Contents lists available at ScienceDirect

Organizational Behavior and Human Decision Processes

journal homepage: www.elsevier.com/locate/obhdp

Social undermining as a dark side of symbolic awards: Evidence from a regression discontinuity design☆

Teng Li [a], Runjing Lu [b,*]

[a] International School of Business and Finance and Institute of Advanced Finance, Sun Yat-sen University, China
[b] University of Alberta, 116 St & 85 Ave, Edmonton, AB T6G 2R3, Canada

A B S T R A C T

In this paper, we study the effects of non-monetary symbolic awards on winners, losers, and their peers. Using a regression discontinuity design, we examine post-award performance differences between those who barely won a symbolic performance award and those who came just short of winning the award in a large insurance company (Study 1). Our findings show that awarded workers performed worse than their non-awarded counterparts, and worse performance was more severe in more competitive teams. Building on these findings, we explore potential mechanisms using an incentivized real-effort experiment (Study 2). The experiment reveals that award winners' worse post-award performance relative to unawarded workers was driven by social undermining in the form of deliberate sabotage by coworkers, rather than award winners' own behavioral changes due to negative motivational effects.

1. Introduction

How to properly motivate and reward workers is a central question in organizational behavior research (Conroy et al., 2015). Among the possible ways to motivate worker performance, extrinsic incentives have received a disproportionate share of scholarly attention (Gallus and Frey, 2016). Notably, researchers have uncovered potential negative consequences of extrinsic incentives, such as undermining intrinsic motivation and inducing social comparison (Deci et al., 2001, Nickerson and Zenger, 2008). Because monetary incentives (e.g., performance-based pay) are particularly prone to such corrosive effects (Erez et al., 1990, Gerhart et al., 2009, Gneezy et al., 2011), non-monetary incentives, such as symbolic awards, are considered promising alternatives.

Symbolic awards are a special type of non-monetary incentive whose value resides primarily in the public recognition of recipients (Gallus and Frey, 2016). There are various forms of symbolic awards, ranging from gold medals to merit certificates and purely symbolic recognition (e.g., awarding the title of "Employee of the Month"). From a theoretical perspective, by publicly recognizing recipients' *competence* and strengthening their *ties* to the bestowing organizations, symbolic awards tap into two important determinants of intrinsic motivation (Ryan and Deci, 2000); they are expected to enhance participants' motivation and thus lead to higher performance. Consistent with this theoretical conjecture, most prior research has documented positive effects of symbolic awards on participants' performance.[1] From a practical perspective, symbolic awards also have cost advantages because they substitute symbolic content (e.g., status) for actual material rewards (e.g., prize money). Cognizant of these advantages, a growing number of organizations have developed symbolic award programs to motivate their employees to perform better (Nelson, 2012).

Yet, despite the widespread use of symbolic awards in many domains, there has been little attention to their potential pitfalls. Several theories in organizational behavior and psychology suggest that symbolic awards may negatively impact recipients' own motivation and effort, leading to *negative motivational effects* on performance. First, self-determination theory (Deci and Ryan, 1985, Ryan and Deci, 2000) posits that intrinsic motivation is directly linked with the extent to which

☆ An earlier version of this paper circulated under the name "Symbolic Awards at Work: A Regression Discontinuity Design." We are grateful to Evan Polman (the associate editor) and three anonymous referees for their insightful comments. We are deeply indebted to Gordon Dahl and Lorenz Goette for their support and guidance. We would also like to thank Ach Adhvaryu, Anik Ashraf, Pranshant Bharadwaj, Leonardo Burtstyn, Julie Cullen, Jeffrey Clemens, Robert Dur, Jana Gallus, Susanne Neckermann, Ricardo Perez-Truglia, Sally Sadoff, Marta Serra-Garcia, participants at SOLE, EMCON, Warwick PhD conference, ACLEC, UCSD seminars, and NUS seminars for their helpful comments. Finally, we thank Manman Cai, Bing Ling, Jinyang Ren, and students in the Yunzhouxing group for their help with the experiment in Study 2. All errors are our own.

* Corresponding author.
E-mail addresses: liteng27@mail.sysu.edu.cn (T. Li), runjing1@ualberta.ca (R. Lu).

[1] For example, Ashraf, Bandiera, and Lee (2014), Gallus (2017), Kosfeld and Neckermann (2011), Levitt et al. (2016), and Neckermann et al. (2014). See Gallus and Frey (2016) for a review.

https://doi.org/10.1016/j.obhdp.2022.104184
Received 20 February 2021; Received in revised form 26 July 2022; Accepted 10 August 2022

participants internalize the criteria associated with an incentive, and their ability to control those criteria. Therefore, symbolic awards based on predetermined performance criteria may crowd out participants' intrinsic motivation to perform the award-related task, leading to worse performance in the task. Second, research on people's propensity for moral behaviors (Monin and Miller, 2001, Mullen and Monin, 2016) suggests that individuals are less likely to behave in a socially desirable way when they believe they have fulfilled the obligation to do so ("licensing"). If award recipients infer they have exceeded organizational expectations on the award-related task, they may feel licensed to reduce effort in the task, resulting in deteriorated performance after the award recognition (e.g., Frey and Gallus, 2017, Rogers and Feller, 2018). Finally, according to the goal pursuit literature (e.g., Förster et al., 2005, Liberman and Förster, 2000), individuals who set attaining a symbolic award as their goal may disengage from behaviors directed at achieving the goal (e.g., working hard) and have poorer performance in the goal-directed task after they receive the award.

In line with these arguments, several researchers have found that winning symbolic awards leads award recipients to change behaviors and as a result, perform worse. For example, students who received an award for perfect attendance were subsequently absent more often from school (Robinson et al., 2021), Fields Medal winners published fewer academic papers after they won the award (Borjas and Doran, 2015), and firms whose CEOs received awards subsequently had worse stock and operating performance relative to their prior level and the level of control firms (Malmendier and Tate, 2009).

Although the above theories and studies provide a valuable theoretical foundation and empirical evidence that symbolic awards can cause recipients to perform worse after the award recognition, they have taken an *intrapersonal* approach by focusing on how awards affect recipients' *own* post-award behaviors. However, people do not work in a vacuum; most employees work in teams and frequently interact with coworkers. By publicly recognizing award recipients, symbolic awards are likely to change the dynamics between the recipients and their coworkers, affecting *coworkers'* behaviors and thereby influencing the award recipients' subsequent performance. It is important to understand and distinguish this *interpersonal* channel from the intrapersonal one, because they entail different organizational responses to address and may prevail in different settings. In this paper, we extend the literature on awards by studying how symbolic awards can lead coworkers to sabotage award recipients and cause the recipients to underperform, both relative to their prior level and to the level of their unawarded counterparts.

Past research has demonstrated that workers often assess their level of effectiveness in a task by comparing themselves to coworkers (Buunk and Gibbons, 2007, Festinger, 1954). A high-performing coworker may be perceived as a threat to others' status or ability to obtain limited organizational resources, resulting in feelings of envy among colleagues (Cohen-Charash, 2009, Duffy and Shaw, 2000, Lazear, 1989, Smith and Kim, 2007), and prompting social undermining (Duffy et al., 2012, Lam et al., 2011, Tai et al., 2012). Social undermining behaviors, ranging from withholding necessary information to ostracizing and poaching customers (e.g., Breidenthal et al., 2020, Cropanzano et al., 1997, Duffy et al., 2012, Larkin et al., 2012), could worsen targeted employees' performance. For instance, Eissa, Chinchanachokchai, and Wyland (2017) found that a higher-level of self-reported social undermining experienced at work was related to worse job performance among employees at various U.S. organizations. Symbolic awards that highlight award recipients' superior performance may inadvertently make the recipients a salient benchmark for social comparison, leading to social undermining of them. Given these arguments, we hypothesize that symbolic awards can incite coworker social undermining of awarded employees and cause the latter's performance to deteriorate.

The setting of our first study (Study 1) was the largest branch of a leading insurance firm in China. This branch employed at least 4,000 insurance salespeople in a single quarter during our sample period. We exploited a natural experiment based on a symbolic performance award in the branch. Specifically, we compared the subsequent performance of salespeople whose performance barely exceeded the award threshold ("barely winners") against those whose performance fell just below the threshold ("barely losers") in a regression discontinuity (RD) design. Our findings show that barely winners exhibited *worse* performance relative to both their own prior performance and that of barely losers after receiving the award. In addition, winners' performance deterioration was more severe in teams where competition for limited organizational resources was more intense among teammates.

To examine whether social undermining, negative motivational effects, or both drive award winners' worse post-award performance, we conducted Study 2, an incentivized real-effort experiment among undergraduate and master students in a top 10 university in China. The main task for participants was to correctly answer calculation questions within a time limit in exchange for payment, and participants who scored high would receive a symbolic performance award. We operationalized social undermining in the experiment by allowing coworkers (who did not participate in answering calculation questions) to adjust participants' scores in exchange for potential economic gain. We experimentally varied the availability of social undermining and measured the extent to which this option was exercised. Our findings show that barely winners' post-award performance was worse than that of barely losers *only* when social undermining was allowed. In addition, nearly 80 percent of the post-award performance gap between barely winners and barely losers was attributable to the higher level of social undermining exercised by coworkers of barely winners than coworkers of barely losers. These findings provide strong evidence that social undermining is the main driver of award winners' poorer performance compared to non-recipients after the award recognition, while award winners' own behavioral changes due to negative motivational effects play a negligible role. Finally, the consistency in results between Study 1 and Study 2 despite differences in participants and awarded tasks suggests that our findings will likely generalize to other settings with similar features.

Our findings contribute to the literature in three ways. First, we present the first causal evidence that winning symbolic awards lead award recipients to underperform in the workplace, relative to their prior level and to the level of their unawarded counterparts. Most prior studies have found positive effects of symbolic awards on performance, whether it is ex-ante performance in anticipation of future awards or post-award performance after awards are conferred. In terms of effects on ex-ante performance, Ashraf et al. (2014), Kosfeld and Neckermann (2011), and Levitt et al. (2016) documented that participants performed better in experimental tasks (e.g., taking exams or data entry) ex ante when symbolic recognition was offered as an incentive than when they were not. In terms of effects on post-award performance, Gallus (2017) found that Wikipedia contributors who received a symbolic award remained active on the platform longer afterwards than contributors who did not receive any awards. Moreover, Bradler et al. (2016), Hoogveld and Zubanov (2017), and Neckermann and Yang (2017) showed that award non-recipients performed better than participants in control conditions with no award incentives.

Negative effects of symbolic awards on performance have only been documented in very few papers among students or non-traditional workers, such as academics and CEOs (Borjas and Doran, 2015, Malmendier and Tate, 2009, Robinson et al., 2021). Our contribution is that we document a negative effect of symbolic awards on the post-award performance of award recipients who are regular workers in traditional workplaces. Given that awarded employees are often high performers and that the effect we documented is substantial, symbolic awards could generate costs sufficient enough to matter for firms' bottom line. Our findings should spur discussion in academia and firms alike about the use and design of symbolic awards.

Second, our results reveal social undermining as a novel channel through which symbolic awards negatively affect recipients' post-award

performance. Previous research on awards has mainly adopted an intrapersonal perspective and cited negative motivational effects of awards to explain why award recipients' performance deteriorated after awards were conferred (Borjas and Doran, 2015, Malmendier and Tate, 2009, Robinson et al., 2021). In contrast, we apply the theories of social comparison (Campbell et al., 2017, Festinger, 1954, LePine and Van Dyne, 2001) and social undermining (Duffy, Ganster, and Pagon, 2002) to the domain of symbolic awards and show that awards can induce coworkers to engage in social undermining which in turn harms awarded workers' post-award performance. Our findings highlight the importance of taking coworker behaviors into account when designing incentive programs. Failing to do so could result in unintended negative consequences, offsetting the benefits of incentives. Our paper, by identifying social undermining as the channel through which symbolic awards could potentially hurt awarded employees, also provides insight into how organizations may seek to alleviate the undesired consequences of symbolic awards without sacrificing the benefits of symbolic awards.

Third, we contribute to the literature on social undermining (e.g., Duffy et al., 2012, Lam et al., 2011, Tai et al., 2012). We directly measure the extent of social undermining rather than relying on survey-based measurements and thus are able to quantify the amount of social undermining induced by status differences (from symbolic awards). Our finding that winners' worse post-award performance is more severe in teams with more intense competition for resources among teammates also strengthens evidence from previous studies that competitive organizational climates incite social undermining (Duffy et al., 2008, Dunn and Schweitzer, 2006, Vecchio, 2000).

2. Theoretical background and hypotheses

2.1. Positive effects of symbolic awards

Employee performance is critical to the overall success of a company. How to improve worker performance has been a central question for management theory and practice since the time of Frederick Taylor (Pfeffer, 1976). One common incentive organizations use to improve worker performance is symbolic awards. There are two main types of symbolic awards: prospective and retrospective. Retrospective awards acknowledge a job well done after a task is completed and come as a surprise to recipients. In contrast, prospective awards are pre-announced, i.e., the criteria for earning the award are stipulated in advance. Aspirants can thus work towards fulfilling the criteria in order to attain the award. One common example of prospective awards is "Employee of the Month," which is often pre-announced and publicly recognizes top performers based on predefined criteria. In this paper, we focus on prospective symbolic awards.

Researchers have proposed various theoretical reasons why symbolic awards may lead to better performance of participants, whether it is ex-ante performance in anticipation of future awards or post-award performance after awards were conferred. First, by publicly recognizing competence, symbolic awards can provide recipients with a positive self-image or social image and motivate them to subsequently perform better (e.g., Ariely et al., 2009, Benabou and Tirole, 2002, DellaVigna et al., 2012, Gallus, 2017, Kolstad, 2013, Kosfeld and Neckermann, 2011, Neckermann et al., 2014). In addition, symbolic awards can be used to identify role models, and award criteria can be used to convey organizational norms and values (Lieberman et al., 2019). Consistent with this argument, symbolic awards have been shown to motivate non-recipients via the role model effect or via non-recipients' desire to conform to the norm (e.g., Bradler et al., 2016, Hoogveld and Zubanov, 2017, Neckermann and Yang, 2017). Finally, symbolic awards may also strengthen the ties of award participants and recipients to the bestowing organizations and induce reciprocal behaviors, such as working hard and performing well (e.g., Akerlof and Kranton, 2005, Fehr and Schmidt, 1999, Gallus, 2017, Kube, Maréchal, and Puppe, 2012).

Consistent with the above theoretical conjecture, most papers have documented *positive* effects of symbolic awards on participants' performance across various professions, tasks, and countries. In terms of effects on ex-ante performance, Ashraf et al. (2014) and Levitt et al. (2016) documented that health trainees in Zambia and elementary to secondary school students in the United States achieved higher scores in exams when symbolic awards were offered as an incentive than when they were not; relatedly, Kosfeld and Neckermann (2011) showed that university students in Zurich performed better in data entry in anticipation of a symbolic recognition. In terms of effects on post-award performance, Gallus (2017) found that Wikipedia volunteers who received a randomly assigned symbolic award remained active on the platform longer afterwards than volunteers in the control condition where awards were not offered. In addition, Bradler et al. (2016), Hoogveld and Zubanov (2017), and Neckermann and Yang (2017) showed that university students (in Germany, Netherlands, and China, respectively) who failed to receive a symbolic award subsequently outperformed in midterm exam or data entry compared to participants in control conditions without any award incentives.

It is worth emphasizing that all but one of the above studies were conducted in Western cultures, and all are lab or field experiments involving researcher intervention and installation of new award programs. However, national culture could moderate incentive effectiveness (North, 1990), and experiments could be subject to the experimenter effect (Rosenthal, 1976). Therefore, studying award programs in a different culture and well-established award programs initiated by firms themselves could deepen our understanding of the conditions under which awards work or fail.

2.2. Potential negative effects of symbolic awards

Despite increasing academic attention to symbolic awards, only recently have scholars begun to explore unintended *negative* consequences of these awards. This is an important shortcoming, given the widespread use of symbolic awards across many organizations in various domains. In the sections below, we draw on extant theory to identify potential reasons why symbolic awards may negatively impact award recipients' performance by changing their own behaviors and those of their coworkers.

2.2.1. Intrapersonal perspective: Negative motivational effects

From an *intrapersonal* perspective, symbolic awards may negatively affect award recipients' own motivation and effort, thereby reducing their ex-ante or post-award performance. These negative motivational effects on performance have been highlighted in literature on self-determination theory, licensing and conformity, and disengagement after goal attainment.

First, symbolic awards can lead to a *motivation crowding-out* effect, eroding award participants' intrinsic motivation and worsening their subsequent performance. According to self-determination theory (SDT; Deci and Ryan, 1985, Ryan and Deci, 2000), intrinsic motivation, generated for the sake of a task itself rather than the prospect of instrumental gain and loss, is an important determinant of performance. Past papers found that intrinsically motivated individuals on average exerted more effort and performed better in school (Gottfried, 1985, Vansteenkiste, Lens, and Deci, 2006) and at work (Grant, 2008). However, extrinsic incentives may erode intrinsic motivation. Under STD, the motivation crowding-out effect of an extrinsic incentive depends on participants' degree of autonomy and self-determination in the incentive program. The less participants internalize the criteria and rules associated with the incentive, and the less autonomy and control they have over such criteria and rules, the more likely the incentive is to erode intrinsic motivation. Consistent with this reasoning, Cerasoli et al.'s (2014) meta-analysis reveals that contingent incentives which are directly and clearly tied to measurable performance criteria are more prone to crowding out participants' intrinsic motivation. Symbolic

awards based on pre-announced criteria may thus erode participants' intrinsic motivation to perform the award-related task.

When extrinsic incentives crowd out intrinsic motivation, offering such incentives could worsen performance (Gneezy et al., 2011). For instance, paying people to donate blood could lower the fraction of people willing to donate (Titmuss, 1970), and giving a small compensation to people for collecting charity donations reduced their effort and performance in doing so (Gneezy and Rustichini, 2000). Not only could such deleterious effects be present when extrinsic incentives are in place, they could also occur after extrinsic incentives are removed. For example, Meier (2007) showed that although a matching incentive (e.g., match 25 to 50 cents for a dollar) increased donations when the incentive was in place, donations dropped below the pre-incentive level after it was removed.

While most papers on motivation crowding-out effects concern monetary incentives and altruistic behaviors, non-monetary symbolic awards could also crowd out intrinsic motivation of award recipients or top performers and negatively affect their performance. We are only aware of two studies that provide evidence for a motivation crowding-out effect of symbolic awards on performance. Robinson et al. (2021) found that middle school students who were offered a prospective award for perfect attendance had more absences than the control group after the newly installed award was removed. However, older individuals are less responsive to nonfinancial rewards than younger individuals (Levitt et al., 2016). It is thus unclear whether the documented effect among teenagers applies to adult workers. Relatedly, Gubler et al. (2016) studied a prospective award for perfect attendance among factory workers. They found that the attendance of internally motivated workers, who were already punctual before the award program began, worsened once they lost award eligibility (i.e., after arriving late to work one time). It is worth pointing out that this award program deviated from a traditional symbolic award program in that it included a small monetary reward (i.e., a $75 gift card raffled off among eligible employees) and there was no award ceremony, which limited positive social image building. The empirical evidence is thus still lacking for a motivation crowding-out effect of purely symbolic awards with proper public recognition in the workplace.

Second, symbolic awards may cause awarded recipients to reduce effort and lower performance because of licensing and conformity preference. Awards often implicitly convey organizational expectations and norms to participants. Research on *licensing* suggests that people are less inclined to behave in a socially desirable way when they believe they have fulfilled the obligation to do so (Monin and Miller, 2001, Mullen and Monin, 2016). Thus, individuals whose past performance exceeds expected thresholds may feel licensed to reduce their future effort and perform worse than before. For instance, Kuhnen and Tymula (2012) showed that individuals who received private feedback that they ranked higher than expected in a calculation task subsequently lowered their performance. If award recipients infer from winning symbolic awards that they have exceeded organizational expectations, they may feel licensed to reduce effort going forward, leading to worse future performance.

Additionally, the theory of *conformity* (Bernheim, 1994) predicts that individuals who perceive themselves as deviating from the norm change their behaviors to conform. For example, using a field experiment in a Bangladeshi sweater factory, Ashraf (2019) showed that workers who ranked higher than their friends in a public ranking reduced their subsequent performance to avoid outperforming their friends. If award recipients interpret themselves as outperforming others and deviating from the average performance (i.e., the norm) in the awarded task, they may reduce effort to conform, resulting in poorer performance in the future.

According to our best knowledge, only two studies found that symbolic awards negatively affect the performance of award recipients or top performers due to licensing or conformity preference.[2] In a study of middle school students who received a surprise retrospective attendance award, Robinson et al. (2021) concluded that awarded students worsened their subsequent attendance because they inferred that they had exceeded school attendance expectations and felt licensed to be absent. In addition, Bursztyn and Jensen (2015) found that top performing secondary school students reduced their performance in a SAT preparatory course to avoid appearing on an academic leaderboard because of their desire to conform to the norm of not studying hard. Although the two studies provide valuable evidence that symbolic awards can negatively affect the performance of award recipients and high performers, they focused on relatively inconsequential tasks and school-age students who are arguably immature. These findings may not apply to job performance directly tied to income and mature adult workers. Therefore, it remains unclear whether symbolic awards still lead to licensing or conformity preference and worsen award recipients' subsequent job performance in regular workplaces.

Finally, symbolic awards may lead to worse performance among award recipients by inducing *disengagement after goal attainment*. The goal pursuit literature has argued that goal attainment may lead to disengagement from behaviors directed at achieving that specific goal and result in worse performance in the goal-directed task (e.g., Denzler, Förster, and Liberman, 2009, Förster et al., 2005, Kanfer and Chen, 2016, Liberman and Förster, 2000, Marsh, Hicks, and Bink, 1998). For instance, Ferguson and Bargh (2004) found that participants who achieved their goals in a word creation game evaluated goal-relevant objects less positively than participants who were actively pursuing the goal. If individuals set a goal of attaining a symbolic award, those who have achieved it may experience disengagement from the awarded task and invest less effort in the task afterwards. As a result, award recipients would perform worse in the task compared to their prior level and that of their unawarded counterparts.

Research evidence supports the negative effect of post-goal disengagement on the performance of award recipients. Borjas and Doran (2015) showed that Fields Medal winners published less after receiving the award because they reallocated effort from writing papers to exploring new topics. In addition, Malmendier and Tate (2009) documented that CEOs who won prestigious titles like "CEO of the Year" shifted their effort to activities outside their firms (e.g., writing books) and underperformed relative to their prior performance and non-winning CEOs.

Given the above evidence and theorizing, we contend that symbolic awards can lead to negative motivational effects, causing award recipients to decrease effort and perform worse relative to their prior performance and non-recipients after awards are conferred. This detrimental effect on performance can occur in the absence of coworkers or other external forces because recipients' own behavioral change is the culprit.

2.2.2. Interpersonal perspective: Social comparison and undermining

Individuals seldom work alone; most of them interact with coworkers on a daily basis. Symbolic awards, which publicly recognize award recipients, may not only affect recipients' own behaviors but also those of their coworkers. It is thus important to take coworkers into account when analyzing the impact of symbolic awards. Therefore, we adopt an *interpersonal* approach and draw on theories of social

[2] Previous studies on awards have mostly documented conformity preference among unawarded participants or lower performers, which led them to improve performance after awards were conferred (Bradler et al., 2016, Hoogveld and Zubanov, 2017, Neckermann and Yang, 2017).

comparison and social undermining to understand why and how symbolic awards may induce undesirable behavioral changes of coworkers, thereby negatively affecting award recipients' performance.

Employees constantly engage in social comparison to gauge their relative standing in the workplace (Campbell et al., 2017, Festinger, 1954, LePine and Van Dyne, 2001). Past research on social comparison has demonstrated that workers often assess their own task performance by comparing themselves to those who are close to them, such as coworkers (Buunk and Gibbons, 2007, Festinger, 1954). Individuals who observe a fellow worker receive recognition or perform well may perceive their own status as threatened, doubt their ability to compete for limited organizational resources, or develop feelings of envy (Cohen-Charash, 2009, Duffy and Shaw, 2000, Lazear, 1989, Smith and Kim, 2007). Studies have found that, in response, individuals may engage in social undermining to sabotage the fellow worker, hoping to improve their own status and alleviate negative emotions (Duffy, Ganster, and Pagon, 2002, Duffy et al., 2012, Lam et al., 2011, Tai et al., 2012).

Social undermining is defined as a form of negative behavior "[i]ntended to hinder, over time, the abiliy to establish and maintain positive interpersonal relationships, work-related success, and favorable reputation" (Duffy, Ganster, and Pagon, 2002). As implied by the definition, social undermining likely harms the performance of those who are targeted. Examples of workplace social undermining behavior include withholding needed information and help, and poaching customers, which could directly affect the performance of targeted workers; and ostracizing and spreading rumors, which could induce psychological withdrawal and lower organizational commitment, thereby indirectly affecting targeted workers' performance (e.g., Breidenthal et al., 2020, Cropanzano et al., 1997, Duffy et al., 2012, Larkin et al., 2012). In support of the negative effect of social undermining on performance, Duffy, Ganster, and Pagon (2002) found that Slovenian police officers who reported to have experienced a higher level of undermining at work showed more counterproductive behaviors, such as extended breaks from work. Surveying employees at various organizations in the United States, Eissa, Chinchanachokchai, and Wyland (2017) documented that workers who said they experienced a higher-level of undermining at work had poorer job performance through the mediation of self-esteem and creativity.

Symbolic awards that publicly recognize top-performing employees may inadvertently make award recipients salient benchmarks of social comparison and incite social undermining. We thus contend that symbolic awards can lead to social undermining of award recipients and negatively impact their performance, even when award recipients do not experience negative motivational effects and maintain the same level of effort.

Scholars have further pointed out that workers undermine not only higher-status or better-performing colleagues, they may also undermine those with lower status or poorer performance because at a minimum, they want to maintain their status into the future (Garcia et al., 2010, Bothner et al., 2007, Pettit et al., 2010, Scheepers et al., 2009). Social comparison theory (Festinger, 1954) and findings on status momentum (Pettit et al., 2013) imply that workers compare their past development against colleagues' recent development and use these temporal trends to predict their future relative status. If trends suggest that their future status will be overtaken by a colleague, workers may engage in social undermining even when the colleague currently has lower status and performance. For example, senior workers ("old dogs") may undermine top-performing junior colleagues ("rising stars") who they think will soon surpass them. Supporting this argument, Reh et al. (2018) found that participants in a verbal ability test chose to undermine counterparts with sharply increasing performance trajectories, regardless of whether said counterparts actually performed better than them. Therefore, even when award recipients are relatively junior, they can still be targeted by social undermining because awards signal the recipients' high future potential and senior colleagues may perceive the recipients as threats to future status.

In competitive organizations with limited opportunities for status and scarce resources, employees can only improve their status and acquire more resources at the expense of others (Cohen-Charash, 2009). Scholars have thus argued that social undermining is more easily incited in competitive organizational climates (Duffy et al., 2008, Dunn and Schweitzer, 2006, Vecchio, 2000). This line of thought suggests that award recipients are more likely to suffer from social undermining in more competitive environments because the stakes of losing status and having worse relative performance are higher for their coworkers. Therefore, symbolic awards may have a stronger negative effect on the performance of award recipients when competition among workers is stronger.

Based on the above evidence and theorizing, we expect symbolic awards to induce social undermining of award recipients, with negative repercussions for recipients' performance. Since social undermining is perpetrated by coworkers, award recipients' worse post-award performance compared to non-recipients should only occur when coworkers are present. In addition, social undermining should be more severe when there is stronger competition between coworkers and award recipients for resources or status, leading to more severe performance decreases among recipients in more competitive environments.

2.3. Hypotheses

Taken sections 2.2.1 and 2.2.2 together, we have the following contentions. If symbolic awards lead to negative motivational effects, award recipients will decrease effort and perform worse relative to both their prior performance and non-recipients after awards are conferred. Since recipients' own behavioral change is the culprit, this deleterious effect can occur in the absence of coworkers. If symbolic awards induce social undermining of award recipients, award recipients will perform worse post award, and particularly so when coworkers are present because social undermining is carried out by coworkers. Moreover, performance reduction among recipients should be more severe in more competitive environments because social undermining is more intense when there is a stronger competition between coworkers and award recipients.

Hypothesis 1. *After an award is conferred, award recipients exhibit lower performance in an award-related task relative to their prior performance and relative to their unawarded counterparts.*

Hypothesis 2a. *After an award is conferred, award recipients exhibit lower performance in the award-related task relative to their unawarded counterparts because they exert less effort.*

Hypothesis 2b. *After an award is conferred, award recipients exhibit lower performance in the award-related task relative to their unawarded counterparts because they experience more social undermining.*

Hypothesis 3. *After an award is conferred, award recipients' lower performance in the award-related task relative to their unawarded counterparts is more severe in more competitive environments because social undermining is more intense.*

Besides negative motivational effects and social undermining, other reasons may explain why award recipients perform worse than non-recipients after the award designation. We discuss these alternatives in detail in section 3.3.

2.4. Overview of studies

We test our hypotheses in two studies designed to examine the effects of symbolic awards on the performance of award recipients. In Study 1, we analyze data from a quasi-experiment in a large insurance company to examine changes in workers' performance after barely winning or barely losing a symbolic sales performance award. By comparing post-award performance between barely winners and barely losers and

Table 1
Study 1 Summary Statistics.

Variable	N	Mean	Std. Dev.	Minimum	Maximum
Life insurance commission (t + 1)	1,837	2.11	3.38	0.00	14.88
Other insurance commission (t + 1)	1,837	0.27	0.46	0.00	2.52
Number of referrals (t + 1)	1,837	0.19	0.65	0.00	6.00
Income (t + 1)	1,837	4.07	4.60	0.00	20.20
Exit (t + 1)	1,837	0.06	0.21	0.00	1.00
Life insurance commission (t)	1,837	2.47	2.37	0.00	8.91
Other insurance commission (t)	1,837	0.20	0.30	0.00	1.85
Number of referrals (t)	1,837	0.07	0.36	0.00	6.00
Income (t)	1,837	3.87	3.1	0.00	12.06
Duration (t)	1,837	32.22	18.44	1.00	64.00
Male	1,837	0.33	0.47	0.00	1.00
Age	1,837	34.72	7.91	18.00	54.00
Education	1,837	13.78	1.40	9.00	19.00
Urban	1,837	0.49	0.50	0.00	1.00

Notes: This table presents summary statistics for the rookie sample in Study 1. The sample consists of rookies whose standardized first quarter life insurance commission is within 2.75 from the quarterly award threshold. Observation is at the person-by-quarter level. "t" and "t + 1" in parentheses denote the timing when a time-varying variable is measured: t is a rookie's first quarter in the company, and $t + 1$ is the following quarter. Commissions and income are in the unit of 1,000 CNY and are winsorized at 1 % level among all rookies. *Number of referrals* is the number of new recruits referred by a salesperson. *Promotion* equals one if one gets promoted in a quarter, and zero otherwise. *Exit* equals one if one exits the firm in a quarter, and zero otherwise. *Duration* is the number of days worked in a quarter. *Male* is an indicator of being male. *Age* is the age measured in years. *Education* is the amount of education received in years. *Urban* is an indicator of being from urban areas.

examining heterogeneous effects of the extent of within-team competition, we test Hypotheses 1 and 3. In Study 2, we conduct a follow up experiment to understand whether negative motivational effects (Hypothesis 2a), social undermining (Hypothesis 2b), or both drive the findings from Study 1.

3. Study 1: Symbolic awards in the field

In this study, we examine how the performance of award recipients changes relative to their own prior performance and the performance of non-recipients after awards are conferred, and explore heterogeneous effects based on the intensity of workplace competition.

3.1. Methods

3.1.1. Sample

We obtained our data from the largest branch of a leading insurance firm in a city in eastern China (hereafter, "the company"). The company has 12 subbranches, each consisting of 30 teams and 400 salespeople, on average. The two main job levels in the company are salesperson and manager. Salespeople are organized into teams led by managers.

Salespeople are responsible for selling insurance and referring new employees. They have zero base salary and earn income from insurance commissions and bonuses. Two types of insurance products are sold: life insurance and short-term insurance. In the rest of the paper, "life insurance commission" refers to the commission from the *first* annual premium payment; "other insurance commission" refers to lump-sum commissions from short-term insurance.

For salespeople, promotions are based solely on two metrics: life insurance commissions and the number of employee referrals. Salespeople are assessed at the beginning of each quarter based on their performance in the previous quarter. They are promoted if their performance in both metrics is above the threshold for their job level and demoted if their performance is below certain basic requirements. Often, managers assign unreferred new employees who were recruited directly by the company to their most promising subordinates who satisfy all criteria of promotion to manager except for the number of referrals.[3] Salespeople often compete for these referral assignments because recruiting on one's own is not easy.[4] Within-team competition thus largely depends on the number of team members on the verge of promotion.

3.1.2. Measures

"Best Rookie" award. Since the early 2000s, the company has implemented a quarterly award program to recognize the top-performing rookies whose contracts began that quarter. The award is pre-announced to all rookies, and all surveyed salespeople heard about the award when they first joined the company (see Appendix C.1). The 10 rookies with the highest first-quarter life insurance commissions receive the "Best Rookie" award at a company-wide meeting at the beginning of the following quarter. Award winners' rankings and commissions are posted on the board, while information about other rookies is unpublished. The award does not come with any monetary prizes or factor into promotion decisions. Salespeople face the same incentive scheme regardless of their award status.

Variables. The company provided us with data covering all salespeople in the company between January 2013 and December 2016. This dataset includes each salesperson's contract start date and end date (if the contract is terminated), as well as detailed monthly information about their insurance commissions, total income, number of referrals, job level, and insurance cancellations. These performance measures are our main dependent variables; similar measures are commonly used in studies on worker performance (e.g., Bradler et al., 2016). The data also include demographic information, including gender, age, years of education, and urban status, which we used as controls, in line with previous studies (e.g., Gubler et al., 2016). Our key explanatory variable is being a "Best Rookie" award recipient, cross-validated using the company's award list and our own ranking of rookies' first-quarter life insurance commissions. Since the award is conferred quarterly, we aggregated all monthly measures into quarterly data.

We also used data regarding the hierarchical structure of the company to identify each salesperson's direct manager, referrer, referrals, teammates, and subordinates. We defined salespeople as being teammates if they shared the same direct manager at the same time. This team information is necessary to test Hypothesis 3, because within-team competition depends on the number of team members on the verge of promotion to manager.

3.1.3. Data analysis

To estimate the effect of the symbolic award on post-award performance, we could not directly compare winners and losers due to unobserved differences in their abilities. Isolating the effect requires observing two equally accomplished rookies, only one of whom received the award. To approximate this condition, we used a regression discontinuity (RD) design to compare the subsequent performance of two rookies whose first-quarter life insurance commissions were close to the award threshold, one narrowly winning and the other narrowly losing.

[3] Managers need to oversee at least two lower-level managers to be promoted to a higher level, so they are often better off assigning the new recruits to their promising subordinates than to themselves.

[4] On average, it takes eight quarters before a salesperson refers their first employee.

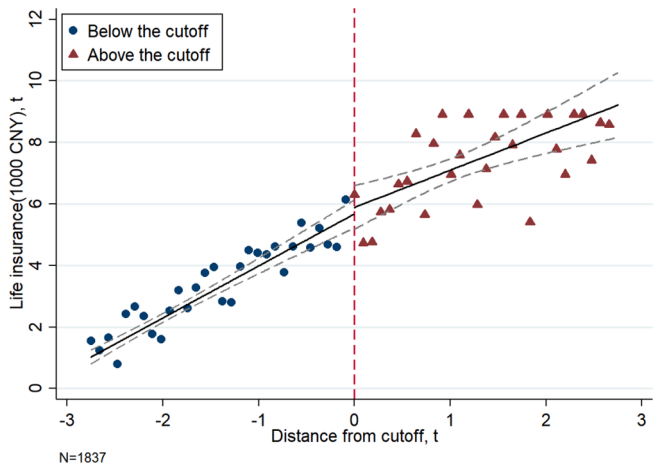


Fig. 1. Study 1 Placebo Test – Pre-award Life Insurance Commission. *Notes:* Each observation is rookies' average life insurance commission in their first quarter in the company (quarter t) in a 0.09 bin based on their standardized first quarter life insurance commission. Dashed vertical line denotes the 10th standardized first quarter life insurance commission in quarter t (normalized to 0). The solid lines are estimated using a linear regression and triangular weights based on individual-level data. The dashed lines denote the 95% confidence interval based on the heteroscedasticity-consistent standard errors.

To construct our sample, we calculated the optimal IK bandwidth using the standardized first-quarter life insurance commission as the running variable (Imbens and Kalyanaraman, 2012).[5] Within the bandwidth, the sample comprised 1,837 rookies, including 115 winners.[6] We used local linear regression with triangular weights to estimate the local average treatment effect (LATE) of winning the award on life insurance commission and other performance measures. The specification is as follows:

$$Y_{i,t+\tau} = \beta_0 + \beta_1 Win_{i,t} + \beta_2 f(StdCommission_{i,t} - Cut_t) + \beta_3 Win_{i,t} \times f(StdCommission_{i,t} - Cut_t) + \beta_4 X_{i,t+\tau} + \alpha_{t+\tau} + \varepsilon_{i,t+\tau} \quad (1)$$

where $Y_{i,t+\tau}$ is the outcome of interest for rookie i measured in the τ^{th} quarter after their first quarter in the company. $Win_{i,t}$ equals 1 if rookie i won the award, and 0 otherwise. The running variable is $StdCommission_{i,t} - Cut_t$, i.e., the difference between a rookie's standardized life insurance commission and the standardized life insurance commission at the award threshold (rank 10) in quarter t. $f(.)$ is a first order function in our main model; we conducted robustness tests using higher order functions. We also included the interaction between $Win_{i,t}$ and $f(StdCommission_{i,t} - Cut_t)$ to allow different slopes of $f(StdCommission_{i,t} - Cut_t)$ on either side of the award threshold. $X_{i,t+\tau}$ is a vector of control variables for rookie i measured in quarter $t + \tau$, including gender, age, age squared, urban status, and years of education. We included quarter-by-year fixed effects $\alpha_{t+\tau}$ to absorb time-varying common shocks to the company. $\epsilon_{i,t+\tau}$ is the error term. β_1 is the coefficient of interest, which measures the impacts of award designation on the subsequent performance of winners relative to losers. Standard errors are heteroscedasticity-consistent.

Table 1 reports summary statistics for the analysis sample. Roughly 33 percent of rookies were male, which is the norm in the insurance industry in China. On average, they had completed 14 years of education, equivalent to "some college." Rookies on average worked for 32 days during their first quarter of employment ("duration") and earned life insurance commissions of 2,470 CNY in their first quarter and 2,110 CNY in their second quarter.[7]

3.2. Results

In this section, we first assess the validity of our RD design and then test Hypotheses 1 and 3 by comparing post-award performance between barely winners and barely losers and studying heterogeneous effects based on the extent of within-team competition.

3.2.1. Validity of the RD design

We examined the baseline performance and characteristics of rookies and their teammates to assess the validity of our RD design. One threat to our RD design is that rookies may perfectly manipulate their insurance sales to barely exceed the award threshold. However, given the large number of rookies in geographically dispersed teams, a lack of public performance disclosure, and high variance in the award threshold across time (see Fig. A1), it is almost impossible for rookies to know the award threshold in advance and manipulate their sales accordingly. In addition, the histogram and density curve of the running variable (i.e., the difference between a rookie's standardized first-quarter life insurance commission and the value at rank 10 in each quarter) show that the density changes smoothly across the award cutoff; moreover, we cannot reject a lack of discontinuity based on the McCrary (2008) test (p value = 0.25) (see Fig. A2).[8]

Furthermore, we compared the baseline performance and demographics for rookies on either side of the award threshold. Fig. 1 demonstrates that rookies' first-quarter life insurance commissions changed smoothly across the threshold. Moreover, Tables 2 and A3 show no evidence of discontinuity at the threshold in rookies' gender, age, education, urban status, duration, other insurance commissions, number of referrals, and total income in the first quarter.

3.2.2. Hypothesis tests

Our data confirm Hypothesis 1: barely winning rookies perform worse relative to their barely losing counterparts and relative to their own prior performance after the award is conferred. Fig. 2 plots rookies' life insurance commissions in the quarter after the award against the running variable, revealing a significant drop in commissions just above the award cutoff, despite a positive slope on either side of it. In other words, barely winning rookies performed *worse* than barely losing rookies, although rookies who ranked higher tended to perform better after the award was conferred. Corresponding regression results are reported in Table 3. Our preferred specification in column (3) shows that in the quarter after the award, commissions for barely winning rookies

[5] The formula is $StdCommission_{i,t}$=[$commission_{i,t}$-$avg(commission_t)$] / $se(commission_t)$. We constructed the running variable using a standardized commission value so that we could compare rankings across quarters.

[6] Table A1 reports the quarterly number of observations and range of ranks included in the rookie sample.

[7] Salespeople in our analytical sample are similar to those in the full sample, as shown in Table A2.

[8] When plotting the density and conducting the McCrary test, we excluded rookies whose rankings matched the award cutoff. We did so because the density of the running variable has a *mechanical* spike at 0 due to the way we constructed the variable, and the McCrary test has lower power in testing the continuity of a density curve with a mechanical spike. To illustrate the issue, we ran the McCrary test on 1,000 sets of simulated data. For each simulation, we generated 800 commissions for each of the 15 quarters (total 12,000 data points) using a uniform distribution based on the minimum and maximum in the actual data. We then ran the McCrary test on the distribution of the running variable calculated using the simulated data. By construction, the simulated data were *not* manipulated and should have passed the McCrary test at the 10 percent level 90 percent of the time. However, the p-value of the McCrary test exceeds 0.1 only 700 out of 1,000 times for the distribution *including* the mechanical spike, but 907 out of 1,000 times for the distribution *excluding* the mechanical spike. This exercise illustrates that excluding the spike at 0 improves power.

Table 2
Study 1 Validity of RD – Baseline Characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)
	Male	Age	Education	Urban	Duration (t)	Exit (t + 1)
Win	0.103	−1.745	−0.282	−0.038	−3.099	0.003
	(0.088)	(1.311)	(0.218)	(0.088)	(2.889)	(0.011)
N obs	1,837	1,837	1,837	1,837	1,837	1,851
R-squared	0.026	0.066	0.132	0.029	0.155	0.011
Top 20 mean (t)	0.349	36.572	13.937	0.532	40.092	0.007
Bandwidth	2.75	2.75	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y	Y	Y

Notes: This table conducts balance tests for the rookie sample in Study 1. See note to Table 1 for variable definitions. *Top 20 mean (t)* refers to the mean of the dependent variable among the top 20 rookies in quarter t. All regressions are estimated using a local linear model and triangular weights. Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

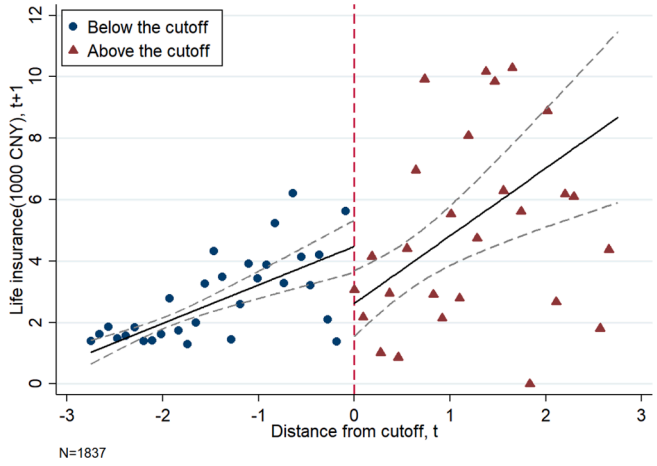


Fig. 2. Study 1 Main Result – Effect of Award on Life Insurance Commission in Quarter t + 1. *Notes:* Each observation is rookies' average life insurance commission in the quarter after an award designation (quarter t + 1) in a 0.09 bin based on their standardized first quarter life insurance commission. Dashed vertical line denotes the 10th standardized first quarter life insurance commission in quarter t (normalized to 0). The solid lines are estimated using a linear regression and triangular weights based on individual-level data. The dashed lines denote the 95% confidence interval based on the heteroscedasticity-consistent standard errors.

were 1,720 CNY lower than commissions for barely losing rookies, amounting to 27 percent of the top 20 rookies' average first-quarter life insurance commission.[9] Estimates remain quantitatively similar when we exclude year-quarter fixed effects or demographic controls in columns (1) and (2).

For robustness, we estimated column (3) in Table 3 using alternative inference methods (see Table A4, panel A); standard errors barely change. Table A4 panels B-E further show that our results are robust to restricting the sample to rookies ranked in the top 20 or fifth to fifteenth, varying the bandwidths between 2 and 3.5, and estimating with higher order polynomials or alternative weights, respectively.

We also plotted the level and percentage changes in rookies' life insurance commissions from the first quarter to the second quarter of employment in Fig. 3. While the average change among barely losers centers tightly around zero, the change among barely winners is

Table 3
Study 1 Main Result – Effect of Award on Life Insurance Commission.

	(1)	(2)	(3)
	Commission (t + 1)	Commission (t + 1)	Commission (t + 1)
Win	−1.857***	−1.803***	−1.720***
	(0.696)	(0.646)	(0.655)
N obs	1,837	1,837	1,837
R-squared	0.078	0.214	0.229
Top 20 mean (t)	6.209	6.209	6.209
Bandwidth	2.75	2.75	2.75
Year × Quarter FE	N	Y	Y
Demographics	N	N	Y

Notes: This table presents the effect of the "Best Rookie" award on the post-award life insurance commission of the rookie sample in Study 1. The dependent variable is the life insurance commission in the quarter after an award designation (quarter t + 1); units are in 1,000 CNY. Column (1) has no control variables, column (2) includes year-by-quarter fixed effects, and column (3) further controls for rookies' gender, age, age squared, education, and urban status. *Top 20 mean (t)* refers to the mean of the dependent variable in quarter t among the top 20 rookies in quarter t. All coefficients are estimated using a local linear model and triangular weights. Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

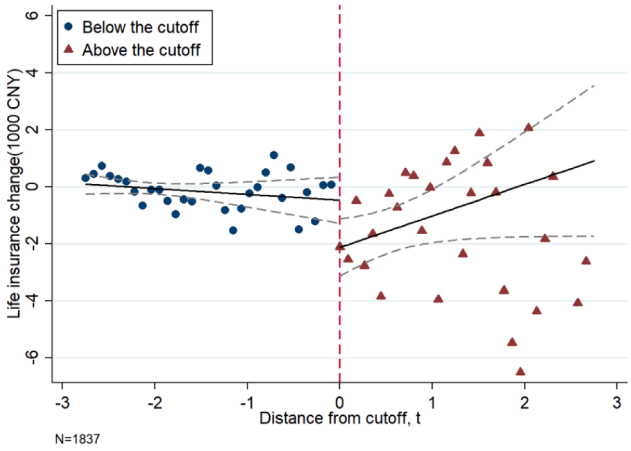
significantly negative.[10] More specifically, the average change for barely winners is −2,439 CNY or −40 percent (p value < 0.01), whereas that for barely losers is only −54 CNY or −0.2 percent (p value > 0.1). This finding confirms Hypothesis 1 that winners also perform worse relative to their own previous performance.

Given an average commission rate of roughly 15 percent, the performance gap of −1,720 CNY between barely winners and barely losers implies a revenue loss of 11,400 CNY (1,720/0.15) per winner per quarter. Moreover, we show in Appendix B that the performance gap remains negative (albeit insignificant) until three quarters after the award designation, implying persistent revenue losses for the firm.

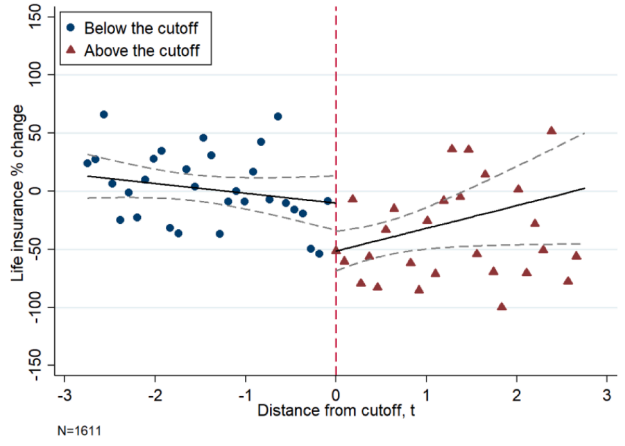
To understand potential mechanisms at work, we surveyed a small group of employees in the company (see Appendix C.1). All surveyed award winners said they increased effort after the award was conferred; 75 percent of surveyed non-recipients said the award winners increased their performance or maintained the same level of performance in life insurance sales post award. These survey responses imply that award recipients' worse post-award performance is likely not driven by their

[9] We used the average for the top 20 rookies (6,209 CNY) rather than all individuals in the rookie sample (2,469 CNY) as the benchmark because the former is more relevant to the discontinuity at rank 10.

[10] Note that the change in life insurance commission for winners on the far right exceeds zero. We refrain from overinterpreting this because the sample size at that end of the curve is small and the precision is low.

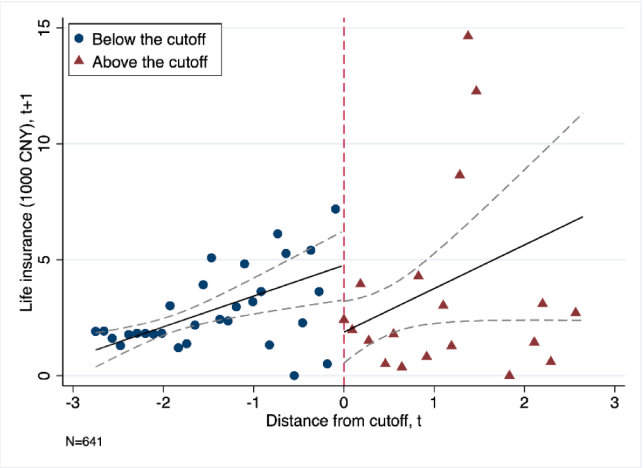


A. Level change

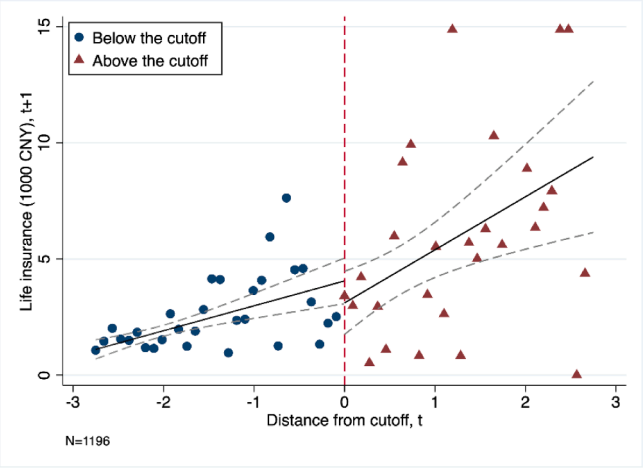


B. Percentage change

Fig. 3. Study 1 Main Result – Effect of Award on Change in Life Insurance Commission from Quarter t to t + 1. *Notes:* Each observation is rookies' average level change (panel A) or percentage change (panel B) in life insurance commission from quarter t to t + 1 in a 0.09 bin based on their standardized first quarter life insurance commission. Dashed vertical lines denote the 10th standardized first quarter life insurance commission in quarter t (normalized to 0). The solid lines are estimated using a linear regression and triangular weights based on individual-level data. The dashed lines denote the 95% confidence interval based on the heteroscedasticity-consistent standard errors.



A. With competitive teammates



B. Without competitive teammates

Fig. 4. Study 1 Testing Social Undermining – Effect of Award on Life Insurance Commission by Presence of Competitive Teammates in Quarter t + 1. *Notes:* Each observation is rookies' average life insurance commission in the quarter after an award designation (quarter t + 1) in a 0.09 bin based on their standardized first quarter life insurance commission. Panel A includes rookies who have at least one competitive teammate while panel B includes those with none. "Competitive teammates" are defined as teammates whose life insurance commission is at least 4,500 CNY in quarter t and who are at job level three and have the same number of referrals (either zero or one) as the rookie at the beginning of quarter t + 1. Dashed vertical lines denote the 10th standardized first quarter life insurance commission in quarter t (normalized to 0). The solid lines are estimated using a linear regression and triangular weights based on individual-level data. The dashed lines denote the 95% confidence interval based on the heteroscedasticity-consistent standard errors.

reduced effort after the award recognition, providing anecdotal evidence against Hypothesis 2a.[11]

In addition, all surveyed award winners said that their teammates, especially those on the verge of promotion to manager, helped them less after the award; 75 percent of surveyed non-recipients agreed that teammates on the verge of promotion experienced more stress when their rookie teammates won the award and over 60 percent said that awarded rookies received less help afterwards. This award-induced change in team dynamics corresponds to within-team competition for an important promotion-related resource in the company: referral assignments. Managers have the sole discretion to allocate new employees recruited via company job fairs, and often assign them to subordinates who satisfy all but the referral criterion for promotion to the manager level. Teammates who are on the verge of promotion (hereafter, competitive teammates) thus compete the hardest to win referral assignments and are the most likely to view award winners as threats who must be undermined.[12]

The above survey responses provide anecdotal evidence to support Hypothesis 3. To formally test this hypothesis, we compared the performance discontinuity between barely winners and barely losers across teams with competitive teammates versus teams without competitive teammates in the quarter after the award (35 versus 65 percent of our

[11] Survey responses are subject to reporting bias, so we do not view them as a definitive test for Hypothesis 2a. We will formally examine this hypothesis in Study 2.

[12] Salespeople who earned over 4,500 CNY in life insurance commissions and made at least two referrals in a quarter would be promoted to the manager level in the following quarter. Therefore, we define competitive teammates as those with life insurance commissions of at least 4,500 CNY in quarter *t* who had the same number of referrals (either zero or one) as their rookie teammate at the start of quarter *t*+1.

Table 4
Study 1 Testing Social Undermining – Effect of Award on Life Insurance Commission by Presence of Competitive Teammates in Quarter t + 1.

	(1)
	Commission (t + 1)
Win	−0.676
	(0.726)
Win × 1(Competitive teammates)	−2.717***
	(0.763)
N obs	1,837
R-squared	0.243
Top 20 mean (t)	6.209
Bandwidth	2.75
Year × Quarter FE	Y
Demographics	Y

Notes: This table presents the heterogeneous effect of the "Best Rookie" award on the post-award life insurance commission of the rookie sample in Study 1 by whether a rookie has at least one competitive teammate in the quarter after an award designation (quarter t + 1). The dependent variable is the life insurance commission in quarter t + 1; units are in 1,000 CNY. Specification mirrors the one in Table 3 column (3) while adding an indicator of having competitive teammates and its interaction with the *Win* dummy. "Competitive teammates" are defined as teammates whose life insurance commission is at least 4,500 CNY in quarter t and who are at job level three and have the same number of referrals (either zero or one) as the rookie at the beginning of quarter t + 1. Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table 5
Study 1 Testing Strategic Allocation Across Time – Effect of Award on *Cancelled* Life Insurance Commission.

	(1) Cancellation (t)	(2) Cancellation (t + 1)	(3) Cancellation (t + 2)	(4) Cancellation (t + 3)
Win	0.253	−0.225*	−0.033	−0.198
	(0.180)	(0.132)	(0.156)	(0.201)
N obs	1,837	1,837	1,716	1,526
R-squared	0.231	0.111	0.070	0.090
Top 20 mean	0.632	0.387	0.282	0.282
Bandwidth	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y
Demographics	Y	Y	Y	Y

Notes: This table presents the effect of the "Best Rookie" award on the cancelled life insurance commission of the rookie sample in Study 1 between the quarter before an award designation (quarter t) and the third quarter afterwards (quarter t + 3). The dependent variable is the amount of life insurance commission cancelled in a quarter; units are in 1,000 CNY. *Top 20 mean* refers to the mean of cancelled commission in a quarter among the top 20 rookies in quarter t. The number of observations decreases from column (1) to column (4) due to rookies' exit from the company. Specification mirrors the one in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

analysis sample). Fig. 4 shows that the discontinuity between barely winners and barely losers is much larger in teams with competitive teammates than in those without. In Table 4, we added an indicator for competitive teammates and its interaction with the *Win* dummy to our main specification. The results show that performance discontinuity is concentrated in teams with competitive teammates, confirming Hypothesis 3. Importantly, the baseline performance and characteristics of barely winners and barely losers as well as their teammates all change smoothly across the award cutoff for both types of teams (see Fig. A3, Table A5, and Table A6).

3.3. Discussion

Apart from negative motivational effects and social undermining, other reasons may explain award recipients' worse performance relative to their own prior performance and that of non-recipients. We now discuss several alternative explanations for our findings.

First, award recipients may use awards to signal high ability to external organizations and exit the company at a higher rate (Spence, 1978). If remaining winners are worse than exiting winners, a negative winner-loser performance gap will emerge among those who stay, in a manifestation of Berkson's (1946) paradox. However, Table 2 column (6) and Table B2 show that there is no difference in the exit rate between barely winners and barely losers from their first quarter in the company (quarter *t*) to their fourth quarter.[13] Therefore, differential exit due to signaling likely does not explain our findings.

Second, strategic behaviors may contribute to winners' worse subsequent performance relative to losers. Two types of strategic behaviors can prevail in our setting. On one hand, rookies may win the award by gaming the system, e.g., selling insurance to themselves and canceling the contract afterwards. On the other hand, award winners may ask teammates to pass on sales to them before the award and return the sales afterwards (potentially with interest). If strategic behaviors are driving our main findings, we would expect to see either a higher rate of policy cancellations among winners after the award, or lower insurance commissions before the award among their teammates but higher commissions after the award. In contrast, Table 5 shows that barely winners had fewer policy cancellations than barely losers in the quarter immediately after the award and no significant difference in cancellations in other quarters.[14] Additionally, Table 6 reveals no discontinuity in life insurance commission between the referrers, managers, and senior teammates of barely winners and those of barely losers in quarters *t*-1 to *t* + 3.[15] There is no discontinuity in other job tasks among these teammates either (see Fig. A4). Overall, strategic behaviors cannot explain our findings.

Third, regression to the mean (Lazear, 2004) or unexpected contemporaneous shocks may lead award winners to perform worse after the award. This is unlikely in our case for several reasons. First, salespeople develop their own customer bases, and the company has no protocol that assigns hard-to-sell regions to high performers. In addition, the award is based on three months of performance, meaning that randomness in sales, a common cause of regression to the mean, should have balanced out. Lastly and most importantly, since award status is quasi-random around the award cutoff, any shocks orthogonal to the award would affect *both* barely winners and barely losers, and thus would not generate performance discontinuity at the cutoff.

Fourth, from a goal-as-reference point perspective (Heath et al., 1999), unawarded rookies may feel badly about not reaching their goal of winning the award, and this may motivate them to work harder, thereby generating a discontinuity at the award cutoff. However, this is inconsistent with Fig. 3, which shows no evidence of barely losers working harder after the award. It is also difficult to understand why losers in teams with competitive teammates work harder than losers in other teams; if anything, the former should work less hard because they are at risk of being undermined if they stand out too much.

[13] The sample size in Table 2 column (6) is larger than the rookie sample because the former also includes rookies who exited in quarter *t*+1 (14 rookies), most of whom were on the far-left side of the award cutoff. Given the low exit rate and the triangular weight centered at the award cutoff, this attrition does not meaningfully impact our RD estimates. Nonetheless, in untabulated results, we applied the Heckman two-step correction to our main specification, using entry time, whether a rookie was referred by their manager, and a rookie's distance to their manager's home to predict their early exit. The results are very similar to our main results.

[14] Policy cancellations are often proportionate to insurance sales. Since barely winners sold less insurance in quarter *t*+1, it is not surprising that they had fewer cancellations.

[15] The smaller sample sizes in columns (1), (4), and (5) are due to mechanical truncation of the sample period or to managers, referrers, and senior teammates exiting the company.

Table 6
Study 1 Testing Strategic Allocation Across Teammates – Effect of Award on Life Insurance Commission of *Rookies' Teammates.*

	(1)	(2)	(3)	(4)	(5)
	Commission (t-1)	Commission (t)	Commission (t + 1)	Commission (t + 2)	Commission (t + 3)
Panel A: Referrers					
Win	−1.146	0.872	−0.000	−2.306	−1.556
	(2.250)	(2.597)	(2.278)	(2.088)	(2.359)
N obs	1,513	1,831	1,833	1,710	1,514
R-squared	0.282	0.247	0.283	0.183	0.200
Top 20 mean	12.377	13.067	14.16	12.109	11.101
Panel B: Managers					
Win	−0.090	0.682	0.791	1.479	1.554
	(3.704)	(3.039)	(2.620)	(5.424)	(3.210)
N obs	1,480	1,729	1,729	1,611	1,425
R-squared	0.165	0.122	0.163	0.144	0.096
Top 20 mean	14.860	13.896	16.799	15.199	13.323
Panel C: Senior teammates					
Win	0.090	0.331	−0.121	−0.298	−0.640
	(0.393)	(0.446)	(0.451)	(0.499)	(0.463)
N obs	3,645	4,306	4,306	4,051	3,803
R-squared	0.071	0.088	0.079	0.079	0.078
Top 20 mean	3.359	3.010	2.905	3.129	3.193
Bandwidth	2.75	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y	Y
Demographics	Y	Y	Y	Y	Y

Notes: This table presents the effect of the "Best Rookie" award on the life insurance commission of rookies' teammates in Study 1 between the quarter before an award designation (quarter t) and the third quarter afterwards (quarter t + 3). The dependent variables are the quarterly life insurance commission of rookies' referrers (panel A), rookies' managers (panel B), and rookies' senior teammates (panel C); units are in 1,000 CNY. *Top 20 mean* refers to the mean of the dependent variable in a quarter among the corresponding teammates of the top 20 rookies in quarter t. The number of observations decreases from column (1) to column (5) due to teammates' exit from the company. Specification mirrors the one in Table 3 column (3) with additional controls for teammates' job levels and an indicator of whether the referrer is also the manager. Heteroscedasticity-consistent standard errors are reported in parentheses.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 7
Study 1 Testing Effort Reallocation Across Tasks.

	(1)	(2)	(3)	(4)	(5)
	Other commission (t + 1)	Referrals (t + 1)	Income (t + 1)	Highest job level	Ever become manager
Win	−0.091	−0.138	−2.032**	−0.391*	−0.026
	(0.061)	(0.128)	(0.854)	(0.216)	(0.063)
N obs	1,837	1,837	1,837	1,837	1,837
R-squared	0.076	0.144	0.176	0.148	0.070
Top 20 mean (t)	0.405	0.491	6.693	3.424	0.149
Bandwidth	2.75	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y	Y
Demographics	Y	Y	Y	Y	Y

Notes: This table presents the effect of the "Best Rookie" award on various post-award performances of the rookie sample in Study 1. The dependent variables in columns (1) to (3) are other insurance commission, number of referrals, and total income in the quarter after an award designation (quarter t + 1), respectively; the dependent variables in columns (4) and (5) are the highest job level of a rookie and an indicator of a rookie ever being promoted to manager by the end of the sample period, respectively. Commission and income are in the unit of 1,000 CNY while other variables are in the unit of one. Specification mirrors the one in Table 3 column (3). *Top 20 mean (t)* refers to the mean of the dependent variable in quarter t among the top 20 rookies in quarter t. Heteroscedasticity-consistent standard errors are reported in parentheses.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Finally, one may argue that barely winners' worse performance in life insurance sales is not costly to the firm. First, winners may reallocate effort to other tasks and perform better in those tasks, balancing out the costs of poorer performance in life insurance sales. However, Table 7 shows that barely winners did not perform better than barely losers in other important job tasks (referral recruitment and other insurance sales) and even earned less total income. Barely winners' highest job level attained was also lower than barely losers', and they were no more likely to be promoted to manager, indicating that the former did not perform better in unobservable tasks that helped their careers either. Second, winners' worse performance may result from their teammates reallocating help away from them to other junior salespeople who in turn may enjoy higher performance. However, non-awarded rookies did not exceed their prior performance levels (Fig. 3), and new recruits in quarter $t + 1$ in teams with a rookie winner did not perform differently from those in other teams (Table A7). These findings also suggest that awards do not generate any positive spillover effects on unawarded workers, casting doubt on the role model effect of awards in the current context.

4. Study 2: Exploring mechanisms driving the effects of symbolic awards

The findings from Study 1 show that recipients of symbolic awards performed worse than non-recipients after awards were conferred, and that the effect was stronger in teams where there was fiercer competition for limited organizational resources among teammates. These findings lend support to Hypothesis 1 that award designations can negatively impact awarded employees' performance and Hypothesis 3 that this deleterious effect is more severe when competition among teammates is more intense.

However, due to data limitations of Study 1, we were unable to conclude whether the worse performance of awarded employees compared to that of their unawarded counterparts was driven by

Table 8
Study 2 Validity of RD – Baseline Characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Award only (AO)		**Award and sabotage (AS)**				**Award and help (AH)**			
	Workers		Workers		Observers		Workers		Observers	
	Male	Age	Male	Age	Male	Age	Male	Age	Male	Age
Win	0.116	1.331	0.004	0.563	0.470	0.87	0.228	1.055	0.190	0.002
	(0.474)	(0.968)	(0.058)	(1.922)	(0.353)	(3.857)	(0.197)	(0.745)	(0.190)	(0.421)
N obs	17	17	22	22	22	22	29	29	29	29
N winners	7	7	9	9	9	9	12	12	12	12
Outcome mean	0.294	20.647	0.136	20.0	0.318	20.864	0.207	20.241	0.345	20.207
Bandwidth	18	18	13	13	13	13	16	16	16	16

Notes: This table conducts balance tests for workers whose scores (or observers whose paired workers' scores) are within the listed bandwidth from the award threshold in the first round of each experiment session in Study 2. Dependent variables are an indicator of being male and the age of participants in years. *Outcome mean* refers to the mean of the dependent variable among participants in the respective regression. All coefficients are estimated using a local linear model and triangular weights. Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***.

Table 9
Study 2 Main Result – Effect of Award on Workers' Score and Observers' Score Adjustment.

	(1)	(2)	(3)	(4)	(5)	(6)
	Award only (AO)	**Award and sabotage (AS)**		**Award and help (AH)**		
	Workers	Workers	Observers	Workers	Observers	
	Score	Score	Adjust	Score	Adjust	Adjust change
Win	−2.991	−12.337**	−9.378**	−2.741	−0.335	−4.663
	(5.008)	(4.901)	(4.055)	(6.333)	(3.312)	(4.871)
N obs	17	22	22	29	29	29
N winners	7	9	9	12	12	12
Baseline mean	72.294	53.955	–	47.414	17.034	–
Bandwidth	18	13	13	16	16	16
Demographics	Y	Y	Y	Y	Y	Y

Notes: This table presents the effect of the "Best Player of the Round" award on workers' score and the score adjustment of workers' paired observers in Study 2. Only workers whose scores (or observers whose paired workers' scores) are within the listed bandwidth from the award threshold in the first round of each experiment session are included. Dependent variables are *Score*, *Adjust*, and *Adjust change*. *Score* refers to workers' final score (raw score plus observers' adjustment). Note that *Score* in column (1) is the raw score because there are no observers in the AO condition. *Adjust* refers to observers' score adjustment in the second round, and is only available for the AS and the AH conditions. A negative *Adjust* represents deliberate sabotage while a positive *Adjust* represents help. *Adjust change* is the change in observers' adjustment from the first to the second round, and is only available for the AH condition. *Baseline mean* refers to the mean of the dependent variable in the first round among the included workers or observers. Note that *baseline mean* is not defined in columns (3) and (6) because there is no adjustment in the first round of the AS condition or adjustment change in the first round of the AH condition. All coefficients are estimated using a local linear model and triangular weights, controlling for participants' gender and age. Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

awarded employees' decreased effort due to negative motivational effects (Hypothesis 2a), social undermining of awarded employees (Hypothesis 2b), or both. Distinguishing between negative motivational effects and social undermining is important because they entail different organizational countermeasures to address. For example, if negative motivational effects are the main mechanism at work, increased supervision and encouragement of awarded employees may help moderate award winners' tendency to reduce effort, thereby alleviating the negative effects. In contrast, if social undermining is the main driving force, firms may consider increasing base salaries or introducing team rewards based on the performance of *all* team members, including award non-recipients, as these changes have been shown to reduce the incentive to undermine coworkers (Flory et al., 2016).

Moreover, if social undermining is the main mechanism behind awarded employees' worse performance compared to unawarded employees, it is important to understand whether this behavior is hostile (e.g., deliberate sabotage) or more benign (e.g., offering less help). Different forms of social undermining have different implications for organizations. If coworkers' social undermining primarily takes the form of offering less help, employees may redirect their helpful behaviors to other junior workers or increase their own effort, which counterbalances the costs associated with awarded employees' worsening performance. However, if coworkers' main form of social undermining is deliberate sabotage, social undermining is unambiguously costly to the firm and should be eliminated.

To differentiate between social undermining (in its various forms) and negative motivational effects, we designed an incentivized real-effort experiment in which we varied the availability of deliberate sabotage and help. This design enabled us to distinguish between the aforementioned mechanisms by comparing awarded and unawarded workers' post-award performances as well as coworker behaviors in the absence of social undermining, in the presence of potential reduction in help (a more benign form of social undermining), and in the presence of potential deliberate sabotage (a more hostile form of social undermining). If negative motivational effects are at work, award recipients should perform worse than their unawarded counterparts after the award is conferred even when sabotage or help is not possible. If social undermining in the form of deliberate sabotage (or reduction in help) is at work, we would expect awarded workers to experience more deliberate sabotage (or reduced help) than unawarded workers after the award recognition; additionally, awarded employees' worse post-award performance relative to non-recipients would be more severe when deliberate sabotage (or a reduction in help) is allowed than when it is not. We pre-registered an analysis plan (https://osf.io/uszf6) before conducting the experiment and shared data and code for the experiment on https://osf.io/ajft9/.

4.1. Sample

We recruited 200 undergraduate and master students from a top 10 university in China to participate in our experiment. Participants were between 18 and 29 years old (average age: 21.2); approximately 80

percent of them were women.

4.2. Procedures and measures

4.2.1. Experimental details

After consenting to participate in the study, each participant was randomly assigned a unique experiment ID and assigned to one of three experimental conditions with different potentials for and forms of social undermining.

The *award only (AO) condition* was the baseline experimental condition in which social undermining was not permitted. All participants in this condition assumed the role of "worker," whose main task was to answer simple two-digit calculation questions within a five-minute time limit.[16] Task performance was measured by the number of correct answers (hereafter referred to as "score") which depended on workers' ability and effort, similar to most tasks in the workplace. Workers began with a score of zero and earned one point for each correct answer provided; their total score at the end of the experiment would be exchanged for payment at a predetermined rate, mimicking the common compensation scheme for sales professionals with no base salary.

In the first round, workers knew that the seven workers with the highest score would be recognized with a "Best Worker" award at the end of the first round. During the award ceremony of the first round, an experiment administrator announced the awarded workers' experiment IDs and posted their rankings and scores on the board. To increase the recognition element of the symbolic award, awarded workers received certificates and a round of applause (see Fig. A5 for a depiction of the award ceremony). Unawarded workers knew their own scores, but not their rankings. In the second round, workers repeated the calculation task, knowing that there would not be award recognition anymore, and that only workers whose second-round scores were at or above the seventh-highest score in the first round (i.e., eligible workers) would move on to the third round. In the third round, workers who succeeded in entering the round were informed that they would receive 50 points without needing to perform any calculation task. This lump sum 50-point payment approximates the expected value of keeping one's job in a firm. Awarded workers' lower effort and performance in the second round relative to their first-round level and relative to unawarded workers' second-round level would support Hypothesis 2a; in other words, awarded workers' poorer performance compared to non-recipients after receiving the award is attributable to awarded workers' reduced effort. We ran two sessions for this condition, each with 20 workers.

Workers in the *award and sabotage (AS)* condition completed the same tasks and faced the same incentives as those in the AO condition except that we randomly paired each worker with an "observer." Observers knew the experiment ID of their paired worker, but workers were not aware of the presence of the observers. In the AS condition, observers could engage in *deliberate sabotage* by subtracting points from their paired worker's score in exchange for potential economic gain. There was no award recognition for observers, and observers' sole reward was monetary payment based on their remaining points at the end of the experiment.

In the first round, observers were given 20 baseline points while waiting for workers to finish answering calculation questions. In the second round, observers were notified of the awarded workers' experiment IDs, scores, and rankings from the first round and knew that awards would not be conferred in the following rounds. Observers then decided how many points to subtract from their paired worker's second-round score. Observers' gain from the point reduction was that they could replace the paired worker to receive 50 points in the third round if the worker's second-round *adjusted* score (original score plus adjustment) was below the seventh-ranked score in the first round. The cost was that observers had to pay one baseline point for each point subtracted from the worker, which would affect observers' remaining points at the end of the experiment, calculated as 20 baseline points - points paid for sabotage + 50 points if they entered the third round (or + 0 point if they did not).[17] We informed observers that a worker's adjusted score and points received in the third round contributed towards the worker's final payment, so observers knew that the point subtraction would negatively affect their paired workers. We designed this conflict of interest to mimic competition between coworkers for limited organizational resources.

If observers chose to subtract points, then they intentionally undermined their paired worker's work-related success for the sake of their own benefit, which is in line with the definition of social undermining in the workplace (Duffy, Ganster, and Pagon, 2002). We thus measured deliberate sabotage as the number of points subtracted. Higher subtraction exercised by the observers of awarded workers compared to the observers of unawarded workers, coupled with worse adjusted scores of awarded workers relative to unawarded workers in the second round would support Hypothesis 2b. In other words, such evidence would indicate that greater social undermining of awarded workers in the form of deliberate sabotage contributes to their worse post-award performance relative to non-recipients. We ran two sessions for this condition, each with 20 workers and 20 observers.

Workers in the *award and help (AH)* condition completed the same tasks and faced the same incentives as those in the AO condition except that we randomly paired each worker with an observer. In the AH condition, observers could add points to their paired worker's score and subsequently engage in social undermining by reducing such help (*reduction in help*) in exchange for potential economic gain. There was no award recognition for observers, and observers' sole reward was monetary payment based on their remaining points at the end of the experiment.

In the first round, while waiting for workers to finish the calculation task, observers received 20 baseline points and decided how many points (0 to 20) to add to their paired worker's score, knowing that the seven workers with the highest adjusted scores would receive a "Best Worker" award at the end of the first round. Points added did not affect observers' baseline points.[18] In the second round, observers saw the awarded workers' experiment IDs, scores, and rankings from the first round and knew that there would not be future awards. Observers again decided how many points (0 to 20) to add to their paired worker's scores, knowing that they could replace the worker to receive 50 points in the third round if the worker's second-round adjusted score was below the seventh-ranked adjusted score in the first round. It again cost them nothing to add points. Observers' points at the end of the experiment thus equaled 70 (20 + 50) points if they entered the third round or 20 points if they did not. Meanwhile, observers knew that a reduction in points added to their paired worker's score would negatively affect the worker's payment because we informed them that the worker's adjusted score and points in the third round contributed to the worker's payment.

The number of points added represents the amount of help observers provided to their paired worker. We measured help change as the change in points added to the worker's score from the first to the second round. If observers chose to reduce their help from the first to the second round, then they intentionally undermined their paired worker's work-related success in exchange for their own benefit. More help reduction

[16] For example, 22+56. The average number of correct answers for a round is 50 in our sample.

[17] Observers had 20 baseline points so could at most subtract 20 points from the parier worker's score.

[18] Tajfel et al. (1971) showed that mere categorization leads to in-group favoritism, i.e., allocating more resources to in-group members than to out-group members. We thus expected observers to add points to their paired worker in the first round since they could gain psychological benefits at no cost. Indeed, all observers in the AH condition chose to add points in the first round.

exercised by the observers of awarded workers than those of the unawarded ones, coupled with worse adjusted scores of awarded workers relative to unawarded counterparts in the second round would again provide support for Hypothesis 2b. In other words, this evidence implies that greater social undermining of awarded workers in the form of reduction in help leads to their poorer performance compared to unawarded workers post award. We ran two sessions for this condition, each with 20 workers and 20 observers.

After each experiment, we asked workers about their performance and effort and observers about their score adjustment decisions. See Appendix C.2 for details.

4.2.2. Regression specification

We adopted the same RD design as in Study 1 to estimate the effect of symbolic awards on awarded workers' performance and observers' social undermining behaviors. We calculated the optimal IK bandwidth using the score in the first round as the running variable and restricted our sample to workers (and their observers) within the IK bandwidth.[19] The specification is as follows:

$$Y_{i,t+\tau} = \gamma_0 + \gamma_1 Win_{i,t} + \gamma_2 f\left(Score_{i,t} - Cut_t\right) + \gamma_3 Win_{i,t} \times f\left(Score_{i,t} - Cut_t\right) + \gamma_4 X_i + \varepsilon_{i,t+\tau} \quad (2)$$

where $Y_{i,t+\tau}$ is the outcome of interest, e.g., raw or adjusted score of worker i, the amount of sabotage on worker i, or the change in the help to worker i. $Win_{i,t}$ equals 1 if worker i won the award in the first round, and 0 otherwise. The running variable is $Score_{i,t} - Cut_t$, the difference between a worker's (adjusted) score and the seventh-ranked score (the award threshold) in the first round. $f(.)$ is a linear function. We included the interaction between $Win_{i,t}$ and $f(.)$ to allow different slopes of the running variable on different sides of the award threshold. X_i refers to worker i's gender and age. $\epsilon_{i,t+\tau}$ is the error term. γ_1 is the coefficient of interest, which measures the impact of award designation on the subsequent performance of barely winners relative to barely losers and social undermining behaviors of their respective observers. Standard errors are heteroscedasticity-consistent.

4.3. Results

We first examined the validity of the RD design in the three experimental conditions. Table 8 demonstrates that neither workers' nor observers' gender or age exhibit any discontinuity at the award threshold. Additionally, Table A8 shows that neither workers' scores nor observers' adjustment amounts in the first round exhibit any discontinuity at the award threshold.[20]

Table 9 presents the main results. Column (1) shows that barely winners and barely losers did not perform differently after the award in the AO condition. Moreover, over 90 percent of winners in the AO condition reported increasing their effort from the first to the second round. These two findings are inconsistent with Hypothesis 2a, suggesting that awarded workers' worse post-award performance compared to their unawarded counterparts is *not* driven by awarded workers' reduced effort.

For the AS condition, column (2) shows that barely winners' adjusted scores in the second round were 12.3 points (23 percent of the mean) lower than barely losers' scores. This performance gap is roughly-four times the gap in the AO condition. Column (3) further shows that the observers of barely winners subtracted 9.4 points more from their paired worker than the observers of barely losers, explaining 76 percent of the post-award performance gap between the awarded and unawarded workers in column (2). In fact, nearly 80 percent of observers in the AS condition subtracted points from their worker's score despite knowing that such behavior would harm the worker's payment. In addition, almost all of the observers who subtracted points cited their desire to obtain points in the third round as their motivation and over half cited the worker's award status (see Appendix C.2). In other words, these observers intentionally sabotaged the performance of their paired worker for the sake of their own benefit, and the worker's award status contributed to this decision. Collectively, our results indicate that symbolic awards incite deliberate sabotage, causing barely winners' worse performance compared to barely losers post award, confirming Hypothesis 2b.

For the AH condition, column (4) shows that barely winners' adjusted scores in the second round were *not* statistically different from barely losers' scores. Columns (5) and (6) further demonstrate that neither the *level* of help in the second round nor the *change* in help from the first to the second round between observers of barely winners and observers of barely losers shows any discontinuity at the award threshold. These results suggest that a reduction in help *alone* is not sufficient to cause a difference in the post-award performance between barely winners and barely losers.

4.4. Discussion

Study 2 complements the observational analysis in Study 1 by providing direct evidence that symbolic awards induce social undermining in the form of deliberate sabotage, leading to recipients' worse performance than non-recipients' after awards are conferred. Moreover, the fact that a large fraction of observers in the AS condition cited the desire to earn more points as their motivation for point subtraction suggests that competition for future rewards and resources could be a moderator of social undermining. This interpretation is also consistent with the finding in Study 1 that barely winners' worse performance compared to barely losers was more severe in teams with more intense competition for limited internal resources.

5. General discussion

We have examined how symbolic awards affect award recipients' post-award performance in the field (Study 1) and explored mechanisms behind the post-award performance gap between awarded and non-awarded workers in an incentivized real-effort experiment (Study 2). Our field study shows that award recipients performed worse than non-recipients after awards were conferred, and that worse performance was more severe in teams with more intense competition among teammates. Our lab experiment further reveals that award winners' worse performance compared to non-recipients was driven by coworkers' social undermining in the form of deliberate sabotage rather than changes in award winners' own behaviors due to negative motivational effects.

5.1. Theoretical contributions

Our research contributes to the literature in several ways. First, our paper provides the first causal evidence that symbolic awards cause award recipients' job performance to deteriorate post award. Most previous research found that symbolic awards either improved the ex-ante performance of participants in anticipation of future awards (Ashraf et al., 2014, Kosfeld and Neckermann, 2011, Levitt et al., 2016) or the post-award performance of award recipients or non-recipients after awards were conferred (Bradler et al., 2016, Gallus, 2017, Hoogveld and Zubanov (2017), Neckermann and Yang, 2017). The very few papers that documented negative effects of symbolic awards on performance focused on students or non-traditional workers, such as academics and CEOs (Borjas and Doran, 2015, Malmendier and Tate, 2009, Robinson et al., 2021). In contrast, Study 1 shows that symbolic awards negatively affect the performance of award recipients who are regular workers in a traditional workplace. Our findings should spur discussion

[19] The running variable is the raw score in the AO and AS conditions and the adjusted score in the AH condition.

[20] Observers' adjustment amounts in the first round were only available in the AH condition.

among researchers and practitioners on the efficacy of symbolic awards in the workplace and the conditions under which they succeed or fail.

Second, we provide evidence of social undermining as a novel channel whereby symbolic awards lead to negative effects on performance. In previous studies on awards, scholars have adopted an intrapersonal perspective and focused on motivational effects of award programs, i.e., how winning an award affects the motivation and behavior of recipients themselves. For example, Robinson et al. (2021) studied retrospective and prospective attendance award programs among middle school students; they cited licensing as an explanation for worse post-award attendance among awarded students and motivation crowding-out for worse attendance among average students after the award program was removed. Additionally, Borjas and Doran (2015) and Malmendier and Tate (2009) argued that Fields medalists and award-winning CEOs performed worse in their tasks (i.e., publishing academic papers and maintaining their firms' stock and operating performance, respectively) because they diverted effort in these tasks elsewhere after the award recognition.

In contrast, we adopted an interpersonal perspective to consider how coworker behaviors and team dynamics affect the efficacy of award programs. Our findings in Study 2 reveal that symbolic awards led coworkers to sabotage award recipients and worsened recipients' subsequent performance while negative motivational effects alone played little role. Study 1 also demonstrates that the deleterious effect on performance was stronger when competition between teammates for internal resources was more intense, potentially because social undermining was more intense in these teams. Taken together, our findings highlight the importance of taking workplace interactions and team dynamics into account when designing incentive programs.

Taking the interpersonal approach further, we also examined spillover effects on the performance of award non-participants who were in the same team as award recipients in Study 1. To our best knowledge, this is the first study on spillover effects of award programs in the firm setting. Previous research on spillover effects of award programs focused on non-firm settings, such as schools and the military, and documented positive effects on the performance of non-recipients (Ager, Bursztyn, and Voth, 2017, Guryan, Kroft, and Notowidigdo, 2009, Moreira, 2016, Sequeira, Spinnewijn, and Xu, 2016). In contrast, we leveraged detailed data on hierarchical structure in a large firm and found no evidence of spillover effects. The lack of positive spillover effects combined with deteriorated performance of award recipients due to social undermining suggests that symbolic awards could hurt firm performance as a whole.

Third, this paper contributes to the literature on social undermining (e.g., Duffy et al., 2012, Lam et al., 2011, Tai et al., 2012). We examined an under-studied trigger of workplace social undermining, i.e., differential status due to symbolic awards. In addition, we directly observed social undermining in Study 2, in contrast to previous research where scholars typically relied on survey-based measurements (e.g., Duffy et al., 2006). Although surveys provide valuable information of the prevalence, motivation, and consequences of social undermining, they may be affected by self-reporting bias (Althubaiti, 2016). To overcome this limitation, we designed an incentivized real-effort experiment to measure social undermining and quantify its impact on performance. Furthermore, our finding in Study 1 that winners' worse post-award performance was more severe in competitive teams also speaks to prior findings that competitive organizational climates incite social undermining (Duffy et al., 2008, Dunn and Schweitzer, 2006, Vecchio, 2000).[21] Finally, we found in Study 1 that workers even undermined coworkers who were more junior than themselves. This finding links to studies on social comparison theory (Festinger, 1954) and status momentum (Pettit et al., 2013), which predict that workers compare their past development against the recent development of others to predict their future relative status, and take action when their future status is threatened, even when their current status is safe.

Finally, we utilized a natural experiment facilitated by an RD design to study the effects of awards. Although regressions are sometimes treated as statistical artifacts in psychology and organizational behavior research, they can offer alternative accounts for judgment biases in experiments and surveys (Fiedler and Unkelbach, 2014). Our work is an example of how regression methods can be used to answer questions of interest in these fields.

5.2. Practical implications

Our results suggest that symbolic awards could lead to unintended cost by inciting social undermining of award recipients; the cost could be especially high when award programs recognize top performers. Top performers are central to the growth of organizations. They are more productive than average workers, role models for others, and more likely to rise to management positions (Morgenroth et al., 2015, Lafortune et al., 2018). A decrease in their performance is likely to have a greater organizational impact. Moreover, top performers who are undermined may never fully recover to achieve their prior level of performance (see Table B1), leading to persistent organizational losses. Our findings have practical relevance and should spur discussion of the use and design of symbolic award programs among researchers and practitioners, given the widespread practice of using awards to motivate employees and the lack of attention to their potential downsides (Robinson et al., 2021).

Study 1 shows that the degree of award-induced social undermining increases as the level of competition rises. This finding demonstrates the importance of taking coworker interaction and team dynamics into account when organizations design award programs. Organizations could consider reducing forms of public recognition that single out top performers in highly competitive environments and other environments more prone to social undermining.

Organizations may alleviate social undermining in the form of deliberate sabotage in several ways. Scholars have suggested using active monitoring and punishment to mitigate social undermining (Chen, 2003). In untabulated results of Study 1, we found that barely winners' worse performance relative to barely losers was less severe when their managers had directly referred them to the company. One explanation is that managers may exert more effort in deterring social undermining when they have close relationships with award winners or when their incomes are more directly tied to award winners' performance. Interviews with employees at the firm confirmed this conjecture. This finding indicates that organizations could consider using managers to monitor and mitigate social undermining among their subordinates.

Improving treatment of workers could be another way to reduce social undermining. According to research on gift-exchange (e.g., Akerlof, 1982), employees may reciprocate good treatment from their employers by working harder or by refraining from unethical behaviors like cheating and sabotage. Flory et al. (2016) found that higher base salaries, when framed as an unexpected bonus, curbed incidences of sabotage in relative pay environments. Organizations concerned about social undermining could consider increasing base salaries, reducing pay dispersion, introducing unexpected and unconditional bonuses, and improving overall treatment of workers.

5.3. Limitations and future directions

While this paper has yielded novel findings, several limitations should be addressed in future research. First, we only estimated the effect of an award on the post-award performance since the data for Study 1 only covered periods when the award was already in place. Given the economically significant decrease in winners' post-award performance

[21] Our finding also relates to the literature on inefficiencies caused by competition in organizations. For example, competition has been shown to discourage or impose a psychological burden on workers (Fang et al., 2020; Smith, 2013).

and lack of positive spillover effects, the award likely incurred substantial costs to the firm ex post. However, we were unable to pin down the net effect of the award, which includes both ex-ante and post-award effects. In future research, scholars can extend our findings by juxtaposing the two effects in other settings.

Second, we focused on non-monetary symbolic awards in this paper, but the erosive effect of inciting social undermining could exist for *monetary* awards. When workers engage in social comparison, they compare not only status and performance, but also income. Pay inequality, actual or perceived, has been shown to lead to job dissatisfaction (Card et al., 2012), have detrimental impacts on group cohesion and cooperation (Breza et al., 2018), and induce sabotage and attrition in individual pay-for-performance compensation systems (Larkin et al., 2012). Therefore, adding a monetary element to symbolic award programs is likely to exacerbate social undermining by creating and highlighting income disparities above and beyond status differences. We encourage scholars to explore the effect of monetary awards in the future.

Third, the awards in our paper were for rookie employees (Study 1) or students who were newly recruited for experimental purposes (Study 2). Such junior workers may be especially prone to the negative effect of social undermining. On one hand, coworkers may be more likely to morally disengage when they face rookie competitors due to a lack of interaction and psychological connection. Since moral disengagement facilitates social undermining (Duffy et al., 2012), junior workers likely receive more social undermining than workers with a longer tenure. On the other hand, junior workers tend to be less skilled at handling colleague relations (Stroube, 2021) and may suffer larger performance losses from social undermining than more experienced workers. Therefore, the negative effect of social undermining caused by awards could be more severe for junior workers than experienced workers. Relatedly, older individuals are better at coping with stress and sabotage at work (e.g., Evans and Johnson, 2000). To the extent that junior workers are younger, they may be worse at dealing with social undermining and suffer more. If the documented negative effects on performance mainly exist among younger and more junior workers, symbolic awards may be an effective way to motivate older and more experienced employees, but should be used with caution for younger and more junior workers in competitive environments. We encourage researchers to explore how experience and age moderate the effect of awards and social undermining in the future.

Fourth, we studied two settings in which workers relied on individual performance incentives with zero base salary and competed for limited resources. Because results were consistent in both settings despite drastic differences in participants (i.e., insurance salespeople versus college students) and awarded tasks (i.e., selling insurance versus solving calculation problems), we are confident that our findings will generalize to other settings with similar features. For example, in firms with similarly competitive environments, awards that single out top performers likely generate negative effects on the performance of award recipients post award. However, this may not be the case in firms with cooperative environments where, for instance, team-based incentives dominate and workers have higher base salaries (Flory et al., 2016). It would be useful to compare effects of awards on recipients' performance in competitive and non-competitive environments and to examine how the efficacy of awards varies under different incentive structures and pay designs.

Finally, we examined these effects in China, where collectivism is valued over individualism (Rhee et al., 1995). Researchers have argued that collectivist societies place greater value on ingroup harmony, interdependence, and cooperative orientation than the success of the individual (Triandis, 1996, Weng, Zhang, Kulich, and Zuo, 2021). In contrast, individualistic countries tend to value individual achievement and social status (Feather, 1989, Hofstede, 1980). Consistent with these arguments, Kim (2021) found that participants from Asian collectivist cultures exhibited a higher preference for high achievers to fail than those from individualistic cultures. Therefore, award programs that publicly recognize individuals may be less likely to elicit social undermining in individualistic cultures than collectivist cultures, and negative effects of award programs may be alleviated in countries like the United States compared to China. Comparing effects of award programs across cultures and across countries could be a fruitful avenue for future research.

6. Conclusion

In this paper, we have revealed a dark side of symbolic awards in firms by demonstrating how they trigger social undermining of award winners and adversely affect winners' post-award performance. Symbolic awards may generate unexpected negative consequences on organizations even though they do not incur direct monetary costs. Organizations should carefully design award programs and take precautions to prevent negative effects from offsetting the overall benefits of awards.

Funding.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. . Additional figures and Tables

See Figs. A1-A5, Tables A1-A8.
Fig. B1.
Tables B1-B2.

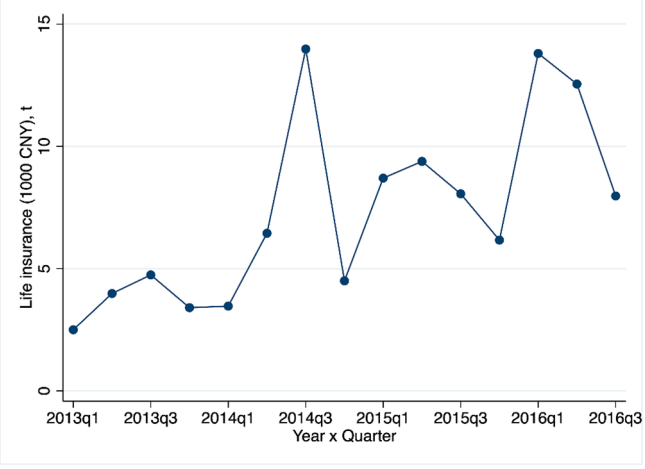


Fig. A1. Quarterly Award Cutoff of the "Best Rookie" Award in Study 1. *Notes:* This figure plots the quarterly award cutoff of the "Best Rookie" award in Study 1, i.e., the 10th life insurance commission among rookies in each quarter between the first quarter of 2013 and the third quarter of 2016; units are in 1,000 CNY.

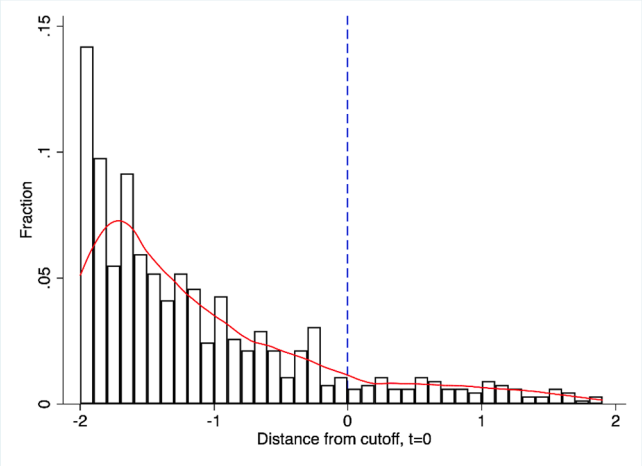
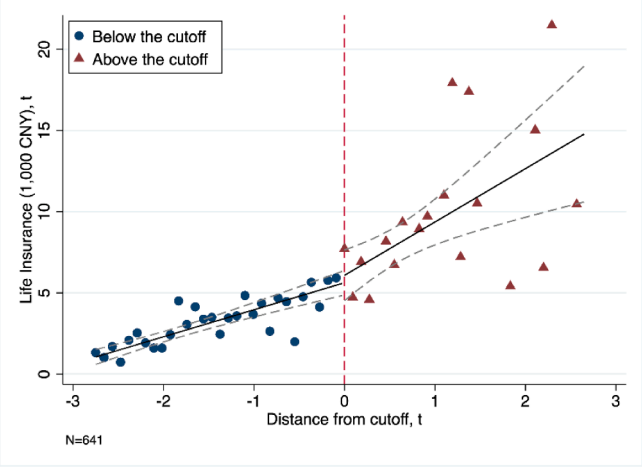
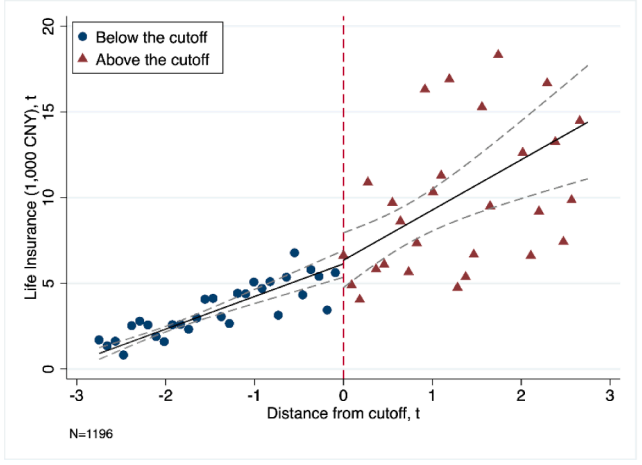


Fig. A2. Distribution of Running Variable in Study 1. *Notes:* This figure plots the histogram and density curve of rookies' standardized first quarter life insurance commission in Study 1 (with the award cutoff normalized to zero). We exclude rookies at the award cutoff from the plot because our normalization creates a mechanical spike at zero and renders the McCrary test on the smoothness of the density low power (see section 3.2.1 for details).

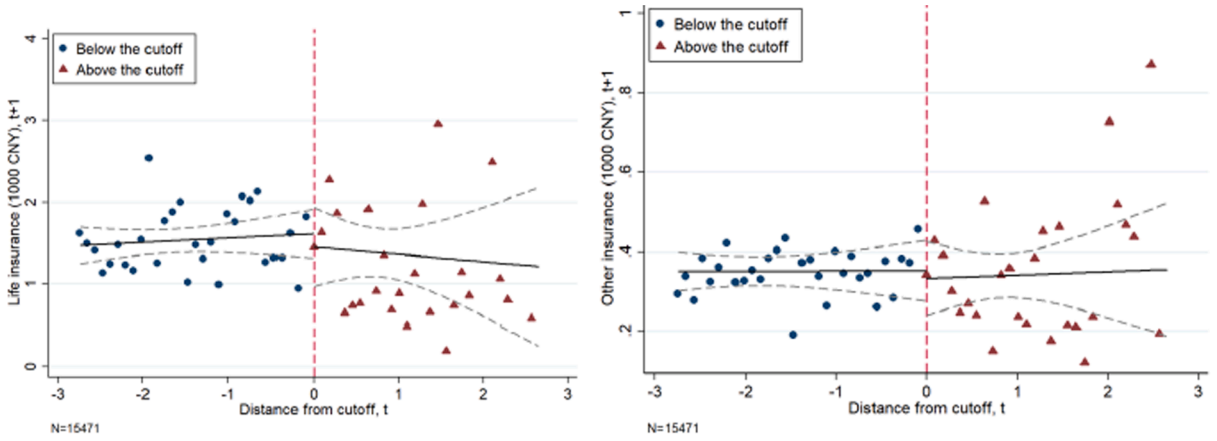


A. With competitive teammates



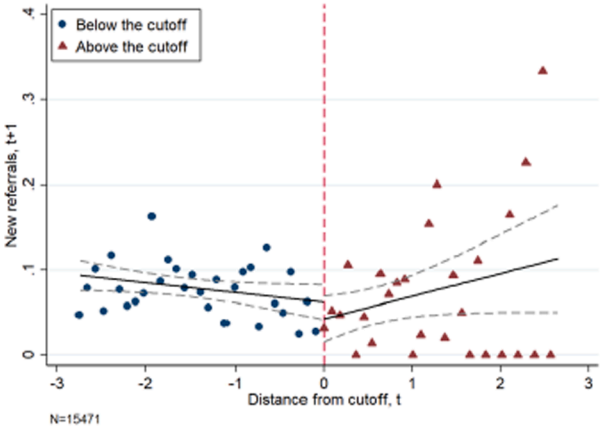
B. Without competitive teammates

Fig. A3. Study 1 Placebo Test – Pre-award Life Insurance Commission by Presence of Competitive Teammates in Quarter t + 1. *Notes:* This figure conducts placebo tests for Fig. 4. Each observation is rookies' average life insurance commission in their first quarter in the company (quarter t) in a 0.09 bin based on their standardized first quarter life insurance commission. Specifications, variable definitions, and sample definitions mirror those in Fig. 4.

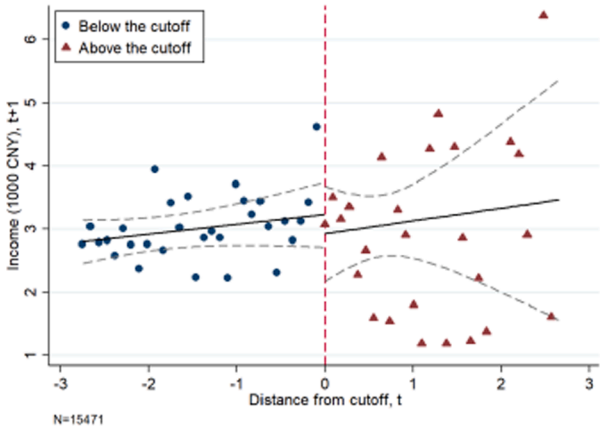


A: Life insurance commission

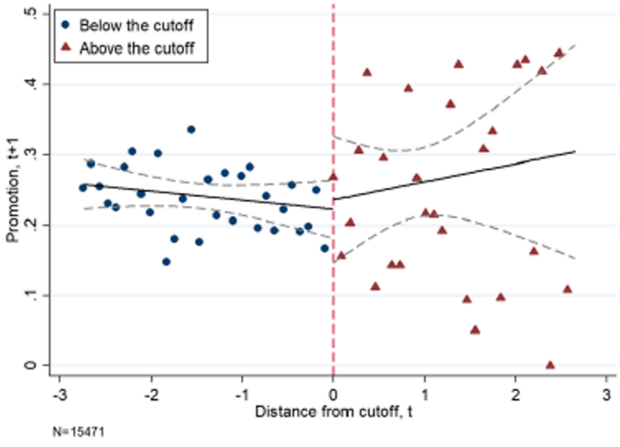
B: Other insurance commission



C: The number of new referrals



D: Income



E: Promotion

Fig. A4. Study 1 Spillover – Effect of Award on Performances of *Rookies' Teammates* in Quarter t + 1. *Notes:* Each observation is the average performance of *rookies' teammates* in the quarter after an award designation (quarter t + 1) in a 0.09 bin based on the *rookies'* standardized first quarter life insurance commission. Dashed vertical lines denote the 10th standardized first quarter life insurance commission among rookies in quarter t (normalized to 0). The solid lines are estimated using a linear regression and triangular weights based on individual-level data. The dashed lines denote the 95 % confidence interval based on the heteroscedasticity-consistent standard errors.

A. Award list

B. Award ceremony

Fig. A5. Award List and Award Ceremony in Study 2. *Notes:* Panel A displays an example of award list in Study 2. The list states the winners' experiment ID, performance score, and ranking (in Chinese). The award list is announced in an award ceremony at the end of the first round of each experiment session in Study 2, and panel B shows a photo of such award ceremony.

Table A2
Study 1 Summary Statistics – *Full Sample.*

Variable	N	Mean	Std. Dev.	Min.	Max.
Life insurance commission (t + 1)	10,996	1.12	2.35	0.00	14.88
Other insurance commission (t + 1)	10,996	0.15	0.30	0.00	1.85
Number of referrals (t + 1)	10,996	0.11	0.58	0.00	28.00
Income (t + 1)	10,996	2.48	3.66	0.00	20.20
Exit (t + 1)	10,996	0.09	0.29	0.00	1.00
Life insurance commission (t)	10,996	1.03	1.51	0.00	9.01
Duration (t)	10,996	29.42	18.36	1.00	64.00
Other insurance commission (t)	10,996	0.15	0.30	0.00	1.85
Number of referrals (t)	10,996	0.04	0.51	0.00	46.00
Income (t)	10,996	1.87	2.38	0.00	12.06
Male	10,996	0.36	0.48	0.00	1.00
Age	10,996	34.34	7.81	18.00	57.00
Education	10,996	14.26	1.29	9.00	21.00
Urban	10,996	0.48	0.50	0.00	1.00

Notes: This table reports summary statistics of *all* rookies employed by the insurance company during our sample period in Study 1. See note to Table 1 for variable definitions.

Table A3
Study 1 Placebo Test – Pre-award Performances.

	(1) Life insurance commission (t)	(2) Other insurance commission (t)	(3) Referrals (t)	(4) Income (t)
Win	−0.079	−0.001	−0.061	−0.907
	(0.148)	(0.048)	(0.063)	(0.577)
N obs	1,837	1,837	1,837	1,837
R-squared	0.951	0.209	0.079	0.590
Top 20 mean (t)	6.209	0.405	0.491	6.693
Bandwidth	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y
Demographics	Y	Y	Y	Y

Notes: This table performs placebo tests for the rookie sample in Study 1 using rookies' performances in the quarter before an award designation (quarter t) as outcomes. The dependent variables in columns (1) to (4) are rookies' life insurance commission, other insurance commission, number of referrals, and total income in quarter t, respectively. Specifications and variable definitions mirror those in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A1
Number of Observations and Rank Range by Quarter in Study 1.

Year × quarter	N obs	Best rank	Worst rank
2013 × Q1	268	3	120
2013 × Q2	116	2	117
2013 × Q3	117	2	118
2013 × Q4	171	4	176
2014 × Q1	235	3	166
2014 × Q2	100	2	96
2014 × Q3	57	2	58
2014 × Q4	150	5	154
2015 × Q1	304	5	309
2015 × Q2	24	5	28
2015 × Q3	82	3	84
2015 × Q4	101	3	104
2016 × Q1	29	2	31
2016 × Q2	50	4	53
2016 × Q3	33	6	38

Notes: This table presents the number of observations and rank range by quarter for the rookie sample in Study 1. *Best rank* and *Worst rank* refer to the rank of the best performing rookie and the worst performing rookie in the sample in each quarter, respectively. In principle, N obs = Worst rank − Best rank + 1, but this does not hold when there are tied ranks. For instance, in 2013 × Q1, there are 153 rookies tied at rank 120th.

Table A4
Study 1 Robustness Check.

	Dependent variable: Life insurance commission (t + 1)			
	Panel A: Alternative inference methods			
Win	−1.720			
-Team clusters	(0.649)***			
-Year-quarter clusters	(0.654)***			
-Two-way clusters	(0.654)***			
	Panel B: Alternative rank restrictions			
	Rank = 1–20	Rank = 5–15		
Win	−1.917**	−1.950*		
	(0.882)	(1.051)		
N obs	269	154		
N winners	115	90		
Baseline mean (t)	7.295	7.617		
	Panel C: Alternative bandwidths			
	2	2.5	3	3.5
Win	−2.058***	−1.938***	−1.609**	−1.495**
	(0.796)	(0.691)	(0.630)	(0.590)
N obs	671	1,383	2,507	3,755
N winners	93	109	117	124
Baseline mean (t)	6.039	6.158	6.219	6.283
	Panel D: Alternative fitted-functions			
	Linear	Quadratic	Cubic	Quartic
Win	−1.720***	−2.211**	−2.199***	−2.177***
	(0.655)	(0.934)	(0.842)	(0.795)
N obs	1,837	1,837	1,837	1,837
Top 20 mean (t)	6.209	6.209	6.209	6.209
	Panel E: Alternative weights			
	Triangular	Epanechnikov	Gaussian	Quartic
Win	−1.720***	−1.626**	−1.814***	−1.882***
	(0.655)	(0.638)	(0.674)	(0.675)
N obs	1,837	1,837	1,837	1,837
Top 20 mean (t)	6.209	6.209	6.209	6.209

Notes: This table performs robustness checks for Table 3 column (3) using alternative inference methods (panel A), rank restrictions (panel B), bandwidths (panel C), fitted-functions (panel D), and weights (panel E). In panel A, we use wild bootstrap method (1,000 times) to obtain robust clustered standard errors when clustering by year-quarter (Cameron, Gelbach, and Miller, 2008). *Baseline mean (t)* refers to the mean of the dependent variable in quarter t among rookies whose rank or standardized first quarter life insurance commission is within the listed bandwidth from the award threshold in quarter t. *Top 20 mean (t)* refers to the mean of the dependent variable in quarter t among the top 20 rookies in quarter t.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table A5
Study 1 Validity of RD – Baseline Characteristics by Presence of Competitive Teammates in Quarter t + 1.

	1{w/ competitive teammates} (t + 1)	With competitive teammates					Without competitive teammates				
		Male	Age	Edu	Urban	Duration (t)	Male	Age	Edu	Urban	Duration (t)
Win	0.016	−0.015	−0.994	−0.310	0.016	2.270	0.198*	−2.216	−0.234	0.036	−1.817
	(0.092)	(0.133)	(2.164)	(0.336)	(0.137)	(7.189)	(0.113)	(1.675)	(0.270)	(0.111)	(4.449)
N obs	1,837	641	641	641	641	641	1,196	1,196	1,196	1,196	1,196
N winners	115	40	40	40	40	40	75	75	75	75	75
R-squared	0.032	0.075	0.076	0.133	0.050	0.175	0.029	0.088	0.153	0.031	0.172
Top 20 mean (t)	0.353	0.432	36.547	14.000	0.537	47.911	0.305	36.586	13.902	0.575	44.440
Bandwidth	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Demographics	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes: This table performs balance tests for the rookie sample in Study 1 by whether or not a rookie has at least one competitive teammate in the quarter after an award designation (quarter t + 1). See notes to Table 1 and Table 4 for variable and sample definitions. Specifications mirror the one in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table A6
Study 1 Validity of RD - Baseline Characteristics and Performances of *Rookies' Teammates* by Presence of Competitive Teammates in Quarter t + 1.

	Panel A: Teammates' characteristics											
	With competitive teammates						Without competitive teammates					
	Male	Age	Edu	Urban	Job level (t)	Tenure (t)	Male	Age	Edu	Urban	Job level (t)	Tenure (t)
Win	−0.06	−1.291	0.129	0.134	0.007	−0.682	0.008	1.339	0.232	0.070	0.019	0.280
	(0.038)	(1.052)	(0.229)	(0.107)	(0.038)	(2.773)	(0.044)	(1.463)	(0.242)	(0.112)	(0.104)	(4.013)
N obs	8,260	8,260	8,260	8,260	8,260	8,260	7,291	7,291	7,291	7,291	7,291	7,291
N winners	30	30	30	30	30	30	85	85	85	85	85	85
R-squared	0.006	0.018	0.028	0.033	0.059	0.041	0.005	0.008	0.035	0.022	0.046	0.027
Top 20 mean	0.345	41.088	13.846	0.509	2.134	21.834	0.309	38.093	13.660	0.465	2.050	12.834
Bandwidth	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

	Panel B: Teammates' performances							
	With competitive teammates				Without competitive teammates			
	Life insurance (t)	Other insurance (t)	Referrals (t)	Income (t)	Life insurance (t)	Other insurance (t)	Referrals (t)	Income (t)
Win	0.282	0.037	−0.007	0.201	−0.911	0.013	−0.046	−0.221
	(0.257)	(0.056)	(0.009)	(0.360)	(0.726)	(0.055)	(0.052)	(0.654)
N obs	8,260	8,260	8,260	8,260	7,291	7,291	7,291	7,291
N winners	30	30	30	30	85	85	85	85
R-squared	0.160	0.300	0.020	0.250	0.125	0.373	0.037	0.347
Top 20 mean	1.532	0.388	0.016	3.236	1.449	0.322	0.095	3.010
Bandwidth	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y
Demographics	Y	Y	Y	Y	Y	Y	Y	Y

Notes: This table performs balance tests and placebo tests for *rookies' teammates* in Study 1 by whether or not a rookie has at least one competitive teammate in the quarter after an award designation (quarter t + 1). See notes to Table 1 and Table 4 for variable and sample definitions. *Top 20 mean* refers to the mean of the dependent variable in quarter t among the teammates of the top 20 rookies in quarter t. Specifications in panel A mirror those in Table 2; specifications in panel B mirror the one in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table A7
Study 1 Testing Effort Reallocation of Teammates – Effect of Award on Life Insurance Commission of *Rookies Joining in Quarter t + 1*.

	(1)
	Life insurance
Win	−0.057
	(0.181)
N obs	3,946
R-squared	0.236
Bandwidth	2.75
Year × Quarter FE	Y
Demographics	Y

Notes: This table presents the difference in the first quarter life insurance commission between rookies who join in quarter t + 1 a team with quarter t "Best Rookie" award winners and those who join in quarter t + 1 a team without. Specifications mirror the one in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table A8
Study 2 Placebo Test – Pre-award Workers' Score and Observers' Score Adjustment.

	(1)	(2)	(3)	(4)
	Award only (AO)	**Award and sabotage (AS)**	**Award and help (AH)**	
	Workers Score	Workers Score	Workers Score	Observers djust
Win	1.349	−0.066	−2.391	4.502
	(5.324)	(0.520)	(6.972)	(4.750)
N obs	17	22	29	29
N winners	7	9	12	12
Baseline mean	72.294	53.955	47.414	17.034
Bandwidth	18	13	16	16
Demographics	Y	Y	Y	Y

Notes: This table performs placebo tests for Study 2 using worker's final score (*Score*) and observers' score adjustment (*Adjust*) in the first round of each experiment session (where applicable) as outcomes. Note that first-round *Adjust* is only available in the AH condition. See note to Table 9 for variable definitions and specifications. Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

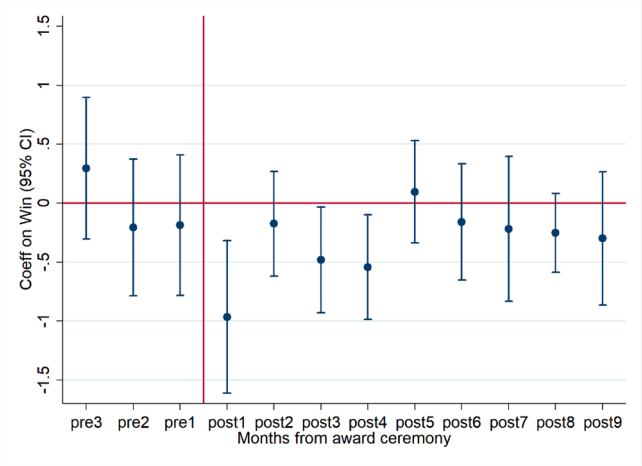


Fig. B1. Study 1 Performance Dynamics – Effect of Award on *Monthly* Life Insurance Commission. *Notes:* This figure plots coefficients and 95% confidence intervals for *Win* dummy from Equation (2) using *monthly* life insurance commissions of the rookie sample in Study 1 as outcomes; units are in 1,000 CNY. The x-axis denotes the month in which the commission is measured. For example, "pre1" is the month before an award designation and "post1" the month afterwards. The vertical line represents the timing of an award ceremony. Specifications mirror the one in Table 3 column (3).

Table B1
Study 1 Performance Dynamics – Effect of Award on *Quarterly* Life Insurance Commission.

	(1) Commission (t)	(2) Commission (t + 1)	(3) Commission (t + 2)	(4) Commission (t + 3)
Win	−0.079	−1.720***	−0.531	−0.737
	(0.148)	(0.655)	(0.616)	(0.714)
N obs	1,837	1,837	1,716	1,526
R-squared	0.951	0.229	0.137	0.121
Bandwidth	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y
Demographics	Y	Y	Y	Y

This table presents the effect of the "Best Rookie" award on the quarterly life insurance commission of the rookie sample in Study 1 between the quarter before an award designation (quarter t) and the third quarter afterwards (quarter t + 3). The number of observations decreases from column (1) to column (4) due to rookies' exit from the company. Specification mirrors the one in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table B2
Study 1 Performance Dynamics – Effect of Award on Cumulative Exit Rate.

	(1) Exit by t + 1	(2) Exit by t + 2	(3) Exit by t + 3	(4) Tenure
Win	0.005	0.032	0.018	−0.192
	(0.010)	(0.043)	(0.051)	(0.483)
Observations	1,837	1,837	1,837	1,837
R-squared	0.383	0.346	0.323	0.313
Top 20 mean	0.059	0.160	0.268	7.230
Bandwidth	2.75	2.75	2.75	2.75
Year × Quarter FE	Y	Y	Y	Y
Demographics	Y	Y	Y	Y

Notes: This table presents the effect of the "Best Rookie" award on rookies' cumulative exit rate by the end of a quarter (columns 1–3) and the total number of quarters a rookie remains in the company by the end of our sample (column 4). *Top 20 mean* refers to the mean of the dependent variable in a quarter among the top 20 rookies in quarter t. Specification mirrors the one in Table 3 column (3). Heteroscedasticity-consistent standard errors are reported in parentheses.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

References

Ager, P., Bursztyn, L., & Voth, H.-J. (2017). *Killer incentives: Status competition and pilot performance during World War II*. Technical report. National Bureau of Economic Research.

Akerlof, G. A. (1982). Labor contracts as partial gift exchange. *The Quarterly Journal of Economics, 97*(4), 543–569.

Akerlof, G. A., & Kranton, R. E. (2005). Identity and the economics of organizations. *Journal of Economic Perspectives, 19*(1), 9–32.

Althubaiti, A. (2016). Information bias in health research: Definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare, 9*, 211.

Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review, 99*(1), 544–555.

Ashraf, A. (2019). Do performance ranks increase productivity? Evidence from a field experiment.

Ashraf, N., Bandiera, O., & Lee, S. S. (2014). Awards unbundled: Evidence from a natural field experiment. *Journal of Economic Behavior & Organization, 100*, 44–63.

Bénabou, R., & Tirole, J. (2002). Self-confidence and personal motivation. *The Quarterly Journal of Economics, 117*(3), 871–915.

Berkson, J. (1946). Limitations of the application of fourfold table analysis to hospital data. *Biometrics Bulletin, 2*(3), 47–53.

Bernheim, B. D. (1994). A theory of conformity. *Journal of Political Economy, 102*(5), 841–877.

Borjas, G. J., & Doran, K. B. (2015). Prizes and productivity how winning the Fields medal affects scientific output. *Journal of Human Resources, 50*(3), 728–758.

Bothner, M. S., Kang, J.-H., & Stuart, T. E. (2007). Competitive crowding and risk taking in a tournament: Evidence from NASCAR racing. *Administrative Science Quarterly, 52*(2), 208–247.

Bradler, C., Dur, R., Neckermann, S., & Non, A. (2016). Employee recognition and performance: A field experiment. *Management Science, 62*(11), 3085–3099.

Breidenthal, A. P., Liu, D., Bai, Y., & Mao, Y. (2020). The dark side of creativity: Coworker envy and ostracism as a response to employee creativity. *Organizational Behavior and Human Decision Processes, 161*, 242–254.
Breza, E., Kaur, S., & Shamdasani, Y. (2018). The morale effects of pay inequality. *The Quarterly Journal of Economics, 133*(2), 611–663.
Bursztyn, L., & Jensen, R. (2015). How does peer pressure affect educational investments? *The Quarterly Journal of Economics, 130*(3), 1329–1367.
Buunk, A. P., & Gibbons, F. X. (2007). Social comparison: The end of a theory and the emergence of a field. *Organizational Behavior and Human Decision Processes, 102*(1), 3–21.
Cameron, A. C., Gelbach, J. B., & Miller, D. L. (2008). Bootstrap-based improvements for inference with clustered errors. *The Review of Economics and Statistics, 90*(3), 414–427.
Campbell, E. M., Liao, H., Chuang, A., Zhou, J., & Dong, Y. (2017). Hot shots and cool reception? An expanded view of social consequences for high performers. *Journal of Applied Psychology, 102*(5), 845.
Card, D., Mas, A., Moretti, E., & Saez, E. (2012). Inequality at work: The effect of peer salaries on job satisfaction. *American Economic Review, 102*(6), 2981–3003.
Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin, 140*(4), 980.
Chen, K.-P. (2003). Sabotage in promotion tournaments. *Journal of Law, Economics, and Organization, 19*(1), 119–140.
Cohen-Charash, Y. (2009). Episodic envy. *Journal of Applied Social Psychology, 39*(9), 2128–2173.
Conroy, S. A., Yoon, Y. J., Bamberger, P. A., Gerhart, B., Gupta, N., Nyberg, A. J., … Sturman, M. C. (2015). Past, present and future compensation research perspectives. *Compensation & Benefits Review, 47*(5–6), 207–215.
Cropanzano, R., Howes, J. C., Grandey, A. A., & Toth, P. (1997). The relationship of organizational politics and support to work behaviors, attitudes, and stress. *Journal of Organizational Behavior, 18*(2), 159–180.
Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research, 71*(1), 1–27.
Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19*(2), 109–134.
DellaVigna, S., List, J. A., & Malmendier, U. (2012). Testing for altruism and social pressure in charitable giving. *The Quarterly Journal of Economics, 127*(1), 1–56.
Denzler, M., Förster, J., & Liberman, N. (2009). How goal-fulfillment decreases aggression. *Journal of Experimental Social Psychology, 45*(1), 90–100.
Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social undermining in the workplace. *Academy of Management Journal, 45*(2), 331–351.
Duffy, M. K., Ganster, D. C., Shaw, J. D., Johnson, J. L., & Pagon, M. (2006). The social context of undermining behavior at work. *Organizational Behavior and Human Decision Processes, 101*(1), 105–126.
Duffy, M. K., Scott, K. L., Shaw, J. D., Tepper, B. J., & Aquino, K. (2012). A social context model of envy and social undermining. *Academy of Management Journal, 55*(3), 643–666.
Duffy, M. K. and Shaw, J. D. (2000). The salieri syndrome: Consequences of envy in groups. *Small Group Research*, 31(1):3–23.
Duffy, M. K., Shaw, J. D., & Schaubroeck, J. M. (2008). Envy in organizational life. *Envy: Theory and Research, 2*, 167–189.
Dunn, J. R., & Schweitzer, M. E. (2006). Green and mean: Envy and social undermining in organizations. *Ethics in groups*. Emerald Group Publishing Limited.
Eissa, G., Chinchanachokchai, S., & Wyland, R. (2017). The influence of supervisor undermining on self-esteem, creativity, and overall job performance: A multiple mediation model. *Organization Management Journal, 14*(4), 185–197.
Erez, M., Gopher, D., & Arzi, N. (1990). Effects of goal difficulty, self-set goals, and monetary rewards on dual task performance. *Organizational Behavior and Human Decision Processes, 47*(2), 247–269.
Evans, G. W., & Johnson, D. (2000). Stress and open-office noise. *Journal of Applied Psychology, 85*(5), 779.
Fang, D., Noe, T., & Strack, P. (2020). Turning up the heat: The discouraging effect of competition in contests. *Journal of Political Economy, 128*(5), 1940–1975.
Feather, N. T. (1989). Attitudes towards the high achiever: The fall of the tall poppy. *Australian Journal of Psychology, 41*(3), 239–267.
Fehr, E., & Schmidt, K. M. (1999). A theory of fairness, competition, and cooperation. *The Quarterly Journal of Economics, 114*(3), 817–868.
Ferguson, M. J., & Bargh, J. A. (2004). Liking is for doing: The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology, 87*(5), 557.
Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117–140.
Fiedler, K., & Unkelbach, C. (2014). Regressive judgment: Implications of a universal property of the empirical world. *Current Directions in Psychological Science, 23*(5), 361–367.
Flory, J. A., Leibbrandt, A., and List, J. A. (2016). The effects of wage contracts on workplace misbehaviors: Evidence from a call center natural field experiment. Technical report, National Bureau of Economic Research.
Förster, J., Liberman, N., & Higgins, E. T. (2005). Accessibility from active and fulfilled goals. *Journal of Experimental Social Psychology, 41*(3), 220–239.
Frey, B. S., & Gallus, J. (2017). Towards an economics of awards. *Journal of Economic Surveys, 31*(1), 190–200.
Gallus, J. (2017). Fostering public good contributions with symbolic awards: A large-scale natural field experiment at Wikipedia. *Management Science, 63*(12), 3999–4015.
Gallus, J., & Frey, B. S. (2016). Awards: A strategic management perspective. *Strategic Management Journal, 37*(8), 1699–1714.
Garcia, S. M., Song, H., & Tesser, A. (2010). Tainted recommendations: The social comparison bias. *Organizational Behavior and Human Decision Processes, 113*(2), 97–101.
Gerhart, B., Rynes, S. L., & Fulmer, I. S. (2009). 6 pay and performance: Individuals, groups, and executives. *Academy of Management Annals, 3*(1), 251–315.
Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. *Journal of Economic Perspectives, 25*(4), 191–210.
Gneezy, U., & Rustichini, A. (2000). Pay enough or don't pay at all. *The Quarterly Journal of Economics, 115*(3), 791–810.
Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology, 77*(6), 631.
Grant, A. M. (2008). Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance, and productivity. *Journal of Applied Psychology, 93*(1), 48.
Gubler, T., Larkin, I., & Pierce, L. (2016). Motivational spillovers from awards: Crowding out in a multitasking environment. *Organization Science, 27*(2), 286–303.
Guryan, J., Kroft, K., & Notowidigdo, M. J. (2009). Peer effects in the workplace: Evidence from random groupings in professional golf tournaments. *American Economic Journal: Applied Economics, 1*(4), 34–68.
Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as reference points. *Cognitive Psychology, 38*(1), 79–109.
Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization, 10*(4), 15–41.
Hoogveld, N., & Zubanov, N. (2017). The power of (no) recognition: Experimental evidence from the university classroom. *Journal of Behavioral and Experimental Economics, 67*, 75–84.
Imbens, G., & Kalyanaraman, K. (2012). Optimal bandwidth choice for the regression discontinuity estimator. *The Review of Economic Studies, 79*(3), 933–959.
Kanfer, R., & Chen, G. (2016). Motivation in organizational behavior: History, advances and prospects. *Organizational Behavior and Human Decision Processes, 136*, 6–19.
Kim, J. (2021). *Attitudes Towards Achievement (Doctoral dissertation*. Auckland University of Technology).
Kolstad, J. T. (2013). Information and quality when motivation is intrinsic: Evidence from surgeon report cards. *American Economic Review, 103*(7), 2875–2910.
Kosfeld, M., & Neckermann, S. (2011). Getting more work for nothing? Symbolic awards and worker performance. *American Economic Journal: Microeconomics, 3*(3), 86–99.
Kube, S., Maréchal, M. A., & Puppe, C. (2012). The currency of reciprocity: Gift exchange in the workplace. *American Economic Review, 102*(4), 1644–1662.
Kuhnen, C. M., & Tymula, A. (2012). Feedback, self-esteem, and performance in organizations. *Management Science, 58*(1), 94–113.
Lafortune, J., Riutort, J., & Tessada, J. (2018). Role models or individual consulting: The impact of personalizing micro-entrepreneurship training. *American Economic Journal: Applied Economics, 10*(4), 222–245.
Lam, C. K., Van der Vegt, G. S., Walter, F., & Huang, X. (2011). Harming high performers: A social comparison perspective on interpersonal harming in work teams. *Journal of Applied Psychology, 96*(3), 588.
Larkin, I., Pierce, L., & Gino, F. (2012). The psychological costs of pay-for-performance: Implications for the strategic compensation of employees. *Strategic Management Journal, 33*(10), 1194–1214.
Lazear, E. P. (1989). Pay equality and industrial politics. *Journal of Political Economy, 97*(3), 561–580.
Lazear, E. P. (2004). The Peter Principle: A theory of decline. *Journal of Political Economy, 112*(S1), S141–S163.
LePine, J. A., & Van Dyne, L. (2001). Voice and cooperative behavior as contrasting forms of contextual performance: Evidence of differential relationships with big five personality characteristics and cognitive ability. *Journal of Applied Psychology, 86*(2), 326.
Levitt, S. D., List, J. A., Neckermann, S., & Sadoff, S. (2016). The behavioralist goes to school: Leveraging behavioral economics to improve educational performance. *American Economic Journal: Economic Policy, 8*(4), 183–219.
Liberman, N., & Förster, J. (2000). Expression after suppression: A motivational explanation of postsuppressional rebound. *Journal of Personality and Social Psychology, 79*(2), 190.
Lieberman, A., Duke, K. E., & Amir, O. (2019). How incentive framing can harness the power of social norms. *Organizational Behavior and Human Decision Processes, 151*, 118–131.
Malmendier, U., & Tate, G. (2009). Superstar CEOs. *The Quarterly Journal of Economics, 124*(4), 1593–1638.
Marsh, R. L., Hicks, J. L., & Bink, M. L. (1998). Activation of completed, uncompleted, and partially completed intentions. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 24*(2), 350.
McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics, 142*(2), 698–714.
Meier, S. (2007). Do subsidies increase charitable giving in the long run? Matching donations in a field experiment. *Journal of the European Economic Association, 5*(6), 1203–1222.
Moreira, D. (2016). Success spills over: How awards affect winners' and peers' performance in Brazil. Working paper.
Monin, B., & Miller, D. T. (2001). Moral credentials and the expression of prejudice. *Journal of Personality and Social Psychology, 81*(1), 33.
Morgenroth, T., Ryan, M. K., & Peters, K. (2015). The motivational theory of role modeling: How role models influence role aspirants' goals. *Review of General Psychology, 19*(4), 465–483.
Mullen, E., & Monin, B. (2016). Consistency versus licensing effects of past moral behavior. *Annual Review of Psychology, 67*, 363–385.

Neckermann, S., Cueni, R., & Frey, B. S. (2014). Awards at work. *Labour Economics, 31*, 205–217.
Neckermann, S., & Yang, X. (2017). Understanding the (unexpected) consequences of unexpected recognition. *Journal of Economic Behavior & Organization, 135*, 131–142.
Nelson, B. (2012). *1501 ways to reward employees*. Workman Publishing.
Nickerson, J. A., & Zenger, T. R. (2008). Envy, comparison costs, and the economic theory of the firm. *Strategic Management Journal, 29*(13), 1429–1449.
North, D. C. (1990). Institutions, institutional change and economic performance.
Pettit, N. C., Sivanathan, N., Gladstone, E., & Marr, J. C. (2013). Rising stars and sinking ships: Consequences of status momentum. *Psychological Science, 24*(8), 1579–1584.
Pettit, N. C., Yong, K., & Spataro, S. E. (2010). Holding your place: Reactions to the prospect of status gains and losses. *Journal of Experimental Social Psychology, 46*(2), 396–401.
Pfeffer, J. (1976). Beyond management and the worker: The institutional function of management. *Academy of Management Review, 1*(2), 36–46.
Reh, S., Tröster, C., & Van Quaquebeke, N. (2018). Keeping (future) rivals down: Temporal social comparison predicts coworker social undermining via future status threat and envy. *Journal of Applied Psychology, 103*(4), 399.
Rhee, E., Uleman, J. S., Lee, H. K., & Roman, R. J. (1995). Spontaneous self-descriptions and ethnic identities in individualistic and collectivistic cultures. *Journal of Personality and Social Psychology, 69*(1), 142.
Robinson, C. D., Gallus, J., Lee, M. G., & Rogers, T. (2021). The demotivating effect (and unintended message) of awards. *Organizational Behavior and Human Decision Processes, 163*, 51–64.
Rogers, T., & Feller, A. (2018). Reducing student absences at scale by targeting parents' misbeliefs. *Nature Human Behaviour, 2*(5), 335–342.
Rosenthal, R. (1976). Experimenter effects in behavioral research.
Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68.
Scheepers, D., Ellemers, N., & Sintemaartensdijk, N. (2009). Suffering from the possibility of status loss: Physiological responses to social identity threat in high status groups. *European Journal of Social Psychology, 39*(6), 1075–1092.
Sequeira, S., Spinnewijn, J., & Xu, G. (2016). Rewarding schooling success and perceived returns to education: Evidence from India. *Journal of Economic Behavior & Organization, 131*, 373–392.
Smith, J. (2013). Peers, pressure, and performance at the national spelling bee. *Journal of Human Resources, 48*(2), 265–285.
Smith, R. H., & Kim, S. H. (2007). Comprehending envy. *Psychological Bulletin, 133*(1), 46.
Spence, M. (1978). Job market signaling. *Uncertainty in Economics*, 281–306.
Stroube, B. K. (2021). Using allegations to understand selection bias in organizations: Mis- conduct in the Chicago police department. *Organizational Behavior and Human Decision Processes, 166*, 149–165.
Tai, K., Narayanan, J., & McAllister, D. J. (2012). Envy as pain: Rethinking the nature of envy and its implications for employees and organizations. *Academy of Management Review, 37*(1), 107–129.
Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology, 1*(2), 149–178.
Titmuss, R. M. (1970). *The Gift Relationship*. London: Allen and Unwin.
Triandis, H. C. (1996). The psychological measurement of cultural syndromes. *American Psychologist, 51*(4), 407.
Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist, 41*(1), 19–31.
Vecchio, R. P. (2000). Negative emotion in the workplace: Employee jealousy and envy. *International Journal of Stress Management, 7*(3), 161–179.
Weng, L., Zhang, Y. B., Kulich, S. J., & Zuo, C. (2021). Cultural values in Chinese proverbs reported by Chinese college students. *Asian Journal of Social Psychology, 24*(2), 232–243.