CESifo WORKING PAPERS

9940
2022

September 2022

Which Peer Group to Choose? The Effects of Relative Performance Information on Employee Self-Selection and Performance

Petra Nieken, Anna Ressi

CESifo

Impressum:

CESifo Working Papers
ISSN 2364-1428 (electronic version)
Publisher and distributor: Munich Society for the Promotion of Economic Research - CESifo GmbH
The international platform of Ludwigs-Maximilians University's Center for Economic Studies and the ifo Institute
Poschingerstr. 5, 81679 Munich, Germany
Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email office@cesifo.de
Editor: Clemens Fuest
https://www.cesifo.org/en/wp
An electronic version of the paper may be downloaded
· from the SSRN website: www.SSRN.com
· from the RePEc website: www.RePEc.org
· from the CESifo website: https://www.cesifo.org/en/wp

CESifo *Working Paper No. 9940*

Which Peer Group to Choose? The Effects of Relative Performance Information on Employee Self-Selection and Performance

Abstract

This paper reports results of two controlled experiments on the behavioural effects of relative performance information (RPI) in different organizational structures. Our baseline study 1 focuses on a centralized organizational structure where employees are exogenously assigned to either a high-performing or a low-performing peer group. We find that RPI boosts performances when employees are assigned to the low-performing group. In contrast, when assigned to the high-performing group, our results point to a discouragement effect of RPI that can be attributed to low-performers. In study 2, we show that this or similarly undesired effects do not play a crucial role under a decentralized organizational structure where employees can self-select. In fact, we demonstrate that RPI especially induces employees with a relatively low performance to voluntarily choose the high-performing group. Analyzing subsequent performances suggests that providing self-selection options allows employees to use the high-performing group as a self-set target to spur motivation.

JEL-Codes: C910, D830, D910, M520.

Keywords: peer groups, self-selection, reference points, relative performance information.

Petra Nieken
Institute of Management, KIT
Karlsruhe Institute of Technology / Germany
petra.nieken@kit.edu

*Anna Ressi**
WHU – Otto Beisheim School of Management
Vallendar / Germany
anna.ressi@whu.edu

*corresponding author

We are grateful for research funding from WHU - Otto Beisheim School of Management. We also appreciate the helpful comments and suggestions from Fabien Ize, Victor van Pelt, Paul M. Gorny, Peter-J. Jost, Andrea Martinangeli, Michael Kopel, Andreas Ostermaier, and participants at the ENEAR Conference 2022, M-BEPS 2022, GEABA Conference 2022, BeDS Workshop 2019, ASFEE Conference 2019, and the KIT Brownbag seminar.

1 INTRODUCTION

Providing information about how employees perform relative to others, also known as relative performance information (RPI), has become a pervasive motivational instrument for management control systems in many of today's work environments (Frey [2007], Hannan et al. [2013], Tafkov [2013]). When an RPI system is implemented, employees are compared with peers who hold similar functions and responsibilities and, thus, serve as an informative reference. For example, sales organizations might commend employees as "Salesperson of the Month", "Manager of the Month", or "Innovator of the Month", respectively (Frey [2007], Larkin et al. [2011]).

However, little is known about the interaction of RPI with the underlying organizational structure. We present data from two controlled experiments, where our main focus lies on investigating the behavioral effects of RPI when employees have the autonomy to sort into a specific peer group. Studying such a decentralized organizational structure is highly relevant as companies have increasingly abandoned their rigid top-down command-and-control management and embraced flatter organizational structures. Especially in the tech world, there is a growing number of practitioners who emphasize the benefits of granting employees the autonomy to choose their tasks, responsibilities, projects, and/or work groups (Bernstein et al. [2016], Lee and Edmondson [2017], Lee [2022], Ketkar and Workiewicz [2022]). Importantly, these choices then also determine employees' peer groups to which RPI pertains.[1] In the modern world of work, environments where employees can shape their peer groups are, thus, pervasive and continue to gain in importance.

In this context, our paper analyzes how private RPI influences employees' decision to sort into a high-performing instead of a low-performing peer group and how these choices affect their subsequent performances. However, when an organization comprises high-performing and low-performing peer groups, those peer groups convey

[1] For example, an employee working in sales can choose to join the department responsible for the U.S. market or the department focusing on the European market. This choice then determines the colleagues that serve as the basis for comparison.

certain performance expectations that might serve as reference points and influence employees, even in the absence of self-selection and RPI. To paint a clearer picture of what drives behavior, we first conduct a baseline study (study 1), focusing on a centralized organizational structure where management retains the authority to assign employees to one of the two peer groups. Following social norm theory (Elster [1989], Akerlof and Kranton [2005]), we expect that employees strive to conform to the reference point of their assigned peer group. Hence, even in the absence of RPI, allocating employees to a high-performing peer group is likely to stimulate their motivation, whereas becoming part of a low-performing group might prove to be detrimental. By comparing a situation with and without RPI, we can disentangle and analyze the peer group's *conformity effect* (Shang et al. [2020]) from the commonly praised *motivation effect of RPI* (see, e.g., Hannan et al. [2008], Hannan et al. [2013], Hannan et al. [2019], Tafkov [2013]). The latter stems from people's inclination to compare themselves with others (Festinger 1954) and their desire to maintain a positive self-evaluation (Tesser [1988], Beach and Tesser [1995]). We predict that the effects of RPI will not be universally positive but will crucially depend on how the employees regard their own performance in comparison to their peer group.

In our baseline study 1, we use a controlled experiment where participants can earn money by performing a real-effort task for two rounds. Round 1 provides us with participants' basic performance levels. In round 2, our experimental setup involves a 2x2 between-subject design. We vary whether 1) participants are assigned to a high-performing group A or to a low-performing group B and 2) whether participants will be informed about their rank within their affiliated group (*RPI*) or whether they do not receive RPI (*NoRPI*). Even though our real-effort task can be expected to spark relatively modest self-image concerns, we find clear evidence that participants' performances are affected by the reference point of their assigned group and the design of the information system. First, participants demonstrate the hypothesized conformity preferences. Those who are exogenously assigned to group A show a significantly higher performance than those who are assigned to group B. Further, adding RPI attenuates this conformity effect on performance. Participants assigned to the low-performing

peer group, on average, increase their performance when RPI is provided. In contrast, in the high-performing peer group, low-performing employees, in particular, seem to be discouraged by RPI, which manifests itself in a decline in average performance.

In study 2, we analyze whether these or similarly undesired effects are still pertinent in a decentralized organizational structure, where employees have the autonomy to determine which peer group they will be part of. We argue that an employee's decision of whether to receive RPI pertaining to a high-performing instead of a low-performing group incorporates a trade-off between several considerations: First, in line with social identity theory (Tajfel and Turner [1979], Akerlof and Kranton [2000, 2005]), employees want to affiliate with a group to which they feel like they belong. Second, because people compare themselves with others and aim at maintaining a high self-evaluation, they engage in self-enhancement strategies to ward off unfavorable information about the self (Tesser [1988], Sedikides [1993], Sedikides and Strube [1995], Golman et al. [2017]). Third, employees might consciously opt for the high peer group to follow their motive for self-improvement (Taylor et al. [1995]) and use the group choice as a self-set target, instilling motivation and yielding a higher monetary compensation (Latham and Locke [1991]). Overall, we argue that employees' behavior depends on the salience of these motives and on how they gauge themselves relative to the high-performing and the low-performing peer group.

To shed light on how RPI affects employees' group choices and their subsequent performances, we use a modified version of the experimental design implemented in our baseline study 1. Instead of being exogenously assigned to either group A or group B in round 2, participants can now choose the group to which they want to belong. Our results show that allowing self-selection seems to ward off discouragement effects. In fact, RPI especially increases the likelihood of participants who performed only slightly better than the low-performing group B to opt for group A. This effect becomes weaker the closer they performed to the high-performing group A. Yet, we find that the average performance of those who chose group A when RPI is provided is higher than the average performance of those who chose group A without RPI. In contrast, for

participants who chose group B, our results point towards the opposite pattern, but the difference is not statistically significant. Hence, providing self-selection possibilities along with RPI can motivate employees to improve by using the high-performing group as a self-set target.

Our two studies speak to the management accounting literature on the optimal design of information systems in several important ways. Early work (e.g., Young et al. [1993], Hannan et al. [2008, 2013], Tafkov [2013], Newman and Tafkov [2014]) was predominantly devoted to the direct benefits of RPI on employee motivation.[2] More recently, some scholars have demonstrated that performance transparency can also encourage undesired behaviors such as effort misallocation (Hannan et al. [2008]), effort distortion (Hannan et al. [2013, 2019]), dishonest reporting (Brown et al. [2014], Schreck [2015]), performance inflation and sabotage (Hartmann and Schreck [2018], Charness et al. [2013], Dato and Nieken [2014]), as well as adverse conformity (Shang et al. [2020]). We complement this strand of research by investigating whether and when RPI causes an adverse self-selection effect and a negative giving-up or complacency effect on performances (see also Berger et al. [2013], Eyring and Narayanan [2018]).

Second, we contribute to the emerging stream of literature on how performance transparency interacts with relational dimensions within organizations. For example, in Mahlendorf et al. [2014], feedback on relative performance has been demonstrated to raise perceived organizational support. This positive effect is especially strong for those who strongly identify with their peer group. On the other hand, the results of Shang et al. [2020] suggest that employees' identity can be disadvantageous as it might induce them to conform to a peer group's low average performance when performance transparency is high. We enrich this relational perspective by focusing on the interaction of RPI with employees' social identity and social norm concerns, as well as their peer group choices.

Finally, by viewing the choice of a high peer group as a consciously set target to

[2] For a comprehensive overview of the ramifications of performance feedback, see, e.g., Schnieder [2021], and Villeval [2020].

keep up with the high-performers, we also relate to the managerial accounting and behavioral economics literature on self-set goals. Existing work discusses self-set goals in the context of self-control problems of hyperbolic discounters that use them as a voluntary disciplining device (see, e.g., Kaur et al. [2010, 2015], Dalton [2016], Brookins et al. [2017], van Lent and Souverijn [2020]). Our study suggests that RPI can induce some employees to actively use their peer group choice as an instrument to spur motivation.

Our paper proceeds as follows. Section 2 presents the baseline study 1 on the centralized organizational structure. We first develop our hypotheses, then explain our experimental design and finally report our experimental findings. Section 3 presents study 2 on the decentralized organizational structure. The last section concludes by providing a discussion and practical implications of our findings and avenues for future research. Additional analyses are relegated to Appendix A. An excerpt of our experimental materials translated into English can be found in Appendix B.

2 STUDY 1: THE CENTRALIZED ORGANIZATIONAL STRUCTURE

2.1 RESEARCH SETTING AND HYPOTHESES

Our baseline study 1 concentrates on a centralized organizational structure where employees are exogenously assigned to a specific peer group. In particular, we introduce a high-performing and a low-performing group in the sense that employees expect the first group to demonstrate a higher average performance level than the latter group. To avoid potential confounding effects, employees in our setup work on the same task under the same compensation plan. Pay is tied to absolute performance, rendering the effects of RPI provision and group assignment on performance purely motivational. In this context, we use insights from social psychology and behavioral economics to derive our hypotheses regarding employees' performance.

The effects of RPI on employees' motivation and performance is an established field of interest in the management accounting literature. This stream of literature critically builds upon social comparison theory (Festinger [1954]), positing that people compare themselves with others they consider to be similar to gauge their own positions. The resulting evaluation, in turn, affects their self-image. If people find themselves being better than their peers, they experience pride, whereas they feel shame if being worse than others (Lazarus [1991], Smith [2000]). As people have an innate desire to maintain a positive self-image (Tesser [1988], Beach and Tesser [1995]), they are willing to exert additional effort to preserve their self-image (Festinger [1957], Garcia and Tor [2007]). By providing RPI, organizations can facilitate social comparisons and harness the associated processes to enhance profitability. Prior accounting studies scrutinized numerous determinants for the success of RPI systems in promoting employees' performance, including, amongst others, observability (Tafkov [2013], Hannan et al. [2013]), precision (Hannan et al. [2008], Hannan et al. [2019]), and content of RPI (Knauer et al. [2021], Kramer et al. [2016]), as well as the organization's compensation system (Azmat and Iriberri [2016], Newman and Tafkov [2014], Tafkov [2013], Hannan et al. [2008]). Those studies, however, focus on the effects of RPI in the context of a single exogenously determined peer group about which employees have no prior information.

In the following, we argue that the positive effect of RPI on employees' performance, which has been reported in prior accounting studies, is sensitive to which peer group an employee is assigned to. To provide a thorough understanding of employees' reactions to RPI, we develop hypotheses that help to disentangle two distinct behavioral forces that determine employees' performances in the context of multiple peer groups. First, peer groups usually convey expectations about the groups' performances, which may accordingly serve as a reference point that guides employee behavior, even in the absence of RPI (Abeler et al. [2011]). Hence, the mere assignment to a high- or low-performing peer group might trigger a so-called *conformity effect*. Providing RPI now adds a second effect in the form of employees' desire to outperform their peers. Depending on how employees' performances compare to that of their peer group, RPI

will boost motivation or lead them to feel discouraged. Below, we provide a detailed description of both effects and the resulting hypotheses.

The Conformity Effect of the Peer Group's Reference Point

To disentangle the two behavioral forces that influence employees' behavior in our setting, we first focus on the effect of assigning employees to a peer group and abstract from the provision of RPI. According to social norm theory (Elster [1989], Akerlof and Kranton [2005]), individuals feel the desire to conform to their peer group because they otherwise experience psychological discomfort.[3] People's conformity preferences have implications for employees' effort and, consequently, performance. We expect that, once employees are assigned to a peer group, they will strive to conform to the associated performance level that works as a reference point. Hence, employees assigned to the high-performing group will, on average, exert more effort and perform better than employees assigned to the low-performing group. This so-called *conformity effect* (see also Shang et al. [2020]) of an exogenous assignment to a peer group translates to our first hypothesis.

Hypothesis 1: Without RPI, employees assigned to the high-performing peer group will, on average, perform better than employees assigned to the low-performing peer group.

The Performance Effect of RPI

We are now interested in how the additional behavioral forces that are triggered by the provision of RPI interact with the exogenous assignment to a specific peer group. Considering previous literature, one might intuitively suspect that providing RPI will lead to the well-established, positive *motivation effect* (see also Hannan et al. [2013]) and universally boost employees' performance. Yet, we argue that the effect of RPI will manifest itself differently depending on how employees' own performance compares to their peer group. Therefore, predictions become more nuanced.

[3] Experiments in social psychology (e.g., Turner et al. [1987], Billig and Tajfel [1973]) and experimental economics (e.g., Chen and Li [2009], Charness et al. [2007]) demonstrate that even arbitrary social categorizations, such as our procedure to randomly assign participants to "group A" and "group B", affects people's behavior.

In the high-performing peer group, we expect two opposite effects of RPI that can be ascribed to the distinct behavior of high- and low-performing employees. As already mentioned, the positive *motivation effect of RPI* is commonly attributed to people's endeavor to outperform their peers to boost their self-image. However, employees' motivation to try to be better than others hinges on the perceived attainability thereof (Atkinson [1957], Vroom [1964], Lawler and Suttle [1973]). Whether employees expect to be able to outperform their peers, in turn, crucially depends on how they regard their own performance relative to that of their peer group. We expect that employees whose own performance does not fall significantly short of that of their peer group will feel that their goal of outperforming their peers is attainable. These employees will hence be motivated by RPI. In contrast, employees who perform relatively poorly compared to the high peer group will expect to not be able to outrank their peers, no matter how much effort they exert. Hence, they will feel discouraged or demotivated.[4] In sum, in the high-performing peer group, RPI is likely to exhibit adverse effects on low-performing employees. This downside might even offset the likely positive effect of RPI for high-performing employees.

Concerning the low-performing peer group, we expect that RPI will motivate employees who perform close to their peers to manifest their position or achieve their goal of being an outperformer (Eyring and Narayanan [2018]). In contrast, those who perform significantly better than their peers might feel complacent and affirmed in their previous behavior (Berger et al. [2013], Blaine and Crocker [1993]) and will, therefore, not crucially change their effort in response to RPI. This expectation is also in line with prior studies showing that participants receiving positive feedback are less likely to improve their performance than those receiving negative feedback (Thomas [2016], Chan [2018], Young et al. [1993]). Building on these considerations, we formulate the following hypothesis:

[4]The corresponding slump in performance has been documented, for example, in the laboratory experiment of Rogers and Feller [2016], in the archival study of Berger et al. [2013], as well as in the field studies of Eyring and Narayanan [2018] and Bandiera et al. [2013].

Hypothesis 2: Compared to a situation without RPI, the provision of RPI will, on average, lead to a greater increase in performance for employees assigned to the low-performing peer group than for employees assigned to the high-performing peer group.

2.2 METHOD

Experimental Design

To test our hypotheses empirically, we use a controlled experiment involving a 2x2 between-subject design. All treatments encompass two rounds of a real-effort task. Whereas most prior studies on RPI require participants to solve math problems (e.g., Tafkov [2013], Hannan et al. [2013, 2019]), we consciously use a more neutral work task that subjects our predictions to a particularly conservative test. We selected the slider task because it induces real costs of effort, is fairly gender-neutral, and is likely to lead to relatively homogeneous self-image concerns compared to, for example, a math or IQ task.[5]

In each of the two rounds, participants have eight minutes to place as many sliders in the correct position as possible. The participants see their performance (number of correctly positioned sliders) in real-time on their screen. All participants know that they receive a fixed compensation of 1000 ECUs and a piece rate of 50 ECUs per correctly placed slider, whereby only one of the two rounds is randomly selected for payment.[6] We provide relatively low incentives to avoid that monetary concerns outshine purely motivational effects, which are the focus of our study. Round 1 is identical in all treatment conditions. Specifically, at the end of round 1, all participants are informed about the average performance of two groups, labelled "group A" with an average performance in round 1 of 62.33 sliders and "group B" with an average performance in round 1 of 23.67 sliders. Participants know that each of these groups

[5]The code implementing the slider task is based on Gill and Prowse [2012].

[6]Throughout the experiment, we use the currency ECU, where every 100 ECUs is converted into 1 EUR for determining participants' final payment.

comprises three other participants of a previous session who also performed the slider task for two rounds of eight minutes under the same compensation scheme but without receiving any information except their own performances.[7] We consciously chose a two-round design to prevent participants from forming potentially biased beliefs about how their performance relates to that of the high- and low-performing group. Also, it allows us to use participants' round 1 performance as a measure for base performance levels and thereby control for idiosyncratic and learning effects.

After receiving the performance information of round 1, we vary, first, whether participants are assigned to the high-performing or to the low-performing group (*Group A* vs. *Group B*) and, second, whether or not participants will receive information about their relative performance in their assigned group (*RPI* vs. *NoRPI*). This results in four treatments *NoRPI-Group A, NoRPI-Group B, RPI-Group A, and RPI-Group B*. In the following, we describe our treatment manipulations in more detail.

Peer Group Manipulation

Before the start of round 2, participants are informed about whether they were assigned to group A or to group B (treatment *Group A* and *Group B*, respectively). We explicitly state in the instructions that the group assignment is done by the software. In order to ensure comparability, we use a stratified randomization approach. After sorting participants according to their first-round performance, we assign every other participant to group A and the remaining participants to group B. This guarantees that the average performance in group A and group B is relatively similar.[8]

RPI Manipulation

[7] We first collected data from 17 participants who also played two rounds with the setup described above but did not receive any information about the performances of others. Because we expect the hypothesized effects in the decentralized organizational structure to be most relevant for participants who find themselves somewhere between the two peer groups, we chose the three best-performing participants to form group A and the three worst-performing participants to form group B. In this way, we ensure that most participants in our treatment groups demonstrate a performance that lies between the two reference points. To keep peer groups constant across all sessions and treatments, we use the data of these participants for study 1 as well as study 2.

[8] A Wilcoxon rank-sum test shows that the average performance in round 1 between participants assigned to group A and participants assigned to group B is not significantly different in treatments *NoRPI* ($z = 0.959$, $p = 0.3417$) and *RPI* ($z = -1.169$, $p = 0.2454$), demonstrating that our stratified randomization approach for assigning participants to group A and group B was successful.

In the *NoRPI* treatment, we explicitly state in the instructions that participants will not receive any further information about the groups' performances, nor any information about the performance of other participants. In the *RPI* treatment, we privately communicate a participant's ranking within the assigned group of four (the three participants from a previous session plus the participant themselves) after round 2. Providing RPI in terms of a ranking is consistent with previous literature on RPI (see, e.g., Tafkov [2013], Brown et al. [2014], Hannan et al. [2013, 2019], Knauer et al. [2021], Kramer et al. [2016], Newman and Tafkov [2014]). Importantly, note that the group assignment of other participants in the same session does not influence the group composition.[9] We also inform participants that they will not receive any additional information and that no other participants will learn their rank to rule out incentives for impression management and social image concerns.

Experimental Procedures and Participants

Due to the outbreak of the Covid-19 pandemic and the resulting temporary shutdown of universities and the associated lab facilities, we decided to run the experiment using z-Tree unleashed (Duch et al. [2020]). This freely available software allows scholars to run their experiments programmed with z-Tree (Fischbacher [2007]) virtually. Instead of coming to a physical lab, participants can join from anywhere using their personal electronic devices by just clicking on a link that forwards them to a webpage looking exactly like the z-Leaf environment. Running experiments online instead of executing them in the lab reduces control over alternative activities of our participants. Whereas this can be problematic for treatments involving interactions between participants, it is less of an issue in our individual decision-making setting. An online experiment is particularly well-suited for analyzing the effects of providing RPI on participants' motivation to work. The reason is that it leads to higher opportunity costs of effort,

[9] We aim to isolate the behavioral effects of RPI as cleanly as possible. Hence, we seek to avoid any interdependence of participants confounding our observations, for example, via complex beliefs about the behavior of others. Of course, our design might, therefore, not fully capture situations where multiple employees are assigned to (or choose their peer group) simultaneously. It is, however, well justified in situations where, in a given time frame, the focus lies on a limited number of employees. This is relevant, for example, if an organization hires new employees in different areas or if a few employees consider changing departments or teams.

which more closely resemble actual work environments than sitting in an isolated cubicle in the lab. Also, especially in the recent past, remote and mobile work has become increasingly popular.

During June 2020, we ran a total of 20 session, amounting to a total of 148 participants. At the outset, we ran two sessions with a total of 17 participants who provided data for groups A and B, and afterwards, 18 treatment sessions with a total of 131 participants. We recruited our participants using the participant pool of the Karlsruhe Decision and Design lab.[10] Four participants experienced technical issues and had to be excluded, leaving us with 127 independent observations. The average age of the participants was 23 years, and 53 percent were male. There are no significant differences across treatments in age, gender, or prior participation in economics experiments.

At the beginning of each session, participants joined a Zoom chat room where they were welcomed and given basic information about the proceedings of the experiment. The chat room remained open during the entire duration of the experiment to enable participants to answer questions before, during, and after the session. In the course of the experiment, participants were given several sets of instructions via the experimental software. We always checked the participants' understanding of the instructions by requiring them to answer a short quiz. Before the start of round 1, participants completed a practice round where they were given two minutes to familiarize themselves with the slider task. Between round 1 and round 2, we also elicit their beliefs about their performance relative to the two peer groups in an incentivized manner. All sessions end with a post-experiment questionnaire on social preferences, personal attitudes, and demographic information.[11] Participants were paid their experimental earnings via bank transfer. All sessions lasted approximately one hour, and the

[10] The Karlsruhe Decision and Design Lab (KD2Lab) has been funded by the DFG and the Karlsruhe Institute of Technology (INST-12138411-1FUGG). We used hroot (Bock et al. [2014]) to recruit the participants. In the invitation, we made clear that this experiment will be run online and that participants require a stable WIFI connection and a computer mouse.

[11] We use the following information as control variables for our empirical analyses: perceived task difficulty, risk attitude (see, for example, Buser [2016] and Dohmen et al. [2011]), competitiveness (see, for example, Buser, [2016]), overconfidence (see, e.g., Sautman [2013]), locus of control (see Kovaleva et al. [2012]), conformism (see Goldsmith et al. [2005]), and social comparison orientation (see, e.g., Gibbons and Buunk [1999], Schneider and Schupp [2011]).

average payoff was €13.10, including a €10 fixed payment.

2.3 RESULTS

Measures and Descriptive Statistics

Table 1 describes the main variables that we use in our analysis. The first line reports average values and standard deviations for *Boost in Performance*, where we split our sample into our four treatments according to whether participants were assigned to the high-performing group A or the low-performing group B and whether they received RPI or not. *Boost in Performance* is defined as the absolute increase in performance between rounds 1 and 2. We use this variable rather than the performance in round 2 to control for idiosyncratic and learning effects. To shed more light on what drives the observed effects, we also look at participants with a relatively low and relatively high performance separately. Hence, in the second and third lines of Table 1, we additionally report the results for participants whose performance in round 1 lies closest to reference point A (*High-Performers*) and for participants whose performance in round 1 lies closest to reference point B (*Low-Performers*).[12]

[*Insert Table 1 about here*]

In the following, we consistently report our estimation results once for a model without the variables we collected in the post-experimental questionnaire and once for a model that includes those variables as controls. For brevity, we only indicate whether the model does or does not include controls. We relegate the tables comprising the full-fledged results to Appendix A and only report our main variables of interest.

Empirical Analysis

[12] This is equivalent to splitting participants according to the median *Performance in Round 1* of all participants in our study.

To isolate the performance effect of RPI when group allocations are exogenous and formally test whether the results fall into the pattern as predicted by Hypotheses 1 and 2, we use an OLS regression with the dependent variable being *Boost in Performance*. We use *Group A* as a first explanatory factor, which is an indicator variable that is equal to 1 if participants are assigned to group A and 0 otherwise. The second explanatory variable is *RPI*, which is equal to 1 if participants are provided with RPI and 0 otherwise. The corresponding results are displayed in columns 1 and 2 of Table 2. To test Hypotheses 1 and 2, we include the *Group A* X *RPI* interaction. The results are reported in columns 3 and 4 of Table 2.

Test of Hypothesis 1: The Conformity Effect of the Peer Group's Reference Point

Hypothesis 1 posits a conformity effect of the peer group's reference point. In the corresponding regressions (columns 3 and 4 of Table 2), the main effect of *Group A* is always positive and statistically significant, which means that, in the absence of RPI, participants' boost in performance is greater when assigned to group A than to group B. Thus, Hypothesis 1 is supported. This result suggests that employees conform to their peer group's performance by working harder when being part of the high-performing group and seem to hold back when being part of the low-performing group.[13]

Result 1: Without RPI, participants' increase in performance is, on average, higher when they are assigned to the high-performing group than when they are assigned to the low-performing group.

[*Insert Table 2 about here*]

Test of Hypothesis 2: The Performance Effect of RPI

In Hypothesis 2, we predict that the provision of RPI leads to an increase in performance that is greater when participants are assigned to group B compared to when assigned

[13] Note that we find pronounced effects even though peer groups comprise participants of former sessions. We expect this and subsequent effects to be even stronger when peer groups comprise participants of the same session working under the exact same conditions.

to group A. In addition to the positive main effect of *Group A* discussed in the previous section, columns 3 and 4 also show that the positive main effect of *RPI* as well as the negative interaction effect are statistically significant. This indicates a positive effect of RPI for participants assigned to the low-performing group B. This positive effect is reduced when participants belong to the high-performing group A. Hence, Hypothesis 2 is supported by our experimental results. This provides evidence for pronounced motivational effects of RPI even despite our task's low self-image relevance.

[*Insert Figure 1 about here*]

Importantly, though, it is not only the case that RPI increases participants' performance more when they are part of the low- than the high-performing group. In fact, inspection of Figure 1 reveals that RPI in group A even proves to be detrimental for performance (two-sided t-test; 9.71 vs. 3.26, $t = 2.4152$, $p = 0.0186$, two-tailed). This suggests that, in line with our theoretical argumentation, RPI may trigger a giving-up attitude for employees who feel like their target of outperforming their peers is unattainable. This is also supported by running additional t-tests showing that the negative effect of RPI for participants assigned to the high-performing group can be attributed to *Low-Performers*. For these participants, *Boost in Performance* within group A is significantly lower with than without RPI (two-sided t-test; 2.2 in treatment *RPI-Group A* vs. 11 in treatment *NoRPI-Group A*, $t = 2.2575$, $p = 0.0303$, two-tailed). In contrast, for *High-Performers* in group A, we do not find statistically significant effects of RPI on *Boost in Performance* (two-sided t-test; 5.1818 in treatment *RPI-Group A* vs. 8.4118 in treatment *NoRPI-Group A*, $t = 0.8926$, $p = 0.3803$, two-tailed).

Interestingly, and in contrast to our theoretical predictions, the positive performance effects of RPI for participants assigned to the low-performing group B can be attributed to *High-Performers*. We find that, in group B, *Boost in Performance* of *High-Performers* is statistically significantly higher with than without RPI (two-sided t-test; 11.78947 in treatment *RPI-Group B* vs. 4.375 in treatment *NoRPI-Group B*, $t = -1.8974$, $p = 0.0694$,

two-tailed), whereas the increase in performance is not statistically significant for *Low-Performers* (two-sided t-test; 4.0714 in treatment *RPI-Goup B* vs. 2.3810 in treatment *NoRPI-Group B*, $t = -0.6967$, $p = 0.4909$, two-tailed). Hence, in contrast to prior literature, we do not find support for a complacency attitude as discussed in Section 2.1.

Result 2: Compared to a situation without RPI, RPI provision, on average, significantly boosts performance of participants assigned to the low-performing group. For participants assigned to the high-performing group, providing RPI has, on average, a negative effect on performance.

3 STUDY 2: THE DECENTRALIZED ORGANIZATIONAL STRUCTURE

3.1 RESEARCH SETTING AND HYPOTHESES

In study 2, we consider the same setting as in the baseline study 1 but now shift our focus to the decentralized organizational structure, where employees can self-select into their preferred peer group. Also, we now concentrate our theoretical discussion on employees who perform somewhere between the two peer groups because we expect the trade-offs to be most pronounced for them. The insights from social psychology and behavioral economics we incorporated before again help us identify the driving forces of employees' behavior. We use existing theories to develop hypotheses on, first, how the peer groups' reference points and the provision of RPI influence employees' group choices and, second, how this guides employees' performances. Akin to the setting in Section 2, an employee's behavior will be determined by both the peer groups' reference points and the provision of RPI. To disentangle these effects, we again start by considering a baseline situation without RPI.

The Group Choice Effect of the Peer Group's Reference Point

The degree of similarity to the potential peer groups is a decisive factor influencing which group employees will select. This is in line with social identity theory (Tajfel and Turner [1979], Akerlof and Kranton [2000, 2005]), positing that individuals derive a sense of self from being part of a group. Being or acting in conformity with the group increases their similarity with other members and strengthens their sense of belonging to the group (Akerlof and Kranton [2010]). In the absence of RPI, we, hence, predict that high-performing employees are more likely to sort into the high-performing peer group and vice versa.

Hypothesis 3: Without RPI, the likelihood that employees choose the high-performing peer group is increasing in their own performance.

The Group Choice Distortion Effect of RPI[14]

Drawing on the literature of social psychology, we posit that the provision of RPI will initiate additional motives working against what social identity theory predicts, thereby leading employees to adjust their peer group choice. First, according to self-evaluation maintenance theory (Tesser [1988]) and the related motive of self-enhancement (Sedikides [1993], Sedikides and Strube [1995]), people aim at maintaining and enhancing their self-esteem to feel good about themselves. For this purpose, they pursue positive information and try to shield themselves from negative information. People may also selectively process self-relevant information by discarding, distorting, or reinterpreting information that threatens their self-view (Sedikides and Strube [1995], Golman et al. [2017]). Another strategy to inflate the positivity of one's self is using social comparison information in a motivated manner (Festinger [1957], Sedikides and Strube [1995]). In particular, one can engage in *downward social comparison*, that is, choosing those who perform worse than oneself as the target of comparison (Wills [1981], Taylor et al. [1995]). If companies use RPI as a motivational device, employees might, hence, strategically manage their target of comparison by choosing the low-performing peer group to receive favorable new information and thereby enhance their self-esteem. For high-performing employees, this implies that

[14] We chose the term *group choice distortion effect* as an analogy to the *effort distortion effect* in Hannan et al. [2013].

their peer group choice runs counter to what social identity theory predicts.

The second aspect, which is equally likely to play a prominent role in employees' peer group choices, is the motive of self-improvement. This motive is conceptually distinct from self-enhancement in that it focuses on truly getting better instead of just feeling better (Taylor et al. [1995]). Hence, instead of comparing themselves to others performing worse, people with a desire to improve might choose others who perform better than themselves as the comparison target. These *upward social comparisons* work by providing concrete evidence about superior performances, sparking inspiration and motivation. This mechanism is also related to goal theory (Locke and Latham [1984, 1990]). Employees might consciously use the high-performing peer group as a self-set target (Latham and Locke [1991]), leading to higher motivation and, in turn, to an increase in monetary compensation (Kaur et al. [2010, 2015], van Lent and Souverijn [2020]). In contrast to before, it is now low-performing employees who would choose a different peer group than what social identity theory predicts.

To synthesize, RPI's overall effect on the likelihood of choosing the high-performing over the low-performing peer group depends on the relative intensity of employees' social identity concerns as well as their self-enhancement and self-improvement motives, which renders a clear prediction difficult. Therefore, instead of formulating a hypothesis, we shed light on the question of how RPI influences employees' group choices.

The Performance Effect of Employees' Group Choice Behavior

Finally, we are interested in how employees' group choices guided by the provision of RPI translate into performances.[15] If the self-enhancement motive plays a decisive role, we would expect two countervailing forces to determine average performance. First, without RPI, it is predominantly low-performing employees who will self-select

[15]Note that, in this study, we deal with the effects of RPI on employees' group choices that, in turn, influence their subsequent performances. RPI, hence, affects performances only indirectly. Our approach crucially differs from an analysis of how the introduction of RPI *after* employees chose their peer groups affects performances directly. We chose this focus because we consider it more behaviorally stable over time. This is because providing RPI *after* employees self-selected into their preferred peer group choices will likely prompt them to reconsider their choices for the next period.

into the low-performing peer group, whereas RPI provision will also induce high-performers to select the low peer group. From this, it follows that those who chose the low-performing group with RPI should demonstrate higher average performances than those who chose the same group without RPI. At the same time, however, the preference to conform to one's peer group leads those high-performers to hold back on effort. The overall effect of employees choosing the low-performing peer group to follow their motive for self-enhancement is, hence, not clear-cut.

If employees adhere to their self-improvement motive and effectively use their peer group as a self-set target, we would expect an increase in performance for those who chose the high-performing peer group with RPI compared to those who chose the same group without RPI. Employees who voluntarily choose to be compared with the high-performing peer group will identify with the value of their behavior to improve and reach their goal, spurring motivation and prompting hard work (Gagné and Deci [2005], Locke and Latham [1984, 1990], Holderness et al. [2020]).

All in all, because employees' performances crucially depend on the motives underlying a particular group choice and the effects are not clear-cut, we again do not formulate a hypothesis. Instead, we investigate the question of how employees' group choices affect subsequent performances.

3.2 METHOD

Experimental Design

To test our hypotheses, we again ran a controlled experiment involving a between-subject design with two treatments. The basic experimental setup is exactly as in study 1. We again vary whether or not participants receive information about their relative performance (*RPI* vs. *NoRPI*). However, instead of exogenously manipulating the participants' peer group, they are now free to choose to which group they want to be assigned. Importantly, they learn about all details of round 2, in particular,

what kind of information they will receive, before they are asked to select their group. This allows us to investigate the causal effects of RPI on participants' peer group choices. Our main variables of interest are participants' group choices and changes in performances between round 1 and round 2. Our two-round design again enables us to control for idiosyncratic and learning effects. In addition, it allows our participants to gather experience, which reduces the risk that the participants' group choices are confounded by biased beliefs about their ability relative to the two peer groups.

Experimental Procedures and Participants

The experimental procedure is identical to study 1. We recruited a total of 135 participants who took part in one of our 18 sessions in June 2020. 5 participants experienced technical issues and had to be excluded, leaving us with 130 independent observations. The average age of the participants was 24 years, and 55 percent were male. There are again no significant differences across conditions in age, gender, or prior participation in economics experiments. All sessions lasted approximately one hour, and the average payoff was €12.80, including a €10 fixed payment.

3.3 RESULTS

Measures and Descriptive Statistics

Table 3 describes the main variables that we use in our analysis. In Panel A, we report the average values and standard deviations of *Performance in Round 1*, measuring participants' number of correctly placed sliders in this respective round, and *Boost in Performance*, defined as the absolute increase in performance between rounds 1 and 2 for our two treatments *RPI* and *NoRPI*. We also report the share of participants that self-selected into the high-performing group A (*Choice of Group A*). Panel B reports the share of participants that chose group A and group B, respectively, for one of the following categories: round 1 performance lies (1) above reference point A, (2) between reference points A and B, and (3) below reference point B. Our analysis regarding

participants' group choices particularly focuses on the second category as we suspect the trade-off between the different group choice motives to be most pronounced. We henceforth refer to these participants as *Medium-Performers*. In Panel C, we again report participants' *Boost in Performance* in treatments *RPI* and *NoRPI*, but further split our sample according to whether participants chose to be part of the high-performing group A or the low-performing group B. For the sake of consistency, we also report the results for participants whose performance in round 1 lies closest to reference point A (*High-Performers*) and for participants whose performance in round 1 lies closest to reference point B (*Low-Performers*).

[*Insert Table 3 about here*]

Our main focus lies on investigating whether and how a peer group's reference point and RPI influence employees' group choices and how a particular choice affects their subsequent performance. We again consistently report our estimation results once for a model without the variables we collected in the post-experimental questionnaire and once for a model that includes these variables as controls. The full-fledged results of the latter are again relegated to Appendix A.

Empirical Analysis

To test Hypothesis 3 and shed light on participants' group choices without RPI, we use Probit regressions with *Choice of group A* as the dependent variable. This is an indicator variable equal to 1 when a participant chose the high-performing group A and 0 otherwise. We use the variable *Performance in Round 1* as a control and the indicator variable *RPI* in all our regression specifications. In addition, we estimate models that include an interaction effect between these two variables, *Performance in Round 1* x *RPI*. The corresponding results are reported in Table 4. In Panels A and B, the first two columns always show the results of our Probit model with the main effects only, whereas the second two columns report the model that includes the interaction

effect.[16] In Panel A, we first analyze the whole sample (*NoRPI* and *RPI*). In a second step, we restrict the dataset to participants who perform between the two reference points A and B (Panel B). In Panel C, we further split this restricted dataset according to whether participants perform closer to reference point B (*Medium-Low-Performers*) or A (*Medium-High-Performers*).

Test of Hypothesis 3: The Group Choice Effect of the Peer Group's Reference Point

We first analyze Hypothesis 3, predicting that, because people are driven by social identity considerations, participants in the NoRPI treatment will be more likely to choose the high peer group A the better their performance in round 1. To this end, consider the Probit regressions reported in Panel A of Table 4. Because the main effect of *Performance in Round 1* is positive and statistically significant in all specifications, we find support for our prediction. This suggests that social identity considerations in the form of performance similarities may indeed drive employees' peer group choices.

Result 3: Without RPI, participants are more likely to choose the high-performing group the higher their own performance.

Analysis of The Group Choice Distortion Effect of RPI

In Section 3.1, we concluded that the effect of RPI on employees' group choice is theoretically not straightforward, which calls for an investigative approach. For the sake of completeness, we first discuss the results of our Probit regressions reported in Panel A of Table 4, including all participants, in more detail. Note that the results of the models with and without the interaction term are qualitatively the same. In addition to the positive and significant effect of *Performance in Round 1* as discussed before, we observe that the main effect of *RPI* is economically small and statistically not significant. We also do not find a significant interaction between *RPI* and the participants' *Performance in Round 1* in the full sample.

[*Insert Table 4 about here*]

[16] The average marginal effects (AME) of our Probit regressions are reported in Tables 4B-C in Appendix A.

However, as previously mentioned, we aimed to concentrate our analysis on those participants who find their own performance to lie between those of the high- and low-performing group (see Footnote 7). This is because we expected social identity concerns to outshine self-enhancement and self-improvement motives for those who perform better than group A and worse than group B. Therefore, we next focus on Panel B of Table 4, where we restrict our analysis to *Medium-Performers*. As before, we observe that higher performance levels in round 1 significantly increase the likelihood of choosing group A in both estimations. In contrast to the full sample reported in Panel A, the coefficients for *RPI* as well as the interaction between *Performance in Round 1* and *RPI* are statistically significant.

Figure 2 illustrates the interaction by plotting the adjusted predictions of the marginal effects for different values of *Performance in Round 1* in the two treatments *NoRPI* and *RPI* with observations being restricted to *Medium-Performers*. The vertical line shows the midpoint of the distance between reference points A and B. We observe that the relationship between participants' performances in round 1 and the chosen group differs according to whether RPI is provided or not. Without RPI, they seem to adhere to social identity considerations and choose their group accordingly. If RPI is provided, participants with performance levels slightly below the high reference point A seem to be less likely to choose group A when compared to the *NoRPI* setting. In contrast, participants performing slightly above the low reference point B seem to be more likely to choose group A if RPI is provided than when it is not.

[*Insert Figure 2 about here*]

We, therefore, split all *Medium-Performers* into whether their *Performance in Round 1* lies closest to reference point B or reference point A. Panel C of Table 4 reports the regressions for our sample restricted to those *Medium-Low-Performers* (columns 1 and 2) or *Medium-High-Performers* (columns 3 and 4) between reference point A and B. For the sub-sample of these *Medium-High-Performers*, we observe no statistically significant effects. In contrast, for the subset of *Medium-Low-Performers*, both main effects, as well

as the interaction, are statistically significant. For those participants, the probability of choosing group A increases the closer they perform to the low-performing group B.

Overall, these findings provide some support for our theoretical arguments. Specifically, for participants who perform closely above the low-performing group B, the provision of RPI has a positive effect on the probability of choosing the high-performing group A. This effect becomes smaller the better the participants' performance is. Hence, especially for relatively low-performing employees, we find patterns of behavior that are consistent with our expectation that RPI initiates people's motives for self-improvement. For employees with a relatively high performance, Figure 2 points towards the direction that RPI encourages employees to opt for the low-performing group to avoid unfavorable information and enhance their self-esteem. However, our results for *Medium-High-Performers* are not statistically significant. This suggests that the motive of self-enhancement is not sufficiently strong to dominate the motive of self-improvement and earning a higher payoff.[17] We conjecture that a more self-image-relevant task may change this balance.

Analysis of the Performance Effect of Employees' Group Choice Behavior

To finally test how the participants' choice of their peer group translates into performance, consider, first, Figure 3. Visual inspection suggests that participants who chose group A when RPI is provided perform better than those who chose group A without RPI. For participants who chose group B, Figure 3 suggests the opposite pattern.

[*Insert Figure 3 about here*]

Importantly, at this point, we cannot attribute these performance effects to the provision of RPI because, as demonstrated in the previous subsection, the presence or absence of RPI changes which types of participants choose a particular group. Therefore, we use

[17] In the post-experimental questionnaire, we ask participants about the motives for their group choice. A Chi-square test indicates that a choice of the high peer group is negatively correlated with the motive to escape the pressure to perform (Pearson $\chi^2 = 34.9267$, $p = 0.000$) and positively correlated with the motive of a higher incentive to perform better (Pearson $\chi^2 = 36.9286$, $p = 0.000$).

an OLS regression with *Boost in Performance* as the dependent variable and *RPI* as well as *Group A* as explanatory variables, while controlling for *Performance in Round 1* (see the first column in Panel A of Table 5). As before, column 2 of Panel A also controls for an array of additional idiosyncratic factors. The OLS regression reported in columns 3 and 4 in Panel A include the *RPI* x *Group A* interaction as an additional explanatory variable. In Panel B of Table 5, we split our observations by those who chose group A and those who chose group B. Overall, the results show that, when controlling for participants' performance in round 1 and several other characteristics, participants who chose group B with RPI do not exhibit a significantly different performance than those who chose group B without RPI. More interestingly, however, participants who chose group A with RPI demonstrate a statistically significant increase in performance relative to those who chose group A without RPI. This finding further corroborates our previous conjecture suggesting that RPI induces participants to choose the high-performing group as a self-set target to improve their performance instead of motivating them to enhance their self-esteem by engaging in information avoidance. Importantly, allowing self-selection seems to ward off discouragement effects.[18]

[*Insert Table 5 about here*]

4 DISCUSSION AND CONCLUSION

Our two studies shed light on how the provision of RPI interacts with a peer group's reference point and the organizational structure pertaining to the degree of autonomy in determining one's peer group. A thorough understanding thereof plays an important role in painting a holistic picture of the costs and benefits of RPI. We, thus, provide essential insights for managers on how to design effective information systems and organizational structures. Study 1 presents a centralized organizational structure where

[18]Relatedly, the field study of Kiessling et al. [2021] demonstrates that, in the presence of relative performance feedback, granting autonomy to self-select one's peer has a direct positive influence on performance due to a psychological effect that enhances intrinsic motivation (Deci and Ryan [1985, 2000]).

peer groups are determined exogenously. We find that the well-established positive motivation effect of RPI is not universal. On the one hand, RPI successfully counteracts the inclination of employees to hold back in order to conform to a low-performing peer group. At the same time, however, our results warn against the undesired effect of employees feeling discouraged or demotivated when receiving RPI with respect to a peer group they are not able to keep up with. Therefore, managers in firms with a centralized organizational structure might still be well-advised to use RPI in low-performing divisions but should be more cautious about whom to provide RPI in high-performing divisions.

Study 2 analyzes whether and to which extent a decentralized organizational structure where employees are granted autonomy to select their peer group can counteract adverse side effects of RPI. Our findings suggest that allowing self-selection seems to ward off discouragement. While employees are generally inclined to choose the group that they perform most similarly to, providing RPI especially motivates those with a relatively low initial performance to self-select into the high-performing group. The choice of employees with a relatively high initial performance, on the other hand, remains unaffected. Yet, the average performance of those who chose the high-performing group when RPI is provided is better than of those who chose the same group without RPI. In contrast, we do not find statistically significant differences in performance for participants who decided for the low-performing group. These results suggest that the possibility of using peer group choices as a self-enhancement strategy does not lead to significant undesired effects on motivation. Rather, providing self-selection possibilities allows and motivates employees to choose a high-performing peer group as a self-set target to improve and boost performances.

By analyzing the effects of RPI in a decentralized organizational structure, our study also has a bearing on the debate about autonomy at work. In addition to mitigating the problems that arise due to informational asymmetries, much prior research stresses that autonomy, in general, fosters intrinsic motivation (Deci and Ryan [1985, 2000], Ryan and Deci [2000], Gagné and Deci [2005], Benz and Frey [2008]). In addition, espe-

cially relational autonomy may ward off interpersonal conflicts and improve cohesion and coordination within organizations. On the other hand, scholars warn against employees falling prey to complacency, overconfidence, and inertia when choosing teams that they are already familiar with. This may fail to induce employees to expose themselves to new perspectives and cognitions and to move outside their comfort zones, which stifles performance improvements (Lindsley et al. [1995], Gambardella et al. [2020], Boss et al. [2021]). We add to this discussion by shedding light on how employees use their autonomy to choose between a high- and a low-performing peer group and how RPI influences their choice.

In the current work, we consciously chose to provide a conservative test of our theoretical predictions. In light of prior experimental results (Tafkov [2013], Hannan et al. [2013]), it is plausible that providing public instead of private RPI strengthens the effects with respect to individuals' group choice. Similarly, using a more self-image-relevant task than the slider task fulfills a central tenet of social comparison and self-evaluation maintenance theory (Festinger [1957], Tesser [1988]) to a greater extent and may therefore lead to a more pronounced motive to engage in self-enhancement strategies. Future research can scientifically validate and extend these intuitions. Of course, our work is also subject to limitations, which might provide interesting avenues for further research. First, note that we focused our experimental setup on the effects of participants' self-image concerns while keeping social identity and social norm concerns constant. In the spirit of existing literature on group identity (Shang et al. [2020], Chen and Li [2009], Goette et al. [2006], Towry [2003]), one could instead focus on the questions of how RPI interacts with the strength of social identity and social norm concerns. Second, we restrict ourselves to a one-shot setting where participants only observe their ranking. Varying the informativeness of RPI (coarse vs. fine, see Hannan et al. [2008], or rank-score vs. absolute-score RPI, see Hannan et al. [2019]) or its frequency (interim vs. real-time RPI, see Kuhnen and Tymula [2012]) may inform accountants on how to design information systems effectively. Moreover, in our two studies, participants are either provided with RPI or not. Future research might investigate a situation where they do not only have autonomy over their peer group

but also whether or not they receive RPI at all. Finally, it would also be interesting to consider a more realistic but unfortunately less tractable scenario where peer groups do not remain constant but are formed endogenously over time.

APPENDIX A: ADDITIONAL TABLES

TABLE 2A
Centralized Organizational Structure: Test of Hypotheses H1 and H2

OLS regression with *Boost in Performance* as the dependent variable

Independent Variables	**(1)**	**(2)**
RPI	0.5582	6.2917**
	(1.8099)	(2.4362)
Group A	0.2576	6.3709**
	(1.8372)	(2.5352)
Group A x RPI		-11.5124***
		(3.4364)
Male	0.3514	0.2324
	(1.8168)	(1.7408)
Age	-0.1809	-0.2832
	(0.2755)	(0.2656)
Competitiveness	0.1091	0.2267
	(0.3578)	(0.3446)
Ability to Cope with Stress	-0.6757*	-0.7941**
	(0.3886)	(0.3740)
Conformism	0.2059	0.3703
	(0.4224)	(0.4076)
Social Comparison Orientation	0.3916	0.3542
	(0.3586)	(0.3436)
Overconfidence	1.0148	0.4861
	(0.8119)	(0.7936)
Risk Attitude	0.1863	0.1823
	(0.4343)	(0.4161)
Locus of Control	-0.0348	0.0907
	(0.3892)	(0.3747)
Task Difficulty	-3.3288***	-3.3288***
	(0.8088)	(0.8088)
Constant	19.9821**	18.1057*
	(9.9205)	(9.5200)
Adj. R^2	0.0849	0.1602
F-statistic	1.97**	2.85***
Observations	127	127

The table reports results of OLS regressions (standard errors in parentheses; p-values are two-tailed).
* p < 0.10, ** p < 0.05, *** p < 0.010

The dependent variable is *Boost in Performance*, which is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Group A is an indicator variable that is equal to 1 if participants are assigned to group A and 0 otherwise.

For a description of the variables based on PEQ questions, see Footnote 11.

TABLE 4A
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel A: Probit regressions with *Choice of Group A* as the dependent variable (observations in columns 3 and 4 restricted to *Medium-Performers*) [a]

Independent Variables	(1)	(2)	Medium-Performers (3)	Medium-Performers (4)
Performance in Round 1	0.0301***	0.0331***	0.0556***	0.1077***
	(0.0088)	(0.0107)	0.0164	0.0300
RPI	0.1007	0.4274	0.0258	3.4582**
	(0.2638)	(0.6936)	0.3256	1.4804
Performance in Round 1 x RPI		-0.0084		-0.0884**
		(0.0164)		0.0375
Male	0.0786	0.0630	0.2352	0.2034
	(0.2686)	(0.2704)	0.3418	0.3613
Age	0.0792**	0.0809**	0.0619	0.0739
	(0.0373)	(0.0376)	0.0492	0.0524
Competitiveness	0.0938*	0.0964*	0.0977	0.1192*
	(0.0502)	(0.0506)	0.0657	0.0695
Ability to Cope with Stress	-0.025	-0.0256	-0.0459	-0.0327
	(0.0644)	(0.064)	0.0908	0.0936
Conformism	0.1559**	0.1503**	0.1064	0.0818
	(0.0679)	(0.0687)	0.0831	0.0870
Social Comparison Orientation	0.0794	0.0847	0.1027	0.1421**
	(0.0530)	(0.0541)	0.0654	0.0710
Overconfidence	-0.1031	-0.1021	-0.0784	-0.0675
	(0.1046)	(0.1043)	0.1398	0.1463
Risk Attitude	0.0905	0.0908	0.0891	0.0734
	(0.0637)	(0.0638)	0.0802	0.0827
Locus of Control	-0.0376	-0.0387	-0.0390	-0.0223
	(0.0602)	(0.0599)	0.0802	0.0822
Task Difficulty	0.1167	0.1115	0.1089	0.0779
	(0.1200)	(0.1207)	0.1475	0.1530
Constant	-5.5188***	-5.6534***	-5.6031***	-8.1345***
	(1.6135)	(1.641)	2.0053	2.3733
Pseudo R^2	0.2121	0.2136	0.2303	0.2797
Log likelihood	-70.0097	-69.8804	-49.2427	-46.0813
χ^2	37.70***	37.96***	29.47***	35.79***
Observations	130	130	97	97

TABLE 4A ctd
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel B: Probit regressions with *Choice of Group A* as the dependent variable (observations split by *Medium-Low-Performers* and *Medium-High-Performers*) [b]

Independent Variables	Medium-Low-Performers (1)	Medium-High-Performers (2)
Performance in Round 1	0.1892	0.0857
	0.1356	0.0757
RPI	10.8818**	3.2218
	5.2951	4.3365
Performance in Round 1 x RPI	-0.3369*	-0.0722
	0.1724	0.0928
Male	-0.6983	0.4353
	1.0437	0.5344
Age	0.0306	0.1128
	0.0752	0.0846
Competitiveness	0.3999**	-0.0195
	0.1993	0.0938
Ability to Cope with Stress	-0.1107	0.0035
	0.2129	0.1222
Conformism	0.1763	0.1981
	0.1700	0.1374
Social Comparison Orientation	0.1626	0.1794
	0.1397	0.1103
Overconfidence	-0.2899	0.0211
	0.3539	0.2018
Risk Attitude	0.2812	0.0965
	0.2491	0.1077
Locus of Control	-0.2897	0.0598
	0.2189	0.1199
Task Difficulty	-0.2557	0.1599
	0.3070	0.2615
Constant	-10.0593*	-9.6921*
	5.3429	4.9527
Pseudo R^2	0.4737	0.1819
Log likelihood	-13.612	-26.4486
χ^2	24.5**	11.76
Observations	38	59

[a] The table reports results of Probit regressions (standard errors in parentheses; p-values are two-tailed). Observations in columns 3 and 4 are restricted to *Medium-Performers*.
* p < 0.10, ** p < 0.05, *** p < 0.010

The dependent variable is *Choice of Group A* which is an indicator variable that is equal to 1 if participants chose group A and 0 otherwise.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

Medium-Performers are participants who, in round 1, performed between reference points A and B.

For a description of the variables based on PEQ questions, see Footnote 11.

[b] Observations are split by *Medium-Low-Performers* (columns 1 and 2) and *Medium-High-Performers* (columns 3 and 4). *Medium-Low-Performers* are participants whose performance in round 1 lies between reference points A and B but closest to reference point B. *Medium-High-Performers* are participants whose performance in round 1 lies between reference points A and B but closest to reference point A.

TABLE 4B
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel A: Probit regressions with *Choice of Group A* as the dependent variable

Independent Variables	**(1)**	**(2)**	**(3)**	**(4)**
Performance in Round 1	0.0093***	0.0092***	0.0092***	0.0088***
	(0.0022)	(0.0024)	(0.0023)	(0.0025)
RPI	0.0251	0.0309	0.0268	0.0311
	(00.0836)	(0.0811)	(0.0840)	(0.0809)
Performance in Round 1 x RPI			-0.0012	-0.0023
			(0.0046)	(0.0044)
Controls	NO	YES	NO	YES
Pseudo R^2	0.0807	0.2121	0.0809	0.2136
Log likelihood	-81.6925	-70.0097	-81.6658	-69.8804
χ^2	14.33***	37.70***	14.39***	37.96***
Observations	130	130	130	130

Panel B: Probit regressions with *Choice of Group A* as the dependent variable (observations restricted to *Medium-Performers*) [a]

Independent Variables	**Medium-Performers (1)**	**Medium-Performers (2)**	**Medium-Performers (3)**	**Medium-Performers (4)**
Performance in Round 1	0.0170***	0.0159***	0.0158***	0.0141***
	(0.0039)	(0.0038)	(0.0039)	(0.0039)
RPI	0.0094	0.0074	0.0135	0.0022
	(0.0933)	(0.0936)	(0.0895)	(0.0847)
Performance in Round 1 x RPI			-0.0140*	-0.0168**
			(0.0075)	(0.0069)
Controls	NO	YES	NO	YES
Pseudo R^2	0.1089	0.2303	0.137	0.2797
Log likelihood	-57.0109	-49.2427	-55.2147	-46.0813
χ^2	13.93***	29.47***	17.52***	35.79***
Observations	97	97	97	97

TABLE 4B ctd
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel C: Probit regressions with *Choice of Group A* as the dependent variable (observations split by *Medium-Low-Performers* and *Medium-High-Performers*) [b]

Independent Variables	Medium-Low-Performers (1)	Medium-Low-Performers (2)	Medium-High-Performers (3)	Medium-High-Performers (4)
Performance in Round 1	0.0223*	-0.0043	0.0065	0.0098
	(0.0126)	(0.0129)	(0.0099)	(0.0107)
RPI	0.06164	0.1408	-0.0311	-0.0407
	(0.1497)	(0.1367)	(0.1102)	(0.1211)
Performance in Round 1 x RPI	-0.0825***	-0.0711**	-0.0259	-0.0160
	(0.0280)	(0.0299)	(0.0199)	(0.0217)
Controls	NO	YES	NO	YES
Pseudo R^2	0.1961	0.4737	0.0392	0.1819
Log likelihood	-20.7914	-13.612	-31.0598	-26.4486
χ^2	10.14**	24.5**	2.54	11.76
Observations	38	38	59	59

The table reports results of Probit regressions in terms of average marginal effects (standard errors in parentheses; p-values are two-tailed).

* p < 0.10, ** p < 0.05, *** p < 0.010

The dependent variable is *Choice of Group A* which is an indicator variable that is equal to 1 if participants chose group A and 0 otherwise.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

[a] Observations are restricted to *Medium-Performers*.

Medium-Performers are participants who, in round 1, performed between reference points A and B.

[b] Observations are split by *Medium-Low-Performers* (columns 1 and 2) and *Medium-High-Performers* (columns 3 and 4).

Medium-Low-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point B.

Medium-High-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point A.

TABLE 4C
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Independent Variables	(1)	(2)	Medium-Performers (3)	Medium-Performers (4)
Performance in Round 1	0.0092***	0.0088***	0.0159***	0.0141***
	(0.0024)	(0.0025)	(0.0038)	(0.0039)
RPI	0.0309	0.0311	0.0074	0.0022
	(0.0811)	(0.0809)	(0.0936)	(0.0847)
Performance in Round 1 x RPI		-0.0023		-0.0168**
		(0.0044)		(0.0069)
Male	0.0241	0.0193	0.0676	0.0542
	(0.0826)	(0.0830)	(0.0980)	(0.0964)
Age	0.0242**	0.0247**	0.0177	0.0196
	(0.0108)	(0.0108)	(0.0138)	(0.0136)
Competitiveness	0.0287*	0.0294**	0.0280	0.0317*
	(0.0148)	(0.0148)	(0.0183)	(0.0176)
Ability to Cope with Stress	-0.0077	-0.0078	-0.0132	-0.0087
	(0.0196)	(-0.0195)	(0.0260)	(0.0248)
Conformism	0.0476**	0.0459**	0.0304	0.0217
	(0.0195)	(0.0198)	(0.0233)	(0.0228)
Social Comparison Orientation	0.0243	0.0259	0.0295	0.0377**
	(0.0157)	(0.0160)	(0.0180)	(0.0176)
Overconfidence	-0.0315	-0.0312	-0.0225	-0.0179
	(0.0316)	(0.0315)	(0.0399)	(0.0387)
Risk Attitude	0.0277	0.0278	0.02554	0.0195
	(0.0191)	(0.0191)	(0.0226)	(0.0217)
Locus of Control	-0.0115	-0.0118	-0.0112	-0.0059
	(0.0184)	(0.0183)	(0.0229)	(0.0218)
Task Difficulty	0.0357	0.0341	0.0312	0.0207
	(0.0362)	(0.0364)	(0.0419)	(0.0405)
Pseudo R^2	0.2121	0.2136	0.2303	0.2797
Log likelihood	-70.0097	-69.8804	-49.2427	-46.0813
χ^2	37.70***	37.96***	29.47***	35.79***
Observations	130	130	97	97

TABLE 4C ctd
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel B: Probit regressions with *Choice of Group A* as the dependent variable (observations split by *Medium-Low-Performers* and *Medium-High-Performers*) [b]

Independent Variables	Medium-Low-Performers (1)	Medium-High-Performers (2)
Performance in Round 1	-0.0043	0.0098
	(0.0129)	(0.0107)
RPI	0.1408	-0.0407
	(0.1367)	(0.1211)
Performance in Round 1 x RPI	-0.0711**	-0.0160
	(0.0299)	(0.0217)
Male	-0.1256	0.1101
	(0.1631)	(0.1344)
Age	0.0060	0.0283
	(0.0147)	(0.0205)
Competitiveness	0.0783**	-0.0049
	(0.0317)	(0.0236)
Ability to Cope with Stress	-0.0217	0.0009
	(0.0410)	(0.0307)
Conformism	0.0345	0.0497
	(0.0314)	(0.0331)
Social Comparison Orientation	0.0318	0.0451*
	(0.0259)	(0.0259)
Overconfidence	-0.0567	0.0053
	(0.0668)	(0.0507)
Risk Attitude	0.0550	0.0242
	(0.0460)	(0.0266)
Locus of Control	-0.0567	0.0150
	(0.0398)	(0.0299)
Task Difficulty	-0.0501	0.0402
	(0.0584)	(0.0652)
Pseudo R^2	0.4737	0.1819
Log likelihood	-13.612	-26.4486
χ^2	24.5**	11.76
Observations	38	59

[a] The table reports results of Probit regressions in terms of average marginal effects (standard errors in parentheses; p-values are two-tailed).
Observations in columns 3 and 4 are restricted to *Medium-Performers*.
* p < 0.10, ** p < 0.05, *** p < 0.010
The dependent variable is *Choice of Group A* which is an indicator variable that is equal to 1 if participants chose group A and 0 otherwise.
RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.
Performance in Round 1 is measured using the number of correctly placed sliders in round 1.
Medium-Performers are participants who, in round 1, performed between reference points A and B.
For a description of the variables based on PEQ questions, see Footnote 11.

[b] Observations are split by *Medium-Low-Performers* (columns 1 and 2) and *Medium-High-Performers* (columns 3 and 4).
Medium-Low-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point B. *Medium-High-Performers* are participants whose performance in round 1 lies between reference points A and B but closest to reference point A.

TABLE 5A
Decentralized Organizational Structure: Analysis of the Performance Effect of Employees' Group Choice Behavior

Panel A: OLS regression with *Boost in Performance* as the dependent variable

Independent Variables	(1)	(2)
RPI	1.6877	-2.5338
	(1.6846)	(2.5073)
Choice of Group A	-0.3396	-4.1317*
	(1.8472)	(2.4815)
Choice of Group A x RPI		7.3120**
		(3.2610)
Performance in Round 1	0.0467	0.0654
	(0.0585)	(0.0581)
Male	1.3351	1.1369
	(1.7331)	(1.7060)
Age	-0.4731**	-0.4315**
	(0.1926)	(0.1902)
Competitiveness	0-.4777	-0.4139
	(0.3301)	(0.3258)
Ability to Cope	0.7585*	0.6861*
with Stress	(0.4016)	(0.3961)
Conformism	'-0.0363	-0.0311
	(0.4158)	(0.4088)
Social Comparison	0.1443	0.0775
Orientation	(0.3323)	(0.3281)
Overconfidence	0.6213	0.7906
	(0.6668)	(0.6598)
Risk Attitude	0 .4183	0.4347
	(0.3942)	(0.3876)
Locus of Control	-0.1335	-0.1298
	(0.3831)	(0.3767)
Task Difficulty	-0.9175	-0.8390
	(0.7777)	(0.7653)
Constant	7.5655	8.5738
	(8.6109)	(8.4771)
Adj. R^2	0.079	0.1099
F-statistic	1.85**	2.14**
Observations	130	130

TABLE 5A ctd
Decentralized Organizational Structure: Analysis of the Performance Effect of Employees' Group Choice Behavior

Panel B: OLS Regression with *Boost in Performance* as the Dependent Variable [a]

Independent Variables	Choice of Group A (1)	Choice of Group B (2)
RPI	3.2349*	-2.7317
	(1.8955)	(2.8435)
Performance in Round 1	0.01389	0.1238
	(0.0679)	(0.1104)
Male	6.1980***	-2.5344
	(2.2288)	(2.8785)
Age	-0.8378***	0.5962
	(0.1887)	(0.4268)
Competitiveness	-0.4482	-0.1627
	(0.3749)	(0.5902)
Ability to Cope	0.6164	0.4588
with Stress	(0.4720)	(0.6630)
Conformism	'-0.4059	0.5761
	(0.4951)	(0.6473)
Social Comparison	0.3547	0.4651
Orientation	(0.3889)	(0.5747)
Overconfidence	1.6982**	-0.1645
	(0.8368)	(1.1105)
Risk Attitude	'-0.6253	1.1585*
	(0.4989)	(0.6474)
Locus of Control	0.1122	-0.0711
	(0.4867)	(0.5865)
Task Difficulty	-0.5751	-0.4583
	(0.8677)	(1.4012)
Constant	20.8351**	-25.7436
	(9.8783)	(16.8152)
Adj. R^2	0.3261	0.0501
F-statistic	3.94***	1.24
Observations	74	56

The table reports results of OLS regressions (standard errors in parentheses; p-values are two-tailed).
* p < 0.10, ** p < 0.05, *** p < 0.010

The dependent variable is *Boost in Performance*, which is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Choice of Group A is an indicator variable equal to 1 if participants chose group A and 0 otherwise.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

For a description of the variables based on PEQ questions, see Footnote 11.

[a] Observations are split by participants who chose group A (columns 1 and 2) and those who chose group B (columns 3 and 4).

APPENDIX B: EXPERIMENTAL MATERIALS

This Appendix includes an excerpt of our experimental materials. We show examples for the decentralized organizational structure, where participants receive RPI and can choose their peer group.

General instructions

Screen 1

This experiment consists of two parts (PART 1 and PART 2) and a questionnaire. At the beginning of each part you will receive detailed information about the procedure of the corresponding part.

In both parts you will be given the same work task, which you will perform on your computer. In each part, you can work on the task for 8 minutes.

At the end of the experiment, the software will randomly draw one of the two parts for payment. For answering the questionnaire, you will receive an additional fixed payment of 1000 ECU. In addition, we will ask you for your estimations at some points. The better your estimations are, the more money you will receive.

Hence, your total payout in this experiment is as follows:

Your payout =
Remuneration for the part that has been drawn (part 1 OR part 2)
+ Reward for your estimations
+ 1000 ECU fixed (questionnaire)

Please click on the OK-button to receive the instructions for the first part. If you click on the BACK-button, you will get to the previous page.

<BACK> <OK>

Work task

Screen 1

In the following, we describe the work task that you will perform in both parts.

You will see 48 sliders on your screen. Each slider is initially positioned at the value 0, but can be moved between the values 0 and 100. You can move the slider back and forth for an unlimited number of times. The current position is shown on the right side of each slider. Your task is to position each slider to the value of **exactly 50**, using your PC mouse. You have **8 minutes** to correctly position as many sliders as possible.

The number of correctly positioned sliders will be displayed at the **top left** of your screen. The remaining time in seconds will be displayed at the **top right** of your screen. If you click on the **NEXT-button** at the bottom right of your screen, a **new** screen with 48 sliders will be displayed. Once you click the NEXT-button, you will not be able to get back to the previous screen. In total, there are 5 screens with 48 sliders for you to work on.

Please click on the NEXT-button to go to the next page.

<NEXT>

Screen 2

Before you start **PART 1**, you will go through a practice phase. This is intended to familiarize you with the work task.

During this practice phase, you will not be paid for correctly positioned sliders. Nevertheless, it is in your own interest to take this phase seriously. The more practiced you are in the work task, the more money you will probably earn in the following parts that are being paid.

The practice phase only lasts **2 instead of 8 minutes**. At the end of the 2 minutes, we will show you again how many sliders you have positioned correctly.

Please click on the OK-button to start the practice phase. If you click on the BACK button, you will get to the previous page.

<BACK> <OK>

PART 1

Screen 1

You have completed the practice phase. You now receive **8 minutes** to position as many sliders as possible to the value of **exactly 50** using your PC mouse. When the 8 minutes are over, the work time will stop automatically.

You receive 5 ECU per slider that you have positioned to the value of exactly 50. Sliders that are positioned at a value other than 50 do not count (neither positively nor negatively).

Please click on the NEXT-button to go to the next page.

<NEXT>

Screen 2

The procedure for positioning the sliders, as well as the screen display during the work task is the same as in the previous practice phase. If you want to read the instructions again, click on the INSTRUCTIONS-button.

<INSTRUCTIONS>

Otherwise, please click on the OK-button to answer some basic comprehension questions before you can start. If you click on the BACK-button, you will get to the previous page.

<BACK> <OK>

Screen 3

[comprehension check]

SLIDER TASK IN PART 1

Please click on the START-button to start the work task.

<START>

[if START-button has been clicked]

[if time is up]

The available time of 8 minutes is now over.

Please click on the OK-button to continue.

<OK>

Feedback PART 1

You correctly positioned a total of _____ **sliders**.

If PART 1 is randomly drawn for payout, you will therefore receive _____ **ECU** in addition to your fixed payout of 1000 ECU and the payouts for subsequent questions.

FOR YOUR INFORMATION: In a previous session, participants were given the same work task and remuneration as you for two rounds of 8 minutes each. These participants only learned how many sliders they had correctly positioned themselves. They received no further information.

6 students from this previous session were selected to form two groups of 3 students each, **GROUP A** and **GROUP B**. Group A contains only students who performed above average in this previous session, while Group B contains only students who performed below average.

Average number of sliders
GROUP A (3 participants): _____ **sliders**
GROUP B (3 participants): _____ **sliders**

Please click the OK-button to continue.

<OK>

PART 2

Screen 1

In a few moments, you will start with **PART 2**. You will again be given **8 minutes** to position as many sliders as possible to the value of **exactly 50** using your PC mouse. Before you again start the task, please read the following instructions carefully.

In PART 2, you can now **choose** whether you want to be assigned to GROUP A or GROUP B. **A particular group affiliation does NOT affect the way you can subsequently earn money. You will again receive 5 ECU for each slider that you have positioned to the value of exactly 50.** Sliders that are positioned at a value other than 50 do not count (neither positively nor negatively).

Please click on the NEXT-button to go to the next page.

<NEXT>

Screen 2

At the end of the following part 2, you will again be shown your own number of correctly positioned sliders in part 2 and your resulting compensation.

In addition, you will also see your **rank**, which you occupy within your assigned group in part 2. Note that your rank is determined by comparing your own performance in PART 2 with the performance of the 3 students in your group in Part 2 of the previous session. As each group is made up of 3 students and yourself, your rank can vary from 1 to 4. In case of a tie, you will be shown the middle rank. For example, if you and one other student occupy rank first, you will be shown a rank of 1.5.

You will **NOT** get any more information about how many sliders on average your group has positioned correctly in PART 2.

You will also get **NO** more information about how the students in the other group, or any other student, scored.

Please click on the NEXT-button to go to the next page. If you click on the BACK-button you will get to the previous page.

<BACK> <NEXT>

Screen 3

The procedure for positioning the sliders, as well as the screen display during the work task is basically the same as in the previous PART 1.

The only difference is that now you will as a reminder also see the average number of sliders that the three participants in your group have correctly positioned during PART 1 at the top middle part of your screen.

If you want to read the instructions again, click on the INSTRUCTIONS-button.

<INSTRUCTIONS>

Otherwise, please click on the OK-button to answer some basic comprehension questions before you can choose which group you want to be assigned to. If you click on the BACK-button, you will be get to the previous page.

<BACK> <OK>

Screen 4

[comprehension check]

Screen 5

Please now choose whether you want to be assigned to GROUP A or GROUP B.

Number of sliders in the **previous PART 1**:
YOU: ____ **sliders**

GROUP A (3 participants): on average ____ **sliders**
GROUP B (3 participants): on average ____ **sliders**

Note that at the end of part 2, in addition to your own performance, you will also see your rank within your chosen group in **PART 2**.

- GROUP A
- GROUP B

Please click on the OK-button to start with PART 2.

<OK>

SLIDER TASK IN PART 2

Please click on the START-button to start the work task.

<START>

Individual Feedback at the End of PART 2

You correctly positioned a total of _____ **sliders**.

If PART 2 is randomly drawn for payout, you will therefore receive _____ **ECU** in addition to your fixed payout of 1000 ECU and the payouts for subsequent questions.

Please click the OK-button to continue.

<OK>

Ranking Beliefs PART 2

Screen 1

Before you find out which rank you occupy within your group in Part 2, please give your best estimate on the following two questions.

How do you think you performed in the previous part 2 compared to the performance of the 3 participants in GROUP A and GROUP B?

Please give your best estimate of your RANK within these two groups.

Note that each group is made up of three students. Your rank can therefore lie between 1 and 4.

Example 1: If you answer any of the questions with the number 1, you believe that you will be ranked 1 in that group. This means that you believe that you performed best in that group. Example 2: If you answer any of the questions with the number 4, then you believe that you will be ranked 4 in that group. This means that you believe that you performed worst in that group. Example 3: If you answer any of the questions with the number 3, you believe that you be ranked 3th in that group.

Please click on the NEXT-button to go to the next page.

<NEXT>

Screen 2

You can earn **additional** money with your answers.

At the end of the experiment, the software randomly chooses **ONE** of the following two estimation questions for payout. If your estimate of this selected question is correct, you will receive a **fixed amount of 50 ECU** in addition to the fixed payment of 1000 ECU for completing the questionnaire, the reward for the randomly selected part, and the reward for additional questions.

At the end of the experiment, you will be informed how much you have earned in total by answering the additional questions during the course of the experiment. You will **not** be informed about your rank within the group that you are not affiliated with.

Please click on the OK-button to submit your best estimates in the next step. If you click on the BACK-button, you will get to the previous page.

<BACK> <OK>

Screen 3

FOR YOUR INFORMATION:

Your own number of sliders in **PART 2: ____ sliders**

Average number of sliders in the **previous PART 1**:
GROUP A (3 participants) ____ **sliders**
GROUP B (3 participants) ____ **sliders**

Please first enter your best estimate of your rank in **PART 2** within **GROUP A** (integer between 1 and 4) and click the OK-button to continue:

<OK>

Screen 4

FOR YOUR INFORMATION:

Your own number of sliders in **PART 2: ____ sliders**

Average number of sliders in the previous **PART 1**:
GROUP B (3 participants) ____ **sliders**

Please first enter your best estimate of your rank in **PART 2** within **GROUP A** (integer between 1 and 4) and click the OK-button to continue:

<OK>

Please now enter your best estimate of your rank in **PART 2** within **GROUP B** (integer between 1 and 4) and click the OK-button to continue:

<OK>

Ranking Feedback PART 2

In PART 2, you occupy **the rank ___ out of 4 participants**.

Please click the OK-button to continue.

<OK>

5 REFERENCES

ABELER, J., A. FALK, L. GOETTE, and D. HUFFMAN. 'Reference Points and Effort Provision.' American Economic Review 101 (2011): 470-92.

AKERLOF, G. A., and R. E. KRANTON. 'Economics and identity.' The Quarterly Journal of Economics 115 (2000): 715-753.

AKERLOF, G. A., and R. E. KRANTON. 'Identity and the Economics of Organizations.' Journal of Economic perspectives 19 (2005): 9-32.

AKERLOF, G. A., and R. E. KRANTON. Identity Economics: How Our Identities Shape Our Work, Wages, and Well-Being. Princeton, NJ: Princeton University Press, 2010.

ATKINSON, J. W. 'Motivational Determinants of Risk-Taking Behavior.' Psychological Review 64 (1957): 359-72.

AZMAT, G., and N. IRIBERRI. 'The provision of relative performance feedback: An analysis of performance and satisfaction.' Journal of Economics & Management Strategy 25 (2016): 77-110.

BAILYN, L. 'Autonomy in the industrial R&D lab.' Human Resource Management 24 (1985): 129-146.

BANDIERA, O., I. BARANKAY, and I. RASUL. 'Team incentives: Evidence from a firm level experiment.' Journal of the European Economic Association 11 (2013): 1079-1114.

BAUMEISTER, R. F., and M. R. LEARY. 'The need to belong: Desire for interpersonal attachments as a fundamental human motivation.' Psychological Bulletin 117 (1995): 497-529.

BEACH, S., and A. TESSER. 'Self-esteem and the extended self-evaluation maintenance model: The self in social context.' In Efficacy, Agency, and Self-Esteem, edited by M.

KERNIS, 145-170. New York, NY: Plenum Press, 1995.

BENZ, M., and B. S. FREY. 'The value of doing what you like: Evidence from the self-employed in 23 countries.' Journal of Economic Behavior & Organization 68 (2008): 445-455.

BERGER, L., K. J. KLASSEN, T. LIBBY, and A. WEBB. 'Complacency and giving up across repeated tournaments: Evidence from the field.' Journal of Management Accounting Research 25 (2013): 143-167.

BERNSTEIN, E., J. BUNCH, N. CANNER, and M. LEE. 'Beyond the holacracy hype.' Harvard Business Review (2016): 38-49.

BILLIG, M., and H. TAJFEL. 'Social categorization and similarity in intergroup behaviour.' European Journal of Social Psychology 3 (1973): 27-52.

BLACK, P. W., A. H. NEWMAN, B. R STIKELEATHER, and N. J. WADDOUPS. 'Performance feedback type and employees' subsequent willingness to help other employees.' Journal of Management Accounting Research 31 (2019): 25-39.

BLAINE, B., and J. CROCKER. 'Self-esteem and self-serving biases in reactions to positive and negative events: An integrative review.' In Self-Esteem: The Puzzle of Low Self-Regard, edited by R. F. BAUMEISTER 55-85. New York, NY: Plenum Press, 1993.

BOCK, O., I. BAETGE, and A. NICKLISCH. 'hroot – Hamburg registration and organization online tool.' European Economic Review 71 (2014): 117-120.

BOSS, V., L. DAHLANDER, C. IHL, and R. JAYARAMAN. 'Organizing Entrepreneurial Teams: A Field Experiment on Autonomy over Choosing Teams and Ideas.' Organization Science (2021). Available at `https://doi.org/10.1287/orsc.2021.1520`.

BROOKINS, P., S. BOERG, and S. KUBE. 'Self-chosen goals, incentives, and effort,' Unpublished paper, 2017. Available at `https://www.philipbrookins.com/items/`

2017-10-17-EndoGoals.pdf.

BROWN, J. L., J. G. FISHER, M. SOOY, and G. B. SPRINKLE. 'The effect of rankings on honesty in budget reporting.' Accounting, Organizations and Society 39 (2014): 237-246.

BUSER, T. 'The impact of losing in a competition on the willingness to seek further challenges.' Management Science 62 (2016): 3439-3449.

DATO, S. and P. NIEKEN. 'Gender Differences in Competition and Sabotage.' Journal of Economic Behavior & Organization 100 (2014): 64-80

CHAN, E. W. 'Promotion, relative performance information, and the Peter Principle.' The Accounting Review 93 (2018): 83-103.

CHARNESS, G., L. RIGOTTI, and A. RUSTICHINI. 'Individual behavior and group membership.' American Economic Review 97 (2007): 1340-1352.

CHARNESS, G., D. MASCLET, and M. C. VILLEVAL. 'The dark side of competition for status.' Management Science 60 (2013): 38-55.

CHEN, Y., and S. X. LI. 'Group identity and social preferences.' The American Economic Review 99 (2009): 431-457.

DALTON, P. S., V. GONZALEZ, and C. N. NOUSSAIR. 'Self-chosen goals: Incentives and gender differences,' Unpublished paper, 2016. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2583872.

DECI, E. L., and R. M. RYAN. Intrinsic motivation and self-determination in human behavior. New York: Plenum, 1985.

DECI, E. L., and R. M. RYAN. 'The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior.' Psychological Inquiry 11 (2000): 227-268.

DOHMEN, T. J., A. FALK, D. HUFFMAN, U. SUNDE, J. SCHUPP, and G. G. WAGNER.

'Individual risk attitudes: Measurement, determinants, and behavioral consequences.' Journal of the European Economic Association 9 (2011): 522-550.

DUCH, M. L., M. R. P. GROSSMANN, and T. LAUER. 'z-Tree unleashed: A novel client-integrating architecture for conducting z-Tree experiments over the Internet.' Journal of Behavioral and Experimental Finance 28 (2020): 100400.

ELSTER, J. 'Social norms and economic theory.' Journal of Economic Perspectives 3 (1989): 99-117.

EYRING, H. and G. NARAYANAN. 'Performance Effects of Setting a High Reference Point for Peer-Performance Comparison.' Journal of Accounting Research 56 (2018): 581-615.

FESTINGER, L. 'A theory of social comparison processes.' Human Relations 7 (1954): 117-140.

FISCHBACHER, U. z-Tree: Zurich toolbox for ready-made economic experiments. Experimental Economics 10 (2007): 171-178.

FREY, B. S. 'Awards as compensation.' European Management Review 4 (2007): 6-14.

GAGNÉ, M., and E. L. DECI. 'Self-determination theory and work motivation.' Journal of Organizational Behavior 26 (2005): 331-362.

GAMBARDELLA, A., P. KHASHABI, and C. PANICO. 'Managing autonomy in industrial research and development: A project-level investigation.' Organization Science 31 (2020): 165-181.

GARCIA, S., and A. TOR. 'Rankings, standards, and competition: Task versus scale comparisons.' Organizational Behavior and Human Decision Processes 102 (2007): 95-108.

GIBBONS, F. X., and B. P. BUUNK. 'Individual differences in social comparison: devel-

opment of a scale of social comparison orientation.' Journal of Personality and Social Psychology 76 (1999): 129.

GILL, D., and V. PROWSE. 'A structural analysis of disappointment aversion in a real effort competition.' American Economic Review 102 (2012): 469-503.

GOETTE, L., D. HUFFMAN, and S. MEIER. 'The impact of group membership on cooperation and norm enforcement: Evidence using random assignment to real social groups.' American Economic Review 96 (2006): 212-216.

GOLDSMITH, R. E., R. A. CLARK, and B. A. LAFFERTY. 'Tendency to conform: A new measure and its relationship to psychological reactance.' Psychological Reports 96 (2005): 591-594.

GOLMAN, R., D. HAGMANN, and G. LOEWENSTEIN. 'Information Avoidance.' Journal of Economic Literature 55 (2017): 96-135.

HARTMANN, F., and P. SCHRECK. (2018). 'Rankings, performance, and sabotage: The moderating effects of target setting.' European Accounting Review 27 (2018): 363-382.

HANNAN, R. L., R. KRISHNAN, and A. H. NEWMAN. 'The effects of disseminating relative performance feedback in tournament and individual performance compensation plans.' The Accounting Review 83 (2008): 893-913.

HANNAN, R. L., G. P. MCPHEE, A. H. NEWMAN, and I. D. TAFKOV. 'The effect of relative performance information on performance and effort allocation in a multi-task environment.' The Accounting Review 88 (2013): 553-575.

HANNAN, R. L., G. P. MCPHEE, A. H. NEWMAN, I. D. TAFKOV, and S. J. KACHELMEIER. 'The informativeness of relative performance information and its effect on effort allocation in a multitask environment.' Contemporary Accounting Research 36 (2019): 1607-1633.

HOLDERNESS, D. K., K. J. OLSEN, and T. A. THORNOCK. 'Assigned versus chosen relative performance information: The effect of feedback frequency on performance.' Journal of Management Accounting Research 32 (2020): 137-158.

KAUR, S., M. KREMER, and S. MULLAINATHAN. 'Self-control and the development of work arrangements.' American Economic Review 100 (2010): 624-628.

KAUR, S., M. KREMER, and S. MULLAINATHAN. 'Self-control at work.' Journal of Political Economy 123 (2015): 1227-1277.

KELLY, K., and A. PRESSLEE. 'Tournament group identity and performance: The moderating effect of winner proportion.' Accounting, Organizations and Society 56 (2017): 21-34.

KETKAR, H., and M. WORKIEWICZ. 'Power to the people: The benefits and limits of employee self-selection in organizations.' Strategic Management Journal 43 (2022): 935-963.

KIESSLING, L., J. RADBRUCH, and S. SCHAUBE. 'Self-selection of peers and performance.' Management Science (2021). Available at `https://doi.org/10.1287/mnsc.2021.4267`.

KNAUER, T., F. SOMMER, and A. WÖHRMANN. 'What is a Good Rank? The Effort and Performance Effects of Adding Performance Category Labels to Relative Performance Information.' Contemporary Accounting Research 38 (2021): 839-866.

KOVALEVA, A., C. BEIERLEIN, C. J. KEMPER, and B. RAMMSTEDT. 'Eine Kurzskala zur Messung von Kontrollüberzeugung: Die Skala Internale-Externale-Kontrollüberzeugung-4 (IE-4),' Unpublished paper, 2012. Available at: `https://www.gesis.org/fileadmin/kurzskalen/working_papers/IE4_Workingpaper.pdf`.

KAMER, S., V. S. MASS, and M. VAN RINSUM. 'Relative performance information, rank ordering and employee performance: A research note.' Management Accounting Research 33 (2016): 16-24.

KUHNEN, C. M., and A. TYMULA. 'Feedback, self-esteem, and performance in organizations.' Management Science 58 (2012): 94-113.

LARKIN, I. 'Paying $30,000 for a gold star: An empirical investigation into the value of peer recognition to software salespeople,' Unpublished paper, 2011. Available at https://www.semanticscholar.org/paper/Paying-%2430%2C000-for-a-Gold-Star%3A-An-Empirical-into-Larkin/0199f639bf87dd9c42260a1a3acaac73539e769e.

LATHAM, G. P., and E. A. LOCKE. 'Self-regulation through goal setting.' Organizational Behavior and Human Decision Processes 50 (1991): 212-247.

LAWLER III, E. E., and J. L. SUTTLE. 'Expectancy theory and job behavior.' Organizational behavior and human performance 9 (1973): 482-503.

LAZARUS, R. Emotion and Adaptation. New York, NY: Oxford University Press, 1991.

LEE, M. Y., and A. C. EDMONDSON. 'Self-managing organizations: Exploring the limits of less-hierarchical organizing.' Research in Organizational Behavior 37 (2017): 35-58.

LEE, S. 'The myth of the flat start-up: Reconsidering the organizational structure of start-ups.' Strategic Management Journal 43 (2022): 58-92.

LINDSLEY, D. H., D. J. BRASS, and J. B. THOMAS. 'Efficacy-performing spirals: A multilevel perspective.' Academy of Management Review 20 (1995): 645-678.

LOCKE, E. and G. P. LATHAM. Goal setting: A motivational technique that works! Englewood Cliffs, NJ: Prentice-Hall, 1984.

LOCKE, E. and G. P. LATHAM. A Theory of Goal Setting and Task Performance. Englewood Cliffs, NJ: Prentice-Hall, 1990.

MAHLENDORF, M. D., F. KLEINSCHMIT, and P. PEREGO. 'Relational effects of rela-

tive performance information: The role of professional identity.' Accounting, Organizations and Society 39 (2014): 331-347.

NEWMAN, A. H., and I. D. TAFKOV. 'Relative performance information in tournaments with different prize structures.' Accounting, Organizations and Society 39 (2014): 348-361.

ROGERS, T., and A. FELLER. 'Discouraged by peer excellence: Exposure to exemplary peer performance causes quitting.' Psychological Science 27 (2016): 365-374.

RYAN, R. M., and E. L. DECI. 'Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development and Well-Being.' American Psychologist 55 (2000): 68-78.

SAUTMANN, A. 'Contracts for agents with biased beliefs: Some theory and an experiment.' American Economic Journal: Microeconomics 5 (2013): 124-56.

SCHNEIDER, S., and J. SCHUPP. (2011). 'The social comparison scale: testing the validity, reliability, and applicability of the Iowa-Netherlands Comparison Orientation Measure (INCOM) on the German population,' Unpublished paper, 2011. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1772742.

SCHNIEDER, C. 'How relative performance information affects employee behavior: a systematic review of empirical research.' Journal of Accounting Literature 44 (2021): 72-107.

SCHRECK, P. 'Honesty in managerial reporting: How competition affects the benefits and costs of lying.' Critical Perspectives on Accounting 27 (2015): 177-188.

SEDIKIDES, C. 'Assessment, enhancement, and verification determinants of the self-evaluation process.' Journal of Personality and Social Psychology 65 (1993): 317.

SEDIKIDES, C., and M. J. STRUBE. 'The multiply motivated self.' Personality and Social Psychology Bulletin 21 (1995): 1330-1335.

SHANG, R., M. A. ABERNETHY, and C. Y. HUNG. 'Group identity, performance transparency, and employee performance.' The Accounting Review 95 (2020): 373-397.

SMITH, R. 'Assimilative and contrastive emotional reactions to upward and downward social comparisons.' In Handbook of Social Comparison: Theory and Research, edited by J. SULS and L. WHEELER, 173-200. New York, NY: Kluwer Academic/Plenum Publishers, 2000.

TAJFEL, H., and J. C. TURNER. 'An integrative theory of intergroup conflict.' In The Social Psychology of Intergroup Relations, edited by W. AUSTIN and S. WORCHEL, 33-47. Monterey, CA: Brooks Cole, 1979.

TAFKOV, I. D. 'Private and public relative performance information under different compensation contracts.' The Accounting Review 88 (2013): 327-350.

TAYLOR, S. E., E. NETER, and H. A. WAYMENT. 'Self-evaluation processes.' Personality and Social Psychology Bulletin 21 (1995): 1278-1287.

TESSER, A. 'Toward a self-evaluation maintenance model of social behavior.' In Advances in Experimental Social Psychology, edited by L. BERKOWITZ, 181-228. San Diego, CA: Acade, 1988.

THOMAS, T. F. 'Motivating revisions of management accounting systems: An examination of organizational goals and accounting feedback.' Accounting, Organizations and Society 53 (2016): 1-16.

TOWRY, K. L. 'Control in a teamwork environment-The impact of social ties on the effectiveness of mutual monitoring contracts.' The Accounting Review 78 (2003): 1069-1095.

TURNER, J. C., M. A. HOGG, P. J. OAKES, S. D. REICHER, and M. S. WETHERELL. Rediscovering the social group: A self-categorization theory. basil Blackwell, 1987.

VAN LENT, M., and M. SOUVERIJN. 'Goal setting and raising the bar: A field experiment.' Journal of Behavioral and Experimental Economics 87 (2020): 101570.

VILLEVAL, M. C. 'Performance feedback and peer effects.' In Handbook of Labor, Human Resources and Population Economics, edited by K. F. ZIMMERMANN, 1-38. Springer International Publishing, 2020.

VROOM, V. H. Work and Motivation. NY: Wiley, 1964.

WILLS, T. A. 'Downward comparison principles in social psychology.' Psychological Bulletin 90 (1981): 245-271.

YOUNG, S. M., J. FISHER, and T. M. LINDQUIST. 'The effects of intergroup competition and intragroup cooperation on slack and output in a manufacturing setting.' The Accounting Review 68 (1993): 466-481.

TABLES AND FIGURES

TABLE 1
Centralized Organizational Structure: Descriptive Statistics

Means (Standard Deviations) of *Boost in Performance* split by treatments *NoRPI-Group A, NoRPI-Group B, RPI-Group A, and RPI-Group B*

	NoRPI-Group A (n=34)	**NoRPI-Group B (n=29)**	**RPI-Group A (n=31)**	**RPI-Group B (n=33)**
All participants (n=127)	9.71	2.93	3.26	8.52
	(11.37)	(6.72)	(10.03)	(9.71)
High-Performers (n=55)	8.41	4.38	5.18	11.79
	(9.76)	(5.93)	(8.66)	(10.28)
Low-Performers (n=72)	11.00	2.38	2.20	4.07
	(12.95)	(7.06)	(10.77)	(6.99)

The table shows descriptive statistics of the variable *Boost in Performance* per treatment, once for all participants (line 1), once for *High-Performers* only (line 2), and once for *Low-Performers* only (line 3).

Boost in Performance is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2.

Group assignment is manipulated between-subjects, with participants in the *Group A* (*Group B*) condition being assigned to group A (group B).

Relative performance information is also manipulated between-subjects. Whereas participants in the *NoRPI* condition do not receive relative performance information at the end of round 2, participants in the *RPI* condition observe their rank within their reference group.

High-Performers (*Low-Performers*) are participants whose performance in round 1 lies closest to reference point A (B).

TABLE 2
Centralized Organizational Structure: Test of Hypotheses H1 and H2

OLS regression with *Boost in Performance* as the dependent variable

Independent Variables	**(1)**	**(2)**	**(3)**	**(4)**
RPI	-0.5801	0.5582	5.5841**	6.2917**
	(1.8000)	(1.8099)	(2.4681)	(2.4362)
Group A	0.6954	0.2576	6.7748***	6.3709**
	(1.8000)	(1.8372)	(2.4512)	(2.5352)
Group A x RPI			-12.0319***	-11.5124***
			(3.4482)	(3.4364)
Controls	NO	YES	NO	YES
Constant	6.2112***	19.9821**	2.9310	18.1057*
	(1.6033)	(9.9205)	(1.8006)	(9.5200)
Adj. R^2	-0.0139	0.0849	0.0699	0.1602
F-statistic	0.13	1.97**	4.16***	2.85***
Observations	127	127	127	127

The table reports results of OLS regressions (standard errors in parentheses; p-values are two-tailed). The full regression results including controls are relegated to Appendix A.

* p < 0.10, ** p < 0.05, *** p < 0.010

The dependent variable is *Boost in Performance*, which is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Group A is an indicator variable that is equal to 1 if participants are assigned to group A and 0 otherwise.

TABLE 3
Decentralized Organizational Structure: Descriptive Statistics

Panel A: Means (standard deviations) of *Performance in Round 1* and of *Boost in Performance*, and relative frequencies of *Choice of Choice of Group A* split by treatments *NoRPI* and *RPI* [a]

	NoRPI (n=65)	**RPI (n=65)**
Performance in Round 1	38.51	41.8
	(18.35)	(14.39)
Boost in Performance	4.66	6.43
	(10.79)	(7.75)
Choice of Group A	53.84%	60%

Panel B: Share of participants who chose group A (group B) split by treatments *NoRPI* and *RPI* [b]

	NoRPI (n=65)		**RPI (n=65)**	
	Choice of Group A (n=35)	**Choice of Group B (n=30)**	**Choice of Group A (n=39)**	**Choice of Group B (n=26)**
Participants performing above reference point A (n=12)	71.43%	28.57%	60%	40%
Participants performing between reference point A and B (*Medium-Performers*; n=97)	59.09%	40.91%	66.04%	33.96%
Participants performing below reference point B (n=21)	28.57%	71.43%	14.29%	85.71%

TABLE 3 ctd
Decentralized Organizational Structure: Descriptive Statistics

Panel C: Means (Standard Deviations) of *Boost in Performance* split by treatments *NoRPI* and *RPI* and by whether participants chose group A or group B [c]

	NoRPI		RPI	
	Choice of Group A (n=35)	**Choice of Group B (n=30)**	**Choice of Group A (n=39)**	**Choice of Group B (n=26)**
All participants (n=130)	2.49	7.20	7.92	4.19
	(10.75)	(10.43)	(6.46)	(9.03)
High-Performers (n=71)	3.00	17.57	8.27	4.82
	(12.05)	(7.07)	(6.18)	(11.21)
Low-Performers (n=59)	1.50	4.04	6.78	3.73
	(8.07)	(9.23)	(7.63)	(7.44)

[a] Panel A shows descriptive statistics of the variables *Performance in Round 1*, *Boost in Performance*, and *Choice of Group A* per treatment.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

Boost in Performance is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2.

Choice of Group A is an indicator variable equal to 1 if a participant chose group A and 0 otherwise.

Relative performance information is manipulated between-subjects. Whereas participants in the *NoRPI* condition do not receive relative performance information at the end of round 2, participants in the *RPI* condition observe their rank within their reference group.

[b] Panel B shows the share of participants who chose group A (group B) per treatment. Observations are split by whether, in round 1, participants performed above reference point A (line 1), between reference points A and B (referred to as *Medium-Performers* in subsequent analyses) (line 2), or below reference point B (line 3).

[c] Panel C shows descriptive statistics of the variable *Boost in Performance* per treatment and split by whether participants chose group A or group B. Results are reported once for all participants (line 1), once for *High-Performers* only (line 2), and once for *Low-Performers* only (line 3).

High-Performers (*Low-Performers*) are participants whose performance in round 1 lies closest to reference point A (B).

TABLE 4
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel A: Probit regressions with *Choice of Group A* as the dependent variable

Independent Variables	(1)	(2)	(3)	(4)
Performance in Round 1	0.0258***	0.0301***	0.0270***	0.0331***
	(0.0071)	(0.0088)	(0.0090)	(0.0107)
RPI	0.0691	0.1007	0.2034	0.4274
	(0.2301)	(0.2638)	(0.6251)	(0.6936)
Performance in Round 1 x RPI			-0.0034	-0.0084
			(0.0146)	(0.0164)
Constant	-0.8824***	-5.5188***	-0.9305**	-5.6534***
	(0.3119)	(1.6135)	(0.3758)	(1.641)
Controls	NO	YES	NO	YES
Pseudo R^2	0.0807	0.2121	0.0809	0.2136
Log likelihood	-81.6925	-70.0097	-81.6658	-69.8804
χ^2	14.33***	37.70***	14.39***	37.96***
Observations	130	130	130	130

Panel B: Probit regressions with *Choice of Group A* as the dependent variable (observations restricted to *Medium-Performers*) [a]

Independent Variables	Medium-Performers (1)	Medium-Performers (2)	Medium-Performers (3)	Medium-Performers (4)
Performance in Round 1	0.0508***	0.0556***	0.0834***	0.1077***
	(0.0144)	0.0164	(0.0244)	0.0300
RPI	0.0281	0.0258	2.2871*	3.4582**
	(0.2779)	0.3256	(1.2531)	1.4804
Performance in Round 1 x RPI			-0.0574*	-0.0884**
			(0.0312)	0.0375
Constant	-1.7293***	-5.6031***	-2.9608***	-8.1345***
	(0.5861)	2.0053	(0.9399)	2.3733
Controls	NO	YES	NO	YES
Pseudo R^2	0.1089	0.2303	0.137	0.2797
Log likelihood	-57.0109	-49.2427	-55.2147	-46.0813
χ^2	13.93***	29.47***	17.52***	35.79***
Observations	97	97	97	97

TABLE 4 ctd
Decentralized Organizational Structure: Analysis of Peer Group Choice Behavior

Panel C: Probit regressions with *Choice of Group A* as the dependent variable (observations split by *Medium-Low-Performers* and *Medium-High-Performers*) [b]

Independent Variables	Medium-Low-Performers (1)	Medium-Low-Performers (2)	Medium-High-Performers (3)	Medium-High-Performers (4)
Performance in Round 1	0.2255***	0.1892	0.0840	0.0857
	(0.0827)	0.1356	(0.0609)	0.0757
RPI	8.8366***	10.8818**	4.3253	3.2218
	(3.4041)	5.2951	(3.4618)	4.3365
Performance in Round 1 x	-0.2832**	-0.3369*	-0.0945	-0.0722
RPI	(0.1101)	0.1724	(0.0741)	0.0928
Constant	-7.1234***	-10.0593*	-3.1465	-9.6921*
	(2.5390)	5.3429	(2.8082)	4.9527
Controls	NO	YES	NO	YES
Pseudo R^2	0.1961	0.4737	0.0392	0.1819
Log likelihood	-20.7914	-13.612	-31.0598	-26.4486
χ^2	10.14**	24.5**	2.54	11.76
Observations	38	38	59	59

The table reports results of Probit regressions (standard errors in parentheses; p-values are two-tailed). The full regression results including controls and tables reporting average marginal effects are relegated to Appendix A. * p < 0.10, ** p < 0.05, *** p < 0.010

The dependent variable is *Choice of Group A* which is an indicator variable that is equal to 1 if participants chose group A and 0 otherwise.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

[a] Observations are restricted to *Medium-Performers*.

Medium-Performers are participants who, in round 1, performed between reference points A and B.

[b] Observations are split by *Medium-Low-Performers* (columns 1 and 2) and *Medium-High-Performers* (columns 3 and 4).

Medium-Low-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point B.

Medium-High-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point A.

TABLE 5
Decentralized Organizational Structure: Analysis of the Performance Effect of Employees' Group Choice Behavior

Panel A: OLS regression with *Boost in Performance* as the dependent variable

Independent Variables	**(1)**	**(2)**	**(3)**	**(4)**
RPI	1.5627	1.6877	-3.6573	-2.5338
	(1.6493)	(1.6846)	(2.4607)	(2.5073)
Choice of Group A	-1.5505	-0.3396	-6.1720**	-4.1317*
	(1.7542)	(1.8472)	(2.3754)	(2.4815)
Choice of Group A x RPI			9.0958***	7.3120**
			(3.2482)	(3.2610)
Performance in Round 1	0.0917	0.0467	0.1060**	0.0654
	(0.0530)	(0.0585)	(0.0519)	(0.0581)
Controls	NO	YES	NO	YES
Constant	1.9645***	7.5655	3.9047*	8.5738
	(2.2695)	(8.6109)	(2.3164)	(8.4771)
Adj. R^2	0.0098	0.079	0.0608	0.1099
F-statistic	1.43	1.85**	3.09**	2.14**
Observations	130	130	130	130

TABLE 5 ctd
Decentralized Organizational Structure: Analysis of the Performance Effect of Employees' Group Choice Behavior

Panel B: OLS regression with *Boost in Performance* as the dependent variable (observations split by those who chose group A and those who chose group B) [b]

Independent Variables	Choice of Group A (1)	Choice of Group A (2)	Choice of Group B (3)	Choice of Group B (4)
RPI	5.4379**	3.2349*	-4.0201	-2.7317
	(2.0456)	(1.8955)	(2.5886)	(2.8435)
Performance in Round 1	0.0487	0.01389	0.1651**	0.1238
	(0.0702)	(0.0679)	(0.0771)	(0.1104)
Controls	NO	YES	NO	YES
Constant	0.2995	20.8351**	2.0645	-25.7436
	(3.4804)	(9.8783)	(2.9603)	(16.8152)
Adj. R^2	0.0706	0.3261	0.0675	0.0501
F-statistic	3.77**	3.94***	2.99*	1.24
Observations	74	74	56	56

The table reports results of Probit regressions (standard errors in parentheses; p-values are two-tailed). The full regression results including controls and tables reporting average marginal effects are relegated to Appendix A.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$

The dependent variable is *Choice of Group A* which is an indicator variable that is equal to 1 if participants chose group A and 0 otherwise.

RPI is an indicator variable equal to 1 if participants are provided with RPI and 0 otherwise.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

[a] Observations are restricted to *Medium-Performers*.

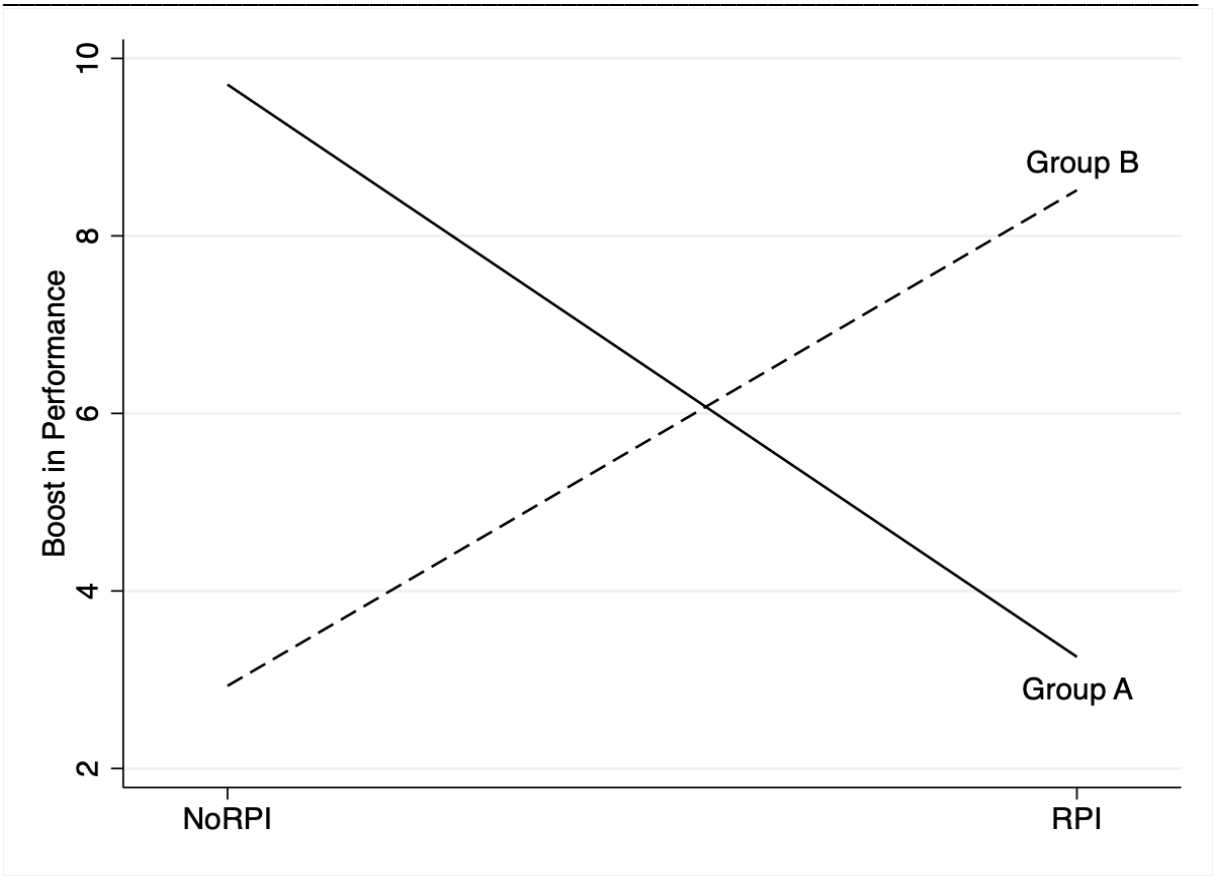
Medium-Performers are participants who, in round 1, performed between reference points A and B.

[b] Observations are split by *Medium-Low-Performers* (columns 1 and 2) and *Medium-High-Performers* (columns 3 and 4).

Medium-Low-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point B.

Medium-High-Performers are participants whose performance in round 1 lies between reference points A and B but closest to reference point A.

FIGURE 1
Centralized Organizational Structure: Effect of RPI on Boost in Performance Split by Group A and Group B

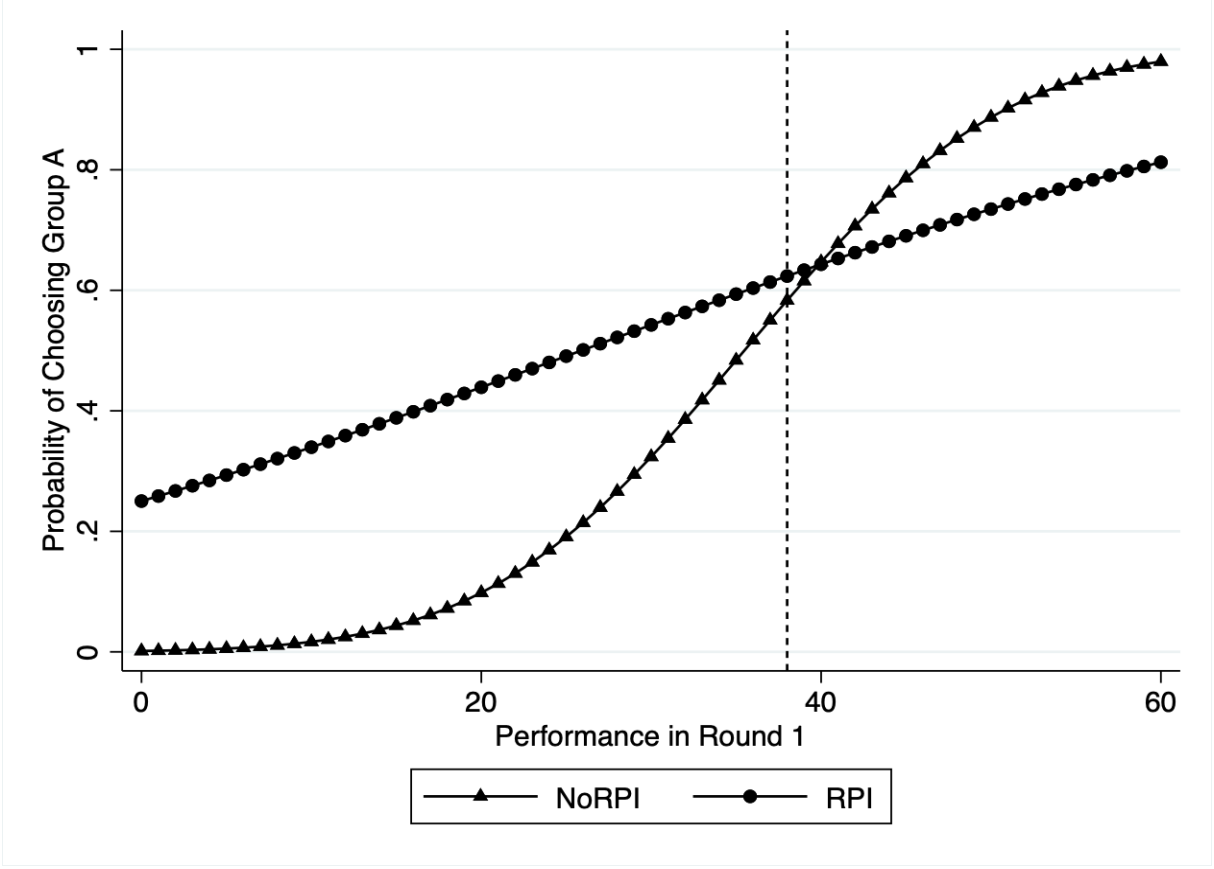


The figure illustrates the change of the mean Boost in Performance between the two treatment conditions *RPI* and *NoRPI*, where the different lines represent observations of participants assigned to group A and group B, respectively.

Boost in Performance is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2. Group assignment is manipulated between-subjects, with participants in the *Group A* (*Group B*) condition being assigned to group A (group B).

Relative performance information is also manipulated between-subjects. Whereas participants in the *NoRPI* condition do not receive relative performance information at the end of round 2, participants in the *RPI* condition observe their rank within their reference group.

FIGURE 2
Decentralized Organizational Structure: Effects of RPI on the Probability to Choose Group A



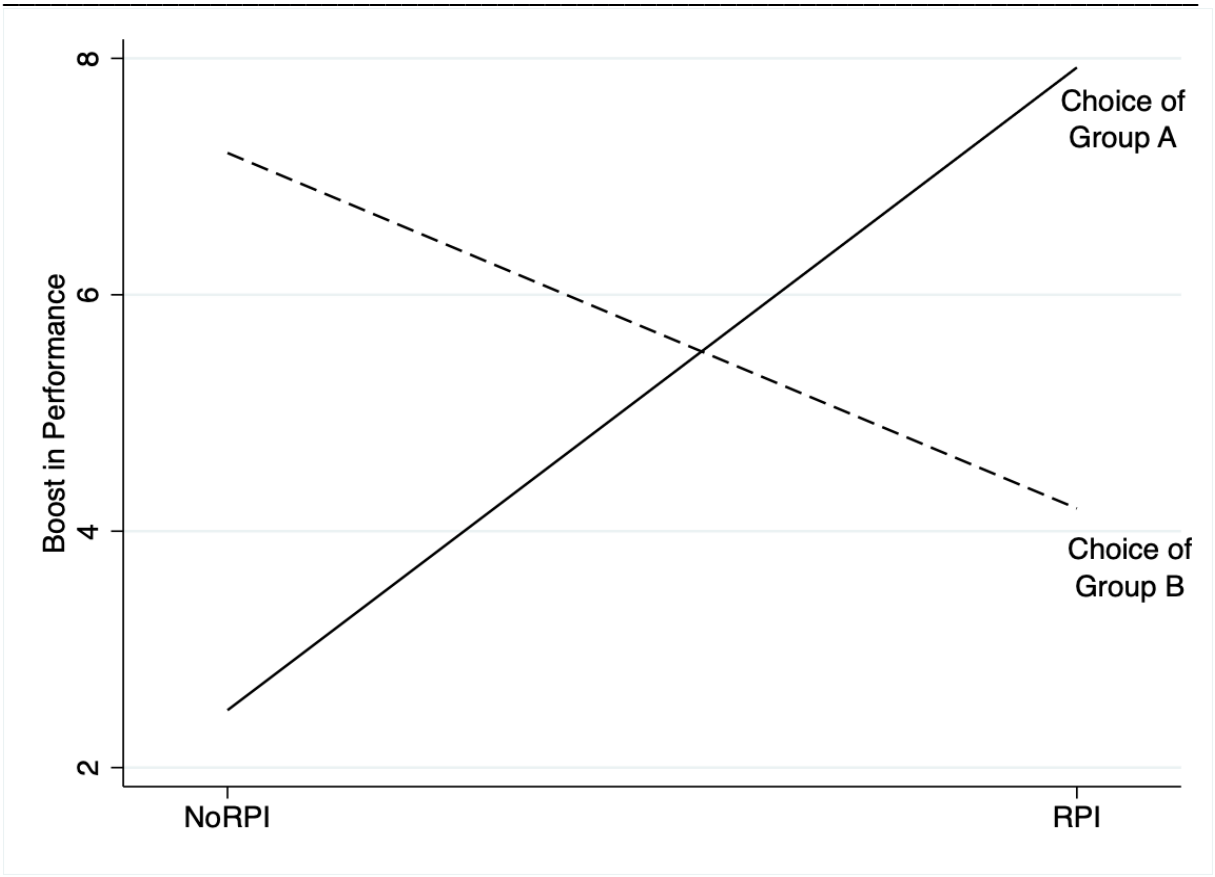
The figure shows an interaction plot for the Probit regression of the probability to choose group A as a function of *Performance in Round 1*. Observations are restricted to *Medium-Performers*. The different lines represent different levels of *RPI*. The vertical line shows the midpoint of the distance between reference point A and B.

Relative performance information is manipulated between-subjects. Whereas participants in the *NoRPI* condition do not receive relative performance information at the end of round 2, participants in the *RPI* condition observe their rank within their reference group.

Performance in Round 1 is measured using the number of correctly placed sliders in round 1.

Medium-Performers are participants who, in round 1, performed between reference points A and B.

FIGURE 3
Decentralized Organizational Structure: Boost in Performance Split by Group Choices



The figure illustrates the change of the mean *Boost in Performance* for participants who chose group A (group B) when receiving RPI compared to participants who chose group A (group B) when not receiving RPI.

Boost in Performance is defined as the absolute increase of participants' number of correctly placed sliders from round 1 to round 2.

Relative performance information is manipulated between-subjects. Whereas participants in the *NoRPI* condition do not receive relative performance information at the end of round 2, participants in the *RPI* condition observe their rank within their reference group.