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Peer Effects of Ambition

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Abstract

Ambition as the desire for personal achievement is an important driver of behavior. Using laboratory experiments, we study the role of social influence on ambition in two distinct domains of achievement, namely performance goals and task complexity. In the first case, participants set themselves a performance goal for a task they have to work on. The goal is associated with a proportional bonus that is added to a piece rate if the goal is reached. In the second case, they choose the complexity of the task, which is positively associated with the piece rate compensation and effort. In both cases we test whether observing peer choices influences own choices. We find strong evidence of peer effects on performance goals. In contrast, we find no support for peer effects on the choice of task complexity.

Keywords: Peer effects; ambition; goal setting; task difficulty; laboratory experiment
JEL Classifications: C91; D83; D91; I24; M5

1 Introduction

People make career plans and set themselves goals which guide their actions. The extent to which individuals desire to be successful, setting themselves demanding goals and striving to achieve them, is a reflection of their ambition. Ambition can play a role in various dimensions such as setting oneself a high performance goal or self-selecting into a challenging task. Ambition is expressed by setting oneself performance goals, for instance, when students set themselves the goal of achieving a good grade in an exam. In employment relations, workers can often choose performance goals which are associated with a wage bonus. Ambition can also be expressed by self-selecting into a difficult task which requires more effort and is associated with higher variance in outcomes, compared to an alternative easier task. For example, students need to choose among selective college majors where graduating requires high ability and hard work, and where the failure rate is high, and less selective majors. Similarly, workers may choose between a job that is potentially highly rewarding, where hard work is required and mistakes are costly, and a less rewarding job, requiring less effort and involving less risk.

The formation of ambition can be thought of as a process influenced by ability, personality traits, and the social environment, among other factors. In this study, we focus on the social aspect and investigate the role of peers in the formation of ambition. We consider one channel through which peer effects can occur, which is observing others' choices. In particular, we compare the importance of peer influence in the formation of ambition across two domains of achievement, namely the more quantitative domain of performance goals, and a more qualitative domain, that of self-selection into different tasks with varying levels of complexity.

In contrast to existing research, we investigate peer effects of *ambition* instead of peer effects of actual achievement or effort. Ambition has a close link with achievement intentions but not necessarily with actual behavior or outcomes. Nonetheless, ambition is an important driver of behavior. In many situations, individuals may have information about their peers' intended behavior or ambition, but not about the realized outcomes. For instance, in the context of education when students form goals regarding their achievement in an exam, they may have information about the ambition of their peers, but peer performance is either only revealed after taking the exam or is not revealed at all. Similarly, when deciding about enrolling in an easy or a difficult course or in a more or less prestigious institution, students often know about their peers' choices, but they do not know how successful they will be given the option they have chosen.

Studying peer effects of ambition is important to better understand how group compo-

sition may influence educational outcomes and even performance in the workplace. The assignment of young students to different schools or classrooms according to ability and achievement aspirations is ubiquitous around the world and is generally associated with low social mobility. Peer effects of ambition are often cited among the potential contributing factors but the supporting empirical evidence is very scarce. For policymakers aiming at increasing social mobility it is essential to understand how the classroom composition influences students' aspirations. It is of similar interest to managers in the private sector to understand how ambition for achievement is influenced by the workforce composition.

Peer effects of ambition are hard to observe in the field, since ambition is often not directly observable and is likely to be confounded with other (partly) observable factors such as performance. A laboratory experiment allows for a tight control of the information transmitted. To the best of our knowledge, this is the first investigation of the role of peers in the formation of ambition to achieve using a standard laboratory experiment. Another novel aspect is that we investigate peer effects on ambition in two different domains of achievement, namely performance goals and self-selection into a more versus less challenging task.

In our experiment participants perform an incentivized effort task where both effort and ability matter for achievement. The task consists of counting squares in grids of varying sizes, with increasing size associated with higher difficulty. We assign participants to one of two conditions. They either work on a task with a fixed difficulty level (grid size) and choose a performance goal—the number of correctly solved grids—rewarded with a proportional bonus if the goal is achieved, or they choose the difficulty of the task—the size of the grid— which is positively related to the piece rate compensation. Once participants have chosen either a performance goal in the first treatment or a grid size in the second treatment, they are informed of the average choice of other participants in the session; subsequently they are given the option to revise their initial choice.

Our findings indicate that observing the performance goals of peers influences one's own goals. When participants observe an average peer performance goal larger than their own goal they revise their goal upwards. Similarly, when they observe an average peer goal smaller than their own goal they revise their goal downwards. Moreover, observing more ambitious peers increases participants' earnings. In contrast, we find only weak support for peer effects on the choice of the task difficulty, since a large majority of participants stick to their initial choice. The results suggest that a person's ambition is influenced by her peers when ambition signals a target for performance and earnings. However, peer effects of ambition are at best weak when ambition relates to self-selecting into more versus less challenging tasks. More broadly, peer effects of ambition can be expected in contexts where measures of achievement are easily observable and unambiguous, such as grades in an exam

or earnings. In contrast, peer effects of ambition are unlikely to be observed for decisions involving uncertainty with regard to their effect on outcomes, such as career choices. Our results are aligned with Sacerdote (2001) who documents that peers influence performance in exams but are unlikely to influence important education and career choices.

This study is related to two areas of research, namely the large literature on peer effects and the motivational effect of performance goals. Information about peer performance has been shown to causally influence individual performance, such as in Mas and Moretti (2009) and Bandiera et al. (2005) who document peer effects in the workplace. Falk and Ichino (2006) also present causal evidence of peer effects on performance. In their study, participants work on the task of putting letters into envelopes. They perform the task either alone or with another participant in the same room. In the latter case, the authors find that the similarity in output is larger within pairs than between pairs, indicating that peer effects are at work. In a recent laboratory study, Beugnot et al. (2019) vary the salience of the competitive motive by giving participants either simultaneous feedback about each others' performance or unidirectional feedback about the performance of another participant. When there is simultaneous feedback, the male participants' performance is influenced by peer performance, but not the performance of women. In contrast, unidirectional feedback has a positive impact on performance for both genders. While some laboratory studies such as van Veldhuizen et al. (2018) and Guryan et al. (2009) do not find peer effects on performance, in a meta-study of 34 laboratory studies, Herbst and Mas (2015) report significant peer effects of performance and show that these effects generalize to the field.

In the context of education, Azmat and Iriberri (2010) use a natural experiment to show that giving students information about their relative performance in class improves grades across the whole grade distribution. Sacerdote (2001) and Zimmerman (2003) also find peer effects on test scores among (randomly assigned) college roommates. Several other studies have identified peer effects in a variety of settings in education, including, for example, Hoxby and Weingarth (2005), Ammermueller and Pischke (2009), Arcidiacono and Nicholson (2005), Lavy et al. (2012), and Burke and Sass (2013). These studies provide compelling evidence of peer influence on performance in school and college achievement.

Apart from effects on performance, peers can also affect other aspects of productivity such as perseverance. While Rosaz et al. (2016) find no evidence of peer effects on performance, they show peer effects on the decision to quit working on a task. Learning that a co-worker has stopped working on a task significantly increases participants' probability of also stopping work when communication is possible. Further evidence of peer effects on perseverance is reported by Gerhards and Gravert (2016). They find positive peer effects on perseverance regardless of peer perseverance when the peer has a higher achievement than oneself. In

contrast, when the peer has lower achievement, own and peer perseverance are negatively linked. Our study differs from this strand of the literature in that we examine the effect of peers on the choice of performance goals and of task difficulty.

Our experiment also relates to the literature on the motivational effect of performance goals. Psychological theories point out that higher goals are generally associated with better outcomes (see, for example, Heath et al., 1999; Locke and Latham, 2002). Economists have studied the effect of performance goals on individual performance. The existing research from the field and the laboratory shows that goals that are set by the individuals themselves increase performance. For instance, Goerg and Kube (2012) find positive effects of goals on performance. In a field setting, library workers have to sort books and are rewarded either for a self-chosen or exogenously set goal. The results show that when goals are self-chosen, performance is higher than in a piece rate treatment while exogenous goals increase performance only if they are sufficiently challenging. The study by van Lent and Souverijn (2017) finds that asking university students to set their own performance goals has a positive effect on performance, but the effect disappears when they are challenged to increase their goal. In the laboratory, Dalton et al. (2016) show that asking workers to set (incentivized) performance goals is a cost-effective compensation scheme for the principal. Other studies find that performance goals set by the principal have a positive effect on individual performance when goals are challenging and at the same time achievable (see Goerg and Kube (2012) for evidence from the field, and Corgnet et al. (2015) and Smithers (2015) for laboratory evidence). Our study adds to this literature by providing insights on how the performance goals of co-workers may influence workers' own goals and performance.

The paper proceeds as follows. In section 2 we provide the details of the experimental design, in section 3 we present the results, and in section 4 we discuss our findings.

2 Experimental design

2.1 Treatments and task

We employ two main and two control treatments in a between-subjects design. At the start of the experiment, participants are informed that the experiment consists of three stages, with the first two stages being very similar to each other, and that information about each stage will be given prior to the stage.

2.1.1 GOAL treatment

Participants perform a real-effort task consisting of counting the number of black squares in a grid with six rows and six columns, as shown in Figure 1. Each time a participant enters an answer, she is informed whether the answer is correct or not.[1] She is then presented with a new grid and asked once again to count the number of black squares. The task lasts for four minutes, and participants earn eight points per correct answer.[2] Participants do not receive explicit information on the final number of correct answers. This initial stage allows participants to gain experience with the task and provides us with a measure of their capability of the task.
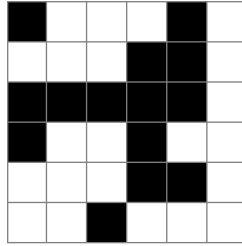

Figure 1: Example of a task presented to participants

After this initial stage, participants are informed that they will be performing the task once again but this time for 10 minutes rather than four. Prior to performing in this second stage, they are asked to set themselves a goal for the number of correct answers in the second stage, which has implications for their earnings. Participants always receive eight points per correct answer. Additionally, if they achieve their goal, they receive a bonus of eight points (i.e., 16 points in total) for each correct answer up to their goal. Earnings are defined as follows:

$$\pi(x, g) = \begin{cases} px + bg & \text{if } x \geq g \\ px & \text{if } x < g, \end{cases}$$

where x is the number of correct answers and g is the goal chosen, p refers to the piece

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[1]For simplicity, throughout the paper we will use the female pronoun when referring to a participant.

[2]In the first two experimental sessions in the goal treatment the piece rate payment as well as the bonus for reaching the goal was four points instead of eight points. We adjusted the payment parameters in the following sessions since the average participant payment was below the desired level for participation in a 45-minute experiment at the WZB-TU lab. We keep the data collected in these two sessions in our sample since we do not observe performance or behavior differences. Two-sided t-tests for differences in performance in stage 1 and 2, initial and final goal do not reject the null hypothesis of no performance difference at conventional levels of statistical significance (p-values>0.1).

rate, and b to the bonus rate (in our case, $p = b = 8$). The goal that maximizes the earnings of a participant is her actual performance.[3]

Before setting the goal, participants are informed that there is a 15 percent chance that their goal choice is final and an 85 percent chance they will be able to revise their goal. They only learn whether their goal is final or not once they have set the goal. We introduce the possibility of not being able to revise the goal in order to incentivize participants to state their preferred goal as if it were final. The computer randomly determines who can and who cannot revise their goals. The latter are informed that their goal is final and then they proceed to the task. Each participant who may revise the goal is informed about the average goal of a randomly chosen subgroup of participants. For this, two participants in the same session are drawn randomly, and the participant is informed of the average goal of these two randomly selected participants.[4] The participant then needs to decide whether or not to revise her initial goal. If she chooses to revise it, she has to state her final goal before then proceeding to the task. If she chooses not to revise her goal, she then proceeds to the task directly. While performing the task in the second stage, participants are continuously informed about the number of correct answers, and a message is displayed on the screen once the goal has been reached. Once participants have reached their goal, they continue working on the task until the end of the 10-minute period.

2.1.2 GRID treatment

In the GRID treatment participants started by working on the task of counting the black squares in a grid, but unlike in GOAL, the initial stage was divided into three parts. In the first part, participants counted the number of black squares in 2×2 grids (with two columns and two rows) and earned one point per correct answer. In the second part, they counted the number of black squares in 6×6 grids and earned eight points per correctly-counted grid. In the third part, they counted the number of black squares in 10×10 grids and earned 30 points per correctly-counted grid. Each part lasted for two minutes and there was no pause between the different parts. Once a participant entered an answer, she was informed whether the answer was correct or not. Participants were not explicitly informed about the total number of correct answers in each part.

In the second stage, participants were told that they would be performing a similar task lasting for 10 minutes. Before performing the task, they would need to choose a grid size that would apply to all grids in the second stage. They could choose any grid size with an

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[3]To ensure that participants understood how earnings were determined, we included example questions in the instructions, which participants had to answer correctly in order to proceed to the next screen.

[4]Participants always saw an integer number as the peer average goal. When the average goal was a decimal number, it was rounded up to the nearest integer number.

identical number of columns and rows out of nine possible options, from 2×2 to 10×10. Our reward scheme compensated larger grids involving more effort and risk with a higher piece rate payment (see Table 1). If the grid size did not impact the likelihood of making mistakes and did not increase the difficulty of the task, the largest grid would lead to the highest earnings. However, this is unlikely to be the case, since the chance of making a mistake is likely to increase with the grid size.[5] Therefore, which is the best grid differed among participants and depended on their ability and effort.

Table 1: Payment scheme in GRID

Grid size	Piece rate
2×2	1
3×3	2
4×4	4
5×5	6
6×6	8
7×7	10
8×8	15
9×9	20
10×10	30

As in GOAL, before making their choice participants were informed that with a 15 percent chance their choice was final and with an 85 percent chance they would be able to revise their decision. After participants had made their decision on the grid size, those who were randomly drawn by the computer to revise their choice were given information on the average grid size of two other randomly selected participants in the same session and were given the option to revise their choice before proceeding to the task.[6]

2.1.3 Control treatments

We implemented two control treatments, one for the GOAL and the other for the GRID treatment. We refer to them as C-GOAL and C-GRID respectively. The only difference between the control and main treatments is that participants in the control treatments were

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[5]This assumption is supported by the data, where the correlation between the share of correct answers and the grid size is highly significant and negative (r=-.32, p-value<0.01)

[6]As in GOAL, when the peer average grid was a decimal number, it was always rounded to the next integer number.

not given information about peer choices. Thus, they worked on the task in the first stage, subsequently chose their goal or grid size, were given the option to revise their choice, and then worked on the task in the second stage. Note that all participants were given the option to revise their initial choice, even though no new information was revealed, before proceeding to the task. The possibility to revise the initial choice was not anticipated by the participants. When given the possibility to revise the initial choice, participants were informed that they would not be able to revise their choice again so that their decision was final.

The reason for implementing the control treatments is twofold. First, they provide us with a baseline measure of the extent to which participants revise their initial decisions when presented with the option to do so, independently of the information on peer choices. Second, it gives us a benchmark for the payoff consequences of observing peer choices, allowing us to evaluate the overall welfare impact.

2.1.4 Elicitation of risk attitude and post-experimental questionnaire

Since we expect risk attitudes to influence the choices of goals and grid sizes, participants also completed the bomb risk elicitation task (Crosetto and Filippin, 2013). This was done after the main task in our experiment and before the final questionnaire. Participants were presented with a grid with 100 boxes, knowing that there was a bomb behind one of them. They decided which boxes to open and earned three points for each box opened if none of them contained the bomb. If they opened the box with the bomb, the earnings were zero. The expected value of the lottery is

$$3\text{points} \cdot \#\text{boxes opened} \cdot (100 - \#\text{boxes opened})/100. \tag{1}$$

It amounts to zero points when 0 or 100 boxes are opened and takes its maximum value (75 points) when 50 boxes are opened. A participant is risk-averse if she decides to open less than 50 boxes, risk neutral if she decides to open 50 boxes, and risk-seeking if she decides to open more than 50 boxes. The coefficient of risk aversion is given by (100 - # boxes opened)/100 and takes on values between zero (extremely risk-loving) and one (extremely risk-averse).

At the end of the experiment, participants answered a short questionnaire. We asked for socio-demographic information and the reasons behind their goal or grid choice, their

decision of whether to revise their choice plus their opinion of the task and their emotions.[7]

2.2 Experimental procedures

We conducted the experiments at the WZB-TU lab at the Technical University of Berlin between December 2017 and September 2018. Participants were recruited through ORSEE (Greiner, 2015), and each participant took part in one experimental session only. The experiment was computerized and programmed with the experimental software oTree (Chen et al., 2016). The participants received points during the experiment, and we applied an exchange rate of 1 point = 0.01 Euro. The experiment lasted around 45 minutes and participants earned, on average, 13 Euros (including a 5 Euro participation fee), paid out in private at the end of the experiment. There were 13 sessions with 24 participants each and one session with 18 participants due to a high number of no-shows. Only one treatment was conducted per session. Participants were given all instructions on the computer screen and had the option to ask questions, which were answered in private. On the instruction screens, participants were required to answer a number of questions to ensure a good understanding of the instructions (we provide the full instructions in Appendix A.3).

Overall, 330 participants took part in the experiment. We excluded four participants from the analyses who chose extremely high goals or received the information of a very large average goal from the other participants in GOAL. The exclusion criterion was based on the Grubbs' test (Grubbs, 1969). This ensures that our results are not driven by extreme choices. The excluded subjects chose very high goals of 150 and 360 or received information about an average goal of their peers of 202 or 112. Our results are unaffected when including all observations.[8] Altogether, we use the decisions of 326 participants for the analyses. Out of these, 116 were in GOAL, 114 in GRID, and 48 participants were in each of the control treatments C-GOAL and C-GRID. Thirty-seven percent of the participants were female and 62 percent male. This gender ratio is representative of the overall ratio among students at the Technical University of Berlin. Thirty-five percent of the participants were at most 20 years old, 41 percent were between 21 and 25, and 23 percent over 25. With regard to the field of study, 45 percent of the participants were studying STEM fields, 37 percent economics or management, and 16 percent indicated another field of study.[9]

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[7]The reasons and opinions could be stated in free form. The emotions were elicited on a 5-point scale and included satisfaction, enthusiasm, pride, determination, disappointment, being upset, and shame (Watson et al., 1988). We asked these questions to give participants a chance to express their opinions and feelings. However, we did not analyze the data since we believe that they do not provide important insights for the interpretation of our results.

[8]All results including the whole sample of participants are reported in the appendix.

[9]The descriptive statistics of our participants by treatment are shown in Table A.1 in Appendix A.1.

3 Results

We start by examining whether observing peer choices makes individuals revise their choice or whether they stick to their initial choice, both with respect to the performance goal and grid size. We proceed by analyzing the extent to which participants' final choices, after having observed their peers' average choice, differ from their initial choices. We then look at the consequences of peer effects for participants' performance and earnings. We conclude with a description of the determinants of the initial performance goal and grid choice.

3.1 Peer effects on the decision to revise own choice

First we test whether participants revise their choice when informed of the peers' average goal or grid size. For this analysis we focus on those participants who had the option to revise their goal or grid choice and who were informed of a peer average goal or grid size that was different from their own choice.[10]

Figure 2 displays the proportion of participants who revised their choice and the direction of the revision in all four treatments. In GOAL 56% of participants revised their choice, a significantly higher fraction than in C-GOAL where 35% of participants revised their choice ($p = 0.02$, test of proportions) indicating that observing the performance goals of peers increases the revision rate. Among those participants who revised in GOAL, 46% revised their goal downwards and 54% upwards, a similar relative share as in C-GOAL where 53% revised down and 47% revised up ($p = 0.63$, test of proportions).

In GRID, only 20% of the participants revised their choice after being informed of their peers' average grid size, which is not statistically different from the 17% of revisions observed in C-GRID. This suggests that in GRID peer information does not influence the tendency to revise own choice. The revision rate in GRID is also significantly lower than in GOAL ($p < 0.01$, test of proportions). Similar to our observation in GOAL, among participants who revised their grid size, there is no difference in the relative share of participants revising their choice upwards between GRID (60%) and C-GRID (63%) ($p = 0.90$, test of proportions).

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[10]We thereby exclude 16 participants in GOAL and 14 participants in GRID who did not have the option to revise their choice. Moreover, we also exclude from our analysis four participants in GOAL and 14 participants in GRID who were informed of a peer average goal or grid size that was identical to their own choice. We do this for any analysis where this group would need to be examined separately, since analyzing the small number of observations is inconclusive.
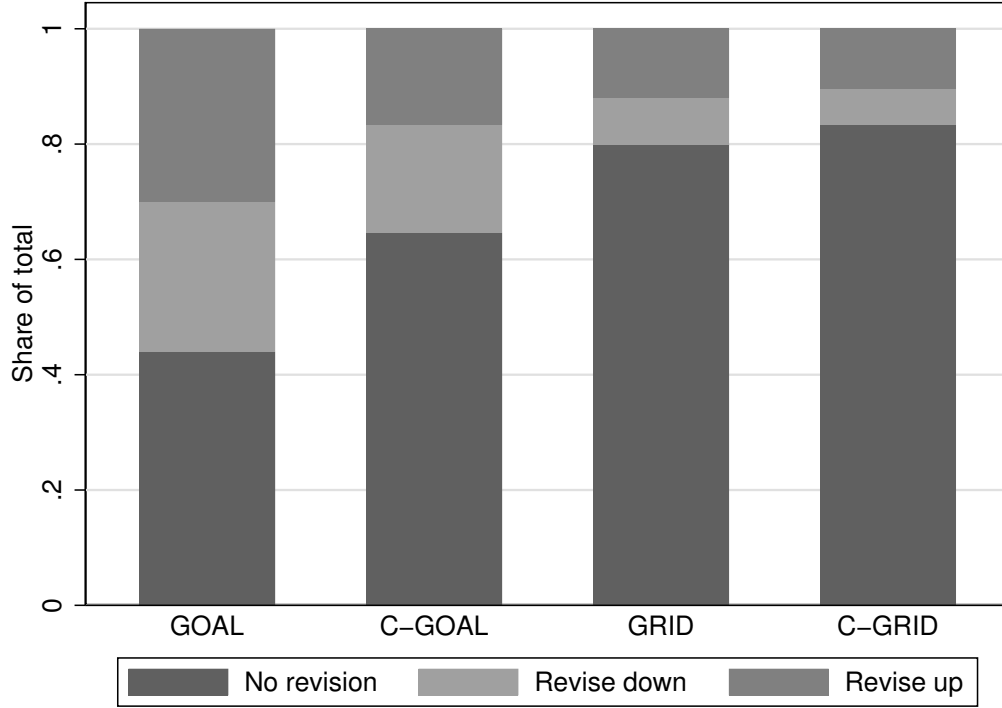
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Figure 2: Share of participants revising their choice

Notes: *No revision* refers to participants who did not revise their choice despite having the possibility to do so. *Revise down* refers to participants whose revised choice was lower than their initial choice. *Revise up* refers to participants whose revised choice was greater than their initial choice.

We now describe the relation between the direction of the revision and the peer average choice in GOAL and GRID depicted in Figure 3. In GOAL, the large majority of participants who revised their goal chose a more ambitious goal when the peer average goal was larger than their initial goal. They also tend to set a new, less ambitious goal when the peer average goal was smaller than their initial goal. Among participants who observed a peer average goal smaller than their own goal, 59.5% chose to revise, with 88% of them revising their initial goal downwards. Similarly, among participants whose goal was lower than the goal of their peers, 55.6% revised their goal, with 90% of them revising upwards.

In GRID, among participants who observed a smaller peer average grid than their own grid, 9.5% chose to revise their choice, with 75% of them revising down and 25% revising up. The proportion of participants who chose to revise their grid among those who observed a larger peer average grid than their own is 34.1%, with 73.3% revising upwards and 26.7% revising downwards. The asymmetry in revision rates according to whether the peer choice was larger or smaller than own choice is large and statistically significant (9.5% vs. 34.1%, $p < 0.01$, test of proportions).

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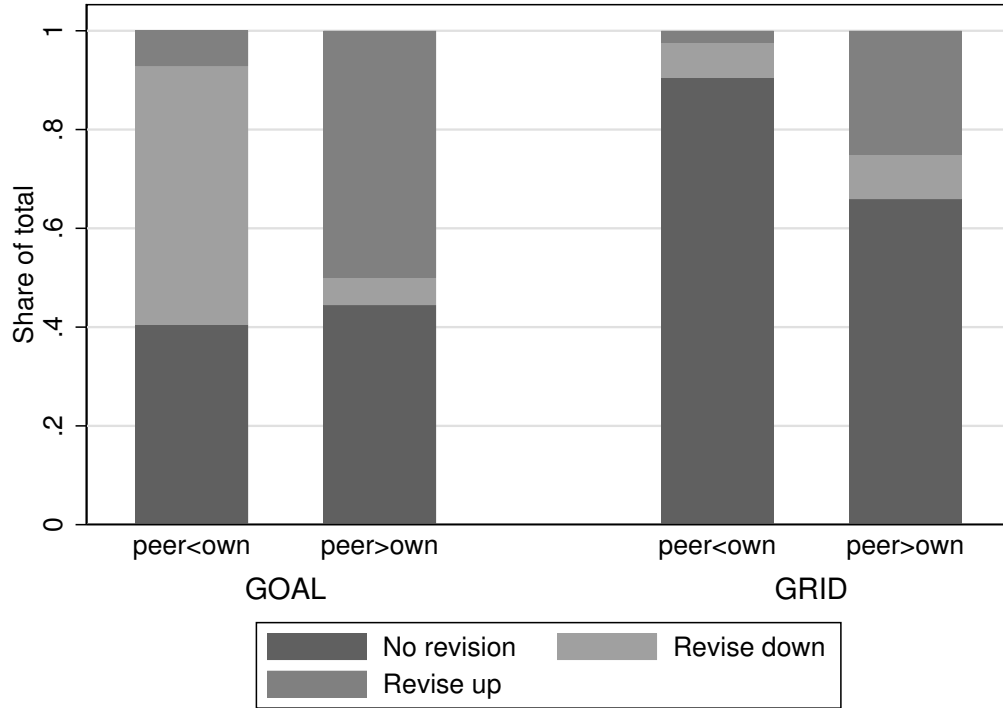
Figure 3: Share of participants revising their choice.

Notes: *peer<own* [*peer>own*] refers to participants who received information that their peers' choice is smaller [greater] than their own initial choice.

We summarize the findings as follows:

Result 1. *(a) The participants' tendency to revise their choice following peer information is substantially larger in GOAL than in GRID.*
(b) The proportion of revisions in the goal treatment is higher with peer information (GOAL) than without peer information (C-GOAL) while it is not significantly different in GRID and C-GRID.

Result 2. *(a) In GOAL participants with more ambitious peers and those with less ambitious peers than themselves are equally likely to revise their choice. In contrast, in GRID participants with more ambitious peers are more likely to revise their choice than those with less ambitious peers.*
(b) Participants who choose to revise, modify their choice into the direction of the peer average choice.

3.2 Size of peer effects

We now examine the magnitude of the peer effect, that is, the extent to which participants revise their choice after observing peer choices. As in the previous section, we restrict the analysis to those participants who were able to revise their choice and who received information about an average goal or grid size that was different from their own. We report in Table 2 the participants' average adjustment of the goal and grid choice after receiving information about their peers. In GOAL participants informed of a larger peer average goal increase their goal on average by 4.93 units, whereas those informed of a smaller peer average goal decrease their goal by 5.4 units (both are statistically significant from zero at the 1 percent level). These effects are symmetric (the difference between the absolute values of the means $|\Delta|$ is not statistically different from zero) and large; they correspond to an average adjustment of more than 10% of the average initial goal.[11] In GRID we observe a similar pattern, but the effects are small (about one-third of a unit or a 4% variation relative to the initial average choice) and not statistically different from zero at conventional levels of significance.[12]

Table 2: Difference between final and initial choice

	GOAL			GRID		
	Mean	SE	N	Mean	SE	N
peer choice > own choice	4.65***	1.28	54	0.30	0.20	44
peer choice < own choice	-5.40***	1.47	42	-0.33	0.22	42
$|\Delta|$	0.76	1.95	-	0.04	0.30	-

Notes: We report the mean and standard error for *Final Choice minus Initial Choice* for participants who observe a larger and a smaller peer choice and for both treatments. We also report the difference between the absolute mean values between the two groups and its standard error. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Figure 4 we show the relationship between the gap between the peers' average choice and the participants' initial choice (on the x-axis), and the difference between the participants' final choice and their initial choice (on the y-axis). Each tick on the axes represents approximately one standard deviation of the difference for the respective treatment. In GOAL there is a clear positive relationship between the two variables, indicating that participants tend to revise their goal in the direction of the peer average goal and proportionally

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[11]In GOAL, the average initial goal is 46.1 correct answers (standard deviation: 21.9). Detailed information is presented in Appendix A.1.

[12]In GRID the average initial grid choice is 7.2 (standard deviation: 2.1).

to the gap between their own goal and the peer average goal. In contrast, there is only a weak positive relationship in GRID, since the majority of participants do not revise their choice after observing peer choices.
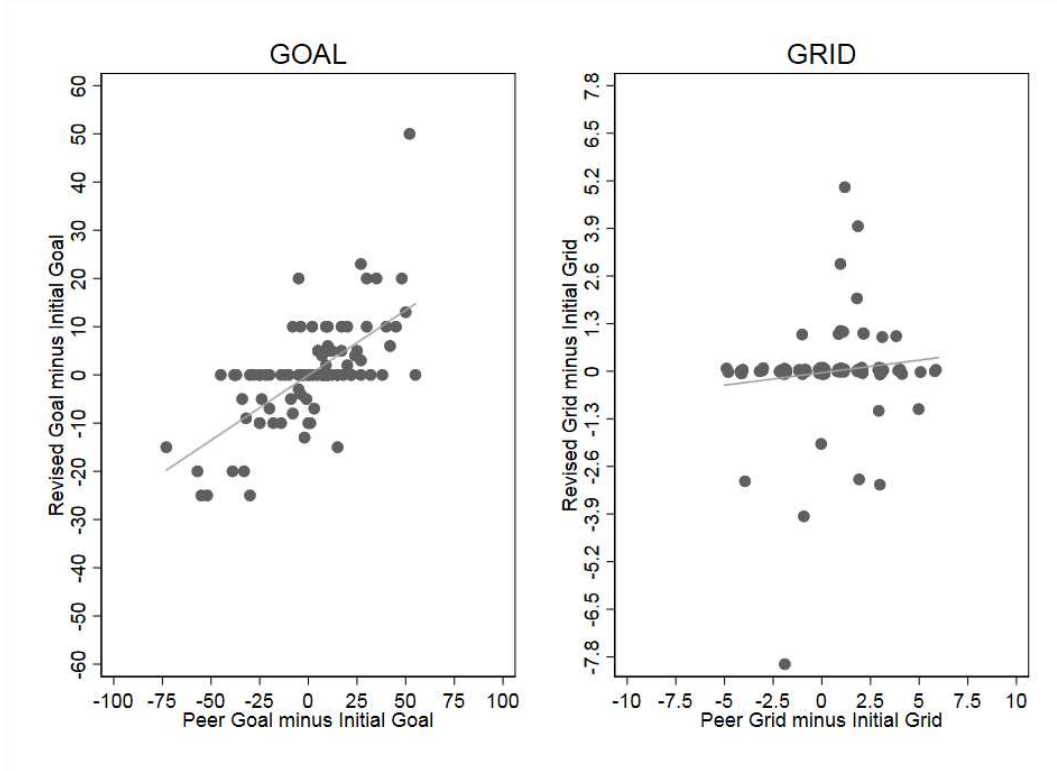
Figure 4: Relation of gap between initial choice and peer choice (x-axis) to gap between final and initial choice (y-axis).

Notes: Each dot corresponds to one observation and the line represents the linear fit. In GRID the dots are jittered to improve readability.

The descriptive analysis presented thus far does not account for the fact that when a participant initially chooses a large goal or grid, there is a high chance that her choice will exceed the peer average choice. Similarly, when a participant initially chooses a small goal or grid, there is a high chance her choice will fall behind the peer average choice. The two groups ('peer < own' and 'peer > own') are therefore not exogenously determined but depend on own initial choice. The regression analysis (in Table 3) allows us to estimate the extent to which peer choices influence participants' final choice, controlling for the participants' initial goal or grid choice and additional factors that may influence the outcome variable. Our main explanatory variables are the distance between the average peer choice and own choice, and the interaction between the distance and whether the peers' choice is larger than the own choice, to allow for different trends in the two cases. We control for the initial goal or grid

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choice and the performance in stage 1 in all specifications. In the extended specification, we additionally control for gender, risk attitudes, and session effects. The dependent variable, final choice, is equal to the initial choice for participants who have chosen not to revise their choice following peer information. We use standardized values for all continuous variables for ease of comparison of the results across the two treatments.

Our results indicate that for treatment GOAL there is a large and statistically significant influence of the peer average goal on participants' final goal. For each standard deviation difference between own goal and the peers' goal, the final goal decreases by a third of a standard deviation (significant at the 1 percent level in column 1a). This effect is unaffected— both in size and significance level—when controlling for gender, risk attitude, and session effects (column 1b). Moreover, there is no support for asymmetry in the response to observing higher versus lower peer goals than own goal (column 1c, p=0.5125, F-test). We also observe that the participants' initial goal is a very strong predictor of their final goal; for every standard deviation increase in the initial goal the final goal increases by about one standard deviation (significant at the 1 percent level in columns 1a, b, c). The performance in stage 1 on the other hand has no predictive power for the revised choice.

In treatment GRID, there is no evidence that participants adjust their grid choice to the peer average grid size (column 2a). The estimates remain insignificant when we control for other factors (column 2b) and allow for a different response to higher versus lower peer average grid than own choice (column 2c). As for treatment GOAL, the initial grid size has a positive effect on the final grid size (significant at the 1 percent level in columns 2a, b, c), while the impact of the performance in stage 1 is also insignificant.

By design in GRID, participants face a lower and an upper bound in their choice set. This restricts the possible response to observing peer choices, in particular for those participants who initially chose either the lowest (2×2) or the largest grid (10×10). The former always observe a larger peer average grid than their own, whereas participants who initially chose the largest grid observe a smaller peer average grid than their own. In both cases, participants can either stick to their initial choice or adjust it in the direction of the peer average grid. Since a considerable share of participants initially chose the largest grid (29%), our results would be biased if in response to a peer average grid smaller than their own choice, they had adjusted their choice upwards if given this option, or if the largest grid size as well as the peer average grid size are far below their desired grid size, so that information on peer choices becomes irrelevant. We examine the extent to which the choice set restriction in GRID may influence our results by analyzing the data set after excluding participants whose initial grid choice was either the largest or the smallest.[13] The results are unaffected (see

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[13]Twenty-nine participants chose the largest grid and only two participants chose the smallest grid.

Table A.4 in Appendix A.2). Thus, the finding of no peer effects in GRID is not driven by the limited choice set of some participants.

Table 3: Effect of peer information on the final choice

| | Dependent variable: final choice | | | | | |
| | GOAL | | | GRID | | |
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Peer choice - own choice	0.302***	0.309***	0.201*	0.045	0.041	-0.291
	(0.091)	(0.087)	(0.103)	(0.144)	(0.150)	(0.307)
Peer choice > own choice			-0.082			0.671*
			(0.169)			(0.364)
Peer choice > own choice × Peer choice - own choice			0.278			0.070
			(0.215)			(0.346)
Initial choice	1.137***	1.139***	1.119***	1.148***	1.152***	1.115***
	(0.074)	(0.086)	(0.084)	(0.162)	(0.167)	(0.162)
Performance stage 1	0.059	0.071	0.072*			
	(0.044)	(0.043)	(0.042)			
Performance 2x2 stage 1				-0.024	-0.009	-0.007
				(0.096)	(0.101)	(0.099)
Performance 6x6 stage 1				-0.005	0.000	0.035
				(0.101)	(0.099)	(0.099)
Performance 10x10 stage 1				0.071	0.037	0.049
				(0.099)	(0.098)	(0.098)
Female		-0.140	-0.134		0.188	0.234
		(0.107)	(0.113)		(0.189)	(0.187)
Risk aversion		0.049	0.061		-0.098	-0.087
		(0.056)	(0.060)		(0.095)	(0.093)
Constant	0.078	0.279**	0.258*	0.178**	-0.060	-0.456
	(0.047)	(0.108)	(0.145)	(0.087)	(0.202)	(0.341)
N	100	100	100	100	100	100
Session dummies	No	Yes	Yes	No	Yes	Yes

Notes: (1a,b,c) OLS regressions, (2a,b,c) Tobit regressions. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Result 3. *In GOAL participants revise their choice in the direction of the peer average goal. The effect is observed both for participants with more and with less ambitious peers. In GRID there is no evidence of peer effects on the final choice.*

3.3 Performance and earnings

Given our finding that participants revise their performance goals in the direction of their peer average goal, the question arises of whether observing peer choices also affects performance and earnings. Observing a peer goal lower than their own goal leads participants to revise their goal downwards and may discourage effort in the task and decrease performance. Similarly, an increase in one's performance goal after observing a more ambitious peer goal

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may encourage higher effort and increase performance. We test for such effects by comparing the performance in stage 2 of participants who observed their peers' goals and had the possibility to revise their choice (GOAL) with those who were also given the possibility to revise their choice, but did not observe others' goals (participants in the control treatment C-GOAL).

We report the regression results in Table 4. Our main variables of interest are indicator variables for whether the participant was given information about the peer average goal (*Peer info*), i.e., if the participant was in treatment GOAL or C-GOAL, see column 1, and whether the peer average goal was larger (*Peer goal > own goal*) or smaller than the participant's own goal (*Peer goal < own goal*), see columns 2 and 3. In all specifications we control for performance in stage 1 and initial goal.

We do not find evidence that peer effects on performance goals influence actual performance. There is no overall average effect (column 1), nor is there a significant effect when separately considering the group of participants who observed more ambitious peers and the group who observed less ambitious peers (column 2). These results are unaffected when controlling for participant characteristics and session effects (column 3).

The finding that peer information does not affect performance in the second stage may partly be a consequence of the small opportunity cost of time for participants in the laboratory. Other studies have shown that performance in laboratory experiments is inelastic with respect to monetary incentives (or performance goals in our study) (see Araujo et al., 2016, for a detailed discussion on the relation between performance and incentives in the laboratory). Possibly, using different tasks or increasing the opportunity cost of time, for example by letting participants leave the laboratory, could lead to more pronounced performance differences. We leave this question for future work.

Table 4: Effect of peer information on performance in stage 2

	Dependent variable: performance in stage 2		
	GOAL		
	(1)	(2)	(3)
Peer info (ref. category: *C-GOAL)*			
Peer info	0.004		
	(0.103)		
Peer goal > own goal		-0.038	0.239
		(0.119)	(0.203)
Peer goal < own goal		0.063	0.282
		(0.123)	(0.186)
Initial goal	0.102*	0.084	0.106
	(0.059)	(0.063)	(0.065)
Performance stage 1	0.782***	0.781***	0.771***
	(0.049)	(0.050)	(0.053)
Female			-0.112
			(0.106)
Risk aversion			0.038
			(0.052)
Constant	-0.002	-0.004	0.032
	(0.087)	(0.086)	(0.130)
N	144	144	144
Session dummies	No	No	Yes

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Next, we look at the consequences of observing peer performance goals on earnings (Table 5). The results show that being informed about the goals of peers increases participants' earnings by 0.26 of a standard deviation on average, marginally significant at the 10 percent level (column 1). When considering separately the group of participants who observe less ambitious peers, the effect becomes larger: the earnings increase by about 0.36 of a standard deviation, which is statistically significant at the 10 percent level (column 2). The effect is smaller and not statistically significant for participants who observe more ambitious peers. The reason for the positive effect of observing less ambitious peers is that participants revise their goal downwards and therefore have a higher chance of receiving the bonus, in

which case their earnings increase substantially.[14] This is substantiated by the regression results reported in column 3, where we control for whether the participant has reached the goal, therefore accounting for the large variation in earnings dependent on whether the goal has been reached. When controlling for whether a participant has reached the goal—and therefore eliminating the aforementioned channel—we find that the estimate for *peer goal < own goal* is halved and is statistically indistinguishable from zero. Moreover, having more ambitious peers now increases earnings by, on average, 0.24 of a standard deviation, which is statistically significant at the 10 percent level. Since we control for *goal reached* the positive estimate for *peer goal > own goal* shows that there is a significant share of participants who initially set themselves too conservative goals (below their actual performance), as shown in Figure A.4 in Appendix A.1.

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[14]See Table 3 in the previous section.

Table 5: Effect of peer information on earnings

	GOAL		
	Dependent variable: payoff in stage 2		
	(1)	(2)	(3)
Peer info (ref. category: *C-GOAL)*			
Peer info	0.258*		
	(0.141)		
Peer goal > own goal		0.185	0.236*
		(0.148)	(0.124)
Peer goal < own goal		0.356*	0.164
		(0.186)	(0.125)
Initial goal	-0.025	-0.056	0.540***
	(0.093)	(0.101)	(0.068)
Performance stage 1	0.665***	0.663***	0.363***
	(0.067)	(0.068)	(0.039)
Goal reached			2.078***
			(0.120)
Female			-0.142*
			(0.074)
Risk aversion			0.052
			(0.037)
Constant	-0.153	-0.156	-1.606***
	(0.122)	(0.122)	(0.127)
N	144	144	144
Session dummies	No	No	Yes

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In treatment GRID we find no impact of observing peers' average grid on earnings (results are reported in Appendix Table A.5). This is consistent with the finding that only a small fraction of participants (22%) revise their choices in response to observing peer choices.

Result 4. *In GOAL observing peer choices does not affect performance. However, it does affect earnings. Participants who observe peer choices earn about 25% more than participants who do not observe their peers, an effect that is marginally significant. In GRID performance and earnings are unaffected by observing peer choices.*

The finding that performance does not change with peer information but earnings do is

a result of improved goal setting with peer information. Participants appear to learn from others what a realistic goal is, which leads to higher earnings.

3.4 Determinants of goal or grid choice

Finally we describe how participants decide on their initial performance goal and grid. Specifically, we test whether the initial choice is influenced by participants' gender, risk attitude, and ability at the task (Table 6). In GOAL female participants set themselves a smaller initial goal than men, on average by about 0.4 of a standard deviation, equivalent to 8.5 units, while their performance in stage 1 differs by one unit only.[15] The gender difference in performance goals is large and statistically significant at the 1 percent level (columns 1a, b). This is consistent with the observation by Dalton et al. (2016) that women are more conservative when setting performance goals than men despite no gender difference in ability (see also Gino et al., 2015). However, we find no difference between men and women in GRID, indicating that the choice of quality or complexity of the task does not differ by gender (columns 2a, b).

There is no evidence in GOAL and GRID that risk aversion influences the initial choice. Finally, participants with higher ability at the task, measured by performance in stage 1, set themselves a larger initial goal. An increase of one standard deviation in performance in stage 1 increases the goal by 0.37 of a standard deviation on average, statistically significant at the 1 percent level (columns 1a, b). Similarly, ability influences the initial grid choice. Participants with a higher performance in stage 1 in the largest grid (10×10) tend to choose a larger grid. An increase in performance in the largest grid in stage 1 by one standard deviation increases the grid choice by 0.4 of a standard deviation, statistically significant at the 1 percent level (columns 2a, b). These findings indicate that the goal and grid choices are not arbitrary but that participants base their decisions on their ability.

Result 5. *Female participants set lower performance goals than males, whereas there is no gender difference in grid choices. Ability at the task positively influences goal and grid choices.*

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[15]The number of correct answers in stage 1 was 22 for male and 21 for female subjects, $p = 0.27$.

Table 6: Determinants of initial goal or grid choice

	Dependent variable: initial goal/grid choice			
	GOAL & C-GOAL		GRID & C-GRID	
	(1a)	(1b)	(2a)	(2b)
Female	-0.374**	-0.372**	0.207	0.287
	(0.162)	(0.154)	(0.217)	(0.218)
Risk aversion	0.002	-0.051	0.010	0.045
	(0.071)	(0.073)	(0.100)	(0.102)
Performance stage 1	0.361***	0.369***		
	(0.071)	(0.066)		
Performance in 2x2 in stage 1			-0.035	-0.045
			(0.111)	(0.108)
Performance in 6x6 in stage 1			0.037	0.101
			(0.113)	(0.112)
Performance in 10x10 in stage 1			0.431***	0.399***
			(0.108)	(0.107)
Constant	0.139*	0.218	0.089	-0.355
	(0.083)	(0.177)	(0.131)	(0.256)
N	164	164	162	162
Session dummies	No	Yes	No	Yes

Notes: (1a,b) OLS regression, (2a,b) Tobit regression. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4   Discussion

We provide evidence that observing the ambition of peers can shape people's own ambition. In a laboratory experiment, the effect of peer information on ambition was tested in two conditions. In one condition, participants were required to set a performance goal in an incentivized effort task and were rewarded with a proportional bonus conditional on reaching the goal. In the other condition, participants had to decide on the difficulty of the task. More difficult tasks are associated with higher effort, risk, and potential earnings. In both conditions, each participant was informed about the average choice of a randomly chosen subgroup of other participants in the same session (the peer group).

Our results indicate that when participants observe the ambition of their peers in the form of performance goals, they adjust their own goals to the peer average choice. The effect is large: participants revise their goal by about one-third of a standard deviation for

each standard deviation gap between their initial goal and the peer average goal. Moreover, observing more ambitious peers increases participants' earnings by about 25 percent, an effect that is marginally significant. On the other hand, we find no support for the hypothesis that participants' choices regarding the level of difficulty of the task are systematically influenced by peer choices.

There are two potential explanations for peer effects, namely uncertainty about one's own ability and social preferences or status concerns. While not aiming at distinguishing between the sources of peer effects of ambition, our experiment sheds some light on their relevance. With regard to the first explanation, if participants face uncertainty regarding their ability, it is not clear what the optimal goal or grid size is. Peer information can then be informative (if participants believe that the ability of the peers is similar to their own). However, it seems unlikely that participants consider others' choices as more informative for setting performance goals relative to deciding on the complexity of the task. Thus, uncertainty about one's own ability seems to play only a minor role.

The second explanation relates to outcome-based social preferences or status concerns. If participants care about their relative performance or income, or about minimizing income inequality, they should increase their goal and work harder if they learn of a peer goal greater than their own, whereas they should decrease their goal and work less when they learn of a smaller peer goal. In contrast, the link between the grid size and a performance measure such as income is weaker, since choosing a large grid size does not directly indicate the peers' intention to perform better or earn more. It may also be motivated, for instance, by the willingness to perform a more challenging task even though it involves greater risk. Therefore, if participants care about their relative earnings or are motivated by minimizing income inequality, we would expect them to react more strongly to peer information about the goal than about grid size, which is consistent with our results. Thus, our findings are more in line with an explanation based on social preferences than with pure information effects.

In our study we consider one channel for peer effects, namely observing others' choices. Peer effects may also work through being observed by others (Tymula and Whitehair, 2018). Investigating whether people's ambition is affected when made public or observable by peers is an interesting avenue for future research.

Our findings have a number of implications for management and public policy. The results indicate that co-workers may converge toward similar productivity levels, not only because they learn from each other or because of task complementarities but also because their levels of ambition may converge. Similarly, in many education systems students are assigned to different classrooms or school types according to their perceived achievement potential at a

very early stage of the education trajectory (OECD, 2013). Our results suggest that sorting children into schools or classrooms according to their perceived academic potential early on may reinforce differences in the performance goals of children. It remains to be investigated in which contexts such differences in goals translate into differences in performance.

References

Ammermueller, A. and Pischke, J. S. (2009). Peer effects in European primary schools: Evidence from the progress in international reading literacy study. *Journal of Labor Economics*, 27(3): 315–348.

Araujo, F. A., Carbone, E., Conell-Price, L., Dunietz, M. W., Jaroszewicz, A., Landsman, R., Lamé, D., Vesterlund, L., Wang, S. W., and Wilson, A. J. (2016). The slider task: An example of restricted inference on incentive effects. *Journal of the Economic Science Association*, 2(1): 1–12.

Arcidiacono, P. and Nicholson, S. (2005). Peer effects in medical school. *Journal of Public Economics*, 89(2): 327–350.

Azmat, G. and Iriberri, N. (2010). The importance of relative performance feedback information: Evidence from a natural experiment using high school students. *Journal of Public Economics*, 94(7): 435–452.

Bandiera, O., Barankay, I., and Rasul, I. (2005). Social preferences and the response to incentives: Evidence from personnel data. *Quarterly Journal of Economics*, 120(3): 917–962.

Beugnot, J., Fortin, B., Lacroix, G., and Villeval, M. C. (2019). Gender and peer effects in social networks. Forthcoming in *European Economic Review*.

Burke, M. A. and Sass, T. R. (2013). Classroom peer effects and student achievement. *Journal of Labor Economics*, 31(1): 51–82.

Chen, D. L., Schonger, M., and Wickens, C. (2016). oTree – an open-source platform for laboratory, online, and field experiments. *Journal of Behavioral and Experimental Finance*, 9: 88–97.

Corgnet, B., Gómez-Miñambres, J., and Hernán-González, R. (2015). Goal setting and monetary incentives: When large stakes are not enough. *Management Science*, 61(12): 2926–2944.

Crosetto, P. and Filippin, A. (2013). The "bomb" risk elicitation task. *Journal of Risk and Uncertainty*, 47(1): 31–65.

Dalton, P. S., Gonzalez, V., and Noussair, C. N. (2016). Gender and peer effects in social networks. CentER Discussion Paper Series No. 2016-036.

Falk, A. and Ichino, A. (2006). Clean evidence on peer effects. *Journal of Labor Economics*, 24(1): 39–57.

Gerhards, L. and Gravert, C. (2016). Because of you I did not give up: How peers affect perseverance. Working paper.

Gino, F., Wilmuth, C. A., and Brooks, A. W. (2015). Compared to men, women view professional advancement as equally attainable, but less desirable. *Proceedings of the National Academy of Sciences*, 112(40): 12354–12359.

Goerg, S. J. and Kube, S. (2012). Self-chosen goals, incentives, and effort. MPI Collective Goods Preprint, No. 2012/19.

Greiner, B. (2015). Subject pool recruitment procedures: Organizing experiments with ORSEE. *Journal of the Economic Science Association*, 1(1): 114–125.

Grubbs, F. E. (1969). Procedures for detecting outlying observations in samples. *Technometrics*, 11(1): 1–21.

Guryan, J., Kroft, K., and Notowidigdo, M. J. (2009). Peer effects in the workplace: Evidence from random groupings in professional golf tournaments. *American Economic Journal: Applied Economics*, 1(4): 34–68.

Heath, C., Larrick, R. P., and Wu, G. (1999). Goals as reference points. *Cognitive Psychology*, 38(1): 79–109.

Herbst, D. and Mas, A. (2015). Peer effects on worker output in the laboratory generalize to the field. *Science*, 350(6260): 545–549.

Hoxby, C. and Weingarth, G. (2005). Taking race out of the equation: School reassignment and the structure of peer effects. Working Paper, Harvard University.

Lavy, V., Silva, O., and Weinhardt, F. (2012). The good, the bad, and the average: Evidence on ability peer effects in schools. *Journal of Labor Economics*, 30(2): 367–414.

Locke, E. A. and Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9): 705–717.

Mas, A. and Moretti, E. (2009). Peers at work. *American Economic Review*, 99(1): 112–45.

OECD (2013). *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices.* PISA, OECD Publishing, Paris, https://doi.org/10.1787/9789264201156-en.

Rosaz, J., Slonim, R., and Villeval, M. C. (2016). Quitting and peer effects at work. *Labour Economics*, 39: 55–67.

Sacerdote, B. (2001). Peer effects with random assignment: Results for Dartmouth roommates. *Quarterly Journal of Economics*, 116(2): 681–704.

Smithers, S. (2015). Goals, motivation and gender. *Economics Letters*, 131: 75–77.

Tymula, A. and Whitehair, J. (2018). Young adults gamble less when observed by peers. *Journal of Economic Psychology*, 68: 1–15.

van Lent, M. and Souverijn, M. (2017). Goal setting and raising the bar: A field experiment. Tinbergen Institute Discussion Paper 17-001/VII.

van Veldhuizen, R., Oosterbeek, H., and Sonnemans, J. (2018). Peers at work: Evidence from the lab. *PloS one*, 13(2): e0192038.

Watson, D., Clark, L. A., and Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6): 1063–1070.

Zimmerman, D. J. (2003). Peer effects in academic outcomes: Evidence from a natural experiment. *Review of Economics and Statistics*, 85(1): 9–23.

A   Appendix

A.1   Additional descriptive information

Table A.1: Descriptive statistics of the participant pool by treatment

	GOAL		C-GOAL		GRID		C-GRID		All	
	N	%	N	%	N	%	N	%	N	%
Female	37	32	20	42	44	39	18	38	119	37
Male	79	68	27	56	68	60	28	58	202	62
Not stated	0	0	1	2	2	2	2	4	5	1
Age										
At most 20	43	37	22	46	37	32	13	27	115	35
Between 20 and 25	43	37	22	46	53	46	17	35	135	41
More than 25	30	26	4	8	24	21	18	38	76	23
Field of study										
STEM	61	53	27	56	38	33	20	42	146	45
Economics & Management	45	39	16	33	47	41	11	23	119	37
Other	8	7	5	10	26	23	13	27	52	16
Not stated	2	2	0	0	3	3	4	8	9	3
N	116	100	48	100	114	100	48	100	326	100

Notes: Descriptive statistics of our participant pool. We report the data for the whole sample, and separately by treatment.

Table A.2: Summary statistics by treatment

	GOAL			Control GOAL		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Performance in stage 1 (4 min)	21.65	5.40	116	23.17	5.51	48
Initial goal	46.23	21.95	116	42.52	25.18	48
Revised goal	44.91	16.77	100	43.42	24.4	48
Performance in stage 2 (10 min)	57.33	14.18	116	60.06	12.88	48
Reached the goal	0.78	0.41	116	0.81	0.39	48
Risk aversion coefficient	0.61	0.20	116	0.56	0.22	48

	GRID			Control GRID		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Performance in 2×2 in stage 1 (2 min)	56.26	7.41	114	56.35	8.33	48
Performance in 6×6 in stage 1	11.13	2.76	114	12.08	2.83	48
Performance in 10×10 in stage 1	2.93	1.20	114	2.69	1.24	48
Initial grid choice	7.23	2.11	114	6.15	2.48	48
Revised grid choice	7.23	2.41	86	6.29	2.41	48
Performance in 2×2 in stage 2 (10 min)	304.75	30.35	4	312.25	22.82	4
Performance in 3×3 in stage 2	211	-	2	249	-	1
Performance in 4×4 in stage 2	144.33	18.37	6	149.25	5.68	4
Performance in 5×5 in stage 2	85.53	19.20	17	87.45	12.36	11
Performance in 6×6 in stage 2	69.67	8.35	15	59.4	12.85	10
Performance in 7×7 in stage 2	39.11	7.89	19	40.33	5.69	3
Performance in 8×8 in stage 2	29	6.12	17	31	6.40	5
Performance in 9×9 in stage 2	25	-	1	24	-	1
Performance in 10×10 in stage 2	19.09	5.89	33	20.89	4.43	9
Risk aversion coefficient	0.61	0.18	114	0.61	0.19	48

Figure A.1: GOAL: Initial goal distribution.
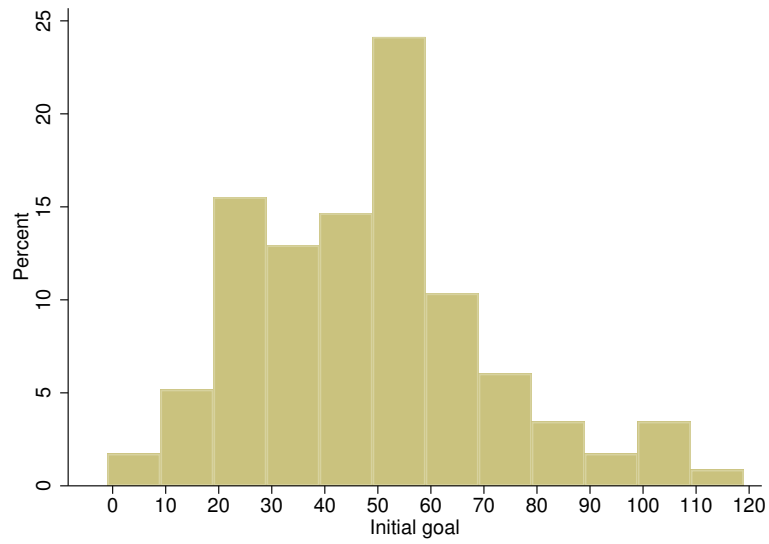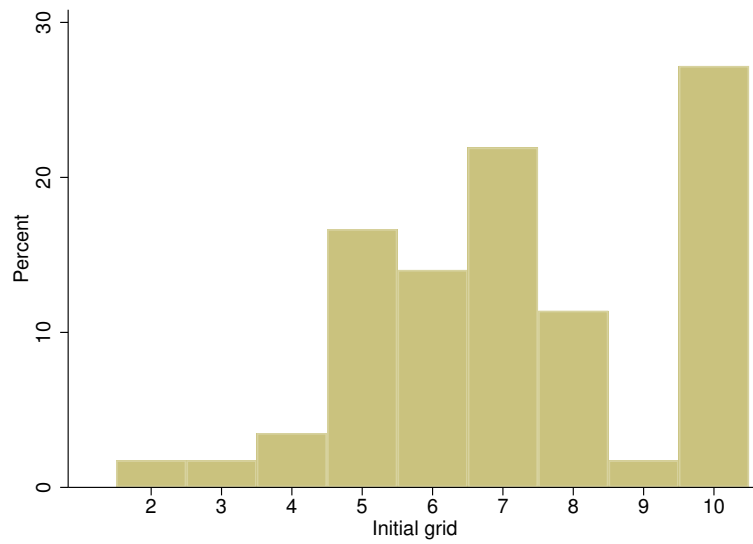Note: N=116.

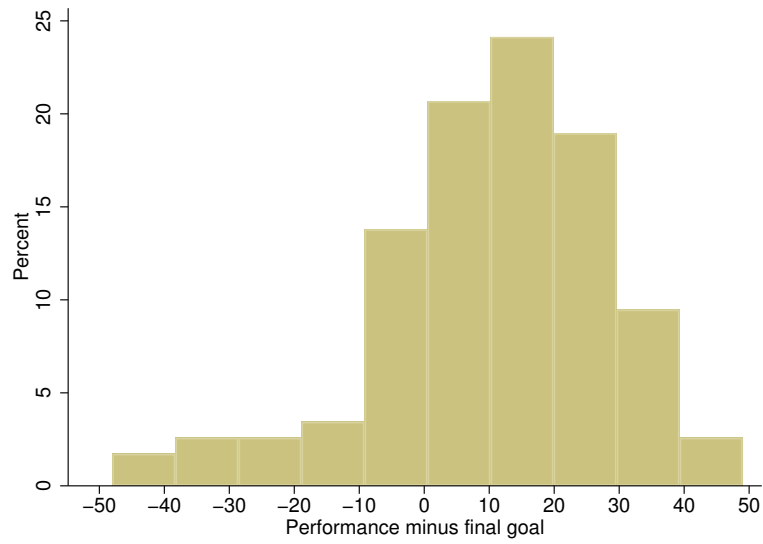Figure A.2: GRID: Initial grid choice distribution.
Note: N=114.

Figure A.3: GOAL: Difference between performance in stage 2 and final goal.
Note: N=116, for all participants who did not have the option to revise their goal, the final goal is also the initial goal.
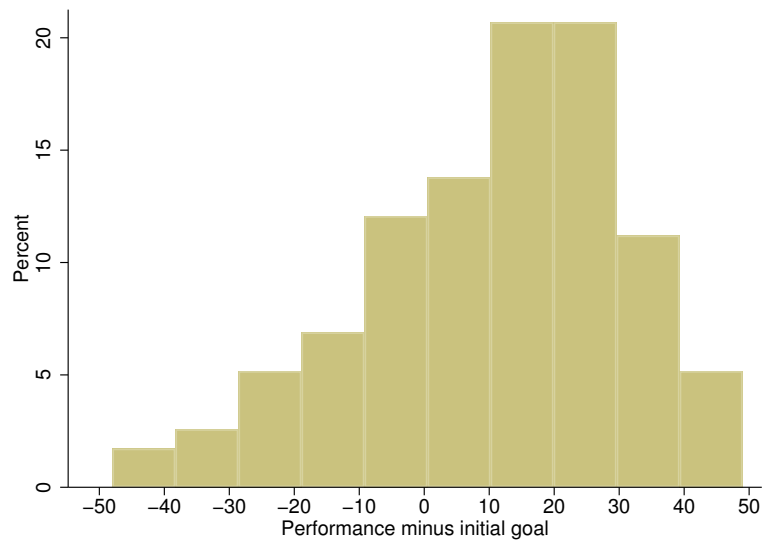

Figure A.4: GOAL: Difference between performance in stage 2 and initial goal.
Note: N=116

A.2 Additional regression results

Table A.3: Effect of peer information on the propensity to revise own choice

	Dependent variable: propensity to revise choice					
	GOAL			GRID		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Peer choice - own choice	0.016	0.003	-0.015	0.167**	0.179**	0.121
	(0.078)	(0.079)	(0.131)	(0.064)	(0.078)	(0.145)
Peer choice > own choice			-0.194			0.354*
			(0.171)			(0.200)
Peer choice > own choice × Peer choice - own choice			0.187			-0.154
			(0.179)			(0.185)
Initial choice	-0.004	-0.002	-0.007	0.098	0.116	0.122
	(0.090)	(0.094)	(0.097)	(0.060)	(0.077)	(0.074)
Performance stage 1	0.031	0.019	0.008			
	(0.055)	(0.057)	(0.060)			
Performance 2x2 stage 1				0.002	-0.012	-0.012
				(0.041)	(0.040)	(0.038)
Performance 6x6 stage 1				0.033	0.038	0.061
				(0.042)	(0.047)	(0.044)
Performance 10x10 stage 1				-0.023	-0.038	-0.036
				(0.034)	(0.035)	(0.037)
Female		0.142	0.161		-0.045	-0.016
		(0.116)	(0.113)		(0.085)	(0.092)
Risk aversion		-0.030	-0.022		-0.015	-0.012
		(0.053)	(0.052)		(0.047)	(0.047)
Constant	0.561***	0.400***	0.468***	0.195***	0.268**	0.165
	(0.051)	(0.123)	(0.161)	(0.039)	(0.108)	(0.168)
N	100	100	100	100	100	100
Session dummies	No	Yes	Yes	No	Yes	Yes

Notes: OLS regressions. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: Effect of peer information on the standardized revised choice excluding initial 2x2 and 10x10 choices

	Dependent variable: revised choice		
	GRID		
	(1a)	(1b)	(1c)
Peer choice - own choice	-0.080	-0.075	-0.430
	(0.119)	(0.125)	(0.320)
Peer choice > own choice			1.015**
			(0.452)
Peer choice > own choice × Peer choice - own choice			-0.155
			(0.339)
Initial choice	0.639***	0.641***	0.554***
	(0.121)	(0.126)	(0.119)
Performance 2x2 stage 1	-0.157	-0.117	-0.110
	(0.102)	(0.109)	(0.100)
Performance 6x6 stage 1	0.118	0.126	0.192**
	(0.101)	(0.100)	(0.095)
Performance 10x10 stage 1	0.051	0.027	0.042
	(0.096)	(0.097)	(0.091)
Female		0.209	0.251
		(0.196)	(0.183)
Risk aversion		0.094	0.303
		(0.566)	(0.526)
Constant	-0.013	-0.332	-1.134*
	(0.084)	(0.391)	(0.580)
N	69	69	69
Session dummies	No	Yes	Yes

Notes: (1a, b, c) Tobit regressions. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: Effect of peer information on earnings

	Dependent variable: payoff in stage 2		
	GRID		
	(1a)	(1b)	(1c)
Peer info (ref. category: *C-GRID)*			
Peer info	-0.205		
	(0.159)		
Peer info > own choice		-0.170	-0.069
		(0.173)	(0.308)
Peer info < own choice		-0.263	-0.166
		(0.211)	(0.319)
Initial grid	0.223***	0.244***	0.241**
	(0.082)	(0.089)	(0.096)
Performance 2x2 stage 1	0.160**	0.161**	0.110
	(0.072)	(0.073)	(0.080)
Performance 6x6 stage 1	0.217**	0.218**	0.236***
	(0.083)	(0.084)	(0.087)
Performance 10x10 stage 1	0.162*	0.164*	0.159*
	(0.087)	(0.087)	(0.090)
Female			-0.109
			(0.159)
Risk aversion			-0.102
			(0.080)
Constant	0.135	0.142	0.315*
	(0.117)	(0.119)	(0.162)
N	134	134	134
Session dummies	No	No	Yes

Notes: OLS regressions. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6: Effect of peer information on the final choice including outliers

	GOAL			GRID		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Peer choice - own choice	0.871**	0.873**	0.220	0.045	0.041	-0.291
	(0.364)	(0.353)	(0.153)	(0.144)	(0.150)	(0.307)
Peer choice > own choice			-0.292*			0.671*
			(0.152)			(0.364)
Peer choice > own choice × Peer choice - own choice			1.035***			0.070
			(0.321)			(0.346)
Initial choice	1.456***	1.455***	1.000***	1.148***	1.152***	1.115***
	(0.294)	(0.282)	(0.114)	(0.162)	(0.167)	(0.162)
Performance stage 1	-0.042	-0.048	-0.009			
	(0.035)	(0.036)	(0.031)			
Performance 2x2 stage 1				-0.024	-0.009	-0.007
				(0.096)	(0.101)	(0.099)
Performance 6x6 stage 1				-0.005	0.000	0.035
				(0.101)	(0.099)	(0.099)
Performance 10x10 stage 1				0.071	0.037	0.049
				(0.099)	(0.098)	(0.098)
Female		-0.092	-0.107		0.188	0.234
		(0.090)	(0.078)		(0.189)	(0.187)
Risk aversion		-0.006	0.015		-0.098	-0.087
		(0.036)	(0.028)		(0.095)	(0.093)
Constant	0.034	0.143	0.100	0.178**	-0.060	-0.456
	(0.049)	(0.091)	(0.087)	(0.087)	(0.202)	(0.341)
N	104	104	104	100	100	100
Session dummies	No	Yes	Yes	No	Yes	Yes

Dependent variable: final choice

Notes: (1a, b, c) OLS regressions, (2a, b, c) Tobit regressions. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.7: Effect of peer information on performance in stage 2 including outliers

	Dependent variable: performance in stage 2		
	GOAL		
	(1)	(2)	(3)
Peer info (ref. category: *C-GOAL)*			
Peer info	0.010		
	(0.103)		
Peer info > own goal		-0.063	0.245
		(0.118)	(0.203)
Peer info < own goal		0.108	0.367*
		(0.123)	(0.190)
Initial goal	0.022	-0.003	0.008
	(0.057)	(0.053)	(0.057)
Performance stage 1	0.817***	0.809***	0.804***
	(0.047)	(0.048)	(0.050)
Female			-0.139
			(0.103)
Risk aversion			0.033
			(0.051)
Constant	-0.012	-0.014	0.009
	(0.085)	(0.085)	(0.134)
N	148	148	148
Session dummies	No	No	Yes

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Effect of peer information on the gap between performance in stage 2 and goal including outliers

	Dependent variable:		
	performance in stage 2 - final goal		
	GOAL		
	(1)	(2)	(3)
Peer info (ref. category: *C-GOAL)*			
Peer info	-0.064		
	(0.098)		
Peer info > own goal		-0.243	-0.224
		(0.149)	(0.182)
Peer info < own goal		0.178**	0.242**
		(0.073)	(0.118)
Initial goal	-0.768***	-0.829***	-0.825***
	(0.090)	(0.074)	(0.073)
Performance stage 1	0.291***	0.272***	0.274***
	(0.038)	(0.038)	(0.038)
Female			0.101
			(0.097)
Risk aversion			0.040
			(0.070)
Constant	0.036	0.031	0.029
	(0.049)	(0.047)	(0.073)
N	148	148	148
Session dummies	No	No	Yes

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: Effect of peer information on earnings including outliers

	Dependent variable: payoff in stage 2		
	GOAL		
	(1)	(2)	(3)
Peer info (ref. category: *C-GOAL)*			
Peer info	0.244*		
	(0.140)		
Peer info > own goal		0.161	0.329**
		(0.148)	(0.150)
Peer info < own goal		0.355**	0.438**
		(0.179)	(0.168)
Initial goal	-0.107**	-0.135**	0.221
	(0.051)	(0.052)	(0.145)
Performance stage 1	0.667***	0.658***	0.511***
	(0.059)	(0.061)	(0.057)
Goal reached			1.676***
			(0.139)
Female			-0.262***
			(0.087)
Risk aversion			0.030
			(0.041)
Constant	-0.150	-0.152	-1.340***
	(0.118)	(0.118)	(0.143)
N	148	148	148
Session dummies	No	No	Yes

Notes: Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10: Determinants of initial goal or grid choice including outliers

	GOAL & C-GOAL		GRID & C-GRID	
	Dependent variable: initial goal/grid choice			
	(1a)	(1b)	(2a)	(2b)
Female	-0.068	-0.052	0.207	0.287
	(0.177)	(0.188)	(0.217)	(0.218)
Risk aversion	0.074	0.037	0.010	0.045
	(0.074)	(0.071)	(0.100)	(0.102)
Performance stage 1	0.224***	0.232***		
	(0.065)	(0.064)		
Performance in 2x2 in stage 1			-0.035	-0.045
			(0.111)	(0.108)
Performance in 6x6 in stage 1			0.037	0.101
			(0.113)	(0.112)
Performance in 10x10 in stage 1			0.431***	0.399***
			(0.108)	(0.107)
Constant	0.030	-0.020	0.089	-0.355
	(0.056)	(0.144)	(0.131)	(0.256)
N	168	168	162	162
Session dummies	No	Yes	No	Yes

Notes: (1a, b) OLS regression, (2a, b) Tobit regression. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.3 Screenshots and English translation

Herzlich Willkommen zu unserem Experiment!

Während des Experimentes ist es Ihnen nicht erlaubt, elektronische Geräte zu benutzen oder mit anderen Teilnehmern zu kommunizieren. Bitte benutzen Sie nur die für das Experiment vorgesehenen Programme und Funktionen. Bitte sprechen Sie nicht mit den anderen Teilnehmern. Sollten Sie eine Frage haben, dann heben Sie bitte Ihre Hand. Wir werden dann zu Ihnen kommen und Ihre Frage im Stillen beantworten. Bitte stellen Sie Ihre Fragen auf keinen Fall laut. Wenn die Frage relevant für alle Teilnehmer ist, werden wir sie laut wiederholen und beantworten. Sollten Sie gegen diese Regeln verstoßen, müssen wir Sie vom Experiment und der Auszahlung ausschließen. Das Experiment, an dem Sie nun teilnehmen werden, ist Teil eines von WZB finanzierten Projekts. Es dient dazu, ökonomisches Entscheidungsverhalten zu analysieren.

*Wenn Sie bereit sind, drücken Sie bitte auf **Start**.*

Start

* Welcome to our experiment! During the experiment you are not allowed to use electronic devices or to communicate with other participants. Please use only the programs and functions intended for the experiment. Please do not talk to the other participants. Raise your hand if you have a question and we will then come to you and we will answer your question quietly. Please do not ask your questions out loud. If the question is relevant for all participants, we will repeat it out loud and answer it. If you violate these rules, we must exclude you from the experiment and the payout. The experiment in which you are participating today is part of a project financed by the WZB. It serves to analyze economic decision-making. When you are ready please press Start.

Allgemeine Instruktionen

Das Experiment besteht aus 3 Teilen. Der erste und zweite Teil sind sehr ähnlich, der dritte Teil ist anders. Am Ende des Experiments folgt ein Fragebogen.

Für die Teilnahme am heutigen Experiment erhalten Sie 5 Euro. Darüber hinaus können Sie abhängig von Ihren Entscheidungen weiteres Geld verdienen. In allen drei Teilen des Experiments werden Sie Punkte sammeln. Am Ende des Experiments werden diese Punkte in Euro umgerechnet. Die Umrechnungsrate beträgt dabei 100 Punkte = 1 Euro. Sie erhalten Ihre Auszahlung direkt im Anschluss an das Experiment, ohne dass die anderen Teilnehmer den Betrag erfahren.

Vor jedem Abschnitt erhalten Sie eine detaillierte Beschreibung der Aufgabe, die zu bearbeiten ist.

*Wenn Sie bereit sind, drücken Sie bitte auf **Weiter**.*

Weiter

* The experiment consists of three stages. The first and the second stage are very similar, the third stage is different. At the end of the experiment, there will be a questionnaire. You will receive a participation fee of 5 Euro and a variable amount depending on your performance and choices in the task. You will accumulate points in all three parts of this experiment. At the end of the session, the points you accumulated at each stage will be converted into Euros to determine your payment. Points will be converted to Euros at a rate of 100 points to 1 Euro. You will receive your earnings privately at the end of the session. The other participants will not learn about your payments. At the beginning of each stage you will receive a detailed description of the task. If you are ready, please press Continue.
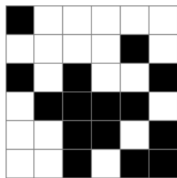
Goal treatment

Teil 1

Aufgabe

In diesem Teil werden Sie mehrere Gitter sehen. Ein Beispiel ist unten abgebildet. Ihre Aufgabe ist es, die Anzahl der schwarzen Kästchen in jedem Gitter zu zählen.

Beispiel:

Wie viele Kästchen sind ausgefüllt?

[   ] [Weiter]

(Antwort: 15)

Für jedes Gitter tragen Sie bitte Ihre Antwort in das freie Feld ein und drücken auf **Weiter**. Sobald Sie auf Weiter gedrückt haben, erscheint kurz ein Feld in dem Ihnen angezeigt wird, ob Ihre Antwort richtig war. Im Folgenden erscheint ein neues Gitter, und Sie müssen die gleiche Frage erneut beantworten. Die Anzahl an schwarzen Kästchen ändert sich von Runde zu Runde.

Jedes Gitter hat 6 Zeilen und 6 Spalten. Der Abschnitt dauert insgesamt 4 Minuten. Die verbleibende Zeit wird Ihnen oberhalb des Gitters angezeigt.

[Weiter]

* You will be shown several grids just like the one below. Your task is to count the number of black squares in each grid. For each grid you need to enter your answer in the empty box below the grid and press Continue. Once you press Continue, you will see whether your choice was correct or incorrect. Next, another grid will appear and you need to answer the same question. The number of black squares changes

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from one round to the next. Each grid will have 6 columns and 6 rows. This stage lasts for 4 minutes in total. The remaining time will be displayed above the grids.

Teil 1

Ihre Auszahlung

Ihre Auszahlung in Teil 1 ist **8 Punkte pro richtige Antwort**.

Beispiel:
Sie haben die Anzahl an schwarzen Kästchen für 50 Gitter richtig angegeben. In diesem Fall erhalten Sie für Teil 1: 50 x 8 Punkte = 400 Punkte Punkte.

Zurück Weiter

* Your earnings for Stage 1 will be 8 points for each correct answer. Example: You gave the correct number of black squares in 50 grids. Your number of points accumulated in Stage 1 is 50 x 8 points = 400 points.

Teil 2

Teil 1 ist beendet. Im Folgenden finden Sie die Anleitung für Teil 2.

In Teil 2 ist es wiederum Ihre Aufgabe die Anzahl der schwarzen Kästchen zu zählen.

Die Gitter haben die gleiche Größe wie zuvor, sie bestehen aus **6 Zeilen und 6 Reihen**. In Teil 2 haben Sie **10 Minuten** Zeit die Aufgaben zu bearbeiten. Zusätzlich bitten wir Sie, sich ein **Ziel für die Anzahl an richtigen Antworten in Teil 2** zu setzen.

Ihr Ziel hat die folgenden Konsequenzen für Ihre Auszahlung:

Fall 1. Die Anzahl an richtigen Antworten ist mindestens so hoch wie das von Ihnen gesetzte Ziel.

Ihre Auszahlung ist dann **8 Punkte für jede richtige Antwort plus einen Bonus in Höhe von 8 Punkte mal Ihr Ziel**. In anderen Worten, wenn Sie Ihr Ziel erreichen, erhalten Sie 16 Punkte mal Ihr Ziel. Weiterhin erhalten Sie 8 Punkte für jede richtige Antwort, die über das Ziel hinausgeht, aber nicht den Bonus von weiteren 8 Punkte.

Fall 2. Die Anzahl an richtigen Antworten ist kleiner als das von Ihnen gesetzte Ziel.

Ihre Auszahlung ist dann **8 Punkte mal die Anzahl an richtigen Antworten**.

Die folgenden drei Beispiele dienen dazu, die Auszahlungskonsequenzen zu verdeutlichen.

Beispiel 1: Sie haben ein Ziel von 100 richtigen Antworten angegeben. Insgesamt haben Sie 102 Fragen richtig beantwortet. Sie erhalten daher 8 Punkte für jede der 102 richtig beantworteten Fragen. Darüberhinaus erhalten Sie 8 Punkte für jede der 100 als Ziel festgelegten Antworten. Ihre Gesamtpunkte für Teil 2 sind in diesem Fall 102 x 8 Punkte + 100 x 8 Punkte = 816 Punkte + 800 Punkte = 1616 Punkte Punkte.

Beispiel 2: Sie haben ein Ziel von 20 richtigen Antworten angegeben. Insgesamt haben Sie 18 Fragen richtig beantwortet. Sie erhalten daher 8 Punkte für jede der 18 richtig beantworteten Fragen. Sie erhalten jedoch keinen Bonus, da Sie das von Ihnen gesetzte Ziel nicht erreicht haben. Ihre Gesamtpunkte für Teil 2 sind in diesem Fall 18 x 8 Punkte = 144 Punkte Punkte.

Bitte vervollständigen Sie Beispiel 3: Sie haben ein Ziel von 10 richtigen Antworten angegeben.
Wenn Sie 5 Fragen richtig beantwortet haben, betragen Ihre Gesamtpunkte für Teil 2 [＿＿＿＿＿＿＿].
Wenn Sie 15 Fragen richtig beantwortet haben, betragen Ihre Gesamtpunkte für Teil 2 [＿＿＿＿＿＿＿].

* Stage 1 has ended. Below, you can find the instructions for Stage 2. In Stage 2, we ask you again to count the number of black squares in a grid. The grids have the same size as in Stage 1, they consist of 6 rows and 6 columns. Stage 2 will last for 10 minutes. Additionally, we ask you to set a goal for your number of correct answers in Stage 2. Your goal has the following implications for your earnings:

Case 1. Your number of correct answers is at least equal to your goal. You get 8 points for each correct answer, plus you receive a bonus of 8 points times your goal. In other words, if you reach your goal, you will receive 16 points times your goal. You will also receive 8 points for each correct answer that exceeds your goal, but not the bonus.

Case 2. Your number of correct answers is less than your goal. You get 8 points times your number of correct answers.

Let's consider the following three examples.

Example 1: You have stated a goal of 100 correct answers. Your number of correct answers was 102. You will receive 8 points for each of the 102 correctly answered questions plus 8 points times your stated goal of 100. Your accumulated points for Stage 2 will then be 102 x 8pts + 100 x 8pts = 816pts + 800pts = 1616pts.

Example 2: You have stated a goal of 20 correct answers. Your number of correct answers was 18. You will receive 8 points for each of the 18 questions answered correctly. However, you will not receive a bonus as you have not reached your goal. Your payment for Stage 2 will then be 8 pts x 18 = 144 pts.

Please complete example 3:

You have stated a goal of 10 correct answers.

If your number of correct answers is 5, your accumulated points for Stage 2 are . . . .

If your number of correct answers is 15, your accumulated points for Stage 2 are . . . .

Teil 2

Zielsetzung

Sie können jetzt **Ihr Ziel für die Anzahl an richtigen Antworten in Teil 2** wählen. (Bitte geben Sie ein Ziel für die Anzahl an richtigen Antworten und nicht für die Anzahl an Punkten an.)

Zur Erinnerung: Teil 2 dauert **10 Minuten** und die Gitter haben eine Größe von **6 Zeilen und 6 Reihen**.

Mit einer Wahrscheinlichkeit von **15%** ist Ihre jetzt getroffene Entscheidung **entgültig**. Mit einer Wahrscheinlichkeit **85%** erhalten Sie danach weitere Informationen und Sie können Ihr Ziel **noch einmal verändern** bevor die Aufgaben beginnen. Da es möglich ist, dass Ihre Entscheidung entgültig ist, sollten Sie jetzt Ihr Ziel so wählen als wäre es final.

Bitte tragen Sie Ihr Ziel in das Feld unten ein.

Mein Ziel :

Wenn Sie bereit sind, drücken Sie bitte **Weiter**. Wenn Sie Fragen haben, heben Sie bitte Ihre Hand.

Weiter

* You will now choose your goal for your number of correct answers for Stage 2 (please choose a goal for the number of correct answers, not for the number of points). Remember that in Stage 2 you will perform the task for 10 minutes and the grids consist of 6 rows and 6 columns. There is a 15 percent chance that your goal is final. There is an 85 percent chance that you will receive additional information and will be able to revise your goal before you start performing the task. Because it is possible that your goal is now final, you should indicate your goal as if your choice was final. Please state your goal in the empty box below.
My goal is . . . .

If you do not have any questions, please press Continue. If you have questions, please raise your hand.

Teil 2

Rangeinschätzung

Wir haben alle Teilnehmer des Experiments nach der **Höhe ihres Zieles** eingestuft und einen Rang zugewiesen. Wir bitten Sie nun einzuschätzen, welchen Rang Sie haben, das heißt an welcher Stelle der Liste Sie stehen. Wenn Sie zum Beispiel glauben das höchste Ziel festgelegt zu haben, müssten Sie 1 in das untere Feld eintragen. Wenn Sie glauben das niedrigste Ziel festgelegt zu haben, sollten Sie 24 in das untere Feld eintragen. Sie können jede Nummer zwischen 1 und 24 in das Feld eintragen. Wenn mehrere Teilnehmer das gleiche Ziel festgelegt haben, wird ihnen der gleiche Rang zugewiesen. Weder Ihre Position in der Liste noch Ihre Einschätzung über Ihren Rang wird den anderen Teilnehmern mitgeteilt.

Meine Einschätzung :

Weiter

* We have ordered all participants in this experiment according to the size of their goal and assigned ranks. Please indicate your guess for the rank of your goal among the goals of all participants in this session i.e., at which position of the list you are. For example, if you think you are the participant with the highest goal, your guess for the rank is 1. If you think you have the lowest goal, your guess for the rank is [total no. of participants in the session]. You can choose any number between 1 and [total no. of participants in the session]. If multiple participants have chosen the same goal, they are assigned the same rank. Neither your rank nor your guess will be made public to the other participants.
My guess is . . .

Teil 2

Zieländerung

Sie haben sich ein Ziel von 25 gesetzt.

Sie wurden ausgewählt weitere Informationen zu erhalten und Ihr Ziel ändern zu können.

> **Information:**
>
> Eine Gruppe von Teilnehmern in diesem Raum wurde zufällig ausgewählt.
> **Das durchschnittliche Ziel der Teilnehmer in dieser Gruppe ist 20.**

Sie haben jetzt die Möglichkeit Ihr ursprüngliches Ziel zu ändern, wenn Sie dies möchten.
Wenn Sie auf "Ich möchte mein Ziel ändern" klicken, können Sie im Folgenden ein neues Ziel festlegen. Im Anschluss beginnt die Aufgabe. Wenn Sie auf "Ich möchte mein Ziel nicht ändern" klicken, beginnt direkt die Aufgabe.

| Ich möchte mein Ziel ändern | Ich möchte mein Ziel nicht ändern |

* You chose a goal of [stated goal]. You were chosen to receive additional information and have the option to revise your choice.

Information:

A group of participants was randomly chosen. The average goal of the participants in this group is [average goal of random group].

You have the option to change your initial goal, if you want. If you press 'I want to change my goal,' you can then choose a new goal. Next, the task starts. If you press 'I do not want to change my goal,' the task will start immediately.
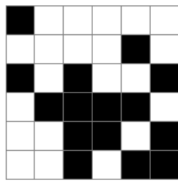
Teil 1

Aufgabe

In diesem Teil werden Sie mehrere Gitter sehen. Ein Beispiel ist unten abgebildet. Ihre Aufgabe ist es, die Anzahl der schwarzen Kästchen in jedem Gitter zu zählen.

Beispiel:

Wie viele Kästchen sind ausgefüllt?

(Antwort: 15)

Für jedes Gitter tragen Sie bitte Ihre Antwort in das freie Feld ein und drücken auf **Weiter**. Sobald Sie auf Weiter gedrückt haben, erscheint kurz ein Feld in dem Ihnen angezeigt wird, ob Ihre Antwort richtig war. Im Folgenden erscheint ein neues Gitter, und Sie müssen die gleiche Frage erneut beantworten. Die Anzahl an schwarzen Kästchen ändert sich von Runde zu Runde.

Dieser Teil des Experiments besteht aus insgesamt 3 Abschnitten. **Jeder Abschnitt dauert 2 Minuten.** Die verbleibende Zeit im aktuellen Abschnitt wird Ihnen oberhalb des Gitters angezeigt. **In jedem Abschnitt haben die Gitter ein andere Größe.**
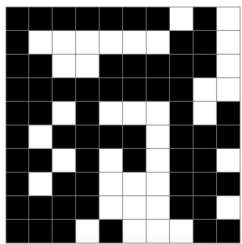
Im **1. Abschnitt** haben die Gitter eine Größe von **2 x 2** Feldern.

Im **2. Abschnitt** haben die Gitter eine Größe von **6 x 6** Feldern.
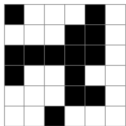
Im **3. Abschnitt** haben die Gitter eine Größe von **10 x 10** Feldern.

Weiter

* You are presented with several grids just like the one below. Your task is to count the number of black squares in each grid. For each grid you need to enter your answer in the empty box below the grid and press Continue. Once you press Continue, you will see whether your choice was correct or incorrect. Next, another grid appears and you need to answer the same question. The number of black squares changes from one round to the next. This stage consists of 3 segments. Each segment will last for 2 minutes. The remaining time will be displayed above the grids. In each segment the grids will have a different size.

In the 1st segment the grids will be of size 2x2.

In the 2nd segment the grids will be of size 6x6.

In the 3rd segment the grids will be of size 10x10.

Teil 1

Ihre Auszahlung

Ihre Auszahlung in Teil 1 hängt von der Anzahl an richtigen Antworten ab.

Gittergröße	Punkte pro richtiger Antwort
2 x 2	1
6 x 6	8
10 x 10	30

Beispiel:
Sie haben die Anzahl an schwarzen Kästchen für 10 Gitter in jedem Abschnitt richtig angegeben. In diesem Fall erhalten Sie für Teil 1: 10 x 1 + 10 x 8 + 10 x 30 = 390 Punkte.

Zurück   Weiter

* Your earnings for Stage 1 depend on the number of correct answers. Example: You gave the correct number of black squares in 10 grids in each segment. Your number of points accumulated in Stage 1 is 10 x 1pt + 10 x 8pts + 10 x 30pts = 390pts.

Teil 2

Teil 1 ist beendet. Im Folgenden finden Sie die Anleitung für Teil 2.

In Teil 2 ist es wiederum Ihre Aufgabe die Anzahl der schwarzen Kästchen zu zählen.

Die Gitter in diesem Abschnitt haben alle dieselbe Größe. **Sie können die Größe der Gitter jetzt selbst festlegen.** In Teil 2 haben Sie **10 Minuten** Zeit die Aufgaben zu bearbeiten.

Sie können eine von neun Gittergrößen wählen. Abhängig davon, welche Gittergröße Sie wählen, erhalten Sie eine andere Anzahl an Punkten pro richtiger Antwort. Die Punkte pro richtiger Antwort für die verschiedenen Gittergrößen sind in der folgenden Tabelle dargestellt:

Gittergröße	Punkte pro richtiger Antwort
2 x 2	1
3 x 3	2
4 x 4	4
5 x 5	6
6 x 6	8
7 x 7	10
8 x 8	15
9 x 9	20
10 x 10	30

Die folgenden drei Beispiele dienen dazu, die Auszahlungskonsequenzen zu verdeutlichen.

Beispiel 1: Sie haben eine Gittergröße von 9 x 9 gewählt. Für jede richtige Antwort erhalten Sie 20 Punkte. Insgesamt haben Sie 50 Fragen richtig beantwortet. Sie erhalten daher 20 für jede der 50 richtig beantworteten Fragen. Ihre Gesamtpunkte für Teil 2 sind in diesem Fall 50 x 20 = 1000 Punkte.

Beispiel 2: Sie haben eine Gittergröße von 4 x 4 gewählt. Für jede richtige Antwort erhalten Sie 4 Punkte. Insgesamt haben Sie 20 Fragen richtig beantwortet. Sie erhalten daher 4 für jede der 20 richtig beantworteten Fragen. Ihre Gesamtpunkte für Teil 2 sind in diesem Fall 20 x 4 = 80 Punkte.

Bitte vervollständigen Sie Beispiel 3: Sie haben eine Gittergröße von 5 x 5 gewählt.
Wenn Sie 60 Fragen richtig beantwortet haben, betragen Ihre Gesamtpunkte für Teil 2 _____ .
Wenn Sie 70 Fragen richtig beantwortet haben, betragen Ihre Gesamtpunkte für Teil 2 _____ .

* Stage 1 has ended. Below, you will find the instructions for Stage 2. In Stage 2, we ask you again to count the number of black squares in a grid. The grids are all the same size. You can choose the size of the grids yourself. Stage 2 will last for 10 minutes.
You can choose one out of nine grid sizes. Depending on which grid size you choose, you get a different number of points per correct answer. The points per correct answer are depicted in the following table:
Let's consider the following three examples.
Example 1: You have chosen the grid size 9x9. For each correct answer you will earn 20 points. Your number of correct answers was 50. You will receive 20 points for each of the 50 correctly answered questions. Your accumulated points for Stage 2 will then be 20pts x 50 = 1,000pts.

Example 2: You have chosen the grid size 4x4. For each correct answer you will earn 4 points. Your number of correct answers was 20. You will receive 4 points for each of the 20 correctly answered questions. Your accumulated points for Stage 2 will then be 4pts x 20 = 80pts.

Please complete example 3:

You have chosen the grids of size 5x5.

If your number of correct answers is 60, your accumulated points for Stage 2 are . . . . If your number of correct answers is 70, your accumulated points for Stage 2 are . . . .

Teil 2

Gittergröße

Sie können jetzt **die Größe Ihres Gitters für Teil 2** wählen. Zur Erinnerung: Teil 2 dauert **10 Minuten**.

Mit einer Wahrscheinlichkeit von **15%** ist Ihre jetzt getroffene Entscheidung **endgültig**. Mit einer Wahrscheinlichkeit **85%** erhalten Sie danach weitere Informationen und Sie können Ihre Wahl **noch einmal verändern** bevor die Aufgaben beginnen. Da es möglich ist, dass Ihre Entscheidung endgültig ist, sollten Sie jetzt Ihre Wahl so treffen als wäre sie final.

Bitte tragen Sie die gewünschte Gittergröße in das Feld unten ein.

Meine Wahl:

| - ⬍ |

Gittergröße	Punkte pro richtiger Antwort
2 x 2	1
3 x 3	2
4 x 4	4
5 x 5	6
6 x 6	8
7 x 7	10
8 x 8	15
9 x 9	20
10 x 10	30

*Wenn Sie bereit sind, drücken Sie bitte **Weiter**. Wenn Sie Fragen haben, heben Sie bitte Ihre Hand.*

Weiter

* You will now choose the size of your grids for stage 2. Remember that in Stage 2, you will perform the task for 10 minutes. There is a 15 percent chance that your goal is final. There is an 85 percent chance that you will receive additional information and will be able to revise your choice before you start performing the task. Because it is possible that your choice is now final, you should indicate your choice as if it were final. Please state your grid size choice in the empty box below. My choice is . . . .

If you are ready, please press Continue.

Teil 2

Wir haben alle Teilnehmer des Experiments nach der **gewählten Größe der Gitter** eingestuft. Wir bitten Sie nun einzuschätzen, wie viele Teilnehmer eine größere Gittergröße als Sie gewählt haben. Wenn Sie zum Beispiel glauben, dass niemand eine größere Größe als Sie gewählt hat, sollten Sie 0 in das untere Feld eintragen. Wenn Sie glauben, dass alle anderen Teilnehmer ein größeres Gitter als Sie gewählt haben, sollten Sie 23 in das untere Feld eintragen. Sie können jede Nummer zwischen 0 und 23 in das Feld eintragen. Weder Ihre Position in der Liste noch Ihre Einschätzung über Ihre Position wird den anderen Teilnehmern mitgeteilt.

Meine Einschätzung :

[ ]

[Weiter]

[Displayed if chosen grid not equal 10] * We have ordered all participants in this experiment according to the size of their grids and assigned ranks. Please indicate your guess for the rank of your grid choice among the grids of all participants in this session i.e., at which position of the list you are. For example, if you think you are the participant with the largest grid, your guess for the rank is 1. If you think you have the smallest grid, your guess for the rank is [total no. of participants in the session]. You can choose any number between 1 and [total no. of participants in the session]. If multiple participants have chosen the same grid, they will be assigned the same rank. Neither your rank nor your guess will be made public to the other participants. My guess is . . .

Teil 2

Wir haben alle Teilnehmer des Experiments nach der **gewählten Größe der Gitter** eingestuft. Wir bitten Sie nun einzuschätzen, wie viele Teilnehmer (außer Ihnen) eine Gittergröße von 10 x 10 gewählt haben. Wenn Sie zum Beispiel glauben nur Sie haben eine Größe von 10 x 10 gewählt, dann sollten Sie 0 in das untere Feld eintragen. Wenn Sie glauben alle Teilnehmer haben eine Größe von 10 x 10 gewählt, sollten Sie 23 in das untere Feld eintragen. Sie können jede Nummer zwischen 0 und 23 in das Feld eintragen. Weder Ihre Gitterwahl noch Ihre Einschätzung über die Gitterwahl der anderen Teilnehmer wird den anderen Teilnehmern mitgeteilt.

Meine Einschätzung :

[ ]

[Weiter]

[Displayed if chosen grid equal 10] * We have ordered all participants in this experiment according to the size of their grids and assigned ranks. Please indicate your guess for how many (except you) have chosen the grid size 10x10 For example, if you think you are the only participant who has chosen 10x10, you should enter 0. If you think all players have chosen 10x10, you should enter [total no. of participants in the session]. You can choose any number between 0 and [total no. of participants in the session]. Neither your rank nor your guess will be made public to the other participants.

My guess is . . .

Teil 2

Größenänderung

Sie haben eine Gittergröße von 7 x 7 gewählt.

Sie wurden ausgewählt weitere Informationen zu erhalten und Ihre Wahl ändern zu können.

Information:

Eine Gruppe von Teilnehmern in diesem Raum wurde zufällig ausgewählt.
Die durchschnittliche Gittergröße der Teilnehmer in dieser Gruppe ist 2 x 2.

Sie haben jetzt die Möglichkeit Ihre ursprüngliche Wahl zu ändern, wenn Sie dies möchten.
Wenn Sie auf "Ich möchte meine Wahl ändern" klicken, können Sie im Folgenden eine neue Gittergröße festlegen. Im Anschluss beginnt die Aufgabe.
Wenn Sie auf "Ich möchte meine Wahl nicht ändern" klicken, beginnt direkt die Aufgabe.

[Ich möchte meine Wahl ändern]   [Ich möchte meine Wahl nicht ändern]

* You chose a grid size of [stated grid size]. You were chosen to receive additional information and have the option to revise your choice.

Information:

A group of participants was randomly chosen. The average grid choice of the participants in this group is [average grid choice of random group].

You have the option to change your initial choice, if you want. If you press 'I want to change my choice,' you can then choose a new grid size. Next, the task starts. If you press 'I do not want to change my choice,' the task will start immediately.

Instruktionen Teil 3

Nachfolgend sehen Sie ein Gitter, das **100 Kästchen** beinhaltet.

Sobald Sie die Aufgabe durch Klicken von **Start** beginnen, können Sie Kästchen auswählen, indem Sie auf diese klicken. Bereits ausgewählte Kästchen werden mit einem Häkchen markiert. **Für jedes gesammelte Kästchen erhalten Sie 3 Punkte.**

Hinter einem Kästchen ist eine Bombe versteckt, die alles zerstört, was bisher eingesammelt wurde. Sie wissen nicht, hinter welchem Kästchen die Bombe versteckt ist. Sie wissen nur, dass sich die Bombe in jedem beliebigen Kästchen mit **gleich großer Wahrscheinlichkeit** befindet.

Ihre Aufgabe besteht darin, so viele Kästchen zu sammeln, wie Sie möchten, und dann den Sammelprozess abzuschließen. Dies geschieht durch einen Klick auf **Stop**. Nachdem Sie Stop geklickt haben, wird aufgedeckt, ob die Bombe unter einem von Ihnen gesammelten Kästchen ist. Wenn Sie das Kästchen eingesammelt haben, in dem sich die Bombe befindet, wird die Bombe explodieren und Ihre Auszahlung für Teil 3 beträgt Null. Wenn Sie die Bombe nicht eingesammelt haben, erhalten Sie den gesamten gesammelten Betrag.

Nachdem Sie die Aufgabe mit **Stop** beendet haben, können die Kästchen durch einen Klick auf den Button **Auflösen** umgedreht werden. Ein Dollarzeichen oder ein Feuersymbol (für die Bombe) wird auf jedem von Ihnen gesammelten Kästchen angezeigt.

Start

Ihre Entscheidung

Anzahl der gesammelten Kästchen: 7
Anzahl der verbleibenden Kästchen: 93

Stopp   Auflösen

* On the next screen you will see a grid, which contains 100 boxes. To start the task, you can choose boxes by clicking on them. Boxes that have already been chosen will be marked with a check sign. For each claimed box you earn 3 points. Behind one box there is a bomb which destroys the boxes collected so far. You do not know where this bomb is hidden. You only know that the bomb can be in any place with equal probability. It is your task to choose as many boxes as you want and then finish the task by pressing stop. Once you have pressed stop, it will be shown whether the bomb is behind one of the boxes that you collected. If you have collected the bomb, it will explode and your earnings for stage 3 will be zero. If you did not collect the bomb, you will receive your collected points. Once you have finished the task, you can turn the boxes by pressing solve. For each box that you collected, you will see either a dollar sign or a fire symbol (representing the bomb).

Fragebogen

Bitte beantworten Sie die folgenden Fragen:

Bitte geben Sie Ihren Geburtsmonat an :

[--------- ⇕]

Bitte geben Sie Ihr Geburtsjahr an :

[--------- ⇕]

Sind Sie :
- ○ **Männlich**
- ○ **Weiblich**
- ○ **Anderes Geschlecht**
- ○ **Keine Angabe**

Bitte geben Sie Ihr Studienfach an :

[   ]

Bitte geben Sie an, ob Sie ein Austauschstudent sind :
- ○ **Ja**
- ○ **Nein**

* Please answer the following questions: Please state your month of birth; Please state your year of birth; Are you [male], [female], [other gender], [no response]; Please state your major; Please state whether you are an exchange student.

Goal treatment

In Teil 2 sollten Sie ein Ziel festlegen. Wie haben Sie sich für dieses Ziel entschieden?

Haben Sie Ihr Ziel geändert, als Sie die Möglichkeit dazu hatten?
- ◯ Ja
- ◯ Nein

Wieso?

* How did you decide on your goal in stage 2?; Did you change your goal when you had the opportunity to do so?; Why?

Grid choice treatment

In Teil 2 sollten Sie eine Gittergröße wählen. Wie haben Sie sich für diese Größe entschieden?

Haben Sie Ihre Gittergröße geändert, als Sie die Möglichkeit dazu hatten?
- ◯ Ja
- ◯ Nein

Wieso?

* How did you decide on your grid size in stage 2?; Did you change your grid size when you had the opportunity to do so?; Why?

Both treatments

Wie fanden Sie die Aufgabe, die Anzahl an ausgefüllten Kästchen zu zählen?

[text box]

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, zufrieden fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, begeistert fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, stolz fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, entschlossen fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, unzufrieden fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, verärgert fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, enttäuscht fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Bitte geben Sie an wie sehr Sie sich gerade, also in diesem Moment, beschämt fühlen (1; gar nicht; 5: völlig):

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Hier haben Sie die Möglichkeit Rückmeldung an die Experimentatoren zu geben.

[text box]

[Weiter]

* How did you like the task of counting black squares?; Please rate how satisfied you feel right now (1: not at all; 5: very much); Please rate how enthusiastic you feel right now (1: not at all; 5: very much); Please rate how proud you feel right now (1: not at all; 5: very much); Please rate how determined you feel right now (1: not at all; 5: very much); Please rate how unsatisfied you feel right now (1: not at all; 5: very

much); Please rate how upset you feel right now (1: not at all; 5: very much); Please rate how disappointed you feel right now (1: not at all; 5: very much); Please rate how ashamed you feel right now (1: not at all; 5: very much); Here you have the opportunity to give feedback to the experimenters.