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Are entrepreneurs influenced by risk attitude, regulatory focus or both? An experiment on entrepreneurs' time allocation ☆

Katrin Burmeister-Lamp [a,*], Moren Lévesque [b], Christian Schade [c]

[a] Rotterdam School of Management, Erasmus University, Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands
[b] Schulich School of Business, York University, 4700 Keele Street, Toronto, Ontario, Canada M3J 1P3
[c] Institute for Entrepreneurial Studies and Innovation Management, School of Business and Economics, Humboldt-Universität zu Berlin, Unter den Linden 6, 10117 Berlin, Germany

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ABSTRACT

"Hybrid entrepreneurs" — those who maintain a wage job while starting a new enterprise — outnumber pure entrepreneurs in many countries. Yet, how hybrid entrepreneurs allocate their working hours between these two activities is not well understood. To better understand the relationship between hybrid entrepreneurs' division of time between their wage jobs and new enterprises we develop a model that captures hybrid entrepreneurs' decisions on the tradeoffs between financial risk and return as it relates to time allocation. We test two hypotheses based on utility theory, and challenge them with two hypotheses based on regulatory focus theory in a controlled experiment with 25 early stage entrepreneurs and 29 undergraduate students. In the computer-based experiment, entrepreneurs' and students' time allocation decisions (tied to monetary incentives) are used to test what would motivate them to work more or less hours in their entrepreneurial startups. We find that the actual time allocation decisions of the student group are somewhat in tune with utility theory, but that the entrepreneurs' time allocation decisions are better explained by regulatory focus theory.

1. Executive summary

Roughly one out of four entrepreneurs takes the initial steps to start a business while working for someone else. *Inc. magazine* reported in 1995 that the 500 owners of America's fastest growing private companies had kept their wage jobs on average for four months after the birth of their new venture. We use this phenomenon, recently coined hybrid entrepreneurship, where entrepreneurs initiate their enterprises while simultaneously working for wages, as a decisional context in which to contrast individuals' risk attitude with their regulatory focus and to identify which best explains the time allocation decisions of entrepreneurs. We thus initially rely on utility theory, specifically risk attitude, to propose two testable hypotheses. The first posits that, when a new enterprise's stake — a measure associated with the magnitude of its return and risk potential — is below a threshold, then individuals with a greater risk aversion allocate more hours to this enterprise, thus preferring it to their wage job, than those with a lower risk aversion. We also posit that, when instead the enterprise's stake exceeds the threshold, individuals with a greater risk aversion allocate fewer hours to the enterprise, thus favoring wages, than those with a lower risk aversion. We then challenge these hypotheses with two additional ones based on regulatory focus theory, specifically on whether individuals are promotion (i.e., strive for gains) or prevention focused (i.e., strive to avoid losses). In this case, what matters is whether an additional hour

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* Corresponding author. Tel.: +31 10 4082595; fax: +31 10 4089638.
E-mail addresses: kburmeister@rsm.nl (K. Burmeister-Lamp), mlevesque@schulich.yorku.ca (M. Lévesque), cds@wiwi.hu-berlin.de (C. Schade).

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in the enterprise yields more or less risk, not its stake. Therefore, the third hypothesis posits that, when each additional hour allocated to the enterprise yields additional risk, individuals with a stronger promotion focus allocate more hours to the enterprise than those with a weaker promotion focus, but individuals with a stronger prevention focus allocate fewer hours than those with a weaker one. As a last hypothesis, we posit an opposite effect for when, instead, each additional hour allocated to the enterprise yields less risk. Specifically, individuals with a stronger promotion focus allocate fewer hours to the enterprise than those with a weaker promotion focus, but individuals with a stronger prevention focus allocate more hours than those with a weaker one. An incentive-compatible experiment on 378 decisions of 25 entrepreneurs and 29 undergraduate business and economics students enables us to test these hypotheses and compare these two groups' time allocation decisions. Risk attitude appears to be a better predictor of students' than of entrepreneurs' time allocations. Highly risk-averse students allocated fewer hours to the enterprise than less risk-averse students when the enterprise's stake was above a threshold, but with no influence of risk attitude when the stake was below the threshold. In contrast, when the stake was above the threshold, entrepreneurs' time allocations were unaffected by their risk attitude, and when the stake was below the threshold, highly risk-averse entrepreneurs allocated fewer hours to the enterprise than those with a lower risk aversion, thus behaving opposite to what we had posited. Entrepreneurs' time allocation decisions appear to be much better explained by their regulatory focus than by their risk attitude. Indeed, entrepreneurs with a pronounced promotion focus allocated more hours to the enterprise when each additional hour yielded more risk, and the same individuals allocated fewer hours when each additional hour yielded less risk. Also, prevention-focused entrepreneurs allocated fewer hours to the enterprise when each additional hour yielded more risk, and the same individuals allocated more hours when it yielded less risk. For students, these relationships did not consistently hold true. Our study has implications for entrepreneurs and investors. For entrepreneurs, we emphasize that additional hours spent in an enterprise might increase the risk, thereby making more sweat equity — as often demanded by investors — not always beneficial.

2. Introduction

Folta et al. (2010) recently coined the term "hybrid entrepreneurship" — a phenomenon where entrepreneurs start their enterprises while simultaneously working for wages. In the United Kingdom, for instance, the number of individuals who divide their working time between self-employment and wage work is larger than the number of "pure" entrepreneurs (Burke et al., 2008). While the reasons for hybrid entrepreneurship are diverse, a major reason is that entrepreneurs want to test the "entrepreneurial waters" by learning about an enterprise's return potential or their fit to entrepreneurship (Folta et al., 2010). Others hope to generate wages that can be invested in the new enterprise (Lévesque and MacCrimmon, 1997).

The decision to commit one's time and money to a risky enterprise and/or a risk-free wage job involves trading off potential financial risks (losses) and returns (gains). Economists typically explain such decisions using utility theory (UT) which posits that risks and returns should be evaluated based on an individual's risk attitude. Eisenhauer (1995) states that "[b]ecause the outcome of the venture is uncertain, the entrepreneur's risk profile is an important determinant of the decision" (p. 72). Psychologists, on the other hand, propose alternative theories to explain such decisions and resulting behaviors, including regulatory focus theory (RFT) (Higgins 1997, 1998), which examines the ways in which individuals go about achieving their goals — either by striving for gains (promotion focus) or by avoiding losses (prevention focus). We investigate how individuals divide their working time between a wage job and a new enterprise by testing hypotheses based on both UT and RFT in an experiment that offered monetary incentives (tied to their decisions) to a sample of early-stage entrepreneurs and a group of undergraduate students.

A key determinant of the time allocation decision between a new enterprise and a wage job is the sense of certainty (i.e., security) associated with wages versus the risk surrounding the potential returns from the new business enterprise. To investigate such determinants, we first draw upon the established stream of literature on the role of entrepreneurs' risk attitudes in economic models (e.g., Douglas and Shepherd, 2000, 2002; Kihlstrom and Laffont, 1979). Specifically, we build a theoretical decision framework inspired by Becker (1965) on time allocation, and propose two hypotheses on how the individuals decide to best allocate their time between the two activities. This utility-maximizing framework considers the relationship between the enterprise's risk and return, as well as the relationship between the returns from both work activities (their wage job and their entrepreneurial enterprise). These hypotheses characterize a "best" number of hours to allocate to the enterprise, which we derive based on the wage rate, the individual's risk attitude, the magnitude (stake) of the risk, and the potential return from the enterprise.

Second, we draw upon the emerging literature on the influence of regulatory focus on entrepreneurial behaviors (Aziz and Foo, 2008; Brockner et al., 2004; Hmieleski and Baron, 2008; McMullen and Shepherd, 2002; McMullen and Zahra, 2006; Tumasjan and Braun, 2011; Wu et al., 2008) to challenge our utility-based hypotheses with our regulatory focus theory hypotheses. According to RFT, individuals use different motivational systems to align their actual selves with their ideal selves (Higgins, 1997, 1998). On the one hand, self-regulation with a promotion focus is characterized by the individual's motivation to strive for gains. Self-regulation with a prevention focus entails motivation to prevent losses.

We test our hypotheses with 378 time allocation decisions that a sample of 25 entrepreneurs and 29 undergraduate students made in a computer-based experiment. The comparison allows us to learn about entrepreneurs' behavior (and their motivations) relative to a group of students. In this incentive-compatible experiment, participants allocate their time in seven unique situations presented on a computer screen. Those seven situations were characterized by how each additional hour allocated to the enterprise affects (positively or negatively) the risk related to the enterprise's returns and by whether high or low stakes are involved.

Our contributions are fourfold. First, we contribute to the literature on entrepreneurs' labor supply. Whereas this literature shows that entrepreneurs work more hours than employees do (Ajayi-Obe and Parker, 2005; Lin et al., 2000), earn less on average (Hamilton, 2000), and have more volatile incomes (Carrington et al., 1996; Parker et al., 2005), we focus on entrepreneurs'

decisions to allocate their time between entrepreneurial pursuits and wage work (Lévesque and MacCrimmon, 1997; Lévesque and Schade, 2005). Especially relevant is the Parker et al. (2005) study that identifies income risk as the major determinant of entrepreneurial labor supply. Parker et al. (2005) argue that entrepreneurs self-insure against the high volatility of entrepreneurial income by working, on average, more hours than employees with a risk-free wage. We further complement this study by arguing that working more hours in one's enterprise can only be an effective insurance for a certain income target if the risk surrounding that income does not increase with additional time in the enterprise. Second, we complement empirical studies on the influence of regulatory focus on entrepreneurs' decision-making behavior by testing this theory in a time allocation context. Prior studies in entrepreneurship that use a regulatory focus framework have various foci: conceptual (Brockner et al., 2004; McMullen and Shepherd, 2002), to predict venture performance (Hmieleski and Baron, 2008), to investigate how business leaders' regulatory focus influences employee creativity (Wu et al., 2008), and corporate entrepreneurship (McMullen and Zahra, 2006). Our study complements these investigations. Third, we also contribute to the decision-making literature with a computer-based experiment in which entrepreneurs' and students' decisions regarding time allocation are tied to actual monetary incentives. In doing so, we learn more about entrepreneurs' and students' distinctive decision-making behaviors as in the tradition of experimental economics (we are only aware of two published studies that are in the same spirit: Elston and Audretsch, 2010; as well as Sandri et al., 2010). Finally, we simultaneously investigate the predictive value of a more 'rational' and a more 'emotional' component of decisions in such an economic experiment under conditions of risk; an approach that is quite rare (an example for a similar approach is Schade et al., 2011).

This paper is organized as follows. We explain our utility-maximizing framework and the decisional context. We then develop our four hypotheses and explain the experiment we use to test them. Finally, we test our hypotheses, discuss our results, and conclude with implications and limitations.

3. Modeling the decisional context

Let us consider an individual who earns a fixed (net) return (income) for each hour spent at a wage job. This individual has also invested time and money in his/her newly formed enterprise and is therefore committed to spending a minimum amount of time, ε, every day at this enterprise. This individual has a maximum of work hours per day, τ, that he/she can devote to his/her wage job and to the new enterprise.[1] The key decision he/she must make is how many hours, h, to allocate to the new enterprise; based on this, the remaining hours, $\tau - h$, can be devoted to the wage job. Time allocation, h, is restricted to be above the minimal threshold, ε, in order for the enterprise to develop, and below the maximum number of work hours, τ (i.e., the individual's total daily work-hour tolerance). Because rational individuals generally prefer more income to less, they will select a time allocation (h) that maximizes their utility — an increasing function of the total expected (net) return from both work activities.

The new enterprise has a set of characteristics represented by a combination of *expected return* and *variance* (*risk*) *on the return*. An enterprise with a large expected return and a large variance is labeled "high stake" or *high s*; if both the expected return and variance are low, it is labeled "low stake" or *low s* ($s>0$). For instance, high-tech startups are considered high stake because entrepreneurs anticipate enormous gains, but also significant losses due to the investments required in expensive equipment and unpredictable market contingencies that can result in low demand. Low-stake enterprises (e.g., a home-based consulting business) are associated with less ambitious (and less profit potential) startups.

In our modeling scenario, marginal return V from an increase in stake s is affected by the individual's allocated hours to the new enterprise and by some risky outcome with a probability distribution that the individual cannot control. For instance, the return for an ice cream producer depends on the number of hours the producer works in the business and on weather conditions (a risk) such that during a long, hot summer, the demand for ice cream will be high, but a rainy, cold summer will substantially decrease demand for the creamy cold indulgence, lowering returns. The random variable X represents this risky outcome and, as a result, marginal return $V(h,x)$ is a function of both time h allocated to the enterprise and a realization, x, of the risky outcome X. These are the only input variables in our experiment; any other inputs are assumed to be fixed, or their quantities are established beforehand.

The individual selects a time allocation amount by facing a wealth (i.e., total payoffs from both work activities) denoted $W(h) = \omega[\tau - h] + sV(h,x)$. The first term on the right-hand side represents the (risk-free) return associated with his/her wage job, whereas the second term is the enterprise's risky return.[2] Since the latter is uncertain, the total wealth is also uncertain at the time of the time allocation decision. We select a linear functional form for the marginal return from the increase in stake s of the enterprise with $V(h,x) = f(h) + g(h)x$, $E[X] = 0$ and $Var[X] = \sigma^2$. The stake s thus linearly affects both the expected return $sf(h)$ and the standard deviation of that return $sg(h)\sigma$.

[1] A future specification of this model could consider an individual's total time allocation where the individual simultaneously decides on his/her daily work-hour tolerance. In our study, we assume a stepwise optimization where the first step — the allocation of total daily work hours and free time — has already been made.

[2] We assume no cost of effort since the number of total work hours is fixed. This assumption is equivalent to assuming the same cost of effort regardless of which job (enterprise or wage) the hour is allocated to. This is the case because it would only add a constant to the objective function (i.e., that cost multiplied by the work tolerance τ) which does not affect the optimal solution. Even though the cost of effort might be higher in the wage job than in an individual's entrepreneurial enterprise, we assume equal cost of effort for two reasons. First, Douglas and Shepherd (2002) found no disutility of work effort in a combined sample of self-employed and employed individuals (alumni from an Australian university) and in the separate samples. Second, Blanchflower and Oswald's (2011) review of happiness economics, with combined samples of entrepreneurs and salaried workers, contradicts the standard assumption of labor disutility (or effort aversion) (Lazear, 2007). Instead, it is assumed that a lack of work results in losses in individual utility, while work increases utility. Thus, given these findings on self-employed and wage workers, along with our inability to measure cost of effort in our laboratory experiment, it seems reasonable to assume that self-employed and wage workers expend the same cost-of-work effort.

Expected return $sf(h)$ increases as the number of hours allocated to the enterprise is increased; that is, $df/dh>0$, but the return randomly varies by $sg(h)x$. We consider two cases for $g(h)$. The first is when $dg/dh>0$ and each additional hour allocated to the enterprise yields additional risk. Allocating more time to the enterprise then prompts a tradeoff between increased returns and risk (for any random outcome x). This tradeoff occurs because both the certain component $sf(h)$ (a utility) and the uncertain component $sg(h)x$ (a disutility) increase with h. To illustrate this, consider the case of an entrepreneur who starts a security guard business. The longer the guard works (especially during the night), the more tired he/she is and the higher the probability that he/she will make mistakes at the new security-guard enterprise. Due to this higher probability of making errors, the risk surrounding the return increases as the guard works more hours in the new enterprise. Alternatively, if the guard works on a small and competitive market, he/she has to accept more risky customers (with high up- and downside potential) in order to work more hours in his/her enterprise.

For the second case, $dg/dh<0$. In other words, the tradeoff between the enterprise's risk and return diminishes when additional hours spent on the enterprise correspond to a decrease in the random amount (i.e., the variance) at which the return from the enterprise varies (for any given risky outcome x). Thus, allocating additional hours to the enterprise results in increased returns and decreased risk. For instance, consider a biotechnology firm ready to launch a new product; since demand for the new product is difficult to predict, the potential for high returns exists, along with a potential for great losses. The entrepreneur may reduce the risk surrounding the return by conducting extensive market research, investing time in networking with potential stakeholders, and obtaining commitments from potential customers. However, even when anticipating high returns and low risk, the entrepreneur's time allocation decision is far from obvious because this decision depends on how the return from the wage job compares to the return, or more specifically, to the utility (i.e., a risk-adjusted return) from the new enterprise. Although every additional hour spent in the enterprise yields less risk, working in the enterprise is still riskier than working at a wage job, which can be less attractive to a risk-averse individual.

For these two cases, we thus tease out the risk-return tradeoff for the enterprise, and the tradeoff between the risky return from the enterprise to the risk-free return from the wage job. Moreover, we assume that every individual obeys an exponential utility function $U(W)=-e^{-\alpha W}$, where α reflects that individual's risk attitude.[3] We assume that entrepreneurs and students are either risk-averse (i.e., $\alpha>0$) or risk-prone (i.e., $\alpha<0$) (e.g., Cramer et al., 2002). This utility function, along with a normally distributed outcome X (and thus W), leads to a key property of our model: for any alternative W, the individual is indifferent about maximizing expected utility and selecting the maximum of $E(W)-½\alpha Var(W)$, where $E(\cdot)$ is the expectation operator and $Var(\cdot)$ the variance operator (e.g., Freund, 1956). To maximize expected utility, the individual thus selects a time allocation h^* that maximizes

$$E(W)-\frac{\alpha}{2}Var(W)=\omega(\tau-h)+s\cdot f(h)-\frac{\alpha}{2}[s\cdot g(h)\cdot\sigma]^2. \tag{1}$$

Appendix A offers the first- and second-order conditions for optimality. For the purpose of our experiment, we select linear functional forms, $f(h)=f_1+f_2h$ and $g(h)=g_1+g_2h$ with f_1, f_2 and g_1 positive. These functional forms and the first- and second-order conditions enable us to calculate the optimal number of hours that should be allocated to the new enterprise as

$$h^*=\frac{sf_2-\omega}{\alpha s^2\sigma^2 g_2^2}-\frac{g_1}{g_2}\quad \epsilon(\varepsilon,\tau). \tag{2}$$

Eq. (2) enables us to derive hypotheses on how individuals decide to best divide their work hours between their wage job and new enterprise.

4. Hypotheses

4.1. Utility-theory-based hypotheses

We restrict our attention to risk-averse individuals because the number of risk-prone individuals in our experiment is negligible (two entrepreneurs and four students). These utility-theory-based hypotheses assume full rationality and provide a benchmark for judging the relative efficiency of individuals' *de facto* time allocations. These hypotheses are based on the sensitivity of the optimal time allocation in the new enterprise, h^*, with respect to risk attitude, and are thus obtained directly from taking the first-order derivative of the right-hand side of Eq. (2) with respect to α. Formally,

$$\frac{\partial h^*}{\partial\alpha}=-\frac{sf_2-\omega}{\alpha^2 s^2\sigma^2 g_2^2}. \tag{3}$$

[3] The underlying assumption is that these individuals possess a constant absolute risk aversion (CARA). We thus follow the dominant approach in the finance literature, i.e., the CAPM model (e.g., Sharpe, 1991) to analyze choice behavior between a risky (stock) and a riskless option (riskless asset). The time allocation decision in this study resembles the models used in finance as our participants also decide between a risky (new enterprise) and a riskless option (wage job). Hartog and Vijverberg (2007) followed a similar approach when analyzing the risk properties of curriculum choices in school. We acknowledge the utility of other decision models such as the constant relative risk aversion (CRRA) utility model or prospect theory, but leave their application to entrepreneurial time allocation to future studies.

The right-hand side of Eq. (3) is positive when $s<\omega/f_2$, but negative otherwise. In other words, whenever h^* is an interior solution (i.e., $\varepsilon<h^*<\tau$), an increase in α increases h^* if the enterprise stake s is below a threshold (ω/f_2), but decreases h^* if the stake is above that threshold. This discussion leads to our two utility-theory-based hypotheses:

H1. If the enterprise's stake is *below a threshold*, then individuals with higher risk aversion will allocate *more hours* to the enterprise than individuals with lower risk aversion.

H2. If the enterprise's stake *exceeds the threshold*, then individuals with higher risk aversion will allocate *fewer hours* to the enterprise than individuals with lower risk aversion.

We next challenge these two utility-theory-based hypotheses with two hypotheses drawn from RFT, suggesting that an individual's regulatory focus rather than risk attitude is a significant determinant of time allocation decisions.

4.2. Regulatory-focus-theory-based hypotheses

RFT provides a well-developed framework to better understand the different motives, beliefs, and behaviors of entrepreneurs (Aziz and Foo, 2008; Tumasjan and Braun, 2011; Brockner et al., 2004; Hmieleski and Baron, 2008; McMullen and Shepherd, 2002; McMullen and Zahra, 2006). This theory, developed by Higgins (1997, 1998), explains that the different ways in which individuals make decisions and behave are manifested in two distinct self-regulatory systems — the promotion focus and the prevention focus (Brockner et al., 2004). Both self-regulatory systems differ with respect to three dimensions: (1) the underlying motives that people try to satisfy, (2) the nature of the goals they try to attain, and (3) the types of outcomes that people desire. Promotion-focused individuals' desire for growth, career or skill advancement and accomplishment primarily motivates them to align their behavior with their so-called *ideal selves* (i.e., with the person they *want* to be), and they therefore attend to potential gains. On the other hand, those with a prevention focus are motivated primarily by security and safety needs to align their behavior with what Higgins calls their *ought selves* — their perception of what others (i.e., family, friends, society) want them to be. Thus, prevention-focused individuals concentrate on what they ought to be and do, thereby increasing the significance of potential losses.

Bryant and Dunford (2008) suggest that risky behavior in individuals arises from promotion-focused individuals' eagerness to achieve and advance, while safe behavior arises naturally from prevention-focused individuals' vigilance for danger and avoidance of risk. The relationship between regulatory focus and risk taking has been empirically supported in various studies including a signal-detection task (Crowe and Higgins, 1997), automobile speeding behavior (Hamstra et al., 2011), and in new product investment decisions (Mullins et al., 1999). Given that time allocation decisions involve tradeoffs between risk and returns in the entrepreneurial context, RFT also appears relevant in this context. Specifically, based on this theory we expect promotion-focused participants to take more risks in their time allocation decisions than prevention-focused individuals. In other words, if each additional hour allocated to the enterprise yields additional risk, promotion-focused individuals allocate more hours to the enterprise than individuals with a weaker promotion focus. In contrast, prevention-focused individuals allocate fewer hours to the enterprise than individuals with a weaker prevention focus if each additional hour allocated to the enterprise yields additional risk. Similarly, if each additional hour allocated to the enterprise yields less risk, promotion-focused individuals allocate fewer hours to the enterprise than individuals with a weaker promotion focus. In contrast, prevention-focused individuals allocate more hours to the enterprise than individuals with a weaker prevention focus if each additional hour allocated to the enterprise yields less risk.

Our seven experimental situations differ from each other with respect to two dimensions: (1) the size of the enterprise's stake and (2) whether any additional hour in the enterprise yields more or less risk. In contrast to our utility-theory-based hypotheses, our regulatory-focus-based hypotheses suggest that the threshold no longer matters, but what does matter is whether an additional hour spent in the enterprise yields more or less risk. Indeed, since it requires less cognitive effort to identify whether any additional hour in the enterprise yields more or less risk than to identify whether the stake is above or below a threshold, individuals are more likely to focus on whether the risk increases or decreases. Also, using mental shortcuts and decision heuristics, such as ignoring some decision factors, is a common practice for reducing cognitive effort (Kahneman et al., 1982; Tversky et al., 1988). This discussion leads to our two regulatory-focus-theory-based hypotheses:

H3. If each additional hour allocated to the enterprise yields *additional risk*, then

- **(a) individuals with a stronger promotion focus will allocate *more hours* to the enterprise than individuals with a weaker promotion focus, but**
- **(b) individuals with a stronger prevention focus will allocate *fewer hours* to the enterprise than individuals with a weaker prevention focus.**

H4. If each additional hour allocated to the enterprise yields *less risk*, then

- **(a) individuals with a stronger promotion focus will allocate *fewer hours* to the enterprise than individuals with a weaker promotion focus, and**
- **(b) individuals with a stronger prevention focus will allocate *more hours* to the enterprise than individuals with a weaker prevention focus.**

5. Experimental design

5.1. Calibration of experimental situations

We assigned different numerical values to the model parameters to test the hypotheses. We set the minimum number of hours, ε, to keep the enterprise alive at 1 h (per day). The maximum number of working hours, τ, is 10 (per day). The wage rate, ω, is 30 experimental units (or talers). The standard deviation of the risky return, σ, from the enterprise is 35, the expected return function uses f_1, which is set at 0.05, and f_2, which is set at 0.4. Besides these parameters, which are constant in all experimental situations, we calibrated the numerical values for the enterprise risk, g_1 and g_2, as well as the stakes s. This calibration ensures non-negativity of the optimal time allocation in Eq. (2) and an optimal number of hours allocated to the enterprise within the interval [1,10]. This calibration exercise is applied to the seven experimental situations, where we assume common values for the risk attitude, α, from other experiments (e.g., Lévesque and Schade, 2005). Table 1 provides an overview of all experimental parameters, while Table 2 summarizes the two categories of experimental situations (ES_1 to ES_4 where the stake is above the threshold and risk is increasing and ES_5 to ES_7 where the stake is below the threshold and risk is decreasing).

5.2. Experimental design and measurements

Each participant thus was given seven experimental situations (ES_1 to ES_7) requiring their time allocation decisions. For each situation, we provided the participants with a table of the return distributions from the enterprise and for the wage job, based on the number of hours the participant allocated to the enterprise. Appendix B shows how this information was presented to the participants, with probabilities for an enterprise's normally distributed return to fall within 12 continuous intervals. For example, individuals learned from the table how likely it is that they earn between 200 and 400 talers if they allocate 3 h to the new enterprise. In each experimental situation, all participants selected the number of hours to allocate to the enterprise. The ordering of these situations was randomly determined for each participant. To ensure that the participants understood the relationship between expected returns, risk, and their decision, they were each asked seven questions for which they could find the answer in the table provided to them, as presented in Appendix B. Only if they provided the correct answer to each question, participants were allowed to make their time allocation decision. The experiment was programmed with *z-Tree* software (Fischbacher, 2007).

We employed the risk attitude measure, α, a stable personality trait that is assumed to remain constant across different situations (e.g., Weber and Milliman, 1997) and therefore we only measured it once, at the end of the experiment, with a lottery comparison (McCord and de Neufville, 1986). The advantage of this comparison is that it has no certainty effect (Allais, 1953) in which individuals overweigh certain gains relative to probable gains (Kahneman and Tversky, 1979). Instead, individuals were asked to state a probability p that would make them indifferent to the two lotteries, which, as described in Appendix A, enabled us to calculate α.

We measured the participants' level of promotion and prevention focus after each allocation decision. In line with Keller and Bless (2006), one's regulatory focus has a stable and a situational component. Whereas one's chronic regulatory focus is a stable personality trait, situational characteristics, such as the possibility of gains and losses, may induce different regulatory foci. Given that gains and losses differ across our experimental situations, we expected the regulatory foci to change and thus measured each participant's promotion and prevention focus in each situation. Since a promotion focus is associated with striving for gains, and a prevention focus reflects loss avoidance, we measured these focus types with two items after each participant's decision: (i) I generally strive for large chances of high gains, (ii) I generally want to avoid losses. We use a five-point Likert scale ranging from (1) "I fully agree" to (5) "I do not agree at all" with the above statements (see Appendix B).

5.3. Samples

We selected student subjects (undergraduates) who dominate many areas of behavioral and experimental researches (e.g., Dipboye and Flanagan, 1979; Gordon et al., 1986; Morley and Stephenson, 1977), because they lack real-world experience that may interfere with the experimental task and hence threaten internal validity (Abbink and Rockenback, 2006; Burns, 1985; Greenberg, 1987). In addition, we chose student subjects because we wanted to avoid potential biases of occupational choice

Table 1
Overview of all parameters chosen in the experimental situations.

Parameter	Description	Value(s)
ε	Minimum number of hours in the enterprise	1 h
τ	Maximum number of hours in the enterprise	10 h
s	Stake	90 (ES_1), 109 (ES_2), 150 (ES_3), 240 (ES_4), 54.7 (ES_5), 59.3 (ES_6), 73.5 (ES_7)
σ	Standard deviation of the risky effect	35
ω	Wage rate	30
f_1	Baseline expected return from enterprise	0.05
f_2	Expected return from enterprise per hour	0.4
g_1	Baseline effect on enterprise risk	0.02 (if $g_2>0$); 0.31 (if $g_2<0$)
g_2	Enterprise risk per hour	0.02; −0.03
α	Risk attitude	Ranging from 0.0000172 to 0.0018122

Table 2
Experimental situations.

	Stake below threshold $s<\omega/f_2$	Stake above threshold $s>\omega/f_2$
Increasing risk $g_2>0$	–	ES_1, ES_2, ES_3, ES_4
Decreasing risk $g_2<0$	ES_5, ES_6, ES_7	–

and since students have not yet selected entrepreneurship or wage employment, they are not likely to have such biases (Urbig et al., 2012). However, the use of students in behavioral research has been criticized due to their low representativeness of the business population (e.g., Alpert, 1967; Brunswik, 1955; Campbell and Stanley, 1963; Copeland et al., 1973; Fleming, 1969; Khera and Benson, 1970). To address this criticism and keep the advantage of student subjects, we follow the lead of some researchers and compare the decision-making behavior of entrepreneurs and students in the same experiment (Burmeister-Lamp and Schade, 2007; Gordon et al., 1986; Greenberg, 1987; Hughes and Gibson, 1991; Peterson, 2001; Sandri et al., 2010).

The average age of our sample of 29 students — undergraduates majoring in business and economics — was 21. They participated in the experiment (in 3 groups of 12 to 14) in the laboratory of the School of Business and Economics, Humboldt-Universität zu Berlin, Germany. To recruit them we used the online database ORSEE (online recruitment system for economic experiments) (Greiner, 2004), where students are regularly recruited. Interested subjects register online and provide basic demographic information (e.g., age, gender). We invited undergraduate business and economics students and offered them three different time slots to participate. Students selected one of the time slots, received online confirmation, and arrived at the university laboratory in person at the specified time.

The 25 entrepreneurs in our sample had started their businesses on their own within the previous five years, which is consistent with the early stage of entrepreneurial activity we investigate herein. Their average age was 34 years old. We were fortunate to have an entrepreneur from the media industry, well-connected within the young entrepreneur network in Berlin, to recruit entrepreneurs from his business network as part of his master studies. This generated a group of active and aspiring entrepreneurs in the media and business service industry. We approached the entrepreneurs via email or by calling, asking for their participation in our experiment. The experimenter met the entrepreneurs individually outside their offices (e.g., in close-by cafés), explained the experiment and answered their questions.

We adapted how we collected our data (how and where we ran the experiments) to the participants' needs in order to accommodate differences in opportunity costs between the student and entrepreneurial sample groups. Asking the entrepreneurs to come to a university's laboratory would have resulted in a lower number of participants or in the attraction of entrepreneurs with low opportunity cost. We thus employed different data collection techniques for each sample. Specifically, we brought a mobile laboratory to a convenient place for the entrepreneurs (e.g., in a close-by café). Such adjustments in data collection are common practice; for example, Busenitz and Barney (1997) sent a questionnaire to entrepreneurs via surface mail, but to managers via their respective human resource departments.

The higher opportunity costs of the entrepreneurs were also accounted for by upgrading their monetary incentives (an approach also used in Haigh and List, 2005; Sandri et al., 2010), where 35 units of the experimental currency (i.e., taler) corresponded to one Euro.[4] For students, the exchange rate was 70 talers for one Euro. At the beginning of the experiment, entrepreneurs were given 24 Euros and students 12, and we instructed them that they could be used to offset any losses resulting from their decisions. At the end of the experiment, one out of the seven experimental situations was randomly selected and, depending on the participant's decision in that respective situation, a computerized random device determined the actual payoff (a gain or a loss) from the corresponding payoff distribution, which was added to (or subtracted from) their initial endowment. Entrepreneurs earned on average 33 Euros (ranging from 7.24 to 77.67 Euros), while students earned on average 19 Euros (ranging from 0 to 33.30).

6. Results

Table 3 offers descriptive statistics for our measures of risk attitude, promotion and prevention focus and age for the entrepreneur and student samples. Our sample contained two risk-prone entrepreneurs and four risk-prone students, plus one risk-neutral entrepreneur and five risk-neutral students. The tests were restricted to the 54 risk-averse participants (25 entrepreneurs and 29 students) since the small number of non-risk-averse observations did not allow statistical testing. This distribution of risk attitudes is similar to other research findings, even though the measures for risk attitude differ: Caliendo et al. (2009) report that 79% of their self-employed sample have a low or medium general willingness to take risks (which we interpret as risk aversion), while Elston and Audretsch (2011) found that the majority of entrepreneurs and students in their study were risk averse.

While entrepreneurs were significantly older than students in our study, they did not differ in their risk attitude or their regulatory focus when averaged across all seven experimental situations. However, the promotion and prevention focus differed

[4] Entrepreneurs' monetary incentives had to be greater than students' incentives to render the gain and loss consequences of time allocation decisions as salient and meaningful to entrepreneurs as to students. Giving the same absolute monetary incentives to both samples would misleadingly treat them equally. Paying low monetary incentives to entrepreneurs could be ineffective because they could reduce their efforts in fulfilling the experimental task and, importantly, they could perceive it as being insulting (Gneezy and Rustichini, 2000). By providing entrepreneurs higher incentives than students to counteract their higher opportunity cost, we follow Sandri et al.'s (2010) approach, which compares the behavior of entrepreneurs and students in an experimental investment task.

Table 3
Descriptive statistics.[a]

	Entrepreneurs, n = 25			Students, n = 29		
	Mean	Range	Std dev	Mean	Range	Std dev
α	0.000520	0.000017; 0.001808	0.000446	0.00052	0.000017; 0.001812	0.000524
Age	34.92	24;55	6.467	21.72	19;32	3.369
$Prom_{ES1}$	2.28	1;5	1.208	2.48	1;5	1.271
$Prev_{ES1}$	2.40	1;5	1.041	2.31	1;5	1.228
$Prom_{ES2}$	2.24	1;5	1.200	2.38	1;5	0.942
$Prev_{ES2}$	2.40	1;5	1.190	2.28	1;4	1.162
$Prom_{ES3}$	2.08	1;5	1.187	2.38	1;5	1.115
$Prev_{ES3}$	2.56	1;5	1.325	2.48	1;5	1.214
$Prom_{ES4}$	2.28	1;5	1.275	2.45	1;5	1.121
$Prev_{ES4}$	2.68	1;5	1.376	2.03	1;5	1.210
$Prom_{ES5}$	2.40	1;5	1.118	2.72	1;5	1.279
$Prev_{ES5}$	2.24	1;5	1.332	2.14	1;4	1.093
$Prom_{ES6}$	2.60	1;5	1.118	2.72	1;5	1.099
$Prev_{ES6}$	1.76	1;5	1.091	1.79	1;4	0.978
$Prom_{ES7}$	2.56	1;5	1.356	2.76	1;5	0.951
$Prev_{ES7}$	1.92	1;4	1.187	1.72	1;4	0.797

[a] $Prom_{ES1}$ measures the promotion focus in experimental situation 1 on a 5 point Likert scale (I generally strive for large chances for high gains) ranging from 1 — I strongly agree, …, 5 — I do not agree. $Prev_{ES1}$ measures the prevention focus in experimental situation 1 on a 5 point Likert scale (I generally want to avoid losses) ranging from 1 — I strongly agree, …, 5 — I do not agree.

across experimental situations, thereby supporting the context-dependent component of RFT (Keller and Bless, 2006). Whenever the enterprise's stake was above a threshold and any additional hour in the enterprise yielded more risk (ES_1, ES_2, ES_3, ES_4), individuals were on average more promotion focused (mean = 2.32) than in ES_5, ES_6 and ES_7, where the stake was below the threshold and any additional hour in the enterprise yielded less risk (mean = 2.64). Individuals were also more prevention focused in ES_5, ES_6 and ES_7 (mean = 1.93) as compared to ES_1, ES_2, ES_3 and ES_4 (mean = 2.38). Table 4 shows the correlations between our key variables. Whereas the promotion and prevention focus are negatively correlated (–0.284, $p<0.05$), risk attitude is independent of the two regulatory-focus measures.

We next test our hypotheses by examining whether individuals are driven solely by their risk attitude, regulatory focus, or both. We use Tobit regressions since the dependent variable — number of hours allocated to the enterprise — is restricted to the interval [1, 10].[5] We also include individual random effects because our participants gave multiple responses that can be interdependent.

6.1. Testing utility-theory-based hypotheses

We use the regression equation $h^0 = \beta_0 + \beta_1 \frac{1}{\alpha} + \beta_2 ES^d + \beta_3 \frac{1}{\alpha}\, x\, ES^d + \beta_4 Age + \beta_5 Gender + \varepsilon$, where h^0 is the observed number of hours allocated to the enterprise, ES^d a dummy variable equal to 0 if $g_2<0$ and $s<\omega/f_2$ (i.e., any additional hour in the enterprise yields less risk and the stake is below a threshold), and 1 if $g_2>0$ and $s>\omega/f_2$ (i.e., any additional hour in the enterprise yields more risk and the stake is above the threshold). We consider the inverse of an individual's risk attitude $1/\alpha$ because the optimal time allocation h^* is linear in $1/\alpha$ (as per Eq. (2)). According to H1 and H2, we expect the influence of risk attitude on h^0 to depend on the stake or magnitude of risk, leading to a significant regression coefficient β_3. Panel A of Table 5 shows the results in the combined sample and separately for entrepreneurs and students. We found a significant β_3 in the combined sample and for the student group, indicating that the influence of students' risk attitude on the number of hours they assigned to the enterprise depended on whether the stake was below or above a threshold.

Panels B and C provide more insights on the effect of β_3 and enable us to test H1 and H2 separately. Specifically, we controlled for the enterprise's stake s by running separate regressions for experimental situations where the stake is below ($ES^d = 0$) or above the threshold ($ES^d = 1$). We expect the influence of $1/\alpha$ on h^0 to be negative if $s<\omega/f_2$ and positive if $s>\omega/f_2$. Panel B shows that risk attitude had no significant influence on h^0 in the combined sample and among the student group, and a marginally significant positive influence for the entrepreneurs. Entrepreneurs' behavior is thus the opposite of the behavior suggested by H1, since they assigned fewer hours, on average, to the enterprise the more risk averse they were. Consequently, H1 is not supported.

In contrast, we found support for H2 in the combined sample and among the students, as shown in Panel C of Table 5. That is, students with a higher risk aversion allocated, on average, fewer hours to the enterprise than students with a lower risk aversion whenever the enterprise's stake exceeded the threshold. However, H2 is not supported in the sample of entrepreneurs, since the influence of risk attitude on h^0 is insignificant.

[5] To check robustness, we ran OLS regressions and confirm the signs of all regression coefficients. In comparison with our Tobit analyses, the significance levels of two coefficients change: (1) Students are significantly influenced by their risk attitude when facing low-risk situations (supporting H1 in Table 5, Panel B) and (2) the three-way interaction *Prevention focus* × ES^d × *Entrepreneur* is not significant in Model 2 in Table 7 ($p = 0.17$). However, because the three-way interaction remains significant in Model 3 of Table 7, our results do not change qualitatively. All OLS analyses are available upon request from the first author.

Table 4
Correlations.[a]

	Mean	Std dev	(1)	(2)	(3)	(4)
(1) *Promotion focus*	2.46	0.81	1			
(2) *Prevention focus*	2.19	0.75	−.284**	1		
(3) *Risk attitude*	0.000515	0.000485	−.171	−.097	1	
(4) *Age*	34.9	6.47	.033	0.212	.316	1

[a] Prevention and promotion focus are averaged across all seven experimental situations; n = 54; ** p<0.05.

6.2. Testing the regulatory-focus-based hypotheses

We used the regression equation

$$h^0 = \beta_0 + \beta_1 Prom + \beta_2 Prev + \beta_3\ ES^d + \beta_4 Prom\ x\ ES^d + \beta_5 Prev\ x\ ES^d + \beta_6 Age + \beta_7 Gender + \varepsilon,$$

where h^0 is, again, the observed number of hours allocated to the enterprise, ES^d a dummy variable equal to 0 if $g_2<0$ and $s<\omega/f_2$, and 1 otherwise. Since H3 and H4 suggest that the influence of the promotion and prevention focus on h^0 is moderated by ES^d, we examine the significance of the regression coefficients β_4 and β_5. Panel A of Table 6 shows significance in the combined and the separate samples. These findings suggest that the influence of individuals' regulatory focus on the number of hours allocated to the enterprise depends on whether any additional hour allocated to the enterprise yields more or less risk.

Data in panels B and C of Table 6 enable us to test H3 and H4, respectively. We run separate regressions for the experimental situations ES_1, ES_2, ES_3 and ES_4, where $g_2>0$ and $s>\omega/f_2$ (i.e., each additional hour in the enterprise yields additional risk and the stake is above the threshold), and for ES_5, ES_6 and ES_7, where $g_2<0$ and $s<\omega/f_2$ (i.e., each additional hour in the enterprise yields less risk and the stake is below the threshold). We also control for the enterprise's stake s. If $ES^d=1$ (Panel B), H3 suggests that an individual's promotion focus positively influences h^0, but that a prevention focus negatively influences it. If $ES^d=0$ (Panel C), H4 suggests instead a negative influence of the promotion focus on h^0 and a positive influence of the prevention focus.

Panel B of Table 6 provides support for H3a for the combined sample and for entrepreneurs. Entrepreneurs with a stronger promotion focus allocated, on average, more hours to the enterprise when any additional hour in the enterprise yielded additional

Table 5
Testing H1 and H2.[a]

	Combined sample	Entrepreneurs	Students
Panel A			
$1/\alpha$	.00000027 (.0000225)	.0000822 (.0000447)*	−.0000401 (.0000241)*
ES^d	−1.07 (.42)**	.55 (.67)	−2.35 (.512)***
$1/\alpha \times ES^d$	.00006 (.00003)**	−.0000687 (.0000524)	.0001323 (.0000315)***
Constant	6.28 (.88)***	7.96 (2.21)***	7.58 (1.70)***
N	378	175	203
LL	−868.69	−396.08	−459.84
Prob > Chi^2	.02	.40	.00
BIC	1784.87	833.47	962.19
AIC	1753.39	808.16	935.69
Panel B: $ES^d=0$ ($g_2<0$; $s<\omega/f_2$)			
$1/\alpha$	−.00000108 (.0000237)	.0000714 (.0000404)*	−.0000383 (.0000263)
s	.098 (.03)***	.11 (.05)**	.08 (.04)*
Constant	.42 (2.35)	−.57 (4.08)	−2.44 (3.72)
N	162	75	87
LL	−366.58	−168.69	−193.38
Prob > Chi^2	.05	.06	.05
BIC	768.78	367.62	418.02
AIC	747.16	351.40	400.71
Support H1	No	No (wrong sign)	No
Panel C: $ES^d=1$ ($g_2>0$; $s>\omega/f_2$)			
$1/\alpha$	.00000622 (.0000252)**	.0000175 (.0000457)	.0000918 (.0000249)***
s	−.0002236 (.0037)	−.00379 (.0065)	.0025466 (.0044)
Constant	5.04 (1.38)***	10.13 (3.41)***	8.38 (2.27)***
N	216	100	116
LL	−489.15	−221.08	−258.19
Prob > Chi^2	.08	.55	.00
BIC	1015.93	474.40	549.66
AIC	992.31	456.16	530.39
Support H2	Yes	No	Yes

[a] Tobit regressions (two-sided significance levels: *** p<0.01, ** p<0.05, * p<0.10). Standard errors are reported in parentheses. The dependent variable is h^0. ES^d is a dummy variable for the experimental situation equals to 0 if $s<\omega/f_2$ and $g_2<0$ and 1 if $s>\omega/f_2$ and $g_2>0$. Age and gender are controlled.

Table 6
Testing H3 and H4.[a]

	Combined sample	Entrepreneurs	Students
Panel A			
Promotion focus	1.03 (.23)***	.73 (.32)**	1.36 (.31)***
Prevention focus	−.56 (.24)**	−.85 (.30)***	−.12 (.36)
ES^d	.99 (1.20)	.79 (1.61)	.50 (1.68)
Promotion focus x ES^d	−2.13 (.30)***	−2.53 (.41)***	−1.65 (.42)***
Prevention focus x ES^d	1.65 (.31)***	2.28 (.41)***	1.18 (.44)***
Constant	4.76 (1.16)***	8.34 (1.92)***	2.83 (2.04)
N	378	175	203
LL	−811.07	−347.06	−449.09
Prob > Chi^2	.00	.00	.00
BIC	1681.48	745.76	951.33
AIC	1642.13	714.11	918.20
Panel B: $ES^d = 1$ ($g_2 > 0$; $s > \omega/f_2$)			
Promotion focus	−1.07 (.21)***	−1.74 (.25)***	−.27 (.30)
Prevention focus	1.07 (.20)***	1.44 (.26)***	.90 (.29)***
s	.01 (.01)	−.01 (.01)	.01 (.01)
Constant	5.67 (1.32)***	10.17 (1.83)***	6.43 (2.70)**
N	216	100	116
LL	−453.47	−179.22	−256.37
Prob > Chi^2	.00	.00	.00
BIC	922.95	395.29	550.78
AIC	949.95	374.45	528.75
Support H3a	Yes	Yes	No
Support H3b	Yes	Yes	Yes
Panel C: $ES^d = 0$ ($g_2 < 0$; $s < \omega/f_2$)			
Promotion focus	1.03 (.24)***	.75 (.38)**	1.48 (.33)***
Prevention focus	−.50 (.25)**	−.85 (.33)**	.22 (.39)
s	.08 (.03)***	.10 (.04)**	.09 (.04)**
Constant	−.77 (2.41)	1.31 (3.86)	−7.97 (3.91)**
N	162	75	87
LL	−351.64	−162.18	−184.68
Prob > Chi2	.00	.00	.00
BIC	743.98	358.91	405.08
AIC	719.29	340.37	385.35
Support H4a	Yes	Yes	Yes
Support H4b	Yes	Yes	No

[a] Tobit regressions (two-sided significance levels: *** p<0.01, ** p<0.05, * p<0.10). Standard errors are reported in parentheses. The dependent variable is h^0. Age and gender are controlled but not significant. *Promotion focus* is a 5 point Likert scale (I generally strive for large chances for high gains; 1 — I strongly agree, …, 5 — I do not agree). *Prevention focus* is a 5 point Likert scale (I generally want to avoid losses; 1 — I strongly agree, …, 5 — I do not agree). ES^d is a dummy variable for the experimental situation equals to 0 if $s < \omega/f_2$ and $g_2 < 0$ and 1 if $s > \omega/f_2$ and $g_2 > 0$.

risk. In the student sample, we found no support for H3a because the students' promotion focus had no significant influence on h^0. However, as suggested by H3b, entrepreneurs and students with a strong prevention focus allocated, on average, fewer hours to the enterprise when each additional hour yielded additional risk. Panel C provides support for H4a in the combined and separate samples. In other words, participants with a stronger promotion focus allocated, on average, fewer hours to the enterprise than individuals with a weaker promotion focus when each additional hour yielded less risk (i.e., $g_2 < 0$). In contrast, H4b is supported for the combined sample and for entrepreneurs, but not for students. While entrepreneurs with a stronger prevention focus allocated, on average, more hours to the enterprise than entrepreneurs with a weaker prevention focus, students were not influenced by their prevention focus when each additional hour yielded less risk.

6.3. Robustness test

We tested our hypotheses separately for entrepreneurs and for students. However, two questions remain: (1) What is the relative importance of risk attitude versus regulatory focus on time allocation to an early-stage enterprise? and (2) Are the differences between entrepreneurs and students in terms of their time allocation significant? We address these issues by running three regressions that test the influence of $1/\alpha$, promotion and prevention focus, entrepreneur versus student status, the experimental situation dummy ES^d (equal to 0 if $s < \omega/f_2$ and $g_2 < 0$, and equal to 1 otherwise), and two- and three-way interaction effects between these independent variables on the observed time allocated to the enterprise, h^0. The results are reported in Table 7.

In Model 1,

$$h^0 = \beta_0 + \beta_1 \frac{1}{\alpha} + \beta_2 ES^d + \beta_3 Entrepreneur + \beta_4 Entrepreneur\ x\ ES^d + \beta_5 \frac{1}{\alpha}\ x\ ES^d + \beta_6 \frac{1}{\alpha}\ x\ Entrepreneur + \beta_7 \frac{1}{\alpha}\ x\ ES^d\ x\ Entrepreneur + \beta_8 Age + \beta_9 Gender + \varepsilon.$$

Table 7
Testing the relative importance of risk attitude versus regulatory focus.[a]

	Model 1	Model 2	Model 3
Promotion focus		1.30 (.31)***	1.30 (.30)***
Prevention focus		−.18 (.35)	−.21 (.34)
$1/\alpha$	−.0000433 (.0000272)		−.0000397 (.0000216)*
ES^d	−2.39 (.56)***	.46 (1.64)	−.07 (1.61)
Entrepreneur	−.67 (.89)	3.49 (1.83)*	3.16 (1.81)*
Entrepreneur × ES^d	2.90 (.82)***	.32 (2.34)	.81 (2.29)
$1/\alpha \times ES^d$	.0001361 (.0000346)***		.0001108 (.000029)***
Promotion focus × ES^d		−1.61 (.41)***	−1.59 (.40)***
Prevention focus × ES^d		1.17 (.43)***	.99 (.42)**
$1/\alpha \times$ Entrepreneur	.0001196 (.000048)**		.0000866 (.0000389)**
Promotion focus × Entrepreneur		−.61 (.45)	−.74 (.45)
Prevention focus × Entrepreneur		−.70 (.47)	−.69 (.46)
$1/\alpha \times ES^d \times$ Entrepreneur	−.0002022 (.0000582)***		−.0001659 (.0000491)***
Promotion focus × $ES^d \times$ Entrepreneur		−.94 (.59)	−.82 (.58)
Prevention focus × $ES^d \times$ Entrepreneur		1.14 (.60)*	1.33 (.59)**
Constant	7.96 (1.10)***	4.11 (1.58)***	4.46 (1.58)***
N	378	378	378
LL	−859.41	−797.28	−788.22
Prob > Chi^2	.00	.00	.00
AIC	1742.83	1626.56	1616.43
BIC	1790.05	1689.52	1695.13

[a] Tobit regressions (two-sided significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.10$). Standard errors are reported in parentheses. The dependent variable is h^0. Age and gender are controlled but not significant. *Promotion focus* is a 5 point Likert scale (I generally strive for large chances for high gains; 1 — I strongly agree, …, 5 — I do not agree). *Prevention focus* is a 5 point Likert scale (I generally want to avoid losses; 1 — I strongly agree, …, 5 — I do not agree). ES^d is a dummy variable for the experimental situation equals to 0 if $s<\omega/f_2$ and $g_2<0$ and 1 if $s>\omega/f_2$ and $g_2>0$. *Entrepreneur* is a dummy variable (0 = student, 1 = entrepreneur).

The regression coefficients β_5 and β_7 are significant, which indicates that the influence of risk attitude on h^0 depends on the experimental situation, and that the relationship between $1/\alpha$ and ES^d on h^0 differs between entrepreneurs and students. As already pointed out in Section 6.1, entrepreneurs were not influenced by their risk attitude when the enterprise's stake exceeded the threshold, but when the stake was below that threshold, highly risk-averse entrepreneurs allocated, on average, fewer hours to the enterprise than entrepreneurs with lower risk aversion. In contrast, highly risk-averse students allocated, on average, fewer hours to the enterprise than less risk-averse students when the enterprise's stake exceeded the threshold. Students were not influenced by their risk attitude when the stake was below the threshold.

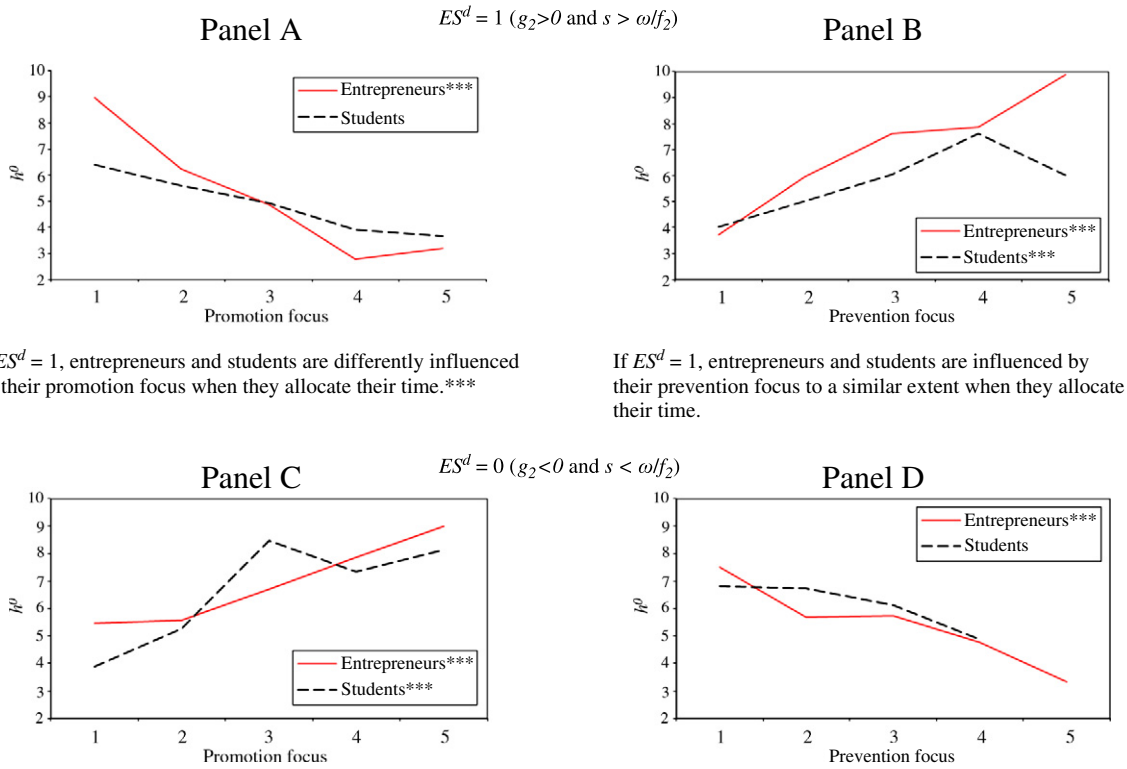
In Model 2,

$$h^0 = \beta_0 + \beta_1 Prom + \beta_2 Prev + \beta_3 ES^d + \beta_4 Entrepreneur + \beta_5 ES^d \; x \; Entrepreneur + \beta_6 Prom \; x \; ES^d + \beta_7 Prev \; x \; ES^d + \beta_8 Prom \; x \; Entrepreneur + \beta_9 Prev \; x \; Entrepreneur + \beta_{10} Prom \; x \; ES^d \; x \; Entrepreneur + \beta_{11} Prev \; x \; ES^d \; x \; Entrepreneur + \beta_{12} Age + \beta_{13} Gender + \varepsilon$$

the influence of regulatory focus and its interactions with the experimental situation and the entrepreneur dummy on h^0 are considered. The significant coefficients β_6 and β_7 support that the influence of an individual's regulatory focus on h^0 be moderated by the experimental situation. Moreover, we found that the moderated relationship described by β_7 differed significantly between entrepreneurs and students (i.e., β_{11} is significant). As discussed in Section 6.2, highly prevention-focused entrepreneurs as well as students allocated, on average, fewer hours to the enterprise than individuals with a low prevention focus when any additional hour in the enterprise yielded more risk. However, when any additional hour allocated to the enterprise yielded less risk, only highly prevention-focused entrepreneurs allocated, on average, more hours to the enterprise, thus supporting H4b. On average, students were not influenced by their prevention focus when any additional hour allocated to the enterprise yielded less risk.

We illustrate these differences in Fig. 1. Panel A shows that entrepreneurs were, on average, influenced by their promotion focus whenever any additional hour allocated to the enterprise yielded additional risk. But the relatively flat line for the students indicates that their number of hours allocated to the enterprise was, on average, not influenced by their promotion focus. Similarly, entrepreneurs were influenced by their prevention focus whenever any additional hour in the enterprise yielded less risk, but students' time allocation was not, on average, influenced by their prevention focus, as shown by Panel D.

Panel B of Fig. 1 further shows that both entrepreneurs and students were influenced by their prevention focus when any additional hour allocated to the enterprise yielded additional risk. In other words, both entrepreneurs and students with a stronger prevention focus allocated, on average, fewer hours to the enterprise than did individuals with a weak prevention focus. Since each additional hour allocated to the enterprise yielded additional risk, strongly prevention-focused entrepreneurs and students took less risks, on average, than their counterparts with a weak prevention focus. Panel C shows that both entrepreneurs and students were influenced by their promotion focus whenever any additional hour allocated to the enterprise yielded less risk. Highly promotion-focused entrepreneurs and students allocated, on average, fewer hours to the enterprise than did less promotion-focused individuals. Model 3 in Table 7 also confirms the robustness of these separately tested effects, and the lower Akaike and Bayesian



If $ES^d = 1$, entrepreneurs and students are differently influenced by their promotion focus when they allocate their time.***

If $ES^d = 1$, entrepreneurs and students are influenced by their prevention focus to a similar extent when they allocate their time.

If $ES^d = 0$, entrepreneurs and students are influenced by their promotion focus to a similar extent when they allocate their time.

If $ES^d = 0$, entrepreneurs and students are differently influenced by their prevention focus when they allocate their time.*

Fig. 1. The influence of regulatory focus, experimental situation, and being an entrepreneur on $h^{0\dagger}$. $ES^d = 1$ ($g_2 > 0$ and $s > \omega/f_2$). The figure reports two-sided significance levels for the influence of promotion and prevention focus in different experimental situations separately for entrepreneurs and students (*** $p<0.01$, ** $p<0.05$, * $p<0.10$). Panel B and Panel D show a significant three-way interaction $ES^d \times$ *prevention focus* $\times$ *entrepreneur***. The three-way interaction $ES^d \times$ *promotion focus* $\times$ *entrepreneur* in Panels A and C is not significant.

information criteria (AIC and BIC) indicate that regulatory focus (Model 2) explained time allocation better than did risk attitude (Model 1), but a model with both determinants of behavior (Model 3) is preferable according to the AIC criterion.

7. Discussion

This study investigated the role of risk attitude and regulatory focus in entrepreneurs' time allocation decisions between a new enterprise and a wage job. It thus contributes to the literature on entrepreneurs' labor supply and to the phenomenon of hybrid entrepreneurship. It also complements empirical work on the influence of regulatory focus on entrepreneurs' decision-making behavior by testing RFT in a time allocation context. Furthermore, our study contributes methodologically as it offers a computer-based experiment, where individuals' time allocation decisions are tied to real monetary incentives.

We found no support for the utility-based hypotheses, H1 and H2, in the sample of entrepreneurs. For students, our findings support H2, but not H1: If the enterprise's stake exceeded the threshold, highly risk-averse students allocated fewer hours to the new enterprise than did less risk-averse students. We found support for all regulatory-focus-based hypotheses in the sample of entrepreneurs. Among students we found support for only H3b and H4a. Thus, our results differed for entrepreneurs and students insofar as the promotion and prevention foci were highly relevant for entrepreneurs in all experimental situations, whereas the promotion (prevention) focus had no influence on students' time allocation when each additional hour in the enterprise yielded more (less) risk. Table 8 summarizes our findings.

Comparing the time allocation decisions of two samples helps identify the boundary conditions of our theory. Our results show that entrepreneurs divide their time significantly differently than do students. We offer two explanations. First, the influence of regulatory focus on decision-making aligns with the finding that entrepreneurs have a different mindset than others (Baron, 1998). Research suggests that entrepreneurs are more affected by their emotions (Michl et al., 2009) and more often use simplifying decision heuristics than do others because they need to make decisions under uncertainty, time pressure and often an overload of information (Baron, 1998; Busenitz and Barney, 1997). Being guided by one's regulatory focus (i.e., focusing on gains or losses) is also a simplified way to process information and achieve one's goals. Entrepreneurs' promotion or prevention focus may serve as an internal compass to filter information and to assess the complex risk-return tradeoffs they face. Making decisions that fit one's regulatory focus by

concentrating on selective information such as gains or losses, likely requires less mental effort than considering both the upside and downside potential of an option and deciding according to one's risk attitude. Therefore, relying on one's regulatory focus may be a useful decision heuristic when complex information must be processed.

Second, business and economics students often behave in sync with rational utility models (Carter and Irons, 1991) and less cooperatively than others (Frank et al., 1996), and they free ride more often (Marwell and Ames, 1981). Also, Dew et al. (2009) show that business students often rely on predictive information, whereas entrepreneurs underweigh or ignore such information. Dew et al. (2009) conclude that business students have a different mindset, or as they call it, a "different logical frame" than entrepreneurs that influences how they formulate problems and why they favor or disregard certain criteria when making decisions. Our results complement these studies on the differences between students' and entrepreneurs' decision-making in that our undergraduate business and economics students were guided by their risk attitudes and behaved according to utility theory to a greater extent than our entrepreneur sample.

We must also differentiate between the motivational intensities that promotion- and prevention-focused individuals experience in order to clarify the stronger power of the prevention focus explanation in high-risk situations (i.e., when stakes are above the threshold and each additional hour allocated to the enterprise yields additional risk). According to Idson et al. (2000), success on a current task, such as achieving one's gains produces greater motivational intensity for promotion-focused individuals than does failure. But failure produces greater motivational intensity than success if the individual is prevention focused. Given that losses are, on average, more strongly experienced than gains of the same objective magnitude (Kahneman and Tversky, 1979), the large potential losses in high-risk situations lead to a more intensive goal commitment for prevention-focused individuals (i.e., less risk taking) than for promotion-focused individuals. Thus, in high-risk situations, prevention-focused individuals will likely pursue their goal to avoid losses more intensively than promotion-focused individuals who strive for gains.

In contrast, in situations where potential gains and losses are small, a promotion focus explains time allocation behavior better than the prevention focus, because promotion-focused individuals show greater goal commitment than prevention-focused individuals (i.e., highly promotion focused people take more risks). Harinck et al. (2007) demonstrate that whenever small amounts of money (i.e., small potential gains and losses) are involved, individuals are more motivated to maximize pleasure (gains) than to minimize pain (losses). The hedonic principle of maximizing gains better suits the goal of promotion-focused individuals than their prevention-focused peers. Since promotion-focused individuals experience a larger motivational intensity when anticipating gains, they are more committed to their goal of realizing these gains than prevention-focused individuals who try to prevent losses, including small potential losses. Consequently, an individual's promotion focus better explains time allocation behavior whenever the stake is relatively small.

8. Implications, limitations and directions for future research

Our results have two theoretical implications. First, entrepreneurs' risk attitude may not be a reliable predictor of their actual time allocation behavior. Our research therefore challenges normative economic theory on entrepreneurs' time allocation behavior where risk attitude is found to impact behavior (e.g., Campbell, 1992; Lévesque et al., 2002). Second, motivational drivers such as regulatory focus may deserve more attention as a valid predictor of entrepreneurs' time allocation behavior. Methodologically, the differences that this study identified between entrepreneurs and students suggest that continuing the systematic comparison of entrepreneurs' and students' behaviors facilitates theory development by revealing potential boundary conditions for the phenomenon in question (Fromkin and Streufert, 1976; Oakes, 1972) and contributes to the external validity of findings (Greenberg, 1987).

Our results can also benefit practicing entrepreneurs, investors and educators. For practicing entrepreneurs, we highlight that additional hours spent in an enterprise can generate additional risk. Thus, more time (sweat equity) in the new enterprise, as typically expected from investors, may not necessarily pay off because the time an entrepreneur should commit depends highly on the risk surrounding that enterprise and on its stake (i.e., the magnitude of the enterprise's potential financial risk and return). Educators may also benefit from our findings since they can educate and influence future entrepreneurs in terms of their regulatory focus and offer insights into different reward systems, and thus implicitly influence their decision-making behavior (Brockner

Table 8
Summary of results.

Hypotheses	Combined data	Entrepreneurs	Students
H1: If the enterprise's stake is *below* a threshold, then individuals with higher risk aversion will allocate *more hours* to the enterprise than individuals with lower risk aversion.	No	No	No
H2: If the enterprise's stake *exceeds* the threshold, then individuals with higher risk aversion will allocate *fewer hours* to the enterprise than individuals with lower risk aversion.	Yes	No	Yes
H3a: If each additional hour allocated to the enterprise yields *additional risk*, then individuals with a stronger promotion focus allocate *more hours* to the enterprise than individuals with a weaker promotion focus.	Yes	Yes	No
H3b: If each additional hour allocated to the enterprise yields *additional risk*, then individuals with a stronger prevention focus allocate *fewer hours* to the enterprise than individuals with a weaker prevention focus.	Yes	Yes	Yes
H4a: If each additional hour allocated to the enterprise yields *less risk*, then individuals with a stronger promotion focus allocate *fewer hours* to the enterprise than individuals with a weaker promotion focus.	Yes	Yes	Yes
H4b: If each additional hour allocated to the enterprise yields *less risk*, then individuals with a stronger prevention focus allocate *more hours* in the enterprise than individuals with a weaker prevention focus.	Yes	Yes	No

et al., 2004). For instance, educators may emphasize the importance of rewarding entrepreneurs for superior performance (and withholding sanctions for inferior performance) to encourage a promotion focus. Specifically, financial contracting that only sanctions an entrepreneur for bad performance is likely to encourage a prevention focus (e.g., discourage innovation).

Our study has some limitations and provides avenues for additional research. Given the potential impact of various other factors (e.g., fluctuating demand for an entrepreneur's services or products, wage work demands, and/or family obligations) on time allocation decisions, entrepreneurs may not behave as per our experimental situations, which demonstrate the limits of our findings' external validity. While field studies could remedy this external validity limit, testing utility-theory-based hypotheses, controlling for multiple potential influences, and testing the impact of increasing and decreasing risk with each additional hour allocated to an enterprise is next to impossible in a field study. This is why we opted for a computer-based experiment due to its high internal validity for hypothesis testing. To mitigate our limitations of external validity, we gave the participants actual monetary payments tied to their decisions, thus aligning our work with the quality criteria of experimental economics (e.g., Smith, 1976).

Furthermore, because our experiment's time horizon was only one day we could not consider the potential of entrepreneurial pursuits. We note that the time horizon could be expanded to weeks/months without changing the model's structure. Our model could also be expanded to enable entrepreneurs to choose their work tolerance (e.g., to 8 or 12 h rather than our current upper bound of 10 h) because actual wage workers/hybrid entrepreneurs may find it difficult to reduce hours on wage jobs (however, when the optimal number of hours in the enterprise h^* is an interior solution, that optimal number does not change with an increase or decrease in work tolerance). We leave these research opportunities for future scrutiny in the entrepreneurial-behavior domain, where the tradeoff between financial risk and financial return is derived from how early-stage entrepreneurs divide their work time between wage jobs and entrepreneurial pursuits.

Appendix A. Expected utility maximization and calculation of risk attitude

Expected utility maximization

The first- and second-order conditions for the optimization of Eq. (1) are, respectively,

$$-\omega + s\frac{df(h)}{dh} - \alpha s^2\sigma^2 g(h)\frac{dg(h)}{dh} = 0 \tag{A1}$$

and

$$s\frac{d^2f(h)}{dh^2} - \alpha s^2\sigma^2\left[\left(\frac{dg(h)}{dh}\right)^2 + g(h)\frac{d^2g(h)}{dh^2}\right] < 0. \tag{A2}$$

If $g(h)>0$ we note that Eq. (A2) always holds when f is *concave* and g is *convex*, that is, when the return from the enterprise increases at a decreasing rate (due to additional time allocated to that business), but the risk associated with that return increases at an increasing rate. On the other hand, if $g(h)<0$ then Eq. (A2) always holds when both f and g are *concave*, that is, when both the return from the enterprise and the risk associated with that return increase at a decreasing rate. In this case, a unique optimal time allocation h^* exists that must satisfy Eq. (A1), and is an interior solution for which hours should be allocated to both work activities when $\varepsilon<h^*<\tau$. However, when Eq. (A1) does not hold, the optimal time allocation will be a corner solution (i.e., $h^*=\varepsilon$ or $h^*=\tau$). In this case, conditions exist under which a new enterprise dominates the wage job and all work hours τ should be allocated to the enterprise. Conditions exist under which a wage job dominates the enterprise, and the minimum number of hours ε must be allocated to the enterprise.

Calculating risk attitude from a lottery comparison

We extract α by assuming that participants are rational individuals as defined by Hammond (1998), whose system of axioms contains conditions of ordering, independence, and continuity, and represents the weakest requirements on rationality as compared to other methods. From Hammond's findings (Lemma 4.3), we can derive a lottery comparison method for two lotteries $L_A = [\tilde{p}, Y_{\min} + a(Y_{\max}-Y_{\min}); 1-\tilde{p}, Y_{\min}]$ and $L_B=[p_a, Y_{\max}; 1-p_a, Y_{\min}]$, where individuals must report a probability p_a for two given uncertain outcomes $Y_{\min}<Y_{\max}$, a given parameter $a\in(0,1)$, and a probability $\tilde{p}$ so that individuals are indifferent between lottery L_A and L_B. This indifference condition leads to

$$\tilde{p}\cdot u(Y_{\min} + a(Y_{\max}-Y_{\min})) + (1-\tilde{p})\cdot u(Y_{\min}) = p_a\cdot u(Y_{\max}) + (1-p_a)\cdot u(Y_{\min}),$$

and to obtain an exponential risk-averse utility function $u(y)=-e^{-\alpha y}$, one must compute the (unique) solution $\alpha>0$ of $-\tilde{p}\left(e^{-\alpha(Y_{\min}+a(Y_{\max}-Y_{\min}))}\right)-(p_a-\tilde{p})\left(e^{-\alpha Y_{\min}}\right)+p_a\cdot\left(e^{-\alpha Y_{\max}}\right)=0$. Compared to other forms of eliciting risk preferences such as certainty-equivalent-based methods, lottery comparisons possess an advantage (McCord and de Neufville, 1986) in that no certainty effect distorts findings since none of the alternatives in the questionnaire is certain. Note that the certainty effect has been demonstrated in Allais's (1953) paradox and has been addressed in prospect theory (Kahneman and Tversky, 1979). In our experiment, we chose $Y_{\min}=500$ Euro, $Y_{\max}=5000$ Euro, $\tilde{p}=0.6$, and $a=0.5$.

Appendix B. Experimental instructions (translation from German)

Welcome to this experiment!

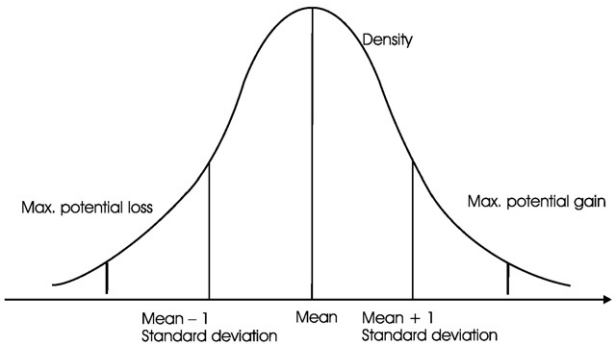
We would like you to imagine being in the following entrepreneurial decision-making situations. Your payoffs in this experiment depend on your decisions. Seventy units of the experimental currency (taler) equal one Euro. All of your decisions are treated anonymously.

Background of all decision situations

In this experiment, we ask you to make decisions in seven situations. These situations differ in some parameters but also have some similarities. In each situation, please imagine that you are planning to start your own small business enterprise and are currently employed in a big company with flexible working times; i.e., you can allocate your working time to the wage job and to your own enterprise as you like.

You are expected to work a total of 10 h a day. You are not planning to work during the weekends, but you are planning to work 5 days a week. In the following seven different situations, we want to know how you divide your 10 h working time per day between your own enterprise and your wage job. Please consider your decisions carefully. The payment in your wage job is 30 taler per hour. In addition, because you already committed to your own venture and invested some money, your minimum input to keep this business alive is 1 h a day.

In contrast to your wage job, the payoffs from your enterprise are never certain as you are always facing a risk. Putting more hours into the enterprise, in general, enables you to earn more money from it. However, in four decision situations, the risk of the enterprise's payoffs increases with any additional hour in the enterprise. In the other three decision situations, the risk of the enterprise's payoffs decreases with any additional hour in the enterprise. The enterprise's payoffs are normally distributed. A normal distribution has the following shape:



We calculated your maximum gain (mean plus three standard deviations) and your maximum loss (mean minus three standard deviations) for each decision situation. Gains and losses beyond this maximum gain and minimum loss are excluded.

As already said, working in your own enterprise is risky, and your expected payoff is normally distributed. In other words, the probability to earn X taler more than the mean payoff is equal to the probability of earning X taler less than the mean payoff. The probability of earning a bit more or a bit less than the mean payoff is larger than the probability to earn a lot more or a lot less than the mean payoff.

Please note that all probabilities are rounded. This is especially important with a 0% probability. The probability that the expected payoff is within the stated interval is never zero. Instead, a 0% probability stands for very low probabilities, those smaller than 0.05%.

Your total earnings in this experiment result from the risky payoff of the enterprise and the riskless wage from the wage job. Your earnings in this experiment are determined as follows: One of the seven decision situations will be randomly determined as payoff-relevant. Afterward, another random device will determine your earnings from your enterprise, which depend on the number of hours you allocate to your own enterprise. Seventy talers equal one Euro.

Experimental situation 1 (Increasing risk, stake: 109)

In this table you see your earnings based on the number of hours you allocate in your own enterprise.

Return in talers							Probability distribution of total return										
Hours in the enterprise	Mean total return = wage + mean enterprise return	Wage	Expected enterprise return	Variation of expected enterprise return (standard deviation)	Max. total loss in talers	Max. total gain in talers	% of return exactly max. loss	% of return betw. max. loss and −800	% of return betw. −800 and −600	% of return betw. −600 and −400	% of return betw. −400 and −200	% of return betw. −200 and 0	% of return betw. 0 and 200	% of return betw. 200 and 400	% of return betw. 400 and 600	% of return betw. 600 and 800	% of return betw. 800 and max. gain	% of return exactly max. gain
1	319.05	270	49.05	152.60	−138.75	776.85	0.1%	0.0%	0.0%	0.0%	0.0%	1.8%	19.9%	48.4%	26.5%	3.2%	0.0%	0.1%
2	332.65	240	92.65	228.90	−354.05	1019.35	0.1%	0.0%	0.0%	0.1%	0.9%	6.3%	20.8%	33.5%	26.3%	10.1%	1.9%	0.1%
3	346.25	210	136.25	305.20	−569.35	1261.85	0.1%	0.0%	0.1%	0.6%	3.0%	9.2%	18.8%	25.4%	22.7%	13.4%	6.7%	0.1%
4	359.85	180	179.85	381.50	−784.65	1504.35	0.1%	0.0%	0.5%	1.7%	4.8%	10.2%	16.5%	20.4%	19.4%	14.0%	12.3%	0.1%
5	373.45	150	223.45	457.80	−999.95	1746.85	0.1%	0.4%	1.2%	2.9%	6.0%	10.2%	14.5%	17.1%	16.7%	13.5%	17.4%	0.1%
6	387.05	120	267.05	534.10	−1215.25	1989.35	0.1%	1.2%	1.9%	3.8%	6.6%	9.8%	12.9%	14.7%	14.5%	12.5%	21.8%	0.1%
7	400.65	90	310.65	610.40	−1430.55	2231.85	0.1%	2.3%	2.6%	4.4%	6.8%	9.3%	11.5%	12.8%	12.8%	11.6%	25.5%	0.1%
8	414.25	60	354.25	686.70	−1645.85	2474.35	0.1%	3.7%	3.1%	4.8%	6.8%	8.8%	10.4%	11.4%	11.5%	10.6%	28.6%	0.1%
9	427.85	30	397.85	763.00	−1861.15	2716.85	0.1%	5.2%	3.5%	5.0%	6.6%	8.2%	9.5%	10.3%	10.4%	9.8%	31.2%	0.1%
10	441.45	0	441.45	839.30	−2076.45	2959.35	0.1%	6.8%	3.8%	5.1%	6.4%	7.7%	8.7%	9.4%	9.5%	9.0%	33.3%	0.1%

In case you allocate only 1 h to your own enterprise (the minimum), your mean total earnings from your wage job and your work in your own enterprise are 319.05 taler. If you allocate another hour to your own enterprise you earn on average 13.60 taler more. In other words, allocating 2 h to your own enterprise and leaving 8 h for the wage job results in a total of 332.65 taler on average. The more hours you allocate to your own enterprise, the higher your expected earnings but the mean variation (i.e., the risk) also increases.

The above table shows the expected earnings based on the number of hours allocated to your own enterprise (1, 2, 3 … 10). The table also shows the maximum gain and the maximum loss you can experience. If you want to know the consequences of 2 h of work in your own enterprise, please follow the line where the number of hours in the enterprise is "2": Here you see that you may earn on average 332.65 taler (240 taler from your wage job and 92.65 taler from your own enterprise). The standard deviation for the mean earnings of your enterprise is 228.9. The next two columns show the maximum gain and the maximum loss you may experience if you allocate 2 h to your enterprise. In the next eleven columns you see the probabilities that your total earnings (from your own enterprise and wage job) are within an interval. If you allocate 2 h to your own enterprise, with a probability of 33.5%, your total earnings will be between 200 and 400 taler. With a probability of 0.9%, your total earnings will be between −200 and −400 taler if you allocate 2 h to your own enterprise.

New screen: comprehension questions

Before you decide how many hours you want to allocate to your own enterprise, we would like to check whether you understand the description of the decision situation correctly.

1. Please choose the correct answer:
   - o The more hours I allocate to my own enterprise, the higher are my expected total earnings. [correct answer]
   - o The more hours I allocate to my own enterprise, the lower are my expected total earnings.
2. Please choose the correct answer:
   - o If I allocate the minimum number of hours to my own enterprise, I earn 270 taler in my wage job. [correct answer]
   - o If I allocate the minimum number of hours to my own enterprise, I earn 300 taler in my wage job.
3. Please choose the correct answer:
   - o If I allocate 9 h to my own enterprise, my enterprise's expected earnings would be 397.85 taler. [correct answer]
   - o If I allocate 9 h to my own enterprise, my enterprise's expected earnings would be 427.85 taler.
4. Please choose the correct answer:
   - o The more hours I allocate to my own enterprise, the higher is the risk. [correct answer]
   - o The more hours I allocate to my own enterprise, the lower is the risk.
5. Please choose the correct answer:
   - o If I allocate 8 h to my own enterprise, the probability is 5.2% that my total earnings will be between −800 taler and the maximum loss of −1645.85 taler.
   - o If I allocate 8 h to my own enterprise, the probability is 3.7% that my total earnings will be between −800 taler and the maximum loss of −1645.85 taler. [correct answer]
6. Please choose the correct answer:
   - o If I allocate 4 h to my own enterprise, the standard deviation is 381.5 of my total earnings of 359.85 taler.
   - o If I allocate 4 h to my own enterprise, the standard deviation is 381.5 of my total earnings of 179.85 taler. [correct answer]
7. Please choose the correct answer:
   - o If I allocate 3 h to my own enterprise, the maximum total earnings are 1261.85 taler. [correct answer]
   - o If I allocate 3 h to my own enterprise, the maximum total earnings are 1504.35 taler.

New screen

Your decision. How many hours do you want to allocate to your own enterprise? Please remember that you can allocate a maximum number of 10 h to your own enterprise. The remaining hours are automatically allocated to the wage job. You do not need to state full hours.

In this situation, I would like to allocate _____,____ hours to my own enterprise. (minimum: 1 h; maximum: 10 h).

New screen

Which goals did you pursue with the decision you just made?

[Response mode: (1) I fully agree, …., (5) I do not agree at all]

I generally want to avoid losses.

I generally strive for large chances of high gains.

Experimental situation 5 (Decreasing risk, stake: 54.7). In this table you see your earnings depending on the number of hours you allocate to your own enterprise.

Return in talers							Probability distribution of total return										
Hours in the enterprise	Mean total return = wage + mean enterprise return	Wage	Expected enterprise return	Variation of expected enterprise return (standard deviation)	Max. total loss in talers	Max. total gain in talers	% of return exactly max. loss	% of return betw. max. loss and −800	% of return betw. −800 and −600	% of return betw. −600 and −400	% of return betw. −400 and −200	% of return betw. −200 and 0	% of return betw. 0 and 200	% of return betw. 200 and 400	% of return betw. 400 and 600	% of return betw. 600 and 800	% of return betw. 800 and max. gain	% of return exactly max. gain
1	294.62	270.00	24.62	536.06	−1313.57	1902.80	0.1%	1.9%	2.7%	5.0%	8.1%	11.3%	13.9%	14.8%	13.8%	11.2%	17.2%	0.1%
2	286.50	240.00	46.50	478.63	−1149.38	1722.37	0.1%	1.0%	2.0%	4.4%	7.9%	12.0%	15.4%	16.5%	15.0%	11.5%	14.0%	0.1%
3	278.38	210.00	68.38	421.19	−985.20	1541.95	0.1%	0.4%	1.3%	3.5%	7.4%	12.6%	17.2%	18.7%	16.4%	11.5%	10.6%	0.1%
4	270.26	180.00	90.26	363.76	−821.01	1361.52	0.1%	0.0%	0.7%	2.4%	6.5%	13.1%	19.5%	21.6%	17.8%	11.0%	7.1%	0.1%
5	262.14	150.00	112.14	306.32	−656.83	1181.10	0.1%	0.0%	0.2%	1.3%	5.0%	13.0%	22.4%	25.4%	19.1%	9.5%	3.8%	0.1%
6	254.02	120.00	134.02	248.89	−492.64	1000.67	0.1%	0.0%	0.0%	0.4%	3.0%	12.0%	26.0%	30.7%	19.7%	6.8%	1.3%	0.1%
7	245.90	90.00	155.90	191.45	−328.46	820.25	0.1%	0.0%	0.0%	0.0%	1.0%	9.0%	30.6%	38.4%	17.8%	3.0%	0.1%	0.1%
8	237.78	60.00	177.78	134.02	−164.27	639.82	0.1%	0.0%	0.0%	0.0%	0.1%	3.7%	35.1%	49.8%	11.0%	0.3%	0.0%	0.1%
9	229.66	30.00	199.66	76.58	−0.09	459.40	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	34.8%	63.8%	1.3%	0.0%	0.0%	0.1%
10	221.54	0.00	221.54	19.15	164.10	278.97	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	13.0%	87.0%	0.0%	0.0%	0.0%	0.1%

In case you allocate only 1 h to your own enterprise (the minimum), your mean total earnings from your wage job and your work in your own enterprise are 294.62 taler. If you allocate another hour to your own enterprise you earn on average 8.12 taler less. In other words, allocating 2 h to your own enterprise and leaving 8 h for the wage job results in a total of 286.50 taler on average. The more hours you allocate to your own enterprise, the higher your expected enterprise's return and the lower the mean variation (i.e., the risk).

The table above shows the expected earnings based on the number of hours allocated to your own enterprise (1, 2, 3 … 10). The table also shows the maximum gain and the maximum loss you can experience. If you want to know the consequences of 2 h of work in your own enterprise, please follow the line where the number of hours in the enterprise is "2": Here you see that you may earn on average 286.50 taler (240 taler from your wage job and 46.50 taler from your own enterprise). The standard deviation for the mean earnings of your enterprise is 478.63. The next two columns show the maximum gain and the maximum loss you may experience if you allocate 2 h to your enterprise. In the next eleven columns you see the probabilities that your total earnings (from your own enterprise and wage job) are within an interval. If you allocate 2 h to your own enterprise, with a probability of 16.5%, your total earnings will be between 200 and 400 taler. With a probability of 7.9%, your total earnings will be between −200 and −400 taler if you allocate 2 h to your own enterprise.

New screen: comprehension questions

Before you decide how many hours you want to allocate to your own enterprise, we would like to check whether you understand the description of the decision situation correctly.

1. Please choose the correct answer:
   a. The more hours I allocate to my own enterprise, the higher are my expected total earnings.
   b. The more hours I allocate to my own enterprise, the lower are my expected total earnings. [correct answer]
2. Please choose the correct answer:
   a. If I allocate the minimum number of hours to my own enterprise, I earn 270 taler in my wage job. [correct answer]
   b. If I allocate the minimum number of hours to my own enterprise, I earn 300 taler in my wage job.
3. Please choose the correct answer:
   a. If I allocate 9 h to my own enterprise, my enterprise's expected earnings would be 199.66 taler. [correct answer]
   b. If I allocate 9 h to my own enterprise, my enterprise's expected earnings would be 221.54 taler.
4. Please choose the correct answer:
   a. The more hours I allocate to my own enterprise, the higher is the risk.
   b. The more hours I allocate to my own enterprise, the lower is the risk. [correct answer]
5. Please choose the correct answer:
   a. If I allocate 3 h to my own enterprise, the probability is 0.4% that my total earnings will be between −800 taler and the maximum loss of −985.20 taler. [correct answer]
   b. If I allocate 3 h to my own enterprise, the probability is 0% that my total earnings will be between −800 taler and the maximum loss of −985.20 taler.
6. Please choose the correct answer:
   a. If I allocate 4 h to my own enterprise, the standard deviation is 363.76 of my total earnings of 270.26 taler.
   b. If I allocate 4 h to my own enterprise, the standard deviation is 363.76 of my total earnings of 90.26 taler. [correct answer]
7. Please choose the correct answer:
   a. If I allocate 3 h to my own enterprise, the maximum total earnings are 1541.95 taler. [correct answer]
   b. If I allocate 3 h to my own enterprise, the maximum total earnings are 820.25 taler.

New screen

Your decision. How many hours do you want to allocate to your own enterprise? Please remember that you can allocate a maximum number of 10 h to your own enterprise. The remaining hours are automatically allocated to the wage job. You do not need to state full hours.

In this situation, I would like to allocate _____,____ hours to my own enterprise. (minimum: 1 h; maximum: 10 h).

New screen

Which goals did you pursue with the decision you just made?

[Response mode: (1) I fully agree, …., (5) I do not agree at all]

I generally want to avoid losses.

I generally strive for large chances of high gains.

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