk-first (see Andreoni et al. 2017 for a discussion on the difference between risk-first and time-first models). In this model, decision makers first evaluate the (uncertain) prospects at different time periods t and then discount the expected utility of each time period. An alternative approach considers that decision makers first apply discount factors to all outcomes before evaluating each prospect (e.g., Laibson 1997, Blavatskyy 2020). Comparing both approaches, Andreoni et al. (2017) find support for the risk-first model.

future time investments required and her valuation of (the uncertain) future monetary gains that entrepreneurship brings. If the time investment W receives relatively less weight in this tradeoff, or similarly so, if the future gains X receive relatively more weight, she is more likely to opt for entrepreneurship. This happens, for instance, if we assume exponential discounting and the discount factor δ increases. A more patient individual (higher δ) places relatively more weight on future gains, and ceteris paribus is more likely to become an entrepreneur.[8]

The above standard setup assumes a unitary discount factor for time and money. Several streams of literature have suggested, however, that different attributes are likely to be discounted at different rates (e.g., Attema et al. 2018, Bleichrodt et al. 2016). Unlike money, time is not fungible, thereby preventing the transferability of time over time and arbitrage (Cubitt and Read 2007). Consequently, "monetary payments may not be suitable to identify parameters of models defined over time-dated consumption" (Augenblick et al. 2015, p. 1068). In fact, people appear to discount both time and effort (a related construct often used interchangeably in this literature) differently than they discount money (Soman 1998 2004, Zauberman and Lynch 2005, Augenblick et al. 2015, Abdellaoui et al. 2018). This has led some recent (macroeconomic) labor supply models to account for—and study the implications of—non-unitary discount factors (cf. Hori and Futagami 2019).[9] Following this approach, we also assume that the decision maker uses different discount factors at period t for monetary gains $\delta_M(t)$ and for investments of time $\delta_T(t)$. The individual then opts for entrepreneurship iff:

$$\underbrace{-\delta_T(t_1).u_T(W)}_{\substack{\text{Value at } t_0=0 \text{ of future} \\ \text{time investments W at } t_1}} + \underbrace{\delta_M(t_2).E[u_M(X)]}_{\substack{\text{Value at } t_0=0 \text{ of future} \\ \text{expected monetary gains X at } t_2}} \geq 0 \qquad (2)$$

[8] Dividing both sides by $\delta(t_1)$, inequality (1) becomes $-u_T(W) + \frac{\delta(t_2)}{\delta(t_1)}.E[u_M(X)] \geq 0$. With exponential discounting, the relative weight $\frac{\delta(t_2)}{\delta(t_1)}$ on the monetary gains reduces to $\delta^{(t_2-t_1)}$, which increases in δ (given $t_2 > t_1$).

[9] Hori and Futagami (2019) model the behavior of an agent who uses different discount rates for consumption and labor supply time. For similar models, see Banerjee and Mullainathan (2010) and Ohdoi and Futagami (2021).

Intuitively, ceteris paribus, individuals who assign more weight to future financial gains (higher $\delta_M(t)$) or less weight to future investments of time (lower $\delta_T(t)$) will be more inclined to choose an entrepreneurial career. This gives the two main hypotheses that we explore empirically (see Table 7).

Apart from an individual's sheer temporal preferences per se (as reflected by discount factors $\delta_T(t)$ and $\delta_M(t)$), several other elements can affect the weight people place on future monetary gains and time investments. The first factor is *risk attitudes*; because the future is inherently uncertain, less risk-averse individuals may be more patient for uncertain outcomes received in the future (Epper et al. 2011). In inequality (2), this can be captured by a higher $\delta_M(t_2).E[u_M(X)]$, effectively increasing the weight assigned to (potential) monetary gains X. The second factor is *perceived resource slack* of either money or time. People who expect to have more financial resources in the future may assign less weight to future gains of money and prefer smaller amounts of money now (Zauberman and Lynch 2005). Slack of money reduces the valuation of the extra gains X from entrepreneurship and consequently the valuation $E[u_M(X)]$. Similarly, greater perceived availability of free time at t_1 lowers $u_T(W)$ and thus brings term $-u_T(W)$ in inequality (2) closer to zero, resulting in less weight placed on the perceived time investment W in the tradeoff. While perceived *opportunity costs* can also influence the weight assigned to future outcomes (Frederick et al. 2009, Zhao et al. 2015), resource slack and opportunity costs of time are essentially two sides of the same coin. The larger the perceived slack, the lower the perceived opportunity costs, and vice versa.[10] Therefore, we consider these two factors together.

Finally, individual differences in *temporal perception* (Shipp and Jansen 2021) can also affect how future outcomes are valued. One way to capture time perception is by incorporating how objective temporal delays are actually perceived.[11] Following the economics literature on the perception of time (Bradford et al. 2019), an objective temporal delay of size t is subjectively perceived as being of size $f(t)$. A larger

[10] Formally, in a constrained optimization framework, the Lagrange multiplier belonging to a given resource constraint reflects the resource's opportunity costs, i.e., its shadow price. Complementary slackness requires that this multiplier is zero if the constraint is truly slack in the optimum.

[11] The economics literature has modeled only the subjective distance element of time perception. To the best of our knowledge, there has not been an attempt to formally model temporal frames. Prior literature shows that the two dimensions are distinct (Hsee et al. 2014). Therefore, we believe that it is a fruitful avenue for future research.

subjective value $f(t)$ captures that the temporal delay t is perceived to be longer. This perception can impact the present valuation of time investments and expected monetary gains. If the former is more affected, for example, because time investments are seen as more abstract than monetary amounts (MacDonnell and White 2015), the subjective perception of time has a larger impact on reducing the weight assigned to the time investment W than on reducing the weight assigned to (potential) monetary gains X in the occupational choice tradeoff.[12] As a result, entrepreneurship becomes relatively more attractive.

STUDY 1

To investigate the relationship between temporal preferences and the intention to become an entrepreneur, we selected a sample of students from a well-known international business school who had varying levels of intention to become entrepreneurs but were otherwise similar. Subsequently, we observed their actual occupational choices. Following recent studies (Holm et al. 2013, Koudstaal et al. 2016), we used an incentivized, choice-based, revealed-preferences approach to measure temporal preferences for monetary and time outcomes (screenshots of the questionnaire are available in the Online Appendix).

Sample

To identify students with high entrepreneurial intentions, we focused on those who were enrolled in the Master's degree in Entrepreneurship. The degree is a one-year intensive program specifically designed for students who aspire to start their own businesses. Around 75% of students in this program start their own ventures—a strikingly higher proportion than for the whole business school (approximately 20%). To identify students with lower entrepreneurial intentions, we focused on those in the generalist Master's degree in Management program.

Our data collection took place during the first weeks of the academic year to ensure that differences in academic programs did not affect preferences. We made classroom announcements in the second week

[12] In our stylized example, this is the case when the drops in the discount factors are such that percentage-wise, it is larger for the time investment than for the monetary gains, i.e., when $\frac{\delta_T(t_1)-\delta_T(f(t_1))}{\delta_T(t_1)} > \frac{\delta_M(t_2)-\delta_M(f(t_2))}{\delta_M(t_2)}$.

of classes, followed the same week by an email invitation to participate in the study. The email reached 428 students: 103 in the entrepreneurship program and 325 in the management program.[13] 274 students started the questionnaire, of whom 203 completed it, for a total of 46 entrepreneurship students (response rate: 44.7%) and 157 management students (response rate: 48.3%).[14]

Additional measure of occupational choice

We tracked participants' occupation choices by investigating their LinkedIn profiles three years after the initial data collection, i.e., two years post-graduation. We recorded the start and end date, job title, and firm size for each professional experience. We were not able to find information for three participants, reducing the sample to 200 observations. We classified participants as *founders* if they had ever held a founding role in a firm (i.e., founder or co-founder) or had worked as an entrepreneur in incubators or accelerators. In addition, we also considered as founders participants who had already started their own firm by the time of the first survey. Overall, we classified 48 participants as founders.[15]

Measurement of temporal preferences

We measured temporal preferences for monetary gains and losses and time investments using incentivized decision tasks. Participants were informed before starting the questionnaire that six respondents would be randomly selected for a prize of up to €310, depending on the choices they made in their preferences for money and time (see online Appendix G for more details).

We measured temporal preferences for monetary outcomes using two choice lists: one for monetary gains and one for monetary losses. A timeline visually represented the outcomes and the time when the

[13] The survey was also sent to 228 students in the finance master program. We cannot compare occupational outcomes on the same basis as the finance master program lasts for 2 years, while the entrepreneurship and management programs run for 1 year, so we excluded finance students from our main analyses. Also, the absence of classroom announcements in the finance program led to a lower response rate. Results of analyses including finance students are consistent and reported in the Online Appendix.

[14] Chi-square tests showed no statistical difference between the two groups in the proportion of students who started ($\chi^2(1, N = 274) = 2.389, p = 0.122$) and finished ($\chi^2(1, N = 203) = 0.284, p = 0.594$) the survey. Also, we observed no gender difference between respondents and non-respondents for the entrepreneurship program ($\chi^2(1, N = 103) = 0.108, p = 0.743$) and management program ($\chi^2(1, N = 325) = 1.39, p = 0.238$). The proportion of women completing the survey also did not differ between the two groups ($\chi^2(1, N = 203) = 0.682, p = 0.409$).

[15] Out of the 48 founders, 26 were still entrepreneurs six years after the initial data collection, with three of them managing two business ventures. This translates to a 54% survival rate, which is consistent with OECD countries' statistics indicating a survival rate of around 50% after five years (Calvino et al. 2015). Among the surviving ventures, 55% employed 2 to 10 individuals, while 41% had between 11 and 50 employees. Only one venture had a headcount of 51 to 200 employees.

outcomes would be received. Figure 2 shows the choice list used to measure preferences for monetary gains.

[Insert Figure 2 about here]

In each choice list, participants made a series of binary decisions between an option that offered a gain (loss) of X "now" and an option that offered a gain (loss) of €100 six months from now.[16] Only one switching point was allowed in each choice list.[17] The value of X ranged from €10 to €100 for the question about monetary gains. This choice list provided us with the switching point X^*, calculated as the midpoint between the two values of X for which the participant switched from the "later" option (i.e., gaining/losing €100 in 6 months) to the "sooner" option (i.e., gaining/losing X now). Switching from €100 in 6 months to X now at a lower value of X implies a stronger preference for the present. We use the (normalized) *present equivalents* of future outcomes, computed as X^*/Y (with Y being the amount gained/lost in 6 months), as a measure of temporal preferences. A present equivalent lower than 1 indicates a preference for the present, while a present equivalent greater than 1 indicates a preference for the future. The usual assumption of a preference for the present is sometimes violated for losses (Loewenstein and Thaler 1989), i.e., some people prefer to lose €100 or more now over and above losing €100 six months from now. To account for this behavior, we used values of X that ranged from €10 to €105 for the question involving losses of money. Again, a lower switching point indicates a stronger preference for the present.

To incentivize the questions on temporal preferences for losses of money, we endowed participants with a sum of money from which gains and losses would be assessed. As explained above, we randomly selected six winners. Four of them were paid based on their revealed preferences for money. Participants were informed that, if they were among the four, they would receive a standard prize of €210 to be paid in two installments: €105 the week after the submission deadline and €105 the week 6 months after the submission deadline. On top of that, we would randomly select one question from the first section of the questionnaire, and their answer to this question would determine their monetary payment. As an illustration,

[16] We used a front-end delay to measure temporal preferences: the participants were informed that "now" referred to the week after the submission deadline while "6 months from now" referred to the week 6 months after the submission deadline.
[17] For instance, a subject who prefers to obtain €40 now rather than waiting 6 months to obtain €100 should also prefer any amount above €40 now rather than waiting for the larger gain. Otherwise, the subject violates monotonicity.

imagine that the selected question was "Would you prefer to A) Lose €80 now or B) Lose €100 in 6 months?" If the participant answered A, the first installment would be reduced by €80 (so only €25 would be paid), but the participant would still receive the full second installment of €105 six months later. On the other hand, if the participant chose option B, he/she would receive the full first installment of €105, but the second installment would be reduced by €100, leaving only €5 to be paid 6 months later.

We measured temporal preferences for time investments in the same fashion as monetary outcomes. While we were interested in how individuals discount time investments (i.e., losses of free time), we also measured temporal preferences for gains of time as a control. Subjects answered one choice list for gains of time and one for losses of time, i.e., time investments. In each, they made a series of decisions between an option that offered a gain (loss) of X minutes "now" and an option that offered a gain (loss) of 2 hours 6 months from now. As for losses of money, research has questioned the assumption of a preference for the present for investments of time (Abdellaoui et al. 2018). Therefore, we chose values of X that ranged from 20 minutes to 2 hours and 50 minutes, meaning that X could be greater than the maximum time—2 hours—gained/lost in the future. Switching from a gain or a loss of 2 hours 6 months from now to X minutes now at a lower value of X implies a stronger preference for the present.

We endowed participants with an amount of time from which investments of time (and, theoretically, gains of time) would be assessed. We used a concrete scenario to set an exogenous reference point (Abdellaoui et al. 2018). We offered participants a remunerated research assistantship that consisted of editing a bibliography. This required them to work two sessions of 3 hours each: 3 hours during the week after the submission deadline, and 3 hours 6 months after the submission deadline. Participants were informed that if they were among the two selected prize winners to be paid based on their choices in the second section of the survey, the duration of each working session would be determined by their answer to a randomly chosen question. For instance, imagine that the selected question was "Would you prefer to A) gain 1 hr 30 min now or B) gain 2 hr in 6 months from now?" If the participant selected option A, s/he would spend less time (gain 1 hr 30 min) in the first session but would spend the baseline 3 hours in the second session. Conversely, if the participant chose option B, s/he would spend the baseline 3 hours in the

first session but less time (gain two hours, so only one hour of work remained) in the second session. Participants received a fixed compensation of €210 in exchange for their work, paid at the end of the second session.

Behavioral and demographic control variables

We controlled for potential confounding attributes that could drive the decision to become an entrepreneur and could also be linked to temporal preferences. We measured attitudes towards risk and losses in an incentive-compatible way. In the section on revealed preferences for money, participants were presented with three choice lists. They were informed that their responses could determine their monetary payment if they were among the selected candidates. Two of the questions measured risk attitudes for gains and losses of money: participants made a series of decisions between a sure gain (loss) of X and a lottery that offered a 50% chance of gaining (losing) €100 and a 50% chance of gaining (losing) nothing. The value of X ranged from €10 to €100. These questions provided us with the certainty equivalents (CE) of the risky lotteries, i.e., the amount of money CE that makes a participant indifferent between gaining (losing) CE with certainty or gaining (losing) €100 with a 50% chance.[18] Based on the CE, we created two indices of *risk aversion* defined as (50-CE)/100 for the questions on gains of money and (CE-50)/100 for the question on losses of money. These indices ranged from -0.5 (an extreme risk-loving attitude) to +0.5 (extreme risk aversion). The third choice list measured aversion to losses of money. We used a mixed lottery involving gains and losses. Participants made a series of choices between a lottery offering a 50% chance of losing X and a 50% chance of gaining €100 or an option that offered €0 for sure. The value of X ranged from €10 to €105.[19] We computed an index of *loss aversion*, which equaled $1-X^*/100$, with X^* denoting the value that made the participant indifferent between getting €0 for sure or playing the lottery that gave a 50% chance of losing X^* and a 50% chance of gaining €100. This index was equal to 1 when the participant exhibited

[18] The certainty equivalent was calculated as the midpoint between the two values of X for which the participant switched from the certain outcome to the risky option.

[19] For the four prize winners for whom the first section was payoff-relevant, one question from five different choice lists was selected for payment at the end of the experiment. For questions involving an element of chance, participants were told that we would use a random number generator to determine whether they would gain (lose) or not. All prize winners were invited to attend the random selection of the relevant question and, when applicable, the random selection of the monetary gain or loss.

an extreme level of loss aversion and equal to 0 when the participant exhibited no loss aversion.

We measured optimism and fear of failure. To assess optimism, we used the 32-item questionnaire developed by Seligman (2004), which produces optimism scores ranging between -16 and 16. To measure fear of failure, we used three (of the five) dimensions of the Performance Failure Appraisal Inventory (Conroy 2001) that were relevant for entrepreneurship: fear of experiencing shame and embarrassment, fear of devaluing one's self-estimate, and fear of having an uncertain future.[20] Participants expressed their agreement on 15 statements using a 7-item Likert scale. We created an aggregate measure of fear of failure by averaging responses across all three dimensions.

We collected demographic information: gender, age, nationality, and whether participants' parents were entrepreneurs (Laureiro-Martínez et al. 2017, Lindquist et al. 2015). We also asked participants if they were already entrepreneurs (and, where applicable, their years of experience, the number of employees in their firm, the age of the firm, and their gross annual income).

Results

Tables A1 and A2 (in the Appendix) report the pairwise correlations and the descriptive statistics of the variables measured in our study. We observed a high correlation between occupational intention (as measured by the master program) and occupational choice.

To analyze the relationship between entrepreneurial intentions, occupational choices, and temporal preferences, we ran a series of regressions. Table 2 reports the regressions for the present equivalents of monetary gains and time investments. We report the results for monetary losses in the Appendix.

[Insert Table 2 about here]

We observed a negative relationship between entrepreneurial intentions and the present equivalents for investments of time ($\beta = -0.160, p = 0.003$, column 2b). Low present equivalents reflect a low weight assigned to future outcomes. Students with high entrepreneurial intentions discounted more heavily (i.e., assigned less weight to) future time investments than those with weak entrepreneurial intentions.

[20] We did not include items related to the two remaining dimensions: fear of important others losing interest and fear of upsetting important others.

The pattern of temporal preferences for time investments was confirmed through observed occupational choice. There was a negative relationship between being a founder and present equivalents for time investments ($\beta = -0.178, p = 0.001$, column 2c). In other words, individuals who ultimately chose an entrepreneurial career were likely to discount more heavily (assign less weight to) future investments of time. In addition, we found a negative relationship between being a founder and present equivalents for gains of money ($\beta = -0.071, p = 0.009$, column 1c). Individuals who chose an entrepreneurial career discounted more heavily (assigned less weight to) future gains of money.

Moreover, these patterns were found to hold even when restricting the analyses to the sub-sample of students who did not participate in the master in entrepreneurship program (p = 0.019 for gains of money and p = 0.020 for time investments, columns 1d and 2d in Table 2). The results were also robust to adding country fixed effects and using alternative specifications (i.e., Tobit), as shown in Appendix A. We also report the results of additional analyses in which we used the participants' last names to investigate whether the patterns we observed were driven by socio-demographic differences. The results are robust to these additional tests (tables A7 and A8 in Appendix).

To replicate the finding that entrepreneurs discount both future monetary gains and future time investments more than salaried workers, we conducted two additional studies. These studies also allowed us to explore the mechanisms behind the observed discounting patterns. We present the results of both studies concerning the link between temporal preferences and occupational choice before presenting exploratory analyses of three potential possible explanations: risk aversion, perceived resource slack, and subjective time perception.

STUDY 2

Sample and measures

We conducted an online study. To recruit participants, we used two panel companies, CloudResearch and Prolific, which have access to specific participant pools for research. We recruited two panels from

each company: one of salaried workers and one of entrepreneurs. A total of 564 individuals participated in the study across the two panel companies.

We employed non-incentivized decision tasks to measure temporal preferences for gains of money, losses of money, and time investments, as well as risk aversion. Instead of using choice lists, we measured temporal preferences with the staircase method (Cornsweet 1962), as it requires fewer instructions and is easier to understand. The staircase method is apt for online studies and has been used to measure preferences in large samples (Falk et al. 2018). The method involves five questions, each adjusting to the previous answer to obtain a precise measure of a given characteristic. As an illustration, participants read the following scenario used to measure temporal preferences for gains of money:

> Suppose you were given the choice between receiving a sum of money today or a sum of money in 12 months. We will now present to you five situations. The sum of money received today is the same in each of these situations. The sum of money received in 12 months is different in every situation. For each of these situations we would like to know which you would choose. Please assume there is no inflation, i.e., future prices are the same as today's prices.

In the first question, participants were asked to choose between receiving $100 today or receiving $144 twelve months later. Depending on their answer, the future amount featured in the next question would increase or decrease. For instance, if the participant chose the future payment, the next question would be to choose between receiving $100 today or receiving $112 twelve months later. By "adjusting the delayed payment according to previous choices, the questions 'zoom in' around the respondent's point of indifference between the smaller immediate and the larger delayed payment and make efficient use of limited and costly survey time" (Falk et al. 2018, p. 1654). Unlike Study 1, this method estimates *future equivalents* (see Sutter et al. 2013) instead of present equivalents. A high future equivalent indicates heavier discounting of future outcomes. We used the same method to measure temporal preferences for losses of money.[21]

To measure temporal preferences for investments of time, we created a simple scenario (Zauberman and Lynch 2005). We asked participants to imagine that they were members of a small local business

[21] The minimum and maximum values used in the staircase method were $84 and $204, respectively.

support group that meets once a month for discussion over dinner. Members take turns as hosts, organizing and leading discussions and arranging catering. Participants were told that, as hosts, it was their role to prepare a detailed discussion agenda (likely to take approximately 4 hours). We then asked them, using a slider ranging from 0 to 8 hours, what maximum amount of time 6 months later they would be prepared to spend on the preparation if it meant they did not have to spend 4 hours on it this week.[22]

Using the same staircase method, we also measured risk aversion. For each participant, we obtained the certainty equivalent (CE) of a lottery giving $300 with a 50% chance. This allowed us to compute an index of *risk aversion*, defined as (150-CE)/300. We also measured fear of failure with the method used in Study 1.[23]

To identify *entrepreneurs*, we asked participants for their current occupation using a multiple-choice list. The survey concluded with questions related to the workplace (e.g., numbers of employees) and demographic data (details in the Online Appendix). Unlike Study 1, the pool included self-employed individuals. To separate self-employed individuals from founders, the survey asked "How many employees are currently employed at your company (excluding yourself)?" Entrepreneurs who answered zero were classified as *self-employed*. Those who had one or more employees were classified as *founders*. Unlike Study 1, the ventures managed were not only startups but also more established firms. Scholars distinguish startups from older ventures (Tzabbar and Margolis 2017). Firms founded decades earlier face different timing pressures (Pérez-Nordtvedt et al. 2008), so a new entrepreneur may perceive the future differently than someone who founded a venture that is now a mature organization. Given our interest in entrepreneurial entry, we distinguished between *startup founders* and *established entrepreneurs*. Following the literature, we define an early-stage startup based on size and age: i.e., a venture founded within five years and with 100 or fewer employees (Roach and Sauermann 2015, Roach and Skrentny 2019). Using a

[22] For a part of the sample, we used a stated-value question to assess losses of time. 16 stated values exceeded the upper bound of the slider (i.e., 8 hours). In our main analysis, we truncated these values to be equivalent to the slider method's upper bound.
[23] Study 1 showed no correlation between optimism or loss aversion and temporal preferences. To keep the experiment short, we therefore did not control for these variables.

definition based only on age leads to the same results, as no startup founded within five years had over 100 employees.

Results

We excluded 13 participants who failed an attention check and 35 subjects who completed the survey in under 290 seconds, i.e., one standard deviation under the mean completion time of 655 seconds. In the main analysis, we also removed participants who were unemployed, whose occupation was unspecified, or who had taken over a company they had not founded. This left us with 483 observations. We report the pairwise correlations and the descriptive statistics of the variables in Tables B1, B2, and B3 (in the Appendix).

To analyze the relationship between temporal preferences and entrepreneurship, we conducted a series of regressions on the (normalized) future equivalents for monetary gains and time investments (Table 3). Overall, founders placed less weight on future monetary gains (i.e., higher future equivalents) than salaried workers ($p = 0.011$ in model 1b). The results are robust to controlling for salary ($p = 0.047$ in model 1c of Table B5, in the Appendix). We did not find any statistical difference for future equivalents of time investment between founders and salaried workers, potentially because our sample included startup founders and established entrepreneurs. Therefore, we separated startup founders from established entrepreneurs (model 1c/2c). Regarding monetary gains, the results are consistent with those obtained by considering all founders. Startup founders placed less weight on future monetary gains than salaried workers ($p = 0.057$ in model 1c).

Startup founders also discounted time investments more than salaried workers ($p = 0.077$ in model 2c). Interestingly, startup founders discounted time investments more than established entrepreneurs ($p = 0.034$ in model 2c). In other words, Study 2 replicated the results of Study 1: entrepreneurs who recently founded a startup discounted more future monetary gains and time investments than salaried workers. These results remained robust when country fixed effects were added (Table B6 in the Appendix).

STUDY 3

In Studies 1 and 2, entrepreneurs place less weight on future monetary gains than salaried workers, and startup founders, in particular, place less weight on future time investments. Study 3 aims to replicate the findings of Study 2 while removing possible cultural confounds, comparing individuals with similar levels of managerial responsibilities, and extending our analyses beyond a single temporal delay. In addition, Study 3 explores additional mechanisms, including resource slack for money and time, as well as subjective time perception.

Sample and measures

We conducted an online study on Prolific, focusing on residents in the United States to minimize cultural and linguistic differences between participants. We recruited a sample of entrepreneurs and a sample of salaried workers. To ensure as great a similarity in income as possible between the sub-samples, we recruited only workers with at least two direct reports. The total sample consisted of 243 participants.

Similar to Study 2, we used the staircase method to measure temporal preferences for monetary gains and time investments. However, unlike Study 2, we used two temporal delays (6 months and 12 months) as the literature suggests that time perception can affect differently how people value different temporal intervals (Kim and Zauberman 2009). As in Study 2, these tasks were not incentivized.

Results

We report the pairwise correlations and the descriptive statistics of the variables in Tables C1, C2, and C3 (in the Appendix). We excluded three participants as their answers to the perceived distance question violated transitivity (see section "Subjective time perception").[24] Results with the whole sample were consistent (see Appendix C). We conducted a series of regressions on the (normalized) future equivalents for monetary gains and time investments (Table 4). Similar to Study 2, founders placed less weight (i.e., higher future equivalents) than salaried workers on future gains of money received in 6 months ($p = 0.098$, in column 1b) and 12 months ($p = 0.058$, in column 2b). The results at 12 months are robust to controlling

[24] These participants positioned the slider on the extreme right side for the three temporal delays (1/6/12 months).

for salary ($p = 0.050$, model 1c of Table C5 in Appendix). While we observed a similar pattern between startup founders and salaried workers, the difference was not significant ($p = 0.168$, at 12 months), potentially due to the smaller sample size compared to Study 2.

[Insert Table 4 about here]

Study 3 also confirmed the results obtained in Study 2 concerning the discounting of time investments. While we observed no difference in future equivalents of time investments between salaried workers and founders (columns 3b and 4b in Table 4), we found significant differences when looking separately at startup founders and established entrepreneurs (columns 3c and 4c in Table 4). Startup founders assigned less weight to future time investments than salaried workers ($p = 0.033$ at 6 months and $p = 0.083$ at 12 months).

EXPLORATORY ANALYSES OF POTENTIAL MECHANISMS

Our results across three studies consistently revealed that startup founders placed less weight on future time investments than salaried workers. Founders (of both startups and established firms) also placed less weight on future monetary gains than salaried workers. To understand why these patterns occurred, we explored the influence of risk attitudes, perceived resource slack (opportunity cost), and subjective time perception. We conducted this analysis in the spirit of reverse causal inference (Birhanu et al. 2016), which involves exploring potential mechanisms to explain apparently anomalous findings (Gelman and Imbens 2013, Vakili and Zhang 2018).

Risk attitudes

As stated by Fisher (1930, p. 76–77), "future income is always subject to some uncertainty, and this uncertainty must naturally have an influence on the rate of time preference, or degree of impatience, of its possessor." However, there is no consensus on the relationship between risk attitudes and temporal preferences. Some studies report that risk-averse individuals are more impatient (Falk et al. 2018), while others report the opposite pattern (Ferecatu and Öncüler 2016) or no correlation between risk attitudes and temporal preferences (Ioannou and Sadeh 2016).

Overall, we did not find evidence that risk attitudes explained the observed differences in discounting behavior between founders and salaried workers. In Study 1, we observed no difference between founders and salaried workers in terms of risk aversion, loss aversion, or optimism (see Table 6). We also found no relationship between those traits and temporal preferences for monetary gains or time investments (Table 2). In Study 2, there was a relationship between risk aversion and temporal preferences, but only for time investments: a higher level of risk aversion was related to higher future equivalents (i.e., higher discounting) of time investments ($p = 0.025$, column 2a of Table 3). However, there was no difference in risk aversion between startup founders and salaried workers or established entrepreneurs. Similarly, there was no relationship between risk aversion and discounting of time investments or monetary gains in Study 3 (columns (a) of Table 4) or differences in risk aversion between startup founders and salaried workers or established entrepreneurs.

Perceived resource slack

Prior research suggests that the perceived change in available resources can affect how future outcomes are valued (Zauberman and Lynch 2005). For instance, an individual who expects to have more financial resources in the future may discount future monetary gains more than someone who does not anticipate an increase in resources. To investigate this mechanism, we measured *perceived resource slack* (financial and time) using the scale developed by Zauberman et al. (2009). We measured perceived time slack in the three studies and perceived financial slack in Study 3. Participants rated their perceived available spare time/money (financial resources) using a Likert scale from 0 (very little available time/money) to 10 (lots of available time/money) in the coming week/in the future (i.e., six months or one year from now). We then calculated the difference between the perceived slack in the future period and the week following the study to capture changes in perceived resource availability.

In Study 1, founders perceived a higher increase in the slack of time than salaried workers ($p = 0.007$). However, we observed no difference in perceived slack of time between startup founders and salaried workers (or established entrepreneurs) in Study 2 or Study 3. Importantly, there was no significant

relationship between perceived slack of time and discounting of time investments in any of the three studies (see Tables 2, 3, and 5). In other words, we do not find support for perceived time slack driving the patterns of discounting of time investment in our studies.

The situation is different for perceived financial slack. In Study 3, startup founders perceived a greater increase in available financial resources during the 12 months following the study than salaried workers ($p = 0.007$) and established entrepreneurs ($p = 0.020$). In turn, people who perceived a larger increase in available financial resources discounted future monetary gains more ($p < 0.001$, columns 1a/2a in Table 5). This difference in perceived financial slack thus seems to be a driver of the different discounting patterns of monetary gains between startup founders and salaried workers.

As mentioned earlier, perceived opportunity costs can also influence the weight people place on future outcomes (Frederick et al. 2009, Zhao et al. 2015). Overall, we did not find any effect of opportunity cost on discounting monetary gains or time investments. As opportunity cost of time and perceived slack are closely related, we report the results in the Appendix.

Subjective time perception

Temporal preferences may also be influenced by how individuals perceive the future (Zauberman et al. 2009), both in terms of how the future approaches the present and how far away the future appears (Shipp and Jansen 2021, p. 303). These two dimensions of the perception of the future, namely its approach and distance, are distinct. Hsee et al. (2014, p. 708) found evidence that "the approaching effect in temporal movement was also not a mere distance effect." We, therefore, focus on both these dimensions. In Study 2, we investigate the influence of the first dimension, i.e., the manner in which the future is perceived to be approaching. In Study 3, we also investigate the second dimension, i.e., the perceived distance of the future.

The first dimension of subjective time encompasses perceptions of the approach of the future. People can perceive themselves as moving towards the future (ego-moving frame) or can perceive the future as approaching (time-moving frame) (McGlone and Harding 1998). The time-moving frame ("the deadline is approaching") may make the future salient because it looms large (Flusberg et al. 2017). In contrast, in the

ego-moving frame ("we are approaching the deadline"), "the Ego is conceived as moving 'forward' through time, [and] future events are farther ahead relative to the Ego's motion" (Nunez et al. 2006, p. 135), potentially leading people to weigh the present heavily. While these *temporal frames* help explain how people weigh present versus future monetary gains (Crilly 2017), there has been no investigation of their effects on the discounting of time investments or whether entrepreneurs use one frame more than salaried workers. Conceivably, entrepreneurs might use the ego-moving frame more because they score highly on agency and self-efficacy (Newman et al. 2019). *Perceived distance* is a second dimension (Zauberman et al. 2009). People may perceive the same point in the future as nearer or farther away, with implications for the value they attach to gains or losses realized at that future time. Again, entrepreneurs may differ from employees in terms of perceived future distance, as people who make substantial efforts towards reaching their goals have been shown to perceive the future as being particularly close (Jiga-Boy et al. 2010).

In line with the literature (Gentner et al. 2002), in Studies 2 and 3, we measured participants' *temporal frame* (time vs. ego) using the question: "Imagine a meeting originally scheduled for next Wednesday is moved forward two days. On what day will the meeting take place now that it has been rescheduled?" "Moving forward" is ambiguous, with native English speakers divided in answering *Monday* or *Friday*, with their response dependent on their conceptualization of time (McGlone and Harding 1998). *Monday* and *Friday* responses were classified as "time-moving" and "ego-moving," respectively. In Study 3, we also measured *perceived distance* using the method of Zauberman et al. (2009). Participants were presented with a series of sliders labeled "very short" on the left side and "very long" on the right side. They were asked to imagine a date in the future (1, 6, and 12 months away) and to place a mark on the line to represent how far away they considered that future day. We transformed the value of the slider into monthly units based on the mean value of the 1-month distance in the sample (see Zauberman et al. 2009).

In Study 2, founders were more likely to use an ego-moving frame than salaried workers ($p = 0.042$). Specifically, startup founders were more likely to use an ego-moving frame than salaried workers ($p = 0.081$), and there was no difference between startup founders and established entrepreneurs ($p = 0.903$). In turn, differences in perception of time were related to discounting. In Study 2, using an ego-

moving frame was related to higher future equivalents (i.e., higher discounting) for gains of money ($p = 0.038$ in column 3b of Table 3) and time investments ($p = 0.063$ in column 4b of Table 3). Individuals who saw themselves as agentic vis-à-vis the future thus discounted future outcomes (monetary gains and investments of time) more.

Founders were also more likely to use an ego-moving frame than salaried workers in Study 3 ($p = 0.024$). Specifically, startup founders were more likely to use an ego-moving frame than salaried workers ($p = 0.061$), with no difference between startup founders and established entrepreneurs ($p = 0.990$). Concerning the second dimension of subjective time, startup founders perceived the future as further away than salaried workers ($p = 0.022$ at 6 months and $p = 0.007$ at 12 months) and established entrepreneurs ($p = 0.002$ at 6 months and $p < 0.001$ at 12 months). Unlike Study 2, we did not find a relationship between an ego-moving frame and discounting monetary gains. Instead, we found a positive relationship between perceived distance and discounting monetary gains. Individuals who perceived a temporal delay of 12 months as further away placed less weight on monetary outcomes received in 12 months than those who perceived this delay as shorter ($p = 0.078$, column 2b in Table 5). This effect disappeared when we controlled for perceived resource slack (Table C9 in the Appendix), which could be due to subjective distance affecting discounting behavior both directly and indirectly via perceived resources. In fact, subjective distance and perceived increases in financial resource slack at 12 months are correlated ($p = 0.001$).

As in Study 2, participants who used an ego-moving frame discounted future time investments more at 6 months ($p = 0.135$, model 3b in Table 5) and 12 months ($p = 0.069$, model 4b in Table 5). Perceived distance did not directly affect the discounting of time investments, but it did when interacted with the temporal frame. Specifically, for participants who adopted an ego-moving frame, viewing the future as further away led to more discounting of future time investments ($p = 0.028$ at 6 months and $p = 0.082$ at 12 months). In short, an agentic view of oneself vis-à-vis the future is associated with greater discounting of time investments; this effect is magnified when actors also perceive the future as being distant.

To sum up, while all founders in Study 3 adopted a more agentic view of the future, only startup founders perceived this future as further away, increasing their discounting of future time investments.

Stability of preferences

Our findings raise the question of the stability of temporal preferences. The literature on this topic is scarce. Age has been identified as influencing temporal preferences over one's lifespan (Read and Read 2004). Although we cannot explore this relationship in Study 1 due to the homogenous nature of the pool, Studies 2 and 3 both show a negative relationship between age and the discounting of monetary gains. In other words, our results support the stylized finding that middle-aged people exhibit greater patience than younger individuals for financial gains (Tanaka et al. 2010, Falk et al. 2018). In addition, temporal preferences may be influenced by changes in income over a lifespan, with wealthier individuals tending to discount monetary gains to a lesser extent (Tanaka et al. 2010). External events, such as inflation, may also affect the stability of temporal preferences (Krupka and Stephens 2013). To our knowledge, the study by Meier and Sprenger (2015) is the first longitudinal study on the stability of temporal preferences. The authors found stable preferences for approximately half of their sample. For the rest of the sample, sociodemographic changes, such as shifts in income or liquidity, explained much of the instability in preferences. It is noteworthy that this literature is silent about the stability of preferences for less fungible attributes than monetary outcomes (such as time investments).

To investigate the stability of temporal preferences, we examined the relationship between experience and temporal preferences. We used participants' years of work experience as a salaried worker/ entrepreneur as a measure of *experience*. We conducted a series of regressions of temporal preferences and subjective time on experience (including its quadratic term) while controlling for age, gender, and education. For salaried workers, there was no relationship between experience and temporal preferences for monetary gains or time investments (see Tables D1 and D2 in the Appendix). Similarly, there was no relationship between experience and temporal preferences for monetary gains among founders. In contrast,

experience increased the weight that founders placed on future time investments ($p = 0.026$ at 6 months and $p = 0.116$ at 12 months).

Concerning the perceptual variables, we observed no relationship between experience and subjective time or perceived resource slack among salaried workers. There was also no relationship between experience and temporal frame or perceived resource (either money or time) slack for founders. However, we observed a negative relationship among entrepreneurs between experience and the subjective perception of temporal distances of 6 months ($p = 0.060$) and 12 months ($p = 0.048$). In other words, controlling for age, gender, and education, more experienced entrepreneurs perceived the future as closer than less experienced entrepreneurs.

Does the effect of experience—for founders—on temporal preferences for time investments reflect unstable preferences, or does it result from the selection of founders with certain temporal preferences out of the market? Though we cannot fully rule out this alternative explanation, we conducted a series of regression analyses of measures of entrepreneurial success (salary and number of employees) on future equivalents for time investments while controlling for founders' experience and other demographics (see Table D3 in the Appendix). We observed no relationship between temporal preferences for time investments and salary or the number of employees. Whilst indicative, our evidence suggests that the change in temporal preferences was probably not due to the exit of entrepreneurs who assigned less weight to future time investments.

DISCUSSION

Despite their importance in various decision-making contexts, temporal considerations have been largely overlooked in the entrepreneurship literature (Lévesque and Stephan 2020, Wood et al. 2021). Our study aims to fill this gap by enhancing our understanding of how temporal preferences influence the choice between entrepreneurship and salaried work. Our findings challenge the conventional wisdom in the management literature that entrepreneurs are more patient than salaried workers when it comes to financial gains. After all, patient individuals might be expected to self-select into careers that offer the prospect of

larger returns in the long run instead of more stable (but lower) wage alternatives (Fouarge et al. 2014). Entrepreneurship falls into the former category, as entrepreneurs may need to wait longer than salaried workers before receiving financial rewards (Sorgner et al. 2017). Nonetheless, our findings suggest that entrepreneurs (either founders of recent startups or more established entrepreneurs), if anything, discount monetary gains more heavily than salaried workers do. These results are consistent with the assumption made in macroeconomic models of business cycle dynamics that entrepreneurs are more impatient than households (e.g., Carlstrom and Fuerst 1997, Iacoviello 2005).

Though monetary gains are the focus of the literature on intertemporal choice, time investment as an attribute that can be discounted is equally important. Entrepreneurs must commit to investing considerable amounts of future time even before founding their ventures. Our studies show that startup founders discount future time investments more heavily than salaried employees, but this difference diminishes with entrepreneurial experience. This effect may be due to the changes that occur during the organizational life cycle of a new venture (Fisher et al. 2016), with the role of the entrepreneur evolving from founder to professional manager (Gedajlovic et al. 2004). Moreover, transitioning to entrepreneurship involves the complex process of developing a new founder identity (Hoang and Gimeno 2010). Experienced entrepreneurs "have a more realistic and complex picture of what being an entrepreneur means and what is expected from them", which influences the way they perceive stressors such as the significant time investments required to sustain a new venture (Kollmann et al. 2019, p. 696).

Our finding that entrepreneurs discount monetary gains more heavily than salaried workers contrasts with Andersen et al.'s (2014) conclusion that entrepreneurs are more patient than the general population. In their study, Andersen and colleagues compared 55 entrepreneurs who visited an entrepreneurship fair to a composite control group of 70 non-firm-owning visitors to the same fair, as well as 475 participants in other experiments. They found that firm ownership was negatively related to discounting but that attending the entrepreneurship fair was positively (and more strongly) related to discounting of monetary gains. These results suggest that individuals with entrepreneurial aspirations who attended the fair may have a stronger

preference for the present, which is consistent with our findings that founders of recent startups heavily discount future monetary gains.

Our study on how future time is discounted has implications beyond the specific context of occupational choice. Time is often "experienced as a powerful constraint on […] actions" in organizations (Orlikowski and Yates 2002, p. 688). Arguably, being patient with respect to future time gives actors more choices, and the perception of having ample time in the future can have the same effect. Though organization research on time has routinely focused on conflicts between short- and long-term horizons (DesJardine and Bansal 2019), acknowledging time as a resource enhances our understanding of why executives make certain strategic choices. Specifically, taking account of the future *time* commitments necessary to pursue long-term projects, such as those related to innovation or sustainability, as well as how any potential gains are discounted, may shed light on strategic choice in ways that go beyond conventional, unidimensional temporal horizons. Similarly, incorporating the idea that people discount time investments and monetary rewards differently can inform our understanding of contract design (Kaur et al. 2015) and contribute to the growing literature on the effect of incentive design on organizational behavior (Bennett and Levinthal 2017, Frank and Obloj 2014, Lee and Meyer-Doyle 2017).

Founders' perception of the future—with future efforts appearing within the actor's control and further away— explains in part why would-be entrepreneurs make decisions today that entail costly future commitments of time. This finding speaks to the entrepreneurship literature on construal and psychological distance (temporal, spatial, social, and hypothetical) (Trope and Liberman 2003, 2010). Tumasjan et al. (2013) found that entrepreneurs focus on the desirability of opportunities perceived as temporally distant and the feasibility of those perceived as temporally proximate. While related, temporal distance within construal level theory is distinct from the *perceived distance* construct in our paper. For instance, Tumasjan et al. (2013) manipulated the anticipated date of the venture foundation. Instead, we focus on perceived distance, i.e., whether a specific future event feels distant. To illustrate the difference, two prospective entrepreneurs may have the same beliefs about the delay before their business is up but *perceive* this delay differently.

Our finding that entrepreneurs heavily discount future outcomes, particularly time investments, is plausibly linked to entrepreneurs' high need for achievement (McClelland 1961, Frese and Gielnik 2014). Individuals with a high need for achievement may be more inclined to discount the future if they are strongly driven to achieve their goals. However, the evidence on the relationship between need for achievement and temporal preferences is not conclusive. Indeed, some prior research has reported the opposite pattern. For example, Kooij et al. (2018) found a positive association between need for achievement and having a stronger concern for the future, while Lusnig et al. (2020) reported that people who meditate, which emphasizes focus on the present moment, exhibit lower levels of need for achievement. Further investigation into the relationship between need for achievement and patience in entrepreneurship is an interesting avenue that may contribute to fostering a "dialogue between psychology-based and economics-based entrepreneurship research" (Zahra and Wright 2011, p. 69).

Our results have implications for policy. Recent years have seen a proliferation of entrepreneurship training programs (Lyons and Zhang 2018). Though there is no consensus on the effectiveness of such programs in increasing venture creation (Eesley and Lee 2021), training affects non-cognitive skills, such as risk-taking and self-efficacy, that predict entrepreneurial entry (Huber et al. 2014). In this respect, incorporating elements related to time perception into entrepreneurial training could affect intentions, eventually leading to venture creation. Business planning programs (see von Graevenitz et al. 2010) may foster a long-term perspective and influence temporal preferences (Khwaja et al. 2007), which could be detrimental to entrepreneurial intentions. Recently, scholars have started to analyze the effect of entrepreneurial training based on scientific approaches, in which potential entrepreneurs develop and test hypotheses before starting their ventures. This method contrasts with the effectuation approach, where entrepreneurs focus on their resources instead of trying to forecast the future: "To the extent we can control future, we do not need to predict it" (Sarasvathy 2001, p. 251). These differences in temporality between "effectuation (aligned with a present time focus) and causation (aligned with a future time focus)" (Lévesque and Stephan 2020, p. 169) can influence entrepreneurial decisions and may explain the lower

levels of entry among entrepreneurs following a scientific approach, as documented by Camuffo et al. (2020).

This study is not without limitations. First, though we report a relationship between temporal preferences and the intention and choice to become an entrepreneur, we cannot claim causality. Second, following the recent economic literature that explores the relationship between temporal preferences and economic behavior, we used temporal delays of up to 12 months (Falk et al. 2018, Meier Sprenger 2015, Newell and Siikamäki 2015, Tanaka et al. 2010). The empirical patterns that we observe may vary with longer temporal delays. Third, though we incentivized decisions in Study 1, participants' choices in Studies 2 and 3 were not incentivized. One might wonder whether the discounting patterns we observed were affected by monetary incentives. However, prior studies have found no effect of financial incentives on discounting patterns for financial gains (Harrison et al. 2002), consumption goods (Ubfal 2016), or time investments (Abdellaoui et al. 2018). These results suggest that the (absence of) provision of incentives in our measures of temporal preferences should not affect the results. A disadvantage of incentivized tasks is the limit in the range of financial outcomes considered in the questions. However, we were careful not to use larger financial amounts in the unincentivized questions of Studies 2 and 3, as the literature on the role of incentives on temporal discounting has used limited monetary amounts. Fourth, the pool of participants in Studies 2 and 3, who voluntarily accepted to answer online studies, may not be representative of entrepreneurs or salaried workers. The ventures founded by the entrepreneurs in our sample were relatively small (8 employees on average). While this is a limitation to the external validity of our findings, small businesses represent a large proportion of all ventures (according to a 2017 OECD report, micro-enterprises, composed of less than ten employees, represented 67% of all businesses in the USA). Future research might fruitfully investigate if the patterns we report differ depending on the type of business venture or the founder's initial motivation. For instance, it may well be that entrepreneurs who aim to retire early discount future monetary gains and time investments differently than those who plan to keep managing their businesses. Finally, many start-ups are managed by entrepreneurial teams, which could lead to the underinvestment of money and time of some members (Yang et al. 2020). While existing literature has

started exploring heterogeneity in beliefs (Chen et al. 2022) and risk attitudes (Kagan et al. 2020) in founding teams, understanding how heterogeneity in temporal preferences for monetary rewards and time investments influences entrepreneurial decisions and outcomes is an exciting avenue for future research (for examples of how behavioral traits influence entrepreneurial outcomes, such as innovation, see Amore et al. 2021 and Dushnitsky 2010).

We conclude by reiterating that time, despite being "still largely neglected" (Lévesque and Stephan 2020, p. 164), is a fundamental pillar of entrepreneurial decisions. Founders adopt an agentic view toward the future and perceive it further away, and consequently place more weight on the present and less on future outcomes. Contrary to the standard view that sees patience as a core attribute of entrepreneurs, entrepreneurs may tend towards impatience,[25] focusing on closing deals and getting cash flowing in the business rather than working on larger (but later) prospects. The perception of time itself—the "most valuable and scarcest resource of all" (Zachary et al. 2015, p. 1402)—plays an essential role in entrepreneurship. The amount of time and effort required to build a successful venture can be daunting and prevent many from pursuing the path of entrepreneurship. By focusing on the present and discounting future time investments, some individuals are willing to take the first step on their entrepreneurial journey.

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[25] As explained with our illustrative decision-making framework, the standard view derives from assuming a unitary discount factor for time investments and monetary gains. However, when this assumption is lifted, it is no longer predicted that prospective entrepreneurs are necessarily more patient and willing to wait longer for rewards than salaried workers. For instance, individuals who uniformly place less weight on the future but do so for time investments to a percentage-wise larger extent are also predicted to enter entrepreneurship more often (cf. inequality (2)).

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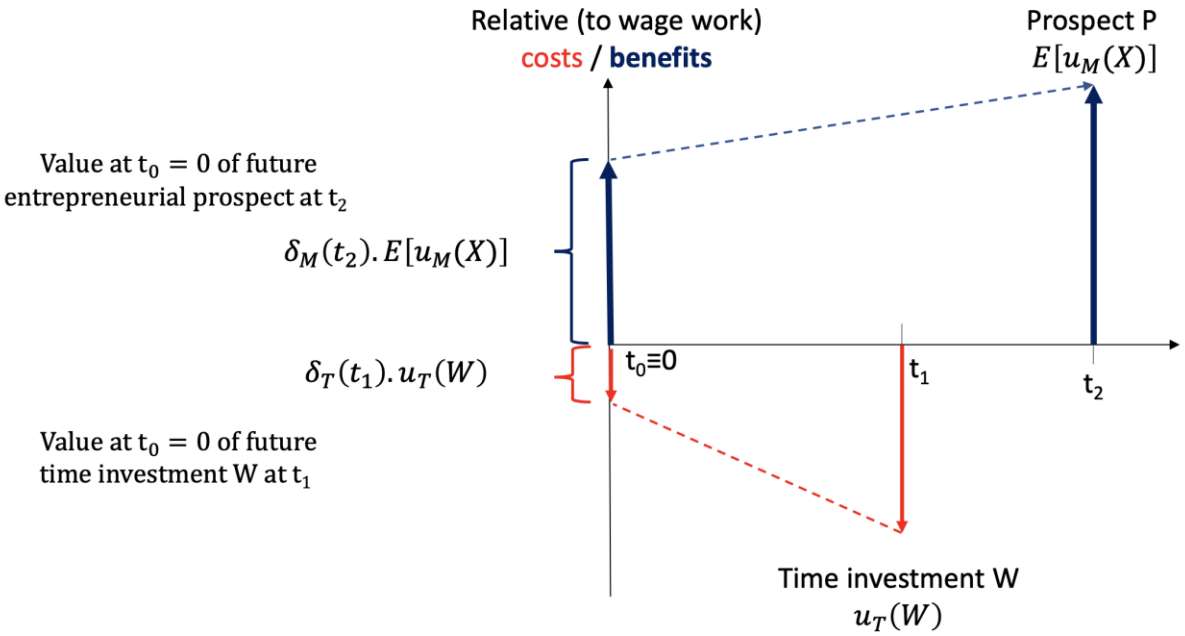
TABLES AND FIGURES

Figure 1: Illustration of the stylized example



At time $t_0 = 0$, the individual decides between wage employment and entrepreneurship. Relative to wage employment (normalized to zero), entrepreneurship requires an additional time investment *W* at t_1 and yields additional (stochastic) returns at t_2.

FIGURE 2: Example of a choice list (temporal preferences for gains of money)

	Select the option you prefer:	
	A - Receive X€ now	B - Receive 100€ in 6 months from now
X = 100€	○	○
X = 95€	○	○
X = 90€	○	○
X = 85€	○	○
X = 80€	○	○
X = 75€	○	○
X = 70€	○	○
X = 60€	○	○
X = 50€	○	○
X = 40€	○	○
X = 30€	○	○
X = 20€	○	○
X = 10€	○	○

TABLE 1: Glossary

Certainty equivalent—sure amount equivalent to an uncertain prospect.

Future equivalent— equivalent in the future of a given outcome (gain or cost) now. For example, an individual might be indifferent between a gain of $1,000 now and $1,500 after one year. In this case, the future equivalent in one year of $1,000 now is $1,500.

Long-term orientation—*"*preference to think about and value the future" (Shipp and Jansen 2021, p. 332), implying the willingness to sacrifice short-term gains for greater long-term gains or to bear losses in the short term instead of greater losses in the long term.

Opportunity cost — "the unrealized flow of utility from the alternatives a choice displaces" (Frederick et al. 2009, p. 553).

Perceived (temporal) distance—subjective perception of prospective temporal delay. The same future event may seem close to the present or far away.

Present equivalent— equivalent now of a given outcome (gain or cost) in the future. For instance, if an individual is indifferent between receiving $60 now or $100 in 6 months, we say that the present equivalent of $100 in 6 months is $60.

Resource slack— "perceived surplus of a given resource available to complete a focal task" (Zauberman and Lynch 2005, p. 23)

Risk aversion— preference for the expected value of an uncertain prospect over the prospect itself. A risk averse individual may impute a certainty equivalent value of $40 to gamble in which she has a 50% chance of receiving $100 and a 50% change of receiving $0.

Subjective time perception— *"*how individuals experience time through psychological time travel […] and/or the perceived duration of time" (Shipp and Jansen 2021, p. 303).

Temporal delay—time between the evaluation and the realization of a future gain, loss, or investment.

Temporal depth— temporal distance into the past and future considered when contemplating an event.

Temporal frame— how people perceive the approach of the future. Distinction between the ego-moving frame (i.e., actors perceive themselves as moving towards the future) and the time-moving frame (i.e., the future moves towards the actors).

Temporal preferences—the way individuals value now costs and benefits in the future.

Time investments— time spent performing a given task.

TABLE 2: Study 1 — Entrepreneurial intention, occupational choice and temporal preferences

	Present equivalent monetary gains				Present equivalent time investments						
	(1a)	(1b)	(1c)	(1d)	(2a)	(2b)	(2c)	(2d)	(2e)	(2f)	(2g)
MS Entrepreneur		-0.007				-0.160***			-0.149***		
		(0.028)				(0.052)			(0.053)		
Founder			-0.071***	-0.084**			-0.178***	-0.155**		-0.167***	-0.158**
			(0.027)	(0.035)			(0.050)	(0.066)		(0.052)	(0.068)
Gender	-0.008	-0.008	-0.013	-0.010	0.007	-0.001	-0.005	-0.021	0.000	-0.003	-0.021
(Female=1)	(0.023)	(0.023)	(0.023)	(0.025)	(0.044)	(0.043)	(0.043)	(0.046)	(0.043)	(0.043)	(0.046)
Age	-0.013*	-0.012*	-0.012	-0.007	-0.004	-0.001	-0.003	-0.014	-0.001	-0.002	-0.014
	(0.007)	(0.007)	(0.007)	(0.008)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.014)	(0.015)
Foreigner	-0.014	-0.016	-0.019	-0.035	-0.060	-0.087*	-0.070	-0.075	-0.083*	-0.067	-0.076
	(0.024)	(0.025)	(0.025)	(0.025)	(0.047)	(0.046)	(0.046)	(0.047)	(0.046)	(0.046)	(0.048)
Optimism	0.004	0.004	0.004	0.002	-0.003	-0.004	-0.003	0.003	-0.004	-0.003	0.003
	(0.003)	(0.004)	(0.003)	(0.004)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Risk aversion gains	-0.050	-0.049	-0.068	0.006	0.111	0.122	0.056	0.134	0.118	0.057	0.136
	(0.067)	(0.067)	(0.068)	(0.082)	(0.127)	(0.125)	(0.128)	(0.154)	(0.125)	(0.128)	(0.154)
Risk aversion losses	-0.049	-0.048	-0.053	-0.129	0.047	0.061	0.016	-0.023	0.053	0.010	-0.021
	(0.070)	(0.070)	(0.070)	(0.080)	(0.132)	(0.130)	(0.132)	(0.150)	(0.130)	(0.132)	(0.151)
Loss aversion	-0.003	-0.001	0.012	-0.076	-0.088	-0.045	-0.065	-0.062	-0.056	-0.074	-0.059
	(0.043)	(0.044)	(0.044)	(0.053)	(0.083)	(0.082)	(0.082)	(0.099)	(0.083)	(0.083)	(0.100)
Resource (time)									-0.010	-0.009	0.002
slack (later vs. now)									(0.008)	(0.008)	(0.009)
N	203	203	200	154	203	203	200	154	203	200	154
R-squared	0.024	0.024	0.056	0.076	0.020	0.064	0.079	0.071	0.072	0.085	0.071

*p<0.1, **p<0.05, ***p<0.01. Standard errors in parentheses. N=200 in columns (c) as we were not able to find information on LinkedIn for three participants.
As a robustness test, we report in columns (d) the results with the sub-sample of students who did not attend the MS Entrepreneur.

TABLE 3: Study 2 — Occupational choice and temporal preferences

	Future equivalent monetary gains			Future equivalent time investments			Future equivalent monetary gains		Future equivalent time investments		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(4a)	(4b)	(4c)
Salaried worker		-0.112**	-0.103*		-0.033	-0.109*	-0.104**	-0.096*	-0.108*	-0.101*	-0.101*
		(0.044)	(0.054)		(0.050)	(0.061)	(0.044)	(0.054)	(0.061)	(0.061)	(0.061)
Self-employed		-0.169***	-0.160**		-0.080	-0.159**	-0.172***	-0.164**	-0.159**	-0.164**	-0.164**
		(0.062)	(0.070)		(0.070)	(0.080)	(0.062)	(0.070)	(0.080)	(0.079)	(0.079)
Established			0.024			-0.196**		0.020	-0.196**	-0.201**	-0.201**
entrepreneur			(0.081)			(0.092)		(0.081)	(0.092)	(0.092)	(0.092)
Age	-0.003**	-0.003*	-0.003*	-0.002	-0.001	-0.001	-0.003	-0.003	-0.001	-0.000	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Gender (Female=1)	0.078**	0.077**	0.076**	0.039	0.040	0.049	0.085**	0.084**	0.050	0.057	0.057
	(0.036)	(0.036)	(0.036)	(0.040)	(0.040)	(0.041)	(0.036)	(0.036)	(0.041)	(0.041)	(0.041)
High education	-0.026	-0.024	-0.023	0.061	0.061	0.051	-0.023	-0.022	0.052	0.052	0.053
	(0.044)	(0.043)	(0.044)	(0.049)	(0.049)	(0.049)	(0.043)	(0.043)	(0.049)	(0.049)	(0.049)
Risk aversion	0.143	0.143	0.143	0.237**	0.238**	0.242**	0.125	0.125	0.241**	0.224**	0.223**
	(0.094)	(0.093)	(0.093)	(0.106)	(0.106)	(0.105)	(0.093)	(0.093)	(0.106)	(0.106)	(0.106)
Ego-framing							0.075**	0.075**		0.076*	0.076*
							(0.036)	(0.036)		(0.041)	(0.041)
Resource (time)									-0.001		-0.001
slack (later vs. now)									(0.007)		(0.007)
Observations	483	483	483	483	483	483	483	483	483	483	483
R-squared	0.022	0.040	0.041	0.016	0.019	0.028	0.049	0.049	0.035	0.028	0.035

*p<0.1, **p<0.05, ***p<0.01. Standard errors in parentheses. Constant included, not reported. Baseline category is (startup) founder. Columns 3 and 4 explore the relationship between subjective time perception, perceived time slack, and temporal preferences.

TABLE 4: Study 3 — Occupational choice and temporal preferences

	Future equivalent monetary gains t=6M			Future equivalent monetary gains t=12M			Future equivalent time investments t=6M			Future equivalent time investments t=12M		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)
Salaried worker		-0.126*	-0.107		-0.149*	-0.129		-0.147	-0.245**		-0.180	-0.343*
		(0.076)	(0.090)		(0.078)	(0.093)		(0.097)	(0.115)		(0.166)	(0.197)
Established			0.038			0.042			-0.202			-0.334
Entrepreneur			(0.100)			(0.103)			(0.127)			(0.219)
Age	-0.012***	-0.013***	-0.014***	-0.012***	-0.013***	-0.014***	-0.007*	-0.008*	-0.006	-0.012*	-0.013*	-0.009
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.007)
Gender	-0.040	-0.023	-0.023	0.000	0.020	0.020	0.025	0.044	0.042	0.041	0.064	0.061
(Female=1)	(0.073)	(0.073)	(0.073)	(0.075)	(0.076)	(0.076)	(0.093)	(0.093)	(0.093)	(0.159)	(0.161)	(0.160)
High education	-0.125	-0.108	-0.110	-0.122	-0.102	-0.104	-0.068	-0.048	-0.037	-0.198	-0.174	-0.156
	(0.090)	(0.090)	(0.091)	(0.093)	(0.093)	(0.094)	(0.115)	(0.115)	(0.115)	(0.197)	(0.198)	(0.198)
Risk aversion	-0.285	-0.319	-0.318	-0.202	-0.242	-0.242	-0.171	-0.211	-0.211	0.006	-0.043	-0.044
	(0.196)	(0.196)	(0.197)	(0.203)	(0.203)	(0.203)	(0.250)	(0.251)	(0.250)	(0.429)	(0.431)	(0.430)
Loss aversion	-0.010	-0.005	-0.006	0.031	0.038	0.037	0.172*	0.179*	0.183*	0.233	0.240	0.248
	(0.081)	(0.081)	(0.081)	(0.084)	(0.084)	(0.084)	(0.104)	(0.104)	(0.103)	(0.178)	(0.178)	(0.178)
Observations	240	240	240	240	240	240	240	240	240	240	240	240
R-squared	0.099	0.109	0.110	0.079	0.094	0.094	0.030	0.040	0.050	0.027	0.032	0.041

*p<0.1, **p<0.05, ***p<0.01. Standard errors in parentheses. Constant included, not reported. Baseline category is (startup) founder.

TABLE 5: Study 3 — Occupational choice, temporal preferences and possible mechanisms

	Future equivalent gains of money t=6M			Future equivalent gains of money t=12M			Future equivalent time investments t=6M			Future equivalent time investments t=12M		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)
Resource (money/time)	0.097***			0.069***			-0.022			0.002		
slack (later vs. now)	(0.020)			(0.014)			(0.019)			(0.027)		
Ego-framing		-0.072	-0.074		-0.108	-0.108		0.143	0.145		0.297*	0.294*
		(0.075)	(0.075)		(0.077)	(0.077)		(0.095)	(0.095)		(0.162)	(0.162)
Subjective distance		0.055	0.113**		0.069*	0.099**		-0.003	-0.111		0.033	-0.080
		(0.040)	(0.055)		(0.039)	(0.050)		(0.051)	(0.070)		(0.083)	(0.105)
Ego-framing#Subj. distance			-0.116			-0.074			0.216**			0.281*
			(0.077)			(0.076)			(0.098)			(0.161)
Risk aversion	-0.289	-0.305	-0.312	-0.290	-0.225	-0.227	-0.178	-0.217	-0.203	-0.048	-0.048	-0.038
	(0.188)	(0.196)	(0.196)	(0.194)	(0.202)	(0.202)	(0.252)	(0.250)	(0.248)	(0.433)	(0.429)	(0.427)
Loss aversion	0.012	-0.006	0.006	0.066	0.041	0.043	0.177*	0.195*	0.172*	0.248	0.280	0.274
	(0.078)	(0.081)	(0.082)	(0.080)	(0.084)	(0.084)	(0.103)	(0.104)	(0.103)	(0.178)	(0.178)	(0.177)
Salaried worker	-0.076	-0.099	-0.097	-0.057	-0.116	-0.119	-0.241**	-0.228*	-0.231**	-0.343*	-0.292	-0.280
	(0.086)	(0.091)	(0.091)	(0.090)	(0.094)	(0.094)	(0.115)	(0.116)	(0.115)	(0.197)	(0.200)	(0.199)
Established	0.079	0.058	0.053	0.101	0.083	0.074	-0.204	-0.213*	-0.202	-0.334	-0.340	-0.306
entrepreneur	(0.096)	(0.101)	(0.100)	(0.099)	(0.104)	(0.105)	(0.127)	(0.128)	(0.127)	(0.219)	(0.222)	(0.222)
Age	-0.013***	-0.013***	-0.013***	-0.012***	-0.014***	-0.013***	-0.006	-0.005	-0.005	-0.009	-0.007	-0.008
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.008)	(0.007)
Gender	-0.041	-0.016	-0.018	0.036	0.024	0.023	0.052	0.036	0.039	0.061	0.049	0.051
(Female=1)	(0.070)	(0.073)	(0.073)	(0.072)	(0.075)	(0.075)	(0.094)	(0.093)	(0.092)	(0.160)	(0.160)	(0.159)
High education	-0.104	-0.116	-0.119	-0.119	-0.109	-0.114	-0.030	-0.016	-0.011	-0.157	-0.107	-0.085
	(0.087)	(0.091)	(0.091)	(0.089)	(0.094)	(0.094)	(0.115)	(0.116)	(0.115)	(0.199)	(0.199)	(0.199)
Observations	240	240	240	240	240	240	240	240	240	240	240	240
R-squared	0.189	0.119	0.128	0.183	0.113	0.117	0.055	0.059	0.079	0.041	0.056	0.068

*p<0.1, **p<0.05, ***p<0.01. Standard errors in parentheses. Constant included, not reported. Baseline category is (startup) founder. Resource (time/money) slack and opportunity cost are computed as the difference between the value in the future (i.e., 6/12 months) and the one at t=0.

TABLE 6 - Differences between startup founders, salaried workers and established entrepreneurs

	Study 1	Study 2			Study 3		
	Startup founders - Salaried workers	All founders - Salaried workers	Startup founders - Salaried workers	Startup founders- Established entrepreneurs	All founders - Salaried Workers	Startup founders - Salaried Workers	Startup founders - Established entrepreneurs
Optimism	0.024	—	—	—	—	—	—
Risk aversion	-0.045	0.003	-0.018	-0.056	0.047*	0.026	-0.039
Loss aversion	0.046	—	—	—	0.010	-0.011	-0.038
Resource (time) slack (6M vs. now)	1.162***	-0.099	-0.082	0.043	-0.284	-0.255	0.055
Resource (time) slack (12M vs. now)	—	—	—	—	-0.100	-0.008	0.172
Resource (money) slack (6M vs. now)	—	—	—	—	0.027	0.301	0.511*
Resource (money) slack (12M vs. now)	—	—	—	—	0.466	1.072***	1.132**
Ego-framing	—	0.116**	0.120*	0.012	0.147**	0.148*	0.001
Subj. Distance 6M	—	—	—	—	0.114	0.368**	0.473***
Subj. Distance 12M	—	—	—	—	0.114	0.559***	0.831***

*p<0.1, **p<0.05, ***p<0.01. To test for differences between (startup) founders and salaried workers and established entrepreneurs, we used a series of *t*-tests.

TABLE 7: Summary of the results

Hypotheses	Study	Result	Details	Mechanisms/Explanations
H1: Founders discount more heavily future time investments than salaried workers	Study 1: entrepreneurial intention	Supported	Students with high entrepreneurial intention discount more future time investments	- *measures: resource (time) slack, risk attitudes* - no evidence that risk attitudes or resource (time) slack drive the results
	Study 1: founders vs. salaried workers	Supported	Founders discount more future time investments than salaried workers	
	Study 2	Supported for recent startup founders	Startup founders discount more future time investments than salaried workers	- *measures: resource (time) slack, risk attitudes, subjective time (temporal frame)* - no evidence that risk attitudes or resource (time) slack drive the results - subjective time perception contributes to the discounting patterns of time investments
	Study 3	Supported for recent startup founders	Startup founders discount more future time investments than salaried workers	- *measures: resource (time) slack, risk attitudes, subjective time (temporal frame + perceived distance), opportunity cost* - no evidence that risk attitudes, resource (time) slack, or opportunity cost drive the results - subjective time perception contributes to the discounting patterns of time investments
H2: Founders discount less future monetary gains than salaried workers	Study 1: entrepreneurial intention	Not supported	No significant difference between students with high/low entrepreneurial intentions	- *measures: risk attitudes* - no evidence that risk attitudes drive the results
	Study 1: founders vs. salaried workers	Not supported	Startup founders discount more future monetary gains than salaried workers	
	Study 2	Not supported	All founders discount more future monetary gains than salaried workers	- *measures: risk attitudes, subjective time (temporal frame)* - no evidence that risk attitudes drive the results - subjective time perception contributes to the discounting patterns of monetary gains
	Study 3	Not supported	All founders discount more future monetary gains than salaried workers	- *measures: resource (money) slack, risk attitudes, subjective time (temporal frame + perceived distance), opportunity cost* - no evidence that risk attitudes or opportunity cost drive the results - resource (money) slack and (to a lesser degree) subjective time perception contribute to the discounting patterns of monetary gains