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The impact of rankings on risk-taking in a social setting**

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Skill, effort, luck:

The impact of rankings on risk-taking in a social  
setting\*

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**Abstract** Social comparisons and rank-based endowments impact risk-taking decisions. We provide experimental evidence indicating that rank-based endowments have differential impacts on risk-taking decisions based on the aspect used to rank individuals. We observe the largest rank-based differences when such endowments are determined based on individuals' effort or skill. Compared to individuals who rank first, individuals who rank last in these settings increase their risk-taking by, on average, 17.55 percentage points (pp). In the case of luck-based endowments, the effect size is significantly smaller (11.34 pp). We conduct an additional treatment where rank and endowment are independent and find that differences in risk-taking are driven mainly by participants' endowments rather than by the ranking itself.

**Keywords:** decision under risk, risk-taking, social ranking, peer effects

**JEL Classification:** G11, G40, G41.

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# 1 Introduction

Rankings—relative comparisons with others—impact many different domains ranging from life satisfaction to financial decision-making. While a large body of literature has discussed the impact of financial comparisons on individuals’ risk-taking decisions (e.g., Gortner and van der Weele, 2019; Kirchler et al., 2018; Klocke et al., 2022; Lindskog et al., 2022; Schwerter, 2023), less attention has been given to (i) the rank-determining factors and (ii) the exact form of the ranking that leads to social comparisons. In this paper, we argue that the impacts of social comparisons on risk-taking differ depending on the factors that determine the ranking. We hypothesize that rankings based on relative skill or effort activate ranking-induced risk-taking to a greater degree than do rankings based on luck. We provide experimental evidence to support this hypothesis. In addition, we explicitly distinguish between implicit rankings based on endowments (i.e., a comparison of endowments) and explicit rankings (i.e., being labelled first, second, or third), revealing that our results are predominantly driven by endowments.

People frequently engage in social comparisons to decrease their feelings of *social uncertainty* (Festinger, 1954). The literature provides convincing evidence indicating that people integrate comparisons of, e.g., consumption choices into their economic decision-making as a source of utility. For example, Abel (1990) discuss the “keeping up with the Joneses” effect and identify other people’s consumption as one possible source of consumption habit formation. Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) develop models in which individuals have preferences regarding comparisons with others, which work alongside their preferences concerning their own consumption to determine their economic decisions. Boyce et al. (2010) argue that individuals’ life satisfaction decreases if they are aware that other people have higher incomes. Schoenberg and Haruvy (2012) point out that social comparisons of financial investments result in decreased satisfaction with one’s performance. Fliessbach et al. (2007) provide neuroscientific evidence indicating that social comparisons activate reward-related brain regions. In light of this evidence, unsurprisingly, a large body of literature finds evidence to support the claim

that social comparisons have important repercussions for risk-taking.<sup>1</sup>

Rankings are an explicit form of social comparison. Through rankings, individuals and observers can learn who is better off than others and who is lagging behind. While the literature reports evidence in support of the notion that rankings influence risk-taking, the question of whether rank-determining-factors impact risk-taking has not yet been investigated, as many experimental studies (see, e.g., Linde and Sonnemans, 2012) randomly assign endowments and thus ranks. In many life situations, endowments, such as prize money, are based on rankings. In our main treatments, we follow this intuition and assign ranks jointly with endowments based on those ranks. However, we assign endowments based on ranks in the context of different tasks. We find that the determining factors associated with these rank-based endowments are relevant with regard to risk-taking and, accordingly, impact (economic) decision-making.

What constitutes a ranking? Rankings allow individuals to learn their position relative to the positions of others. Nevertheless, rankings exhibit differences in terms of their form. Lindskog et al. (2022) and Schwerter (2023) assign different endowments to their participants. In such a setting, an individual is confronted with a social reference point—her peer’s endowment—and bases her decision on the corresponding relative comparison. Hence, an implicit ranking takes place even though it is not explicitly introduced as a “ranking.” The assumption that different (experimental) endowments across participants induce such a ranking is widely accepted in the literature (see, e.g., Kirchler et al., 2018, 2020). For example, the numeric distribution of endowments is equal to the rankings on a podium. In a second experiment, we elaborate more closely on the intuition that different endowments across peers equal ranks in their impact on risk-taking. In particular, we disentangle the impact of ranks and endowments on financial risk-taking. We find that implicit rankings, i.e., the distribution of endowments, impact risk-taking, whereas explicit rankings are subordinate to endowments.

In this paper, we consider luck, skill, and effort to be rank-determining (and thus endowment-

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<sup>1</sup>We explicitly examine the effect of *rank-based endowments* on risk-taking rather than the effect of *wealth* on risk-taking. The literature shows that poverty decreases risk-taking (see, e.g., Haushofer and Fehr, 2014), in contrast to the impact of rank-based endowments on risk-taking.

determining) factors. The key criterion that distinguishes these three factors from one another is the degree to which they are subject to individual influence. An endowment that is distributed based on luck is completely outside the control of the individual and is therefore exogenous. Such an endowment allows individuals to blame external factors for a comparatively low endowment and thereby impedes the internalization of negative emotions (see the literature on biased self-attribution by, e.g., Fischhoff and MacGregor, 1982; DeLong et al., 1991). In contrast, low endowments based on individually influenceable (endogenous) factors are more likely to result in negative emotional impacts. Although individuals may still attempt to blame external factors for failure, more effort may be required to shift the blame in this context. Consequently, the utility impact of a low endowment is greater for rankings that are based on factors that are subject to individual influence. Skill and effort are both (to some degree) under the control of the individual. Skill is endogenous in the long term but usually not in the short term. While the skills needed for a particular challenge are not under the immediate control of the individual in a given situation, we usually expect individuals to be able to improve their skills in the long term. Finally, effort is completely endogenous and can be influenced easily and strongly. Regardless of the task at hand, one can always exert oneself.

In three incentivized treatments, we rank participants based on factors that are randomly assigned and therefore exogenous (the luck treatment) or endogenous (the skill and effort treatments) and subsequently assign endowments that correspond to their ranks. In the skill treatment, we rank participants based on their results on a financial literacy test. We focus on financial literacy because it provides an economic context and is highly relevant for a wide variety of economic decisions. According to Atkinson and Messy (2012) “[f]inancial literacy is rapidly being recognized as a core skill”.<sup>2</sup> In the effort treatment, we rank participants based on their scores on a real effort task. In the skill and effort treatments, unlike in the luck treatment, endowment is not completely exogenous and is not solely based on a random mechanism. Participants who are aware of their rank

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<sup>2</sup>Note that financial literacy can also be considered to be a form of partial knowledge, in line with OECD/INFE (2020). Knowledge, like particular skills, is context-specific and can be influenced in the long term but not in the short term. Accordingly, the key aspects of a skill that are important for our study also apply to knowledge.

and endowment invest in a safe and a risky asset in the context of the standard-portfolio problem based on Gneezy and Potters (1997). Consistent with the literature, we find participants with lower rankings (and thus endowments) to take greater risks (e.g., Linde and Sonnemans, 2012; Nieken and Sliwka, 2010; Schwerter, 2023; Kirchler et al., 2018, 2020). We first study the differences in risk-taking between the endogenous and exogenous rank-based endowments before we attempt to differentiate between the effects of the skill and effort treatments.<sup>3</sup> Contributing to the literature, in line with our hypotheses, we find that risk-taking is more pronounced among participants with lower endowments in the endogenous ranking treatments than in the exogenous ranking treatments. With respect to effect sizes, we find that individuals who receive the lowest endowment in the effort or skill treatment increase their risk-taking by an average of 17.55 percentage points (pp) as compared to individuals who receive the highest endowment. The corresponding effect size with regard to luck-based rankings is only 11.34 pp.

Next, we run an additional treatment that allows us to disentangle the effects of explicit rankings and implicit rankings based on endowments. Typically, rank and endowment are highly correlated. In tournaments, participants who achieve a better rank usually receive more prize money. Employees who perform better than others often receive higher salaries. To disentangle the impacts of rank and endowment, we continue to rank participants based on skill, effort or luck but assign their endowments based on their absolute performance (or based on an additional lottery in the luck treatment), such that the endowment varies independently of the rank. Importantly, in this setting, participants do not learn about the distribution of endowments across ranks. Individuals learn about only their own endowment and their ranking within the group. The additional treatment indicates that the endowment rather than the rank drives participants' risk-taking.

We further investigate whether the increased risk-taking associated with low rank-based endowments is moderated by specific personality traits in light of previous evidence that shows that personality traits impact decision-making (Busic-Sontic et al., 2017). We investigate whether individuals who exhibit high scores for entitlement and the need for

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<sup>3</sup>We combine the observations pertaining to the endogenous treatment groups (skill and effort) into a *combined* treatment.

social comparison are particularly likely to exhibit increased risk-taking in a rank-based endowment setting. Our results provide only limited evidence to support this notion.

Our findings have important implications that can improve our understanding of the impacts of rankings and endowments on risk-taking. Receiving a low endowment based on luck impacts risk-taking substantially less than does receiving a low endowment based on relative skill or effort. In many situations—even those that extend beyond the level of economic decision-making—individuals’ performance is measured in relation to that of others, which may be related to their abilities or effort. For example, in school, children are ranked by comparing their grades. Our findings indicate that low rankings related to personal abilities or effort may increase risk-taking, such as by increasing the prevalence of cheating. Similar situations may arise in the workplace. Importantly, effect sizes may be larger than those that have been suggested by studies based on random rankings (and endowments).

In addition, our findings highlight the importance of carefully disentangling the drivers of increased risk-taking in rank-inducing settings. Our results indicate that the endowment that may be associated with a ranking—rather than the ranking itself—is the main driver that influences risk-taking in many cases.

The remainder of the paper proceeds as follows. In the following section, we develop our hypotheses. Section 3 presents the experimental design and introduces our variables. We discuss our findings in Section 4. The final section concludes.

## 2 Literature and hypotheses

Social comparisons are an important aspect of human interaction. In contrast to an assumption derived from the notion of *homo oeconomicus*, which posits that individuals act exclusively to maximize their own consumption, comparing ourselves to others impacts our utility beyond the level of consumption utility. Festinger (1954) argues that people engage in social comparisons to decrease their feelings of social uncertainty. Kuziemko et al. (2014) coin the term *last-place aversion*, indicating that individuals have a strong

preference to avoid being ranked last. Fliessbach et al. (2007) show that social comparisons activate reward-related brain regions.

Rankings and the corresponding endowments have important repercussions for financial decision-making and risk-taking, as these factors may impact utility through social comparison and consumption possibilities. Thus, if a ranking has implications with regard to the individual's current or future income, homo oeconomicus also considers that ranking as part of her decision-making since she cares about her consumption. Examples of rankings that impact financial endowment can easily be found in workplace environments where rankings determine compensation, job termination, and career advancement. The extensive body of literature on managerial risk-taking (for example, Bodnar et al., 2019; Devers et al., 2008; March and Shapira, 1987) demonstrates how compensation schemes and career concerns affect risk-taking decisions. This stream of literature primarily focuses on the question of how monetary incentives related to a ranking-induced anticipated future income stream impact current risk-taking decisions. For example, managers may take on riskier projects when they hold stock options that become valuable when the firm's stock price exceeds a certain threshold but are not exposed to the downsides of their decisions.

However, rankings may also impact risk-taking in ways that extend beyond their impact on future consumption as well as in situations in which the ranking is not correlated with future income (Gortner and van der Weele, 2019; Linde and Sonnemans, 2012; Andrzejewicz et al., 2022). A large body of literature investigates the direct impact of rankings on risk-taking rather than focusing on the impact of the financial consequences of potential rankings on risk-taking. While this stream of literature does not distinguish among different forms of rankings, such as explicit rankings and implicit rankings associated with different endowments, the general consensus in this field is that individuals take more risks when they have a lower rank in a relative setting (Kuziemko et al., 2014; Schwerter, 2023; Kirchler et al., 2018).<sup>4</sup>

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<sup>4</sup>We consider "rank 1" to be the highest possible rank, in line with the usual positions found on a podium. In line with this podium example, we use the terms high(er) and low(er) ranking throughout our paper to describe better and worse placements on the podium, respectively.



The main contribution of our paper lies in its investigation of whether rank-based endowments have different impacts on risk-taking depending on the factor that determines the corresponding rankings.<sup>5</sup> In general, rankings can be determined by various factors. For example, rankings can be determined by the skill sets of all participants, by the effort that all participants invest in a particular task, or by sheer luck (see also Holmström, 1999).

We argue that the determinant of a ranking (and hence, ultimately, that of an endowment; as argued above, rankings determine endowments in many situations) is an important aspect of its impact on individuals' risk-taking. Forsyth (2008) describe the tendency of humans to externalize failure while internalizing success as self-serving bias. Positive situational outcomes are usually internalized and attributed to individual ability and effort, while negative outcomes are externalized and, for example, attributed to bad luck. Such attributions are made regardless of the true reason for failure or success, as failure undermines self-confidence, whereas the attribution of success to oneself boosts self-esteem (see, e.g., Leary, 2007, for an overview on self-enhancement). For example, individuals tend to credit themselves for past success while blaming external factors (i.e., bad luck) for failure (Fischhoff and MacGregor, 1982; DeLong et al., 1991). A low rank-based endowment with respect to a given task can be viewed as negative feedback on individual performance. Feedback is explicit information that is critical to individuals' perceptions of the self. Therefore, a low rank-based endowment is a threat to the individual's self-esteem, as failure becomes visible to not only the individual in question but also to others.

When individuals' low endowments are explicitly based on their effort or abilities, it is more difficult for these individuals to externalize the causes of low performance: individuals must credit themselves for their failure, thereby undermining their positive self-images and threaten their self-esteem. Mitchell et al. (2020) report that the individual desire to obtain a high social rank is strongly pronounced when the individual's self-esteem is under threat. Accordingly, by achieving a high social rank, self-esteem can be reestab-

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<sup>5</sup>In the literature on poverty, the experimental studies by Barr et al. (2015) and Cappelen et al. (2013) examine the differences in perceptions of fairness with regard to wealth distributions depending on their origin. These studies argue that people differ in terms of their perceptions of fairness depending on whether wealth is distributed based on luck or on effort.

lished. Consequently, individuals are willing to take action to increase their self-esteem by obtaining an improved ranking. In an economic context, individuals may attempt to improve their ranking by increasing their income. In the short term, an increase in income may be achieved by increasing risk-taking in the context of making investment decisions. Fessler (2001) also argues that high social status is directly related to high risk-taking.

Based on individuals' ability to externalize the reasons for their rankings, we argue that the emotional impact of rank-based endowments is more pronounced when the corresponding rankings are based on individuals' skill or effort, which are both endogenous to the individual. Such a ranking leads to an increased willingness to take risks compared to a low ranking based on exogenous factors, such as luck. Thus, we propose the following hypothesis:

**Hypothesis 1.** *Lower rank-based endowments have greater impacts on risk-taking when these rank-based endowments are not based entirely on exogenous factors.*

Given that rank-based endowments determined by endogenous factors are more influential, the question that naturally arises pertains to whether risk-taking differs between individuals who are ranked based on their skill and those who are ranked based on their effort because effort and skill are also different. Everybody is able to exert effort and thereby impact performance and ranking. However, in a skill-related task, individual performance is more difficult to influence on an ad hoc basis (Weiner, 1985), as the acquisition of skills is usually an event that occurred in the past. In a skill-based task, an individual can blame a low rank on "bad luck" in the sense that the necessary skill set was not included among those skills that she had acquired in the past; such an individual would exhibit self-serving bias (Forsyth, 2008). Therefore, we expect the negative emotional impact of a low rank-based endowment determined by skill to be less pronounced than that of a low rank-based endowment determined by effort. Individuals can increase their risk-taking as an way of compensating for the negative emotional impact of this situation, as risk-taking might lead to higher social status (Fessler, 2001). Therefore, we

expect to observe greater risk-taking among individuals with low ranks based on effort than among those with low ranks based on skill.

According to Weiner (1985), the literature on attributional achievement motivation differentiates between controllability and uncontrollability. Effort is under one's own control to a greater extent, as it can be more readily adapted than one's abilities. He claims that individuals tend to feel shame in response to failure in situations in which they are limited by their low abilities, while they tend to react to failures that can be attributed to their low effort with guilt. The actions resulting from shame and guilt are different. People who feel shame tend to engage in defensive behavior (Gilbert, 2000). They attempt to hide their results and express the desire to be unobserved, thus resulting in motivational inhibition. Guilt, in contrast, promotes motivational action. That is, people act in a more pronounced manner to help overcome their earlier failure (Wicker et al., 1983; Cohen et al., 2011). Kouchaki et al. (2014) experimentally test the effect of guilt on risk-taking and find that guilt appears to lead to more optimistic perceptions of risks and to increase the likelihood of risky behavior. Thus, we propose the following hypothesis:

**Hypothesis 2.** *Lower rank-based endowments have a more substantial impact on risk-taking when the rank-based endowment is determined by effort rather than by skill.*

Finally, we discuss the impacts of personality traits on the influence of rankings and endowments on individuals' risk-taking. A plethora of studies have examined the impact of personality traits on decision-making (see, e.g., Lauriola and Levin, 2001; Busic-Sontic et al., 2017). Based on these studies, we explore whether particular personality traits mitigate or strengthen the impact of rank-based endowments on risk-taking. In particular, we ask whether individuals with higher levels of entitlement and a more pronounced tendency to engage in social comparisons make greater adjustments to their risk-taking in reaction to a rank-based endowment.<sup>6</sup>

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<sup>6</sup>Initially, we set out to investigate the impacts of three personality traits, including individuals' need for affiliation in social settings on this list. However, the measure we used to capture individuals' need for affiliation exhibited rather poor reliability, thus preventing us from testing the associated hypothesis. Thus, we do not discuss the omitted hypothesis here to preserve space.

Psychological entitlement describes a stable feeling on the part of the individual that she deserves more than others (Campbell et al., 2004). In the case of rank-based endowments, entitled individuals may expect receive the most endowments. If individuals instead find themselves receiving lower endowments, they may perceive a contrast between their sense of entitlement and the feedback that they receive. This cognitive dissonance must be reduced (Festinger, 1957) either by adjusting individuals' feelings of entitlement or by adjusting their social rank—i.e., the endowment. Furthermore, a high level of entitlement is considered to be detrimental in social situations and has been linked to competitive choices. We expect individuals to engage in more risk-taking with the goal of improving their final payoff in comparison to those obtained by their peers and thereby reduce the cognitive dissonance they experience. We measure an individual's entitlement using the entitlement scale developed by Campbell et al. (2004).

Tesser et al. (1988) argue that in social comparisons, poor performance compared to that of peers can threaten one's self-evaluation and, thus, might trigger action. Action helps the individual maintain a positive self-evaluation. Social comparisons are helpful with regard to evaluating and improving the self and thus enhancing individuals' self-esteem or self-confidence. Although people in general tend to engage in social comparisons (Festinger, 1954), individuals differ in terms of the degree of their desire to compare themselves with others (Gibbons and Buunk, 1999). Therefore, we propose the following hypothesis:

- Hypothesis 3.** *a. Lower rank-based endowments have a greater impact on risk-taking when the individual exhibits a higher level of entitlement.*
- b. Lower rank-based endowments have a greater impact on risk-taking when the individual exhibits more pronounced relative preferences.*

## 3 Methodology and data

### 3.1 Experimental design

We examined individuals' risk-taking in a social setting by conducting a preregistered online experiment.<sup>7</sup> First, we measured individuals' risk preferences. Participants self-reported their perceived willingness to take risks on an eleven-point scale (Dohmen et al., 2011). In addition, participants completed a Holt and Laury (2002) risk aversion elicitation task.<sup>8</sup>

We asked participants to enter a nickname and to choose an avatar from a list. Male and female avatar choices were offered. In total, we offered participants five different avatars for this choice.

Next, all participants completed a financial literacy quiz, which contained ten questions. As the results of the quiz were used to generate rankings among participants in one of the treatments, we additionally asked participants to answer an estimation question to prevent ties from occurring. The participants were given 150 seconds to answer all questions.

Following the financial literacy quiz, all participants completed a real effort task. We displayed random letter sequences for participants to type into a nearby text field and submit their reply. We ensured that it was not possible to copy-and-paste the letter sequences by displaying the sequences as graphics rather than as plain text. We asked the participants to complete as many sequences within 90 seconds as possible. The participants were required to submit one sequence before the subsequent sequence became available.

Next, we randomly assigned the participants to groups of three and ranked them within their groups. The rankings were determined randomly, based on the results of the financial literacy quiz, or based on the results of the real effort task. These ranking determinants

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<sup>7</sup>AEA RCT registered in December 2021: <https://doi.org/10.1257/rct.8653>.

<sup>8</sup>We employed ready-to-use oTree apps from Holzmeister (2017).

were randomly assigned to the groups. We informed the participants of their individual ranking and told them how it was determined. Participants were not informed of hypothetical rankings based on the ranking determinants used in the other treatments. Based on their rankings, the participants received an endowment of \$5, \$7, or \$10. They also learned about their peers' ranks and endowments. The peers were presented using their nicknames and their avatars. Subsequently, the participants decided how much of their endowment to invest in a risky asset (Gneezy and Potters, 1997). With equal probabilities, participants' investments were either multiplied by 2.5 or lost. They were not required to invest anything and could choose an investment amount of zero.

Following the investment decision, we surveyed the participants to collect information regarding their age, gender, and various personality traits. In particular, we collected their psychological entitlement (Campbell et al., 2004), need for affiliation (Steers and Braunstein, 1976), and tendency to compare themselves to others (Gibbons and Buunk, 1999). Additionally, we asked the participants about their financial experience and statistical knowledge. As a final task, the participants responded to an exit survey in which they were asked whether they believed that the researchers had an agenda and, if so, what that agenda was.

Finally, the returns on the risky investment were realized, and the participants were informed of their compensation for the experiment. The participants received their portfolio value following the lottery.

The Internet Appendix A contains a full overview of the experiment.

## 3.2 Treatment

We randomly assigned participants to groups of three and then ranked them relative to other participants in their groups. We determined these rankings randomly, based on the results of the financial literacy quiz, or based on the results of the real effort task. This approach yielded three distinct treatment groups: *skill*, *effort*, and *luck*.<sup>9</sup> Finally, in

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<sup>9</sup>In the event of a tie between two participants within one group, we determined their ranks randomly.

all three treatment groups, participants received a rank-based endowment. Independent of their assigned treatment, all participants completed the financial literacy quiz and participated in the real effort game. We thereby employed a between-subjects design. The treatment groups differed only in terms of the ranking determinant.

### 3.3 Procedure

We used *CloudResearch* (Litman et al., 2017) to conduct our experiment in an online format. CloudResearch features an extensive international database of users from various age groups and professions based on Amazon’s MTurk. As one of the largest online panel providers, CloudResearch offers a pool of more than 50 million users. So-called *Turkers* qualify for CloudResearch based on a standardized procedure that is used to monitor fraudulent records, thus enabling CloudResearch to ensure a high-quality sample.

We publicly posted the link to our experiment on CloudResearch and allowed users to participate anonymously in December 2021 and in February 2022, and in November 2023 for an additional treatment (see Section 4.4). Each Turker was allowed to participate only once. We restricted the sample to users in the United States and did not employ additional filter criteria to ensure a heterogeneous sample. The experiment was conducted using oTree (Chen et al., 2016). To avoid careless responses from participants, we included a simple attention check in our survey (Oppenheimer et al., 2009). In particular, we asked subjects to make a specific selection on a Likert scale. The average time to complete the experiment was 12 minutes, and the average compensation amount was \$8.21. The minimum payoff was \$1, and the maximum payoff was \$25.

The study was reviewed and approved by the German Association for Experimental Economic Research e.V. (<https://gfew.de/ethik/iUtnQW5G>) prior to the experiments.

### 3.4 Variables

We use several variables to test our hypotheses. In the following, we describe these variables:

*Risky investment share.* Risky investment share is our dependent variable. This variable denotes the fraction of participants' endowment that they invested in the risky asset.

*Endowment.* Endowment is our main variable of interest. Endowment refers to a participant's endowment and ranges from \$5 to \$10. In our main treatment, endowment is rank-based and determined by participants' rank relative to two other participants in their group.<sup>10</sup>

*Rank.* Rank indicates a participant's rank in their group and ranges from the top rank (one) to the bottom rank (three).

In addition to our main variables, we use several variables to capture individuals' financial literacy, effort, and usual risk preferences.

*Financial literacy.* We asked the participants to answer ten questions within 150 seconds with the goal of measuring their financial literacy. Based on the responses, we generated a financial literacy score by counting the number of questions that were answered correctly.

*Effort.* We asked participants to type as many text sequences as possible into a nearby text field within 90 seconds. We used the number of correctly typed sequences as our real effort score. As a secondary measure of effort, we used the number of attempts, regardless of whether those attempts were correct; we labelled this variable *Effort try*.<sup>11</sup>

*Risk-taking.* We controlled for participants' self-reported willingness to take risks (*Risk-taking*) (Dohmen et al., 2011). As a secondary measure of risk propensity, we used a Holt and Laury (2002) risk elicitation task (*Holt & Laury*).

We further control for participants' demographics, i.e., their *age* and gender. *Male* is a dummy variable that equals 1 if a participant is male and 0 otherwise. *Nonbinary* is a dummy variable that equals 1 if a participant identifies as nonbinary and 0 otherwise.

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<sup>10</sup>In our *absolute performance treatment* (see Section 4.4), endowment is based on participants' absolute performance as compared to a fixed threshold, independent of the performance of other participants in their group. Participants who answered at least 6 (7) financial literacy questions correctly received an endowment of \$7 (\$10). Participants who solved at least 12 (16) real effort tasks correctly received an endowment of \$7 (\$10). Participants who achieved results below these thresholds received an endowment of \$5. In the luck treatment, endowments were assigned randomly.

<sup>11</sup>Note that a page could be submitted only after participants typed some text into the text field.



Additionally, we inquired about participants' self-reported *investment experience* and their *statistical knowledge*, which were scored on a five-point scale ranging from 1 to 5.

Finally, we asked the participants to complete various questionnaires. We measured psychological entitlement using a scale drawn from Campbell et al. (2004). We aggregate the responses to a single variable, *Entitlement*, based on the average (Cronbach's alpha = 0.93). We measure individuals' relative preferences using the 6-item Iowa-Netherlands Comparison Orientation Measure (INCOM) (Gibbons and Buunk, 1999). Once again, we aggregate the responses to a single variable, *INCOM*, based on the average (Cronbach's alpha = 0.84). According to Gibbons and Buunk (1999), this scale measures the degree to which people engage in comparisons, which differs among different people.

We summarize the definitions of all variables in Table A.1 in the Appendix.

## 4 Results

### 4.1 Summary statistics

We first discuss some summary statistics pertaining to our main treatments, which are divided by treatment and (rank-based) endowment, as shown in Table 1.<sup>12</sup> In our main treatments, rank and endowment are perfectly negatively correlated, as participants received their endowment based on rank. A total of 608 participants completed the main treatments, 604 of whom passed the attention check. We combine the endogenous rankings (effort and skill) into a treatment labeled *combined*. Our first observation is that individuals' risk-taking decreases with endowment. Across all treatments, we find that *risky investment* is the smallest for individuals who received the highest endowment and largest for individuals who received the lowest endowment. The means range from .3426 (effort treatment) to .3704 (skill treatment) for Endowment 10 and from .4776 (luck treatment) to .5348 (skill treatment) for Endowment 5. The differences, ranging from

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<sup>12</sup>Note that some groups feature fewer than three participants. Namely, (a) some participants did not complete the experiment, and (b) some sessions included a number of participants that was not divisible by three due to no-shows. In these cases, we completed the experiment based on a smaller group of people and assigned these individuals ranks starting from the top, i.e., Rank 1.

.1134 (luck treatment) to 0.1850 (effort treatment), are statistically significant, with  $t$ -statistics ranging from 2.4418 (luck treatment) to 3.6098 (effort treatment). Similarly, non-parametric Mann–Whitney U tests show  $p$ -values smaller than .01 for all treatments. Thus, this table provides the first evidence to indicate that risk-taking increases in rank-based endowments. In Figure 1, we illustrate the distribution of shares of risky investments by treatment and endowment.

Table 1 and Figure 1

We briefly consider the differences between the treatments and find that in both the luck and effort treatments, risk-taking increases monotonically in rank-based endowments. However, in the skill treatment, we find no differences in risk-taking between Endowments 10 and 7, although we do find significantly greater risk-taking for Endowment 5.

Before we move to multivariate analyses, we first study the summary statistics by treatment to ensure that our findings are not driven by differences among the subjects included in our treatments (see Table 2). On average, our participants were 35 years of age. Half of our participants were male. Participants' average willingness to take risks was approximately 5, and their average financial literacy was 6.3. On average, participants attempted to complete 16.5 effort tasks and correctly completed 15.2. Nearly all of the participants passed the attention check; only four participants failed this test.

Table 2

We find almost no differences between the treatment groups. The only exceptions are a slightly higher proportion of male participants in the luck treatment than in the skill treatment and differences in terms of the effort that participants showed. Participants in the luck treatment attempted to complete slightly more effort tasks and were also slightly more successful in completing those tasks correctly. These differences are statistically significant at the 10% level. All other differences are neither statistically significant nor economically meaningful. We control for these differences in our multivariate regressions.

In Table A.2 in the Appendix, we provide detailed summary statistics regarding participants' financial literacy scores and effort by treatment and endowment. The table indicates that participants systematically differ with regard to the level of their rank-determining factor (by construction and successful randomization) but do not differ with respect to factors that were not used to determine their rank and endowment. In Table A.3 in the Appendix, we further provide summary statistics concerning the risky investment decision by pseudo rankings and treatment. Risk-taking varies systematically only with regard to real rank-based endowments—not with respect to pseudo rank-based endowments.

## 4.2 The impact of rank-based endowments on risk-taking

Table 3 summarizes the regression results.<sup>13</sup> We study the impact of endowments on risk-taking for the full sample (Column 1) and for the individual treatment groups (Columns 2-5). We control for individuals' overall willingness to take risks, financial literacy, effort, and personality traits. In addition, we control for participants' age and gender. The coefficients of interest are *Endowment 7* and *Endowment 5*, which indicate the differences in risk-taking between participants who ranked second or third from the baseline participants (i.e., those who ranked first and received an endowment of \$10). In Panel B, we additionally report the results of tests performed to investigate the difference between *Endowment 7* and *Endowment 5*.

Table 3

The full sample results shown in Column 1 indicate that participants with Endowment 7 invested, on average, 6.84 pp more in the risky asset ( $t$ -statistic of 2.5213), while participants with Endowment 5 invested, on average, 16.59 pp more in the risky asset ( $t$ -statistic of 5.9422). This finding indicates that risk-taking increases in rank-based endowments and is particularly pronounced among participants who were the lowest rank

<sup>13</sup>We show the Pearson correlation coefficients in Table A.4 in the Appendix.

and received the lowest endowment—in line with the consensus that has been reported in the literature. The control variables show that a higher level of general willingness to take risks (*risk-taking*) is correlated with a higher share allocated to the risky asset, in line with our expectations. We do not observe significant coefficients with regard to our gender and age group dummy variables (not tabulated).

Columns 2 to 5 focus on the different treatments. Across all treatments, participants with Endowment 5 exhibit more pronounced risk-taking. The effect sizes, however, seem to differ, with the coefficients pertaining to the endogenous treatments (combined 21.36 pp; skill 20.10 pp; effort 22.43 pp) being larger than those related to the luck treatment (8.69 pp), thereby providing the first evidence to support Hypothesis 1. In Table 4, we shed more light on these differences. Additionally, across all treatments, the coefficients on Endowment 7 are smaller than those on Endowment 5. However, the coefficients on Endowment 7 are statistically significant only with regard to the combined and effort treatments (8.75 pp; 14.80 pp), while the other treatments feature smaller coefficients that are not significantly different from zero.

Table 4

We focus on the differences between the treatments in Table 4. We employ two variables to study these differences. In Columns 1 to 4, we use *Endowment*. Column 1 once again highlights the significant influence of endowments on the share of risky investments. Columns 2 and 3 highlight differences across treatments. Luck is the baseline treatment, and the interaction coefficients capture the differences between the combined treatment and the effort and skill treatments and the baseline. While overall, a lower endowment yields a higher *risky investment share* of 1.88 pp (per additional USD), the interaction coefficients are negative; the combined and effort interaction coefficients are significantly different from zero (*t*-statistics of -1.8848 and -1.7501, respectively).

Columns 5 to 8 reflect a particular focus on the differences between Endowment 10 and Endowment 5, as a comparison between the extremes may provide particularly interesting insights. Column 5 shows a 15.21 pp higher share of risky assets for Endowment 5 than

for Endowment 10 across all treatments. Columns 6 and 7 then focus on the differences between the treatments and show that this effect is more pronounced with regard to the endogenous rankings (combined, 13.95 pp,  $t$ -statistic of 2.4048). The effect is driven by both the effort (12.35 pp,  $t$ -statistic of 1.7471) and skill treatments (15.41 pp,  $t$ -statistic of 2.2429). Overall, we conclude that risk-taking differs across treatments. The increase in risk-taking with a lower rank-based endowment is greater with regard to the effort and skill treatments than with respect to the baseline luck treatment. These findings provide evidence to support Hypothesis 1.

### 4.3 Risk-taking in the skill and effort treatments

With regard to Hypothesis 2, we test for the differential impacts of endowment on risk-taking between the skill and effort treatments. We expect a low rank-based endowment determined by effort to have a stronger effect on risk-taking than a low endowment determined by skill. As described above, we find a stronger impact on risk-taking with regard to these two determinants than with respect to the luck treatment. Table 1 shows that the differences in the means for *risky investment* between the highest and lowest endowments are 16.44 pp and 18.50 pp, respectively. However, only in the effort treatment is the difference in *risky investment* between the highest and medium endowments significant. The regressions by treatment shown in Columns 4 and 5 in Table 3 reveal similar results.

In Columns 4 and 8 in Table 4, we elaborate on this difference. We conduct multiple regressions based on a subsample that contains only the skill and effort treatments. Skill is used as the baseline in both regression models. Column 4 shows a coefficient of -0.0079 with a  $t$ -statistic of  $-0.5079$  for *Effort · Endowment*. The coefficient is not statistically significant. In Column 8, we report the regression results concerning the impact of Endowment 5 versus that of Endowment 10. While we find a high coefficient with regard to the *Endowment 5 vs. Baseline Endowment 10* variable, the coefficient for the interaction variable *Effort treatment · Endowment 5 vs. Baseline Endowment 10* exhibits a size of

0.0124 with a  $t$ -statistic of 0.1442. The regression results do not reveal any significant differences between the skill and effort treatments. Therefore, we find no clear evidence to support the second hypothesis.

We study the robustness of our findings in Table 5 using alternative measures of participants' effort and overall willingness to take risks. In Column 1, we use the number of effort tasks that participants completed to proxy their effort regardless of whether these tasks were completed correctly or incorrectly. This alternative measure does not alter our conclusions. In Column 2, we use the Holt & Laury risk elicitation task as a proxy of participants' overall willingness to take risks (instead of the scale developed by Dohmen et al. (2011)). We exclude all participants who did not provide consistent results. Once again, our conclusions remain the same. Finally, in Column 3, we use the Holt & Laury risk elicitation task as an alternative attention check and exclude all participants who did not provide consistent replies; however, we use our baseline risk measure from Dohmen et al. (2011). Once again, the results are consistent and support our conclusions.

Table 5

#### 4.4 Disentangling rank and endowment

Rankings can be provided in either an explicit or an implicit form. Experimental endowments can constitute an implicit ranking in at least two different settings. First, participants may learn about their own endowments and about those of other participants. In this case, comparisons among these endowments introduce an implicit ranking. The literature has often considered different endowments across individuals to be equal to a ranking (see, e.g., Dijk et al., 2014; Kirchler et al., 2018, 2020). Second, participants in an experiment may have been informed about the average payoff to be expected as a result of their participation in the experiment. In our setting, participants were informed that the average payment would be \$8. Participants can compare their endowment with this average payoff, in which case they are likely to perceive an endowment below the

average as a below-average ranking and make more risk-seeking choices when they receive such an endowment.

In our experiments, rank and endowment have hitherto been perfectly correlated. Hence, we are not able to determine whether the increased risk-taking is driven by participants' explicit rank or their implicit rank, i.e., their endowment. To disentangle the impacts of rank and endowment, we performed an additional treatment (*absolute performance treatment*) that was not included in our preregistration.<sup>14</sup> We mute the dependence of rank and endowment by defining *absolute* performance thresholds based on data from the main treatments to allocate endowments. To determine ranks, we randomly match participants with a pair of particularly well-performing previous participants or with a pair of particularly poor-performing previous participants. Participants learn about their explicit rank compared to their peers but do not learn about their peers' endowments or possible other levels of endowment.

In contrast to our main treatments, endowment in the *absolute performance treatment* is not determined by rank (i.e., relative performance) but rather by absolute performance compared to that of previous participants. Thus, the endowment is independent of the performance of other participants in their group. We use the data provided by our main treatments to determine the performance thresholds for receiving an endowment of \$7 or \$10. Participants who answered at least 6 (7) financial literacy questions correctly received an endowment of \$7 (\$10). Participants who solved at least 12 (16) real effort tasks correctly received an endowment of \$7 (\$10). Participants whose performance is below the lower threshold are assigned an endowment of \$5. In the luck treatment, we conduct an additional lottery to assign endowments independently of rank. To ensure sufficient variation between rank and endowment, we randomly select a small subset of previous participants who scored in the upper or lower deciles on the financial literacy quiz or real effort task, respectively. Then, participants are randomly matched with a pair of previous participants and receive their rank based solely on their relative performance in relation to this peer group. As a result, this additional treatment allows us to observe

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<sup>14</sup>We summarize the experimental instructions pertaining to the *absolute performance treatment* in Appendix B.

the risk-taking exhibited by individuals who were ranked third (i.e., last) but still received an endowment \$10. The treatment also allows us to observe the risk-taking of individuals who were ranked first but received an endowment of \$5.

We summarize the results of the *absolute performance treatment* in Table 6. In total, 469 participants completed the additional treatment, 464 of whom passed the attention check. First, we determine the variation between rank and endowment. The correlation coefficient between these two variables is 0.0444 ( $p$ -value = 0.3376, not tabulated), thus indicating the successful randomization between rank and endowment. Panel A in Table 6 shows the means and standard deviations of the risky investment by endowment level. The share of the risky investment decreases in participants' endowments. Additionally, with regard to variation by rank, we observe little systematic variation with regard to Endowments 5 and 10. With respect to Endowment 7, the variation by rank is in line with the notion that the risky investment increases from Rank 1 to Rank 3. However, overall, the summary statistics indicate that increased risk-taking is driven by endowment rather than by rank. We shed more light on this notion and provide a formal test in Panel C.

Table 6

Next, we consider the variation by endowment and treatment, i.e., *luck*, *combined*, *skill*, and *effort*. Panel B in Table 6 summarizes the risky investment decision by treatment across different levels of endowment. Keeping in mind that endowments were assigned independent of the rank in the *absolute performance treatment*, the variation across treatments is similar to the main treatments (see Table 1). In particular, in the skill and effort treatments, participants who earned an endowment of \$10 invested less in the risky asset. Finally, Panel C in Table 6 formally tests the impacts of rank and endowment on participants' share of risky investments. Column 1 shows a statistically significant negative coefficient of endowment (-0.0203,  $t$ -statistic of -2.7686). The coefficient for rank is not significantly different from zero ( $t$ -statistic of 0.5893). Column 2 paints a similar picture. Participants who received an endowment of (only) \$5 invested significantly more into the risky asset (0.1019,  $t$ -statistic of 2.7509). The coefficients on rank are not significantly



different from zero. Overall, these findings support the notion that participants' implicit endowment-based rank (i.e., the endowment) drives their decision to invest more or less in the risky asset, while the explicit rank is subordinate.

## 4.5 The impact of personality

Next, we address Hypothesis 3 and the impact of personality on our results. For each personality trait, we split the sample at the median, thus creating two subsamples that reflect a low (LO) or high (HI) personality trait score. We argue that, in particular, participants who exhibit high entitlement scores increase their risk-taking in their rank-based endowment. We summarize the results in Columns 1 and 2 in Table 7. While we do not find statistically significant results in the LO entitlement model, we observe that the effort treatment in particular exhibits a negative coefficient in the HI entitlement model (*Effort treatment · Endowment*, -4.31 pp, *t*-statistic of -2.2398). A *t*-test with regard to the difference in the interaction coefficients between the HI and LO entitlement models exhibits statistical significance at the 10% level (*t*-statistics of 1.7042) with regard to the *Effort treatment · Endowment* variable. The difference between the interaction coefficients pertaining to the skill treatment, however, is not statistically significant (*t*-statistic of 0.1406). Overall, the evidence indicating that a high level of entitlement moderates the impact of the individual's rank-based endowment on risk-taking is mixed at best (Hypothesis 3a).

Table 7

In Columns 3 and 4, we explore Hypothesis 3b and the role of the INCOM scale in the relationship between the endowment and risk-taking. The results are similar to our observations concerning entitlement. In the high INCOM model (Column 4), we observe a negative interaction coefficient with regard to the effort treatment (*Effort treatment · Endowment*, -3.64 pp, *t*-statistic of -1.9207). We examine the difference in the coefficients between the low and high INCOM models and find no statistically significant difference

( $t$ -statistic of 0.7081 with regard to the skill treatment and 1.0264 respect the effort treatment). Overall, these results do not provide evidence indicating that an individual's personality may moderate the impact of rank-based endowments on risk-taking.

## 4.6 Robustness tests

To alleviate concerns that our findings may be driven by experimenter demand effects (Zizzo, 2010), we asked the participants what they believed the goal of the study was. Then, we eliminate all of the participants who correctly identified the goal of the study and repeat our main analysis (see Table A.5 in the Appendix).<sup>15</sup> Our conclusions remain unchanged.

Finally, we address the concern that imperfect randomization between treatments (in particular with respect to gender; see Table 2 and our discussion above) may drive our findings. We interact the treatment indicators with the male dummy variable to capture systematic differences in the share of male participants among the treatments and summarize the results in Table A.6 in the Appendix. Once again, our conclusions remain unchanged.

## 5 Discussion

Individuals routinely engage in social comparison. Rankings and endowment distributions are an explicit form of social comparison and facilitate the quantification of one's position. Rankings emerge in many situations; for example, one individual may compare herself to others due to a natural drive. Alternatively, some contexts may feature explicit rankings, as in the case of sports. In school, rankings emerge when children compare their grades with those of others. Rank-based endowments can also be used in institutionalized settings such as tournaments to enhance participants' performance. Research has shown that rankings and the related endowments impact economic decision-making beyond the

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<sup>15</sup>We show the complete list of all responses and our classifications in the Internet Appendix C.

decision concerning the optimal amount of effort to invest to maximize outcomes from higher ranks; rankings also impact risk-taking in subsequent risk-taking decisions (as shown by, e.g., Bault et al., 2008; Dijk et al., 2014; Schwerter, 2023). We contribute to this literature by showing that relative rank-based endowments have different impacts depending on the factors that determine the endowments.

By conducting an incentivized experiment, we examine the effect of rank-determining factors on risk-taking. In line with the findings of prior, we observe higher levels of risk-taking among individuals with (lower endowments based on) lower ranks than among their peers with (higher endowments based on) higher ranks. We enhance our understanding of how rankings impact risk-taking by showing that the determinant of a ranking matters; rankings impact risk-taking less when they are based on luck (exogenous) than when they are based on factors that can be influenced by individuals (endogenous). In addition, we explicitly consider the form of such rankings and distinguish between the impact of an explicit ranking and that of an implicit ranking based on endowments. We find that, at least in our setting, the impact on risk-taking is driven by (rank-based) endowments rather than primarily by ranks. In line with our hypothesis, we find that risk-taking by individuals in the bottom ranks and those with lower endowments is more pronounced in the skill and effort treatments, i.e., situations in which the externalization of a low rank-based endowment may be more difficult. Regarding different factors that can be influenced by the individual, our findings provide no evidence indicating that either effort or skill has a more substantial impact.

Psychological entitlement and one's tendency to engage in social comparisons may influence one's perceptions of one's own endowment and the corresponding impacts on risk-taking. In particular, individuals who obtain high *entitlement* and *INCOM* (relative preferences) scores may engage in more risk-taking when they perform worse than do individuals who obtain low scores with regard to these two personality traits. Our results do not provide evidence to support this claim.

Our findings enhance our understanding of how rankings impact individuals' decision-making. In job settings, rankings determine compensation and can thereby be utilized

to enhance performance. In tournament settings, rankings are usually associated with economic incentives to encourage participants to exert more effort in competitions. We show not only that rankings impact risk-taking but also that rank-determining factors influence the impact of rankings on risk-taking. Our findings have important implications in settings in which rank-based endowments are routinely utilized. For example, in the job setting, our findings predict that the subsequent investment decisions of a fund manager who receives a low endowment in an effort-based task will be characterized by higher levels of risk-taking. Thus, a firm must monitor subsequent investment decisions closely or add risk-reducing incentives for individuals who perform poorly in terms of effort.

Finally, our findings highlight the importance of carefully disentangling the potential impact of rank from that of endowment. At least in our setting, the endowment received by individuals' relative to the average endowment in particular leads to the increase in risk-taking observed among those individuals.

**Conflicts of interest** All authors declare that they have no conflicts of interest.

**Ethics approval** All procedures involving human participants performed as part of the studies were implemented in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was reviewed and approved by the German Association for Experimental Economic Research e.V. (<https://gfew.de/ethik/iUtnQW5G>).

**Informed consent** Informed consent was obtained from all individual participants included in the study.

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Table 1: Summary statistics for the risky investment decision

Treatment	Endowment	Mean	SD	N	<i>t</i> -tests	Mann-Whitney U
Luck	10	0.3642	0.2886	76	-	-
Luck	7	0.4180	0.3128	69	1.0731	0.4329
Luck	5	0.4776	0.2666	67	2.4418	0.0059
Combined	10	0.3560	0.2611	146	-	-
Combined	7	0.4133	0.3087	138	1.6839	0.1417
Combined	5	0.5315	0.2807	108	5.0740	0.0000
Skill	10	0.3704	0.2662	70	-	-
Skill	7	0.3601	0.2711	67	0.2243	0.8951
Skill	5	0.5348	0.2693	58	3.4563	0.0005
Effort	10	0.3426	0.2574	76	-	-
Effort	7	0.4634	0.3347	71	2.4398	0.0317
Effort	5	0.5276	0.2961	50	3.6098	0.0003

The table reports summary statistics for the risky investment decision by treatment group and rank-based endowment. The columns *Mean* and *SD* show the mean and standard deviation of the risky investment, respectively. *t*-tests reports the test statistics for unpaired two-sample *t*-tests. For each treatment group, the risky investment decisions at Endowment 7 and Endowment 5 are compared to those at Endowment 10. *Mann-Whitney U* reports the *p*-values for unpaired two-sample Mann-Whitney U tests. For each treatment group, the risky investment decisions at Endowment 7 and Endowment 5 are compared to those at Endowment 10.

Table 2: Summary statistics

	Panel A: Summary statistics				Panel B: <i>t</i> -tests		
	Full	Luck	Skill	Effort	Luck vs. Skill	Luck vs. Effort	Skill vs. Effort
Mean (risky investment share)	0.4221	0.4176	0.4158	0.4331	0.0626	0.5249	0.5868
Risk-taking	5.0265	4.8962	5.0974	5.0964	0.7895	0.7953	0.0038
Financial literacy	6.3228	6.4623	6.3641	6.1320	0.4496	1.5558	1.0676
Effort	15.2334	15.8349	14.6974	15.1168	1.7799	1.1118	0.6637
Effort_try	16.5099	17.1745	15.8872	16.4112	2.0989	1.2344	0.8659
Entitlement	3.0074	2.9911	2.9977	3.03440	0.0521	0.3329	0.2678
INCOM	3.3226	3.3333	3.3624	3.2716	0.3694	0.7771	1.0486
Mean (age)	35.3328	35.0330	35.6000	35.3909	0.4972	0.3141	0.1784
Share male	0.4934	0.5377	0.4462	0.4924	1.8992	0.9142	0.9642
Share nonbinary	0.0083	0.0047	0.0103	0.0102	0.6380	0.6342	0.0051
N	604	212	195	197	-	-	-

The table reports summary statistics for the overall sample and each treatment group separately in Panel A. Panel B reports the test statistics for unpaired two-sample *t*-tests between the treatment groups. Luck vs. Skill compares the luck and skill treatment groups. Luck vs. Effort compares the luck and effort treatment groups. Skill vs. Effort compares the skill and effort treatment groups.

Table 3: The impact of endowment on risk-taking

Panel A	Dependent variable: Risky investment share				
	Full	Luck	Combined	Skill	Effort
(Intercept)	0.0665 (0.7229)	0.0113 (0.0699)	0.0437 (0.4035)	0.1587 (1.0142)	-0.0764 (-0.4774)
Endowment 7	0.0684 (2.5213)	0.0447 (0.9035)	0.0875 (2.6156)	0.0249 (0.5426)	0.1480 (2.7236)
Endowment 5	0.1659 (5.9422)	0.0869 (1.9482)	0.2136 (5.7497)	0.2010 (2.8565)	0.2243 (3.6567)
Risk-taking	0.0325 (6.3862)	0.0307 (3.3208)	0.0343 (5.6413)	0.0414 (5.5958)	0.0278 (2.9136)
Financial literacy	0.0016 (0.2556)	0.0078 (0.6467)	-0.0002 (-0.0299)	-0.0050 (-0.3899)	-0.0008 (-0.0786)
Effort	0.0025 (1.3660)	0.0013 (0.3819)	0.0050 (2.2310)	0.0058 (2.0088)	0.0056 (1.3322)
INCOM	0.0333 (2.1551)	0.0567 (1.7886)	0.0256 (1.4364)	0.0309 (1.4515)	0.0240 (0.8826)
Entitlement	-0.0091 (-0.9824)	-0.0072 (-0.3890)	-0.0110 (-1.0038)	-0.0287 (-2.0006)	0.0026 (0.1646)
Additional controls: age, gender	Yes	Yes	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.1286	0.0940	0.1556	0.2131	0.1039
Num. obs.	602	211	391	195	196
Panel B	Endowment 7 vs. Endowment 5				
<i>t</i> -statistics	2.5017	0.6340	2.5216	2.0947	0.9310

Panel A presents the results of our full sample and the subsample regression analyses for each treatment group. *Full* presents the results for our overall sample. *Luck*, *Skill*, *Effort* presents the results for the regressions of the respective subsamples. *Combined* presents the combined results for the skill and effort treatments. Variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses. Panel B reports the results for *t*-tests on the difference between the coefficients for Endowments 7 and 5 in the regression analyses.

Table 4: Differences between treatments

Dependent variable: Risky investment share								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(Intercept)	0.6395 (14.9023)	0.2614 (2.3669)	0.2601 (2.3460)	0.4092 (3.9404)	0.3588 (19.8290)	0.0202 (0.1895)	0.0172 (0.1599)	0.0099 (0.0726)
Endowment	-0.0289 (-5.3246)	-0.0188 (-2.1211)	-0.0188 (-2.1184)	-0.0366 (-3.3769)				
Combined		0.1700 (1.9313)				-0.0458 (-1.1642)		
Combined · Endowment		-0.0215 (-1.8848)						
Skill treatment			0.1450 (1.4031)				-0.0492 (-1.0762)	
Effort treatment			0.2006 (1.8920)	0.0842 (0.7087)			-0.0430 (-0.9418)	-0.0222 (-0.4383)
Skill treatment · Endowment			-0.0199 (-1.4806)					
Effort treatment · Endowment			-0.0238 (-1.7501)	-0.0079 (-0.5097)				
Endowment 5 vs. Baseline Endowment 10					0.1521 (5.5169)	0.0960 (2.1380)	0.0967 (2.1490)	0.2286 (3.8491)
Combined · Endowment 5 vs. Baseline Endowment 10						0.1395 (2.4048)		
Skill treatment · Endowment 5 vs. Baseline Endowment 10							0.1541 (2.2429)	
Effort treatment · Endowment 5 vs. Baseline Endowment 10							0.1235 (1.7471)	0.0124 (0.1442)
Risk-taking		0.0326 (6.4183)	0.0326 (6.3443)	0.0338 (5.5257)		0.0329 (5.8044)	0.0331 (5.7787)	0.0329 (4.7718)
Financial literacy		0.0029 (0.4593)	0.0029 (0.4274)	-0.0014 (-0.1730)		0.0105 (1.5177)	0.0114 (1.4841)	0.0034 (0.3486)
Effort		0.0029 (1.5481)	0.0030 (1.5306)	0.0051 (2.1434)		0.0043 (1.9042)	0.0040 (1.6961)	0.0080 (2.7244)
INCOM		0.0343 (2.2075)	0.0351 (2.2716)	0.0272 (1.5115)		0.0291 (1.5701)	0.0288 (1.5432)	0.0114 (0.5283)
Entitlement		-0.0095 (-1.0172)	-0.0095 (-1.0258)	-0.0097 (-0.8956)		-0.0128 (-1.2154)	-0.0132 (-1.2401)	-0.0109 (-0.8897)
Additional controls: Age, gender	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.0396	0.1297	0.1282	0.1517	0.0692	0.1581	0.1541	0.1799
Num. obs.	604	602	602	391	397	395	395	253

The table reports results of ordinary least squares (OLS) regression analyses. Models 1-3 contain the full sample. Models 4 and 8 test for the difference between the skill and effort treatments. In Models 5-8, only the top and bottom endowments are tested against each other, while the middle endowment is removed from the analyses. Variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses.

Table 5: Alternative risk-taking and effort measures

	Dependent variable: Risky investment share		
	(1)	(2)	(3)
(Intercept)	0.3270 (3.3345)	0.7700 (6.7293)	0.3251 (3.1211)
Endowment	-0.0174 (-1.9481)	-0.0106 (-1.0840)	-0.0145 (-1.5297)
Skill treatment · Endowment	-0.0201 (-1.4777)	-0.0273 (-1.8821)	-0.0241 (-1.6598)
Effort treatment · Endowment	-0.0246 (-1.8053)	-0.0294 (-1.9661)	-0.0271 (-1.8745)
Skill treatment	0.1484 (1.4215)	0.2023 (1.7596)	0.1769 (1.5542)
Effort treatment	0.2052 (1.9279)	0.2127 (1.8041)	0.2042 (1.7867)
Risk-taking	0.0313 (6.2443)		0.0326 (6.0254)
Holt & Laury		-0.0402 (-6.0850)	
Financial literacy	0.0028 (0.4116)	-0.0005 (-0.0641)	0.0021 (0.2765)
Effort		0.0016 (0.7568)	0.0032 (1.5362)
Effort try	0.0041 (1.9824)		
Additional controls: age, gender	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.1239	0.1297	0.1251
Num. obs.	602	535	535

The table reports the results of alternative specifications of OLS regression models. In column 3, participants who answered the Holt & Laury task inconsistently were excluded. Variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses.

Table 6: Disentangling endowment and rank

Panel A: Summary statistics by endowment and rank						
Endowment	Mean	SD	Rank	Mean	SD	N
10	0.3405	0.2917	{ 1	0.3390	0.2909	78
			2	0.3769	0.3145	29
			3	0.3266	0.2856	67
7	0.4062	0.3136	{ 1	0.3631	0.3294	43
			2	0.4160	0.3365	17
			3	0.4474	0.2878	41
5	0.4803	0.3171	{ 1	0.4744	0.3150	68
			2	0.4525	0.3078	48
			3	0.5041	0.3275	73

Panel B: Summary statistics by treatment and endowment						
Treatment	Endowment	Mean	SD	N	<i>t</i> -tests	Mann-Whitney-U
Luck	10	0.3721	0.2972	61	-	-
Luck	7	0.4563	0.2980	54	1.5143	0.1125
Luck	5	0.4243	0.2902	79	1.0404	0.2259
Combined	10	0.3235	0.2885	113	-	-
Combined	7	0.3486	0.3241	47	0.4619	0.7669
Combined	5	0.5205	0.3305	110	4.7392	0.0000
Skill	10	0.3540	0.3079	63	-	-
Skill	7	0.4246	0.3708	18	0.7386	0.5739
Skill	5	0.5022	0.3149	54	2.5650	0.0107
Effort	10	0.2850	0.2600	50	-	-
Effort	7	0.3015	0.2883	29	0.25371	0.8457
Effort	5	0.5382	0.3468	56	4.2801	0.0001

Panel A reports summary statistics for the risky investment decision by endowment and rank. The columns Mean and SD show the mean and standard deviation of the risky investment, respectively. Panel B reports summary statistics for the risky investment decision by treatment group and endowment. *t*-tests reports the test statistics for unpaired two-sample *t*-tests. For each treatment group, the risky investment decisions of Rank 2 and Rank 3 are compared to those of Rank 1. *Mann-Whitney U* reports the *p*-values for unpaired two-sample Mann-Whitney U tests. Panel C shows the results of regression analyses with endowment and rank as explanatory variables. Rank = 2 is a dummy variable that takes a value of 1 if the participant achieved rank 2, and 0 otherwise; Rank = 3 is a dummy variable that takes a value of 1 if the participant achieved rank 3, and 0 otherwise; Endowment = 7 is a dummy variable that takes a value of 1 if the participant received an endowment of \$7, and 0 otherwise; Endowment = 10 is a dummy variable that takes a value of 1 if the participant received an endowment of \$10, and 0 otherwise. The remaining variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses.

Table 6: Disentangling endowment and rank (cont.)

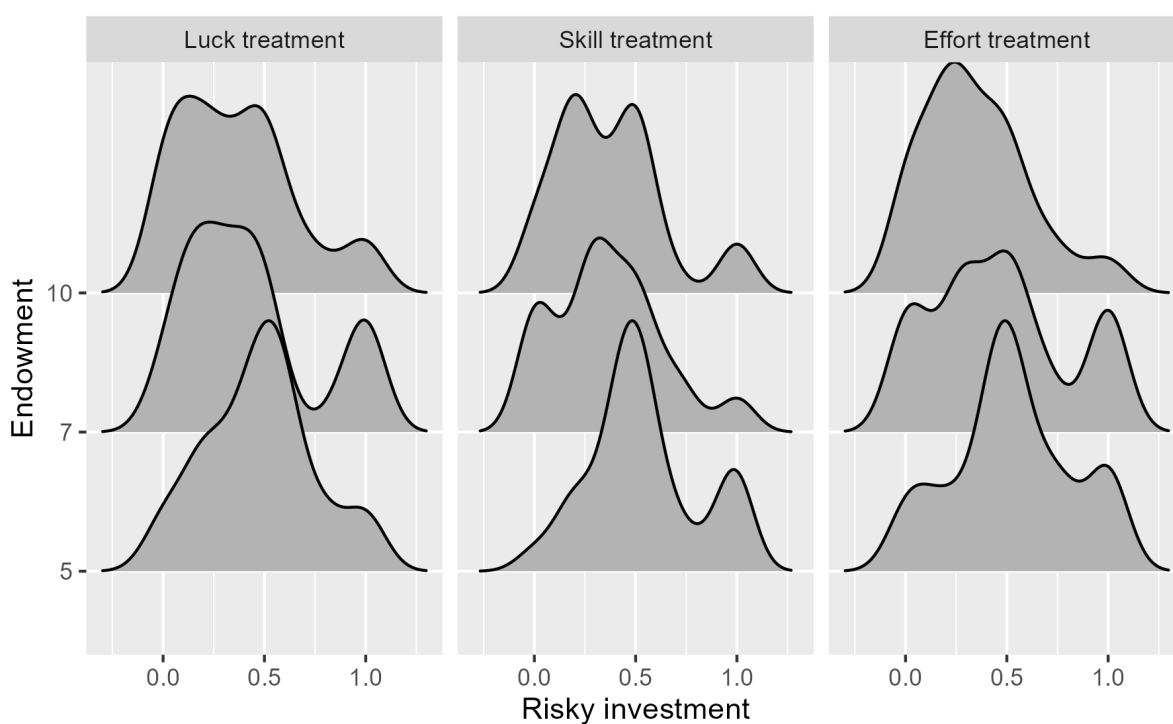
Panel C: Testing endowment vs. rank		
	Dependent variable: Risky investment share	
	(1)	(2)
(Intercept)	0.3952 (3.3266)	0.2028 (1.6755)
Rank	0.0094 (0.5893)	
Endowment	-0.0203 (-2.7686)	
Rank = 2		0.0039 (0.1060)
Rank = 3		0.0189 (0.5900)
Endowment = 7		0.0589 (1.5150)
Endowment = 5		0.1019 (2.7509)
Risk-taking	0.0309 (4.8215)	0.0309 (4.7839)
Financial literacy	0.0027 (0.3489)	0.0027 (0.3589)
Effort	-0.0032 (-1.1834)	-0.0032 (-1.1928)
INCOM	0.0098 (0.5246)	0.0099 (0.5294)
Entitlement	-0.0101 (-0.8622)	-0.0100 (-0.8544)
Additional controls: age , gender	Yes	Yes
Adj. R <sup>2</sup>	0.1008	0.0968
Num. obs.	461	461

Table 7: Personality traits

	Entitlement			INCOM		
	LO	HI	<i>t</i> -test	LO	HI	<i>t</i> -test
(Intercept)	0.2886 (1.9901)	0.4058 (3.4162)	0.6251	0.3160 (2.1523)	0.3927 (3.1099)	0.3964
Endowment	-0.0173 (-1.4516)	-0.0143 (-1.1446)	0.1727	-0.0207 (-1.6163)	-0.0196 (-1.5739)	0.0644
Skill treatment · Endowment	-0.0183 (-0.8905)	-0.0220 (-1.2606)	0.1406	-0.0064 (-0.3060)	-0.0258 (-1.4489)	0.7081
Effort treatment · Endowment	0.0032 (0.1654)	-0.0431 (-2.2398)	1.7042	-0.0084 (-0.4300)	-0.0364 (-1.9207)	1.0264
Skill treatment	0.1335 (0.8361)	0.1564 (1.1737)	0.1098	0.1049 (0.6522)	0.1463 (1.0783)	0.1968
Effort treatment	-0.0260 (-0.1716)	0.3546 (2.3405)	1.7755	0.1292 (0.8635)	0.2658 (1.7411)	0.6388
Risk-taking	0.0424 (5.6726)	0.0224 (3.1902)	1.9507	0.0212 (2.8594)	0.0372 (5.3728)	1.5676
Financial literacy	0.0147 (1.3666)	-0.0104 (-1.1371)	1.7777	0.0005 (0.0514)	0.0039 (0.4163)	0.2468
Effort	-0.0006 (-0.1944)	0.0055 (2.1292)	1.5463	0.0063 (2.1521)	0.0028 (1.0427)	0.8940
Additional controls: Age, gender	Yes	Yes		Yes	Yes	
Adj. R <sup>2</sup>	0.1312	0.1216		0.0764	0.1643	
Num. obs.	281	321		290	312	

This table presents the OLS regression results of subsample analyses by personality traits. For each personality trait, i.e., entitlement and INCOM, the sample is split at the median. LO represents the subsample below the median value, and HI represents the subsample for median or higher values for each of the personality traits, respectively. Variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses. *t*-test reports the results of equality tests of the coefficients for the LO and HI subsamples, respectively.

Figure 1: Distribution of share of risky investments by treatment and endowment



This figure presents density plots of the distribution of the risky investment decision by treatment group and endowment.



# Appendix

Table A.1: Variable definitions

Variable	Definition
<i>Dependent variables</i>	
Risky investment share	Participants' invested share of their endowment in the risky investment alternative based on Gneezy and Potters (1997).
<i>Treatments</i>	
Luck treatment	Baseline treatment. Participants are randomly assigned a rank in their group.
Skill treatment	Participants are ranked relative to each other within their particular groups of three based on their scores on the financial literacy quiz.
Effort treatment	Participants are ranked relative to each other within their particular groups of three based on their scores on the real effort task.
Combined treatment	Participants are ranked based on endogenous factors. Participants in the skill and effort treatments are considered.
<i>Control variables</i>	
Endowment	Endowment is our main variable of interest. Endowment designates a participant's endowment and ranges from \$5 to \$10. In our main treatment, endowment is rank-based and thus determined by participants' rank relative to other participants in their group. Depending on their rank, participants receive either \$5, \$7 or \$10. In the <i>absolute performance treatment</i> (see Section 4.4), Endowment is based on participants' absolute performance as compared to a fixed threshold; these endowments are thus independent of the performance of other participants in their group. Participants who answered at least 6 (7) financial literacy questions correctly received an endowment of \$7 (\$10). Participants who solved at least 12 (16) real effort tasks correctly received an endowment of \$7 (\$10). Participants who obtained scores below these thresholds received an endowment of \$5. In the luck treatment, endowments were assigned randomly.
Rank	Participants' rank in their group relative to that of other participants in the group. The rank depends on either financial literacy skill or effort; alternatively it is assigned randomly. The rank-determining factor in question is assigned randomly to each group of three participants. Ranks range from 1 to 3. Rank 1 is the top rank in the group, and Rank 3 is the bottom rank in the group.
Age	6-level scale measuring participants' age.
Male	Dummy variable that takes the value of 1 if the participant is male and 0 otherwise.
Financial literacy	Participant's score in the financial literacy quiz. Measured as the number of correctly answered financial literacy questions ranging from 0 to 10.
Effort	Participants' score in the real effort task. Measured as the number of correctly entered random letter sequences. Open-ended scale.
Effort try	Participants' alternative score in the real effort task. Measured as the number of entered random letter sequences; incorrect entries are included.
Risk-taking	Participants' self-reported risk attitude; 11-point scale based on Dohmen et al. (2011).
Holt & Laury	Participants' risk aversion elicited via a multiple pricing list following Holt and Laury (2002).
INCOM	6-item scale using a short version of the Iowa-Netherlands Comparison Orientation Measure (Gibbons and Buunk, 1999). Measured on a 5-point Likert scale.
Entitlement	9-item scale measuring psychological entitlement (Campbell et al., 2004). Measured on a 7-point Likert scale.
Study goal	Dummy variable that takes the value of 1 if participants correctly identified the study goal and 0 otherwise.
Attention	Dummy variable that takes the value of 1 if participants passed the attention check and 0 otherwise.

Table A.2: Summary statistics for rank determining tasks

Treatment	Endowment	Financial literacy			Effort			count
		Mean	SD	<i>t</i> -test	Mean	SD	<i>t</i> -test	
Luck	10	6.5658	2.1499	-	15.3289	6.0297	-	76
Luck	7	6.5507	2.2722	0.0409	15.9710	6.9069	0.5936	69
Luck	5	6.2537	2.1836	0.8590	16.2687	7.3187	0.8313	67
Skill (financial literacy)	10	8.0857	1.3269	-	14.6429	6.0769	-	70
Skill (financial literacy)	7	6.4030	1.5182	6.8955	15.6866	6.7335	0.9511	67
Skill (financial literacy)	5	4.2414	1.8761	13.122	13.6207	5.4767	1.0001	58
Effort	10	6.4474	1.9418	-	19.5000	5.5940	-	76
Effort	7	5.9155	2.1095	1.5873	14.0704	4.5742	6.4599	71
Effort	5	5.9600	2.2854	1.2417	9.9400	4.9215	10.0990	50

The table reports summary statistics for the financial literacy score and the real effort task by treatment and rank. *t*-test reports test statistics for equality tests between Endowments 7 and 5 relative to baseline Endowment 10, respectively.

Table A.3: Pseudo rankings: Summary statistics for the risky investment decision

Panel A		Skill Pseudo ranking				
Treatment	Skill-Endowment	Risky investment share				
		Mean	SD	N	<i>t</i> -tests	Mann-Whitney U
Effort	10	0.4138	0.2890	79	-	-
Effort	7	0.4633	0.3377	70	0.9545	0.4156
Effort	5	0.4207	0.2827	48	0.1324	0.8829
Luck	10	0.4198	0.3108	84	-	-
Luck	7	0.4072	0.2524	78	0.2840	0.7103
Luck	5	0.4299	0.3228	50	0.1776	0.8971

Panel B		Effort Pseudo ranking				
Treatment	Effort-Endowment	Risky investment share				
		Mean	SD	N	<i>t</i> -tests	Mann-Whitney U
Skill	10	0.4433	0.2661	76	-	-
Skill	7	0.4258	0.3070	69	0.365	0.3591
Skill	5	0.3602	0.2519	50	1.7702	0.1153
Luck	10	0.4248	0.2871	83	-	-
Luck	7	0.4195	0.3064	79	0.1129	0.8917
Luck	5	0.4024	0.2840	50	0.4382	0.7111

The table reports summary statistics for the risky investment decision by treatment group and pseudo rank-based endowment. Panel A shows pseudo endowments based on skill; Panel B shows pseudo endowments based on effort. The columns *Mean* and *SD* show the mean and standard deviation of the risky investment, respectively. *t*-tests reports the test statistics for unpaired two-sample *t*-tests. For each treatment group, the risky investment decisions of Endowments 7 and 5 are compared to those of Endowment 10. *Mann-Whitney U* reports the *p*-values for unpaired two-sample Mann-Whitney U tests. For each treatment group, the risky investment decisions of Endowments 7 and 5 are compared to those of Endowment 10.

Table A.4: Pearson's correlation table

	Risky investment share	Endowment	Risk-taking	Holt & Laury	Financial literacy	Effort	Effort try	INCOM	Entitlement
Risky investment share									
Endowment	-0.2030***								
Risk-taking	0.2924***	-0.0144							
Holt & Laury	-0.2743***	0.0325	-0.2910***						
Financial literacy	-0.0473	0.2766***	-0.0555	-0.0577					
Effort	0.0257	0.1822***	-0.0373	-0.0147	0.2262***				
Effort try	0.0439	0.1894***	-0.0129	-0.0087	0.2095***	0.9674***			
INCOM	0.0703	0.0837*	0.0061	-0.0765	-0.0568	0.0452	0.0522		
Entitlement	0.0530	-0.0704	0.2446***	-0.0769	-0.1550***	-0.1589***	-0.1606***	0.2090***	
Age	-0.1004*	0.0047	-0.1379***	-0.0794	0.2100***	-0.2994***	-0.3114***	-0.1778***	-0.0389

This table presents pairwise Pearson correlation coefficients. Variable definitions can be found in Table A.1 in the Appendix. Asterisks indicate significance levels:  $p < .001$  \*\*\*,  $p < .01$  \*\*,  $p < .05$  \*.

Table A.5: Demand effects

	Dependent variable: Risky investment share			
	(1)	(2)	(3)	(4)
(Intercept)	0.6312 (14.4012)	0.2399 (2.0810)	0.0047 (0.0428)	0.0049 (0.0445)
Endowment	-0.0279 (-5.0120)	-0.0177 (-1.9107)		
Endowment 5 vs. Baseline Endowment 10			0.1746 (5.9396)	0.0950 (2.0213)
Skill treatment · Endowment		-0.0188 (-1.3669)		
Effort treatment · Endowment		-0.0252 (-1.7754)		
Skill treatment · Endowment 5 vs. Baseline Endowment 10				0.1462 (2.0830)
Effort treatment · Endowment 5 vs. Baseline Endowment 10				0.1277 (1.7326)
Skill treatment		0.1454 (1.3787)	0.0247 (0.7510)	-0.0431 (-0.9144)
Effort treatment		0.2128 (1.9351)	0.0090 (0.2703)	-0.0483 (-1.0063)
Risk-taking		0.0310 (5.8333)	0.0311 (5.2839)	0.0320 (5.4622)
Financial literacy		0.0009 (0.1273)	0.0074 (1.0284)	0.0103 (1.3285)
Effort		0.0035 (1.7506)	0.0039 (1.7381)	0.0046 (1.9068)
INCOM		0.0358 (2.2588)	0.0271 (1.4056)	0.0278 (1.4595)
Entitlement		-0.0059 (-0.6188)	-0.0068 (-0.6235)	-0.0088 (-0.8079)
Additional controls: Age, gender	No	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.0370	0.1176	0.1340	0.1415
Num. obs.	574	572	377	377

The table presents results from OLS regression analyses. Participants who correctly identified the study goal were excluded. Variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses.

Table A.6: Robustness: Gender randomization

	Dependent variable: Risky investment share			
	(1)	(2)	(3)	(4)
(Intercept)	0.6033 (12.3185)	0.2542 (2.2805)	0.0153 (0.1427)	0.0164 (0.1519)
Endowment	-0.0302 (-5.4889)	-0.0189 (-2.1097)		
Endowment 5 vs. Baseline Endowment 10			0.1763 (6.1127)	0.0953 (2.1033)
Effort treatment · Male	0.0127 (0.2203)	0.0077 (0.1387)	0.0025 (0.0387)	-0.0027 (-0.0421)
Skill treatment · Male	-0.0022 (-0.0388)	-0.0235 (-0.4416)	-0.0144 (-0.2248)	-0.0006 (-0.0087)
Skill treatment	0.0086 (0.2339)	0.1511 (1.4507)	0.0289 (0.6522)	-0.0501 (-0.8863)
Effort treatment	0.0175 (0.4320)	0.1957 (1.7874)	0.0087 (0.1895)	-0.0453 (-0.8033)
Skill treatment · Endowment		-0.0190 (-1.3975)		
Effort treatment · Endowment		-0.0239 (-1.7507)		
Skill treatment · Endowment 5 vs. Baseline Endowment 10				0.1571 (2.2560)
Effort treatment · Endowment 5 vs. Baseline Endowment 10				0.1271 (1.7855)
Male	0.0745 (1.8919)	0.0399 (0.9996)	0.0366 (0.7944)	0.0375 (0.8190)
Risk-taking		0.0331 (6.4404)	0.0323 (5.6302)	0.0331 (5.7831)
Financial literacy		0.0027 (0.3885)	0.0076 (1.0754)	0.0112 (1.4366)
Effort		0.0029 (1.5012)	0.0034 (1.5571)	0.0041 (1.7233)
INCOM		0.0361 (2.3411)	0.0288 (1.5184)	0.0293 (1.5612)
Entitlement		-0.0095 (-1.0280)	-0.0114 (-1.0733)	-0.0134 (-1.2563)
Additional controls: Age	No	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.0498	0.1299	0.1438	0.1526
Num. obs.	597	597	391	391

The table reports OLS regression results for a robustness analysis to control for imperfect randomization of gender across treatments. Variable definitions can be found in Table A.1 in the Appendix. *t*-statistics are reported in parentheses.

Skill, effort, luck:

The impact of rankings on  
risk-taking in a social setting

Internet Appendix

Sebastian Krull    Matthias Pelster    Petra Steinorth

# A Experimental design

## Welcome

Thank you for participating in today's study!

During the study you will be confronted with various decisions. Please imagine being in the situation respectively and answer all questions truthfully. Additionally, you are required to answer several questions about yourself and your knowledge in different contexts.

Before you will be able to start, please carefully read the following instructions:

- Note that we do not have access to your personal information and that your participation is anonymous.
- You can decide to quit the study at any time during your participation by closing your browser window.
- During the study you will not be able to change your answers once you have submitted a page. You cannot navigate to prior pages using your browser.
- You will receive a performance-based compensation upon completing the study. The average compensation is \$8.
- It will take you about 20 minutes to fully complete the study.
- Note that there will be attention checks throughout the study.

Please press "Next" to acknowledge that you have read and agreed with the conditions as stated above. If you do not agree with the conditions, please close your browser window.

\*\*\*



**Please choose!**

Are you generally a person who is willing to take risks or do you try to avoid taking risks?  
On an 11-point Likert scale ranging from “not at all willing to take risks” to “very willing to take risks”.

- Not at all willing to take risks
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- Very willing to take risks

\*\*\*

**Please choose!**

Please pick a nickname.

« text field »

Please choose an avatar.

- Avatar 1
- Avatar 2
- Avatar 3
- Avatar 4
- Avatar 5

\*\*\*

## Instructions

In the following 10 decisions are presented on your screen. Each decision is a choice between “Option A” and “Option B”. While the payoffs of the two options are fixed for all decisions, the chances of the payoff for each option will vary. Please imagine that you are offered “Option A” and “Option B” and make your choices accordingly.

To summarize: You will make 10 choices; for each decision you will have to choose between “Option A” and “Option B”. You may choose A for some decision rows and B for other rows.

\*\*\*

### Option A

- \$2.00 with a probability of 10.00%, \$1.60 otherwise
- \$2.00 with a probability of 20.00%, \$1.60 otherwise
- \$2.00 with a probability of 30.00%, \$1.60 otherwise
- \$2.00 with a probability of 40.00%, \$1.60 otherwise
- \$2.00 with a probability of 50.00%, \$1.60 otherwise
- \$2.00 with a probability of 60.00%, \$1.60 otherwise
- \$2.00 with a probability of 70.00%, \$1.60 otherwise
- \$2.00 with a probability of 80.00%, \$1.60 otherwise
- \$2.00 with a probability of 90.00%, \$1.60 otherwise
- \$2.00 with a probability of 100.00%, \$1.60 otherwise

### Option B

- \$3.85 with a probability of 10.00%, \$0.10 otherwise
- \$3.85 with a probability of 20.00%, \$0.10 otherwise
- \$3.85 with a probability of 30.00%, \$0.10 otherwise
- \$3.85 with a probability of 40.00%, \$0.10 otherwise
- \$3.85 with a probability of 50.00%, \$0.10 otherwise
- \$3.85 with a probability of 60.00%, \$0.10 otherwise
- \$3.85 with a probability of 70.00%, \$0.10 otherwise
- \$3.85 with a probability of 80.00%, \$0.10 otherwise
- \$3.85 with a probability of 90.00%, \$0.10 otherwise
- \$3.85 with a probability of 100.00%, \$0.10 otherwise

\*\*\*

## **Your financial expertise**

On the next page you will face various questions on your financial expertise. Please answer the questions by choosing the correct answer. You will have 150 seconds to complete the questions.

\*\*\*

## **Your financial expertise**

**Time left to complete this page: « timer »**

Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy:

- More than today with the money in this account?
- Exactly the same as today with the money in this account?
- Less than today with the money in this account?
- Do not know

Suppose you had \$100 in a savings account and the bank adds 2% per year to the account. How much money would you have in the account after five years if you did not remove any money from the account?

- More than \$102
- Exactly \$102
- Less than \$102
- Do not know

Considering a long time period (for example, 10 or 20 years), which asset described below normally gives the highest return?

- Savings account
- Stocks
- Bonds
- Do not know

Do you think that the following statement is true or false? “If you buy a 10-year bond, it means you cannot sell it after 5 years without incurring a major penalty.”

- True
- False
- Do not know

If interest rates rise, what will typically happen to bond prices?

- They will rise
- They will fall
- They will remain the same
- There is no relationship between bond prices and the interest rate.

Do you think that the following statement is true or false? “Buying a single company’s stock usually provides a safer return than a stock mutual fund.”

- True
- False
- Do not know

Do you think that the following statement is true or false? “A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.”

- True
- False
- Do not know

Suppose you have \$100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have in this account in total?

- More than \$200
- Exactly \$200
- Less than \$200
- Do not know

Which of the following statements is correct? If somebody buys the stocks of firm B in the stock market?

- S/he owns a part of firm B
- S/he has lent money to firm B
- S/he is liable for firm B's debts
- S/he can vote on shareholder resolutions
- None of the above
- Do not know

You invest \$500 to buy \$1,000 worth of stock on margin (that is, you borrowed \$500 from your broker to purchase stock). The value of the stock drops by 50%. You sell it. Approximately how much of your original \$500 investment are you left with in the end?

- \$500
- \$250
- \$0
- Don't know

Suppose you owe \$3,000 on your credit card. You pay a minimum payment of \$35 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many months would it take to eliminate your credit card debt if you made no additional new charges?  
« text field »

\*\*\*

### See the following task

In this part of the experiment you will see various randomly selected letter sequences. You will have 90 seconds to type as many sequences as possible. For each sequence, please exactly type the shown sequence in the field below. Each character has to be correct. All characters are letters, there are no numbers. Once you have entered your sequence, click the “Next” button or press the enter key to see the next sequence.

Please see the following example. Note that you cannot enter anything here.

Please type in sequences

Type the shown sequence below into the field below and click “Next“ or hit the Enter Key

**eUhJk**

« textfield »

Once you are ready, please click “Next” below to start the task.

\*\*\*

**Time left to complete this page: « timer »**

Please type in sequences

Type the shown sequence below into the field below and click “Next“ or hit the Enter Key

**dkUib** (Note: letter sequences are pictures, copy & paste is disabled)

« textfield »

\*\*\*

**(Wait page)**

For the following part of experiment, you will be randomly matched into a group of three participants. Please wait until your group members complete the first part of the experiment.

\*\*\*

**Meet your peers!**

Player 1 & Player 2

Avatar (Player 1) & Avatar (Player 2)

You are randomly matched in a group with Player 1 and Player 2 who also participate in this study.

Next, you will see how you performed in entering the correct letter sequences compared to Player 1 and Player 2. (Other treatments: Next, you will see how you performed in answering the questions on your financial expertise compared to Player 1 and Player 2. Next, you will see how you have been randomly ranked within your group with Player 1 and Player 2.) Then, you will be able to invest your earned endowment. Please see the details on the next page.

\*\*\*



## Your results

Your group's ranking:

Player 1	<b>You</b>	Player 2
Rank 1	Rank 2	Rank 3
\$10.00	\$7.00	\$5.00

In your **effort to type the correct sequences** (Other treatments: In your financial literacy, Randomly), you ranked in the middle of your group members Player 1 and Player 2.

Based on your ranking, you receive an endowment of \$7.00. Now, consider the following investment opportunity:

**With a probability of 50% you will either lose your investment or your investment will be multiplied by 2.5.**

You may invest any part of up to your whole endowment. Please state how much of your endowment \$7.00 you are investing. Your final payoff for this experiment will depend on how your investment plays out.

Activate the slider by clicking it.

« Slider »

For your currently chosen investment, you may earn the following:

Negative outcome:	Positive outcome:
« Negative outcome is shown here »	« Positive outcome is shown here »

\*\*\*

## Coin flip

Imagine you take place in a game of chance.

A fair coin is flipped 4 times. The first throw was tails, the second heads, the third heads again.

What do you think is the probability for the coin to show heads in the next throw?

Activate the slider by clicking it.

« Slider »

\*\*\*

**Please answer the following questions.**

What is your age?

- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 or older

What is your gender?

- Male
- Female
- Non-binary

\*\*\*

**Please answer the following questions.**

What is your study major?

- Finance or closely related
- Business Administration or closely related
- Economics or closely related
- Other

What is your highest level of education?

- Highschool / GED
- Undergraduate degree
- Graduate degree
- MBA
- Other Non-MBA
- Ph.D. or higher
- Prefer not to say

\*\*\*

**Please answer the following questions.**

How do you rate your investment experience?

- low
- rather low
- medium
- rather high
- high

How do you rate your statistical knowledge?

- low
- rather low
- medium
- rather high
- high

Do you currently invest money in stocks, bonds, mutual funds, or other financial instruments?

- Yes
- Not currently, but I used to invest
- No

\*\*\*

**Please choose!**

Here are number of characteristics that may or may not apply to you. Please choose the answers that apply to you to indicate the extent to which you agree or disagree with that statement.

	Strong disagreement	Moderate disagreement	Slight disagreement	Neither agreement or disagreement	Slight agreement	Moderate agreement	Strong agreement
I honestly feel I am just more deserving than others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Great things should come to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I were on the Titanic, I would deserve to be on the first lifeboat!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I demand the best because I am worth it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not necessarily deserve special treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I deserve more things in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People like me deserve an extra break now and then.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Things should go my way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel entitled to more of everything.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\*\*\*

**Please choose!**

Here are number of characteristics that may or may not apply to you. Please choose the answers that apply to you to indicate the extent to which you agree or disagree with that statement.

	Never	Almost never	Seldom	Sometimes	Usually	Almost always	Always
When I have a choice, I try to work in a group instead of by myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay a good deal of attention to the feelings of others at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to do my own work and let others do theirs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I express my disagreements with others openly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find myself talking to those around me about non-business related matters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\*\*\*

**Please choose!**

Here are number of characteristics that may or may not apply to you. Please choose the answers that apply to you to indicate the extent to which you agree or disagree with that statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I always pay a lot of attention to how I do things compared with how others do things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often compare how I am doing socially (e.g., social skills, popularity) with other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not the type of person who compares often with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please choose "Neither agree nor disagree"!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often try to find out what others think who face similar problems as I face.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always like to know what others in a similar situation would do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I want to learn more about something, I try to find out what others think about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\*\*\*

**Please answer the following questions!**

---

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I did understand the questions in this study well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Do you think the researchers in this study had an agenda? If yes, please state what do you think the research agenda was.

«text field»

\*\*\*

**Thank you for participating in our study!**

Based on your effort in fulfilling the given task you were assigned the middle rank in your group. Based on this ranking, you received an endowment of \$7.00. You invested \$2.20 of your endowment and earned \$0.00 from your investment. Therefore your final payoff for today's experiment amounts to \$4.80.

Your secret completion code: "ExampleCode"

« Back to Cloudresearch »

## B Absolute performance treatment

This appendix includes the experimental design for the *absolute performance treatment*. Instead of showing the entire instructions, we focus on the differences to the main treatment. Thus, we focus on the page that displays the ranking and endowments. In the *absolute performance treatment*, Endowment is based on participants' absolute performance compared to a fixed threshold, independent of the performance of other participants in their group (see Section 4.4). Importantly, in this treatment, participants only learn about their own endowment, not about the endowments of other participants in their group.

\*\*\*

## Your results

Your group's ranking:

Player 1	<b>You</b>	Player 2
Rank 1	Rank 2	Rank 3

In your **effort to type the correct sequences** (Other treatments: In your financial literacy, Randomly), you ranked in the middle of your group members Player 1 and Player 2.

Based on your performance (luck treatment: chance), you receive an endowment of **\$5.00**.

Now, consider the following investment opportunity:

**With a probability of 50% you will either lose your investment or your investment will be multiplied by 2.5.**

You may invest any part of up to your whole endowment. Please state how much of your endowment \$5.00 you are investing. Your final payoff for this experiment will depend on how your investment plays out.

Activate the slider by clicking it.

« Slider »

For your currently chosen investment, you may earn the following:

Negative outcome: « Negative outcome is shown here »	Positive outcome: « Positive outcome is shown here »
---	---

\*\*\*



## C Study goal

This appendix includes the full list of participants' responses in the exit survey (from our main treatments). In our exit survey, we asked participants the following questions: "Do you think the researchers in this study had an agenda? If yes, please state what do you think the research agenda was." Then, we manually studied the responses and classified whether participants had identified the study goal or not. We classified responses to be correct when the participants' answers were related to either peer effects or rankings. Otherwise, responses were categorized as not correct. All responses were categorized by two researchers. In case of a tie, a third researcher classified the response.

<b>Study Goal</b>	<b>Identified</b>
I believe this study is testing the risk/reward view of people to see how much they are willing to risk in order to obtain a larger reward. Basically, to see how risk-averse one is.	0
I have no idea	0
something about risk	0
To see how many risks people are willing to take?	0
	0
	0
I feel the researchers were attempting to find out about participants' risk-taking and decision-making skills in relation to the type of person they are (e.g. team player versus individual contributor).	0
	0
	0
No	0
	0
	0
I don't know.	0
I have no idea	0
I am not sure.	0

	0
No	0
To see the risks/decisions we make under pressure?	0
	0
I assume that they are doing the research for some reason but I don't know exactly what for.	0
No	0
Just to see how people relate to issues	0
To see what people's risk appetite is for investing a bonus that they earned.	0
I'm not sure. I think it may have something to do with risk tolerance though.	0
What people do when given options.	0
Ascertain your choices given a certain set of information	0
	0
	0
I think it's about getting different opinions from different sources to see how they compare.	0
	0
Maybe - not sure what it is though	0
	0
Yes, to see if risk taking is tied to personality traits and entitlement.	0
	0
No	0
perception of others that are like me influencing my investment decision	1
No	0
	0
No.	0
no	0
	0
No	0
They may have wanted me to feel special and lead the other two.	0

See how much people choose to invest?	0
I think it was about risks. Am I willing to take risks based on my quiz that I took, maybe? Like I was told I was placed in the middle so will that make me more risky? I'm guessing. Either way I don't like to take risks.	1
I think the researchers were testing how much risk we are willing to take (actually, I'm not really sure)	0
no	0
No	0
I do not think so.	0
	0
yes, I think that they think I'd be more risky if I were doing worse than other people.	1
To gauge how much risk takers we are	0
	0
	0
	0
no	0
Yes, to manipulate the answers to questions to prove their point	0
Evaluate people's willingness to take risks related to their personality and answers on survey questions.	0
How impressions of self impact financial and investment decisions.	0
yes to see how much regular people know about investing	0
	0
	0
I did not see an agenda although there probably was one.	0
They always have an agenda. Something involving the relationship between knowledge and confidence.	0
No, don't know	0
	0
I do not know.	0

	0
I did not notice anything obvious to show any agenda that the researchers might have had.	0
no	0
Something about fairness and skill since we each got different amounts to invest.	0
	0
I don't think there was an agenda. I think they were studying risk evaluation and personality type.	0
To see if we would look at risks or gains more?	0
I imagine there was an agenda but I am unsure of what it was.	0
To see how much of a risk taker people are.	0
Are people who are low risk takers also influenced by other's opinions.	0
I dont know	0
I think my perception about worth and what I deserve is being tested. I'm curious if my wager outcome was already pre-decided.	0
	0
of course the had an agenda. They wanted to see if people would take risks	0
have no idea what it was	0
yeah, they wanted to see if people would cheat or take HUGE risks for benefits	0
	0
I think the only agenda is studying risk management and whether people want to maximize potential or minimize loss.	0
How willing are people to take risks even when associated with smallish amounts of money?	0
no	0
No	0
I think so but I am not sure what their agenda would be, other than to see about financial literacy	0
Risk aversion compared to actual knowledge	0

no	0
No I don't think they had an agenda.	0
A moral ethics agenda.	0
	0
I guess it was to see if I was willing to do away with my real money with a 50% chance. I may regret it, but I went for it.	0
I sure they had a research agenda if thats what you want to call it. I think they might be looking at personality type and willingness to take risk but I dont know for sure.	0
Yes, I think their agenda was to figure out how someone perceives themselves versus their risk aversion.	0
I am not sure.	0
I do not believe there was an agenda	0
	0
no	0
Just to see how our willingness to take risks aligns with our social and ego-tistical selves, and personalities.	0
I don't think so.	0
	0
	0
no, but I think there's something to do with the level of risk and my place between the two other participants. I'm not sure what the point of it was.	1
To see if people are willing to risk losing money.	0
no	0
	0
I wondered if the characters were real players, and if they were being put there to influence my contribution decision.	1
I have no clue what the agenda was.	0
I do not know if the researchers had an agenda.	0
	0

I think the agenda was just to test what people's risk perceptions are and risk toleration is.	0
no idea	0
I think researchers are looking to find out people's willingness to invest or take monetary risk when knowing information about others.	1
I am not certain but it seems the researchers are interested exploring factors that affect investment decisions.	0
	0
	0
	0
	0
I'm not quite sure.	0
I am not entirely sure.	0
They wanted to test our typing skills and financial knowledge	0
Confidence levels and willingness to take economic risk.	0
no	0
No.	0
	0
No.	0
I don't really know. I think it all had something to do with risk taking. Maybe ranking a person lower in their knowledge the researchers were trying to see how much risk they would take with their money	1
I don't know	0
It was good to evaluate that financial decision.	0
Financial acuity and entitlement	0
No, if there is an agenda I do not know what it is.	0
They are studying how people's risk tolerance translates to financial decision-making.	0

Perhaps to see what risk we would take with what money we were given or with what opportunities to make money we would do. Maybe see the relationship between how we see ourselves, others and risks we take.	1
	0
Probably - most researcher do - but I don't know. I wonder if I actually got all of those questions right or if you just manipulated the outcome to make me feel good. Not sure.	0
math knowledge	0
It might be evaluate the financial decisions.	0
Yes, to find out how people make decisions involving risk.	0
Maybe they were just assessing risk-tolerance [and whether people practice what they preach] and how risk-tolerance relates to personality, relationships, etc.	0
just see how people determine whether risks are worth taking or not.	0
	0
no	0
the study of human psychology	0
overview of financial attitudes	0
	0
How risky we are in investments.	0
I am not sure.	0
There has to be an agenda, otherwise - why do a study? However, I'm not entirely sure what it is... perhaps to ascertain the personality traits and business acumen of those who work on Amazon MTURK? I am honestly unsure of the agenda.	0
something about risk-taking or decision-making and maybe it's relation to introversion/extroversion	0

Honestly, to learn how to make more money because ultimately they think it'll mean that they need not consider others' feelings, as exemplified when I was signing up for the study. There seemed to be a message of, "You'll be allowed to participate, but also you might not." Maybe I caught you all on a bad day.	0
Gauge how knowledgeable we are about risk and finance.	0
yes, to see how well the average person understands financials.	0
No, I do not think the researchers had an agenda	0
no	0
	0
Everything was so different, I really don't know what they had in mind.	0
I don't know what their agenda was.	0
I think the agenda was seeing how risk-averse we are based on our choices, such as the ten A vs. B options at the beginning of the study, as well as how much we'd be willing to invest of the money we were awarded.	0
I think it was to see if people who thought they deserved more took more risky bets	0
To test willingness to take risks	0
To see how I would perform on investment and statistical knowledge.	0
	0
I think it was to see how much risk people are willing to take.	0
	0
Risk taking of individuals.	0
	0
Not sure	0
	0
I think you were investigating the relationship between status and risk-taking.	1
	0
No, but they probably had an agenda to get good research so the bonuses should get serious respondents.	0



Maybe they wanted to see if people would invest more money in a risky venture if they believed they were the most financially knowledgeable person in their group.	1
NO	0
	0
To see how much risk we would put in our tasks based on peer observation.	1
No I do not.	0
I am not sure of the agenda. I am also not sure how legitimate the bonus is and what dictates it.	0
No.	0
No clue	0
Unsure	0
Yes-financial agenda	0
See how much of a risk people with certain characteristics want to take concerning money	0
I don't think so.	0
no	0
I am not sure.	0
no doubt it did, but not sure quite what it was	0
no	0
	0
To test our financial and risk taking knowledge.	0
Not certain; evaluating financial knowledge and then presenting risky decision.	0
Perceptions of risk and investment across people with different levels of knowledge.	0
I am not sure I feel like I missed the game. It was unusually quick.	0
I think that the agenda was to determine whether or not you would request the participant to work on other tasks for your organization.	0

To see if there is any correlation between financial and statistical knowledge and risky behavior.	0
Yes, seems like a gauge of financial literacy.	0
no	0
I believe it was to see how people make decisions financially for themselves. Also how each of us understands the financial market.	0
I think the researchers are trying to gauge an average person's ability and experience with probability & statistics	0
No.	0
No, I don't think they had an agenda.	0
I am not completely sure what the agenda was but I am sure there was one.	0
N/A	0
Yes to see what risks people would take.	0
To see how people take risks, maybe?	0
maybe to study risk aversion if ranked in a certain spot?	1
	0
To see how much people take risks.	0
How people actually take risks versus stated preference for risk.	0
not that I know of	0
How likely people are to take risks	0
	0
I think they were curious about investment knowledge and risk assessment	0
I think they were trying to learn more about how people invest.	0
To understand how we feel about others.	0
Based on ranking (1-3) to see how willing the respondent would be to wager their bonus earnings.	0
no	0
	0
	0
No	0

How we would bid against something.	0
Not sure what it was	0
I don't know. The study tried to ascertain level of financial knowledge, how fast one can type and other items. I don't know what the research agenda is.	0
investment risk profiles	0
I think they had an agenda but am not sure what the agenda was.	0
no	0
How people from different backgrounds and with different risk taking levels perceive a financial opportunity	0
I'm not sure if that was the case.	0
I'm not sure	0
Perception of financial matters.	0
I'm guessing that part of it is whether my placement in the ""standings"" affects how much of my earnings I am willing to gamble?	1
I'm not entirely sure what the agenda would be if you had one.	0
Yes they wanted to see how well we choose probability and risks.	0
To find out my knowledge in stocks and investments and what I would do in certain scenarios	0
The evaluation of risk/reward.	0
	0
	0
Knowledge of finance and to see if I was a robot and how I take risks	0
Not sure what the agenda was. I did ok on the typing part because I learned touch typing in high school over 50 years ago. I think it could have been some kind of cooperative study.	0
	0
no	0
Impact of bonus in decision making and risks	0
I'm not sure, maybe to assess whether entitlement makes people take more risk?	0

Don't know about an "agenda", they are obviously researching something specific. I do not know what that is.	0
How an individual relate to others	1
	0
i don't know if they did or not.	0
decision making and choices	0
dont know	0
No	0
They want to know if people are willing to take risks or not.	0
To study other's opinions and thoughts on investment situations.	0
no agenda	0
See how people with varying investment experiences make choices	0
	0
	0
To see how well people paid attention.	0
I think they had an agenda, I just can't determine what it was.	0
	0
	0
no	0
to see how do we take financial risks	0
Not really, other than collecting data for their study.	0
Investment knowledge	0
Perception of investment risk.	0
To see what risks people would take.	0
	0
no	0
	0
	0
Study on probabilty and statistics	0

I'm not great at statistics, so I'm not sure. I think the study did have to do with risk taking, financial knowledge, and personality.	0
No	0
yes understanding the feelings toward risk	0
I don't think there was any agenda with the study. At least nothing that I could figure out. Maybe something about researching people's level of risk tolerance and how that correlates with their personalities I guess.	0
Nope	0
I do not believe they did	0
No, I don't think so.	0
	0
	0
I think you were trying to see if people are risk-takers and whether they enjoy working in groups or not.	0
No, I really have no idea.	0
How people would invest and why through controlled actions	0
	0
Perhaps but I try not to focus on hidden agendas, deception, or other potentially misleading aspects of studies.	0
	0
I think they wanted to know if we'd take risks	0
I do not know the purpose of the study.	0
Per demographics to understanding risk taking	0
	0
	0
I think it was getting our knowledge on math and finances	0
You were testing something about our taste for risk, but I'm not sure what it was.	0
	0
	0

No	0
I believe the purpose was to study how people assess the risks of various situations and how they respond to them.	0
Yes but no clue what it is.	0
Yes, I think the agenda was to understand the risk tolerance and estimation of various people.	0
I am uncertain	0
If there was an agenda, I don't know what it was.	0
To understand how much knowledge a person has in finances and the risks they are willing to take with their money.	0
To see how much risk you take?	0
I am not sure	0
Yes. Personality type and intelligence level and how it relates to emotional vs. calculated risk taking.	0
Comparing risk takers vs non risk takers and gathering data.	0
to check risk aversion and risk taking based on how much money you receive relative to others	1
See how risky people are willing to be based on money available and probabilities.	0
If there was an agenda I don't know what it was.	0
I'm not really sure what the point of this study was. I waited about 10 minutes to be assigned to a group and then had no interaction with them at all. Seemed sort of pointless.	0
Maybe testing how people perceive risk vs reward?	0
Perhaps trying to understand how people with different income and education levels handle money, or understand probability.	0
	0
I am sure they did, otherwise they would not have created the study. I am not certain what the research agenda was.	0
None	0

Yes, to learn what type of people would invest more than others and take the risk.	1
I'm not sure. Maybe they wanted to know what type of people are most likely to invest their money?	0
I have no idea. Can't even guess what the agenda was.	0
No.	0
	0
	0
To assess how comfortable we are with risk?	0
Probably to see how people approach risk when there is competition?	1
no	0
no	0
Perhaps to see how one's judgement of themselves really stacks up to reality	0
Knowledge of taking a risk.	0
	0
No I don't think they had an agenda.	0
Not really	0
	0
Yes to see if we were willing to risk it all	0
	0
NO	0
Studying risk aversion	0
no	0
To see if people were willing to risk more to get a higher bonus	0
I think the researchers were trying to find out how willing people are to put themselves in risky situations based on their self-confidence.	0
Yes to see if people are willing to make a small risk with the ten dollars.	0
I think it was how much risk a person is willing to take with given money.	0
How do people use "house money".	

I didn't see any signs of an agenda, just questions that seemed to be about money and investment knowledge	0
Whether a performance vs random ranking increases risk adverse investment behaviors.	1
I don't think there was any specific agenda. I think the researchers were just trying to see how people take risks in different types of situations. That would be my guess.	0
I don't think the researchers had an agenda	0
I'm sure there was some agenda, but I don't really know what it would have been.	0
To see how much risk someone is willing to take based off how much they feel like they deserve to have the thing they want in life. Or more so feeling entitle how much they are willing to risk to make that happen.	0
Yes but I am not sure what it was	0
	0
	0
How willing am I to gamble the bonus I could receive versus gambling in my everyday life.	0
I think the researchers were trying to find out how much risk people are willing to take.	0
no	0
i'm sure they had an agenda but i don't know exactly what it is	0
Yes, but I'm not sure what it was. Perhaps investment opportunity choices based on whether individuals felt dependent or independent of others.	0
	0
I don't know. I realize I need to relearn some probability knowledge I had in high school. It was notable that I was endowed with the lowest amount, so I might've been more of a risk taker to sort of even the field, but I resisted that urge. This somewhat correlates with my general lack of interest in keeping up with the Joneses.	1



no	0
Not sure.	0
No not really I didn't see any obvious bias or anything	0
No everything seemed on the up and up to me.	0
I honestly have no idea- I'm sure there was something but I don't know what.	0
I think the researchers wanted to see how much risk someone would be willing to take.	0
i am not sure	0
No, not necessarily. Perhaps they want to study what drives people to make the decisions they do across different risk tolerances?	0
I am not sure.	0
I assume the researchers had some sort of agenda. The best I can come up with is personality types and the amount of risk they take.	0
Maybe to understand people's perceptions on how they feel at work about their co-workers.	0
	0
Perhaps to see what people know about investing and taking risks with investing?	0
	0
	0
Probably but I don't know what. Maybe the higher you score, the lower your allotment. That would be my luck.	0
Yes of course all research has an agenda of some sort. I believe this one is to test a persons financial knowledge to gain an understanding of what people as a whole know about finance and perhaps banking as well.	0
I do not think there was an agenda	0
I think the research agenda was to see how people are willing to take financial risks in life.	0

I think they were trying to determine how we handled taking risks and at what point would we think the odds were so good that we would actually take the risk given.	0
I think thy wanted to match personality to willingness to take risks	0
I think the researcher's agenda was understanding peoples levels of knowledge when it comes to savings, bonds, and stocks.	0
Yes; your understanding of finances and how that relates to your willingness to take chances & what you think you are owed.	0
I think they had a thesis for the study. I'm not sure what it is.	0
	0
	0
	0
I'm sure they did but I don't know what it is	0
If knowing how others did comparatively on the same tasks as you influenced risk decisions.	1
I think they were trying to find out how much people are willing to risk.	0
I think the agenda was related to risk taking and gambling.	0
To help understand how well I would respond to the financial questions and if I had any knowledge about finances.	0
Everything was so random I have no idea.	0
	0
	0
The agenda was to evaluate peoples financial risks/ thoughts	0
no	0
	0
Other than finding out what the study was about I do not think there was any other kind of agenda.	0
They want to know the common people's economic ideas and their propensity to invest.	0
To see how much risk I was willing to take	0

I have no idea what the study was about. I enjoyed it though	0
To see how much risk you were willing to take with your money	0
dont know	0
no	0
Maybe they were comparing the responses to the risk-related questions to the ones about personality to see what characteristics tend to go together.	0
Of course, they have an agenda, but I am not sure what it is. It probably has something to do with risk-taking.	0
NO	0
	0
No Idea	0
To see how well we comprehend what we read.	0
No, I can't think of any agenda	0
Probably. Something about risk and personality.	0
I'm not sure	0
Not sure	0
To see how much people are willing to take risks.	0
no	0
No clue	0
I don't know of any agenda	0
I think they wanted to know how much of a risk taker people are.	0
Yes, the researchers gave me the ranking of the other two participants to see how this would affect my willingness to invest and the extent of my investment.	0
No	0
no	0
Perhaps just to understand how much money people want to make in this situation.	0
No	0
I'm not exactly sure about the hypothesis/es of the study.	0

I honestly have no clue. I am sure there was an agenda but what that was exactly, I don't know.	0
It might be something about working under pressure.	0
I wish I knew!	0
No	0
Yes, it was to examine financial literacy and confidence in investing.	0
Im not sure. Maybe about people stocks, interest rates, and stats knowledge with how they take risks.	0
I'm not sure.	0
not sure	0
This was a study of risk aversion and how it relates to one's personality maybe you tried to figure out how people with different economic knowledge react to risk investments	0
I am unsure of what the agenda was in this study.	0
	0
I don't know.	0
Testing who is more likely to be a risk taker and according to the math or who is just gambling. Also the traits of these people.	0
The researchers were trying to study the risk averseness based on knowledge.	0
no	0
Just trying to find different opinions of people in day to day life.	0
I think you always have an agenda. I do not know what this agenda is, but I don't think you were doing this for no reason.	0
No	0
I am sure they did but what exactly it was I'm not sure.	0
To see how personality is based off of performance	0
I do not know what agenda if any the researchers have in this study.	0
I think the researchers want to know if the actions of peers in a group have any effect on the individual.	1
no	0

Many of the choices made during the study involved risk assessment and whether to take more of a sure bet or take a chance for a higher reward. So I would suspect the risk/reward behavior is being evaluated against the parameters that were collected in the later survey questions.	0
I'm not sure	0
unsure	0
Trying to find out about self attitude in relation to financial literacy?	0
Something related to financial literacy and risk taking.	0
I am not sure.	0
I think they were seeing how willing people were to task risks based on personality traits and their financial knowledge.	0
I am under the impression that this research study is about financial literacy as well as the personality traits and how each person thinks that belong to each rank of financial literacy.	0
I'm not sure if the was an agenda. Tho I might suspect that I wasn't actually paired with real people.	0
I don't think so	0
Not really	0
I'm not really sure maybe about risking taking and personality when it comes to investing	0
I think they had a hypothesis that they were testing, but not an agenda per se.	0
I am not sure if they did or not.	0
	0
I think they might be trying to determine if people are independent are more likely to take risks.	0
	0
No	0

I think that they wanted to see the type of decisions we make with money and what chances we are willing to take for a possible higher profit.	0
I think they were ranking investment decision compared to investment experience.	0
To determine if your ranking compared to your "peers" had any bearing on how much money you were willing to invest in the 50/50 bet.	0
Found to evaluate the risk taking capacity of the participant.	0
To view our opinions on finance	0
Yes, To see who are risk takers and how far they are willing to go with investing. I also think that there is a social and psychological aspect to this as well.	0
Naturally the researchers have an agenda in that the study is set up for a certain purpose. It seems that this has to do with with people's willingness to make a higher risk decision cross referenced with attributes gathered about the person through the questions in the study.	0
I think the only agenda was that the other players were not there. I think it was a risk assessment study not a business investment study. I think the questionnaire had to do with narcissism.	0
Perhaps to gauge the risk tolerance of participants when actual money is on the line versus just speaking to theoretical risk tolerance.	0
Correlation between financial knowledge and making financial decisions	0
	0
	0
I'm not sure, but I would guess at the relation between financial knowledge and entitlement	0
I think the researchers were looking at experience and self awareness (risk table) and how it relates to their actual actions?	0

	0
Yes I think that they wanted to know if your prior knowledge had anything to do with your decisions.	0
Risk taking and Financial Knowledge	0
no	0
How much people know about finances/statistics	0
i dont think they had an agenda but im not sure.	0
No	0
i am not sure	0
To see if certain people are risk takers or not.	0
No	0
	0
No	0
How much one is willing to risk.	0
I don't think the researchers had an agenda.	0
To view the connection between our personality and decision-making?	0
I think the researcher wanted to learn the relationship between risk appetite versus the person's ego and emotional intelligence	0
Yes, they were trying to assess how much risk I am willing to take with \$10.	0
To tell me that I was in the middle to see how I felt	1
no	0
I don't know.	0
I'm sure they did, likely about informed risk taking, but not certain.	0
	0
No	0
I am unsure, im positive there is a purpose but i would guess peoples knowledge of stats and finances?	0
At first I thought it was finances but now I'm wondering if it has something to do with emotional intelligence in relation to finances.	0

I'm not entirely positive – I suppose to see what kind of decisions I would make unilaterally if I felt my performance exceeded that of others.	1
I think there was some agenda to see how much risk participants would take based on their personality dimensions.	0
	0
	0
I think the researchers did have some kind of agenda but I don't know what is it.	0
I'm not sure.	0
Yes, but I'm not sure what that would be. Maybe it was to see if I would take less risk knowing I'd been told I wasn't as good at investing.	0
Maybe to see how people reacted to risk?	0
I don't think the researchers had an agenda.	0
To learn about peoples financial knowledge.	0
I think that it was to study participants that are willing to take risks compare to others when investing money.	1
No.	0
I believe the study has to do with financial investments and risk taking behavior, but I don't have a clear idea for what purposes the results would be used. Possibly to help advisors understand why type of personalities they are dealing with?	0
I'm sure they had an agenda they had to be looking for something to start a study. I think maybe it has to do with risk taking and trust.	0
	0
I didn't think anything about an agenda	0
I don't think they did.	0
yes, but I don't know specifically what it was, beyond it being related to statistical understanding vs willingness to take risks	0



I'm not really sure. Maybe to see how people differ. People who know certain things like about stocks and bonds may have be better off financially and may feel they deserve more. .... I'm just guessing	0
They might be trying to see what amount of money would make people more likely to risk it when compared to others to get a higher return	1
Not sure.	0
The researcher's agenda is to understand society's thoughts and knowledge on financial situations.	0
Certainly there was an agenda, but whatever it was didn't click for me. :)	0
No I do not think so.	0
	0
How financial knowledge impacts risk taking	0
No	0
It appears to be something along of the lines of how much self esteem people have and how that affects their choices.	0
Researchers conducted this study for a reason but I don't know what the "agenda" would be.	0
I thought it was going to be a group co-operation, but it turned into what a person will do when shown how well their group members have done at a task.	1
Unsure	0
No, I did not see any visible agenda - just a decision making experiment	0
	0
No.	0
I have no idea	0
	0
	0
	0
yes but i dont know what it was	0
Almost perfect	0

I have no idea what the researchers agenda was.	0
Risk taking	0
	0
I do not know what it would have been.	0
I suppose most studies would have some sort of agenda since it's a form of research. I honestly do not know what the purpose of the study was, but I guess it has to do with risky taking and the psychology behind it. That would be my guess.	0
I am not sure what agenda the researchers had.	0
not sure	0
The only agenda was to learn how people make decisions	0
I took the study at face value.	0
nice	0
	0
Almost perfect.	0
	0
yes, to see how much you know about investment and chance	0
To see how much risk people will take.	0
No	0
I think the study's agenda was to see if I would be willing to make money at the expense of my group. They wanted to see if I felt more "entitled" than others, even if I was not quite as deserving.	1
I am not sure	0
Researchers wanted to know about financial literacy and how that correlates to risk aversion	0
	0
no	0
	0
no	0
To see how I view risky options.	0

I don't think so	0
I feel that showing me the comparisons of other participants definitely had an agenda.	1
No, I have no idea.	0
notsure	0
Not really, I just think it's more about cognitive ability relating to finance, which I don't have being a bachelors in computer science, but my investment experience has been daily ongoing 2 years now. The other part I assume is risk based, which I followed what I believe since I don't do this for the money (as in fulltime, I have a job), so I am okay with taking larger risks on here or donating to charity for those instances. Thanks for the opportunity	0
See how people relate their day to day dealings as opposed to others. And see how financially savvy people are these days	1
Not sure	0
I assume they had an agenda. Otherwise, this was a lot of work - although I guess it might have been a lot of work anyway.	0
Obviously they had an agenda, otherwise they wouldn't be giving money out so that random people on the internet could answer their survey. I don't know what the agenda is. But there must be one.	0
Yes, the researchers did have an agenda. However, there was enough variety in the tasks assigned that I am unsure what their agenda really was.	0
	0
Not totally sure of the agenda, but maybe it was regarding how much we are willing to risk for a high reward.	0
To see how our knowledge of investments plays a role in how we invest money	0
	0
Risk taking capacity of an individual	0
I'm not really sure.	0
Maybe how much of a risk are you willing to take?	0
I felt that the study was thoroughly engaging, and direct.	0

Everything was fine, thank you.	0
I think the researchers were trying to figure out if we would talk to others and find out their thoughts on investing and which things to invest in.	0
Yes, but I'm still trying to figure out what it is.	0
I think the agenda was to see if and when people who are not necessarily willing to take risks ever get to a point where they feel comfortable. For example, if the probability of something happening is pretty high, are most people willing to take the risk (even those who typically don't like taking risks)?	0
Yes. What? I have no idea.	0
no	0
I'm not sure	0
To find out across differing demographics, how much of a risk the average user is willing to take. Or maybe to understand motivation.	0
in the beginning I thought that the study was going to be about how much you know about investing and how much of a risk taker I am	0
How much risk do you feel to take and whether you feel like your worth it thinking this has something to do with personality or risk intelligence?	0
	0
	0
I don't think that the researchers had an agenda. I am curious if the investment chance really is a 50/50	0
I don't think they had an agenda.	0

The table reports the participants' responses in the exit survey. The column *Study Goal* contains the responses to the following question: "Do you think the researchers in this study had an agenda? If yes, please state what do you think the research agenda was." The column *Identified* shows a dummy that is equal to one if we perceived the participant to have correctly identified the study goal.