ORIGINAL PAPER

The influence of compensation interdependence on risk-taking: the role of mutual monitoring

Felix Bolduan[1] · Ivo Schedlinsky[1] · Friedrich Sommer[1]

Abstract

This study investigates if and how the influence of compensation interdependence on risk-taking depends on mutual monitoring of risky investment decisions. We argue that individuals under compensation interdependence have a behavioral incentive for higher risk-taking if mutual monitoring is present. Impression management is hypothesized to be the driving force behind this effect, with the visibility of actions to the peers through mutual monitoring as an important prerequisite. The results of a laboratory experiment support our predictions. Additional analyses reveal that impression management drives our results because participants incorporate their peers' preferences in their decision process. This reasoning is further substantiated as individuals increase their risk-taking if they took less risk than their peers in previous experimental rounds and thus adjust to their respective peer group. Our findings inform firms about the effect of compensation interdependence in working environments with differing opportunities for mutual monitoring.

Keywords Risk-taking · Compensation interdependence · Mutual monitoring · Impression management · Social reasoning

✉ Friedrich Sommer
   friedrich.sommer@uni-bayreuth.de

   Felix Bolduan
   felix.bolduan@uni-bayreuth.de

   Ivo Schedlinsky
   ivo.schedlinsky@uni-bayreuth.de

[1] University of Bayreuth, Nuernberger Str. 38, 95448 Bayreuth, Germany

1 Introduction

Designing incentive systems that promote organizationally desirable behavior is an essential aspect of management accounting (Luft and Shields 2009). To promote team-oriented behavior and emphasize the importance of collaboration within a firm, tying incentives to group performance instead of individual performance has evermore gained firms' interest (Merriman 2008). This is not surprising, as prior research has shown positive effects of such compensation interdependence, as it promotes, for example, performance in collaborative working environments (Blasi et al. 2010) as well as cooperation and coordination (FitzRoy and Kraft 1987).

However, prior research also suggests that compensation interdependence might influence other aspects of employee behavior. One important aspect that might influence achieving organizational goals is risk-taking. Hence, when firms consider implementing compensation interdependence, they should also consider the influence on risk-taking, as dysfunctional effects may arise, for example, risk-taking that might be excessive from a firm's perspective (Lahno and Serra-Garcia 2015).

As compensation interdependence is defined as compensation being dependent on a group's performance instead of individual performance (Nalbantian and Schotter 1997), it is a specific form of decision-making in groups. Prior research on decision-making in groups demonstrates the existence of risky (cautious) shifts if decisions are made in groups instead of individually; this is more generally referred to as "choice shifts" (Davis 1992). Contrary to these typical group settings, many daily business decisions are made on an individual basis and, at the same time, influence other employees or departments of a firm. Examples are salespeople or key-account managers who decide which customers to approach in which specific way and whose compensation is interrelated, for example, through incentives based on divisional or firm performance. Hence, compensation interdependence and decision-making in groups do not necessarily go hand in hand (Bushman et al. 1995; Keating 1997). We aim at contributing to prior research by analyzing this highly relevant aspect.

As employee compensation systems do not operate in isolation, research needs to assess whether the impact of such management control systems, i.e., compensation interdependence, differs depending on the environment they are operating in. An aspect of growing relevance is alternative working environments such as digital workplaces outside the conventional office setup, e.g., telecommuting and workspaces without fixed workplaces (*hot-desking*), which are continually spreading (Global Workplace Analytics 2020). These alternative working environments have one aspect in common: reduced possibilities for interaction among employees and mutual monitoring. While they offer the potential to increase productivity and job satisfaction and reduce costs, a potential downside is less employee-employee interaction in telecommuting (Harris 2003; Hislop and Axtell 2007) and hot-desking setups (Brown and O'Hara 2003; Hirst 2011). Hence, research needs to assess not only the direct influence of such differing possibilities for interaction among employees

but also how these possibilities affect the influence compensation systems have on employee behavior.

For this reason, we analyze whether the influence of compensation interdependence on risk-taking depends on mutual monitoring. While mutual monitoring, in general, refers to individuals' ability to observe each other's actions (Towry 2003), it refers specifically to the ability to observe each other's decisions in terms of risk-taking in our experimental setting.[1] This setting is of particular importance, as compensation systems are implemented for many employees, while alternative working environments often affect only parts of the employees.

Being monitored by others makes individuals think about the impression others are forming of them (Leary and Kowalski 1990) and, consequently, adjust their behavior to create a positive impression (Bolino et al. 2008). However, which decisions individuals believe to create a positive impression depend on organizational and situational circumstances. Under individual performance-based compensation, other-regarding preferences should not play a role, and the individual risk preferences are reinforced. As most individuals are considered risk-averse, risk-taking is reduced. However, individuals under compensation interdependence are not only responsible for themselves but also for other individuals. Hence, they try to adjust their decisions to the other individuals' preferences to make a good impression on peers (impression management). Consequently, their decision depends on what they believe the others' preferences to be.

If individuals under compensation interdependence perceive their investments as riskier than the peers' investments, they are likely to reduce risk-taking to adjust to the group. If the opposite is true and risk-taking is lower in comparison, there is an incentive to adjust to the peer group and take additional risk. Hence, upward-adjustments are only reasonable under compensation interdependence in the presence of mutual monitoring. As stated above, this impression-management process requires that peer decisions are observable, i.e., it hinges on mutual monitoring. In the absence of mutual monitoring, individuals have no information which would allow them to harmonize their decisions. Thus, we predict that compensation interdependence leads to higher risk-taking if mutual monitoring is present. However, if mutual monitoring is absent, the motivation described above diminishes, as impression management is not possible under the absence of mutual monitoring.

To test our predictions, we conduct a laboratory experiment with 120 business students. We manipulate compensation interdependence (*absent* versus *present*) and mutual monitoring (*absent* versus *present*) between subjects. We use an investment task with ten rounds, where subjects have to decide in each round how to split an endowment between two risky investment alternatives, with one alternative being riskier than the other. Hence, this task measures "pure risk" instead of also adding

---

[1] Thus, unlike formal mutual monitoring models, which study a principal's opportunity to exploit mutual monitoring among agents in a multi-agent setting (e. g. Ma 1988; Zhang 2008), our study focuses on non-contractible mutual monitoring between employees.

an effort perspective.[2] Importantly, choosing the riskier alternative goes together with foregoing expected value. As companies are typically assumed to maximize expected value, the riskier alternative would be considered suboptimal from the firm's perspective. Also, we assume a linear relationship between the investment proceeds and the subjects' compensation. This resembles the typical incentive zone in contracts with variable compensation.[3]

As predicted, we find that the effect of compensation interdependence on risk-taking depends on mutual monitoring. In particular, compensation interdependence leads to higher risk-taking in the presence of mutual monitoring, but not in its absence.

Our findings contribute to both management accounting theory and practice. From a practical perspective, we inform firms that compensation interdependence is associated with higher risk-taking when mutual monitoring is present, but not when mutual monitoring is absent. Therefore, firms should consider if the working environment allows mutual monitoring when deciding about implementing an interdependent compensation system to actively manage risk-taking, especially if risk-taking can be suboptimal from a firm's perspective.

From a theoretical perspective, we add to the stream of research investigating the existence of choice shifts in groups.[4] However, in contrast to prior literature, we analyze a particular characteristic of decision-making common in practice:

---

[2] In practice, risk decisions can hardly be separated from effort decisions. E.g., Hakenes and Schnabel (2014) present a theoretical analysis that combines risk decisions and (costly) effort decisions, with both decisions being potentially interrelated. This paper chooses a behavioral approach and relies on the experimental research method. Combining risk and effort decisions is also possible in experimental research. However, for the ease of exposition we exclusively study risk-taking decisions. Moreover, combining risk and effort decisions in the experiment would further impede the advantage of the experimental method, i.e., causal inference.

[3] Many compensation contracts entail a variable bonus component with variable pay as a linear function of performance between a minimum level that does not warrant variable pay (floor) and a cap (Bennett et al. 2017; Murphy 2001). While floors induce an incentive to take additional risk, caps are intended to induce a more prudential behavior (Murphy 2013; Asai 2016). This is why, for example, lawmakers in the U.S. and Europe introduced mandated caps in compensation contracts such as through the Troubled Asset Relief Program (Garner and Kim 2010) or the Capital Requirement Directive IV (European Parliament and the Council 2013). We acknowledge that *total compensation* is frequently characterized by a convex curvature. Especially the limited liability due to a fixed baseline component without loss participation is assumed to drive risk-taking. Focusing on the incentive zone as a part of compensation contracts is a conservative test of our theory given the lack of these risk-inducing situational characteristics. At the same time, subjects in the experiment receive a show-up fee that is not at risk. Further, an alternative design choice could have been to endow subjects with an amount that could be (partly or fully) invested while the amount not invested would be saved. The task by Gneezy and Potters (1997) that underlies our experiment adopts this idea by giving participants the opportunity to choose an alternative that safely pays the endowment or a lottery. However, we do not expect this design choice to interact with our manipulations.

[4] Previous research in this field has investigated whether and how group decision rules, e.g., unanimity (e.g., Ambrus et al. 2015; Baker et al. 2008; Bougheas et al. 2013; Brunette et al. 2015; Keller et al. 2007; Keck et al. 2014; Masclet et al. 2009; Nieboer 2015; Sheremeta and Zhang 2010; Shupp and Williams 2008; Zhang and Casari 2012), majority votes (e.g., Brunette et al. 2015; Harrison et al. 2013), and dictatorship procedures (e.g., Bolton et al. 2015; Ertac and Gurdal 2012) affect risk-taking of groups compared to risk-taking of the individual.

compensation interdependence with individual decisions. Our results show that well-documented choice shifts in groups do not necessarily depend on interaction or particular decision rules in groups. They also occur in less salient forms of groups, where decision-making takes place on an individual basis under compensation interdependence.

We further substantiate that impression management concerns drive the effects of mutual monitoring. While Yechiam et al. (2008) find that mutual observability of choices and outputs between two individuals increases risk-taking, impression management concerns are unlikely to be the driver of this effect as they investigate groups of two without compensation interdependence. Lahno and Serra-Garcia (2015) show that relative payoff concerns and a "norm to conform" influence an individual's risk-taking behavior in groups of two. Other studies focus on the effects of social comparison on risk-taking based on the obtained payoffs and find significant effects on risk-taking (Bault et al. 2008; Linde and Sonnemans 2012). Hence, prior literature on the subject does not include any research investigating settings where impression management can play a role in influencing risk-taking within groups of more than two individuals. Therefore, our study contributes to existing research by examining such situations, which are widespread in practice, for example, in the form of annual bonus payments based on firm performance or department performance (Lazear and Shaw 2007). Further, we are strict in only allowing monitoring *decisions* and not *outcomes*. This choice rules out alternative explanations like learning by trial and error (Schedlinsky et al. 2016) and provides an opportunity for a suitable test of our hypothesized effects.

2 Background and Development of Hypotheses

2.1 Background

2.1.1 Setting

In line with Lefebvre and Vieider (2013, 2014), we classify an investment H as riskier if it offers a higher standard deviation (σ_H) and a lower expected value (EV_H) than another investment L ($EV_H < EV_L$; $\sigma_H > \sigma_L$).[5] This setting rests upon the idea of mean–variance analysis, which is frequently used to compare uncertain prospects (Rothschild and Stiglitz 1970). Under this approach, means of the alternatives are often held constant and the alternative with the lower variance is assumed preferable. However, under the expected utility maximization theory, this approach requires severe restrictions regarding the underlying distribution to be theoretically sound.[6]

---

[5] Given this simultaneity of standard deviation and expected value, it is hardly possible to disentangle the direction, i.e., if the investment returns or the standard deviation drive the effect.

[6] Rothschild and Stiglitz (1970) discuss the mean–variance analysis intensively and summarize that it can yield unjustified conclusions, i.e., that risk-averse individuals may prefer high-variance projects over low-variance projects depending on the underlying function, more precisely for any nonquadratic concave function. In turn, mean–variance analysis is unproblematic for distributions that are identical apart from their location parameters, i.e., affine transformations.

We assign the higher-variance alternative also the lower expected value to facilitate the identification of an organizationally desired result.[7]

Firms are typically characterized as risk-neutral and would hence always prefer the investment with the higher expected value and avoid risk-taking beyond the level needed to maximize expected value. This notion is in line with prior research (Lefebvre and Vieider 2014). Under this frequent assumption, individuals choosing investment H on behalf of the firm would deviate from corporate objectives. We investigate different incentive schemes, which firms introduce to direct employee behavior also in terms of risk-taking. Employees, though, may have objectives and preferences that diverge from those of the firm. As individuals are frequently assumed risk-averse, they could exhibit risk behavior that entails lower risk-taking than the firm's risk-neutral expectations. However, individuals may also be risk-seeking by disposition or show situational risk-taking behavior, leading to higher risk than the firm expects (Sitkin and Weingart 1995). For example, individual decision-makers' decisions, deviating from organizational objectives, policies, or guidelines, were assumed drivers of the financial crisis.

2.1.2 Compensation interdependence

Literature investigating the difference between risk-taking in groups and risk-taking by individuals shows mixed results as far as the existence and direction of a choice shift is concerned. While many studies identify a risky shift in groups,[8] other studies discover a cautious shift,[9] or no choice shift at all.[10] Even when accounting for the different decision-making rules, for example, unanimity after discussion or majority votes, results remain ambiguous.

As noted in the introduction, we focus on compensation interdependence, as this is a more common feature in decision-making practice than actual group decisions. In line with Nalbantian and Schotter (1997) and Lill (2020), we define compensation interdependence as the degree to which the compensation depends on group-based rather than individual-based outcomes. Compensation interdependence is beneficial for firms as it strengthens cooperation and coordination among employees (FitzRoy and Kraft 1987). However, research on compensation interdependence also finds that individual misreporting increases if another individual benefits as well (Church et al. 2012; Lill 2020). Further, Maas and van Rinsum (2013) find that individually beneficial misreporting is higher if another person is also affected positively compared to when another person is affected negatively. Di Cagno et al. (2012) find that compensation interdependence increases risk-taking in a two-person environment (without risk-taking to be suboptimally high from a firm perspective)

---

[7] We discuss the reason for not holding the expected values constant in more detail when introducing the experimental task.

[8] For example, Bougheas et al. 2013; Brunette et al. 2015; Nieboer 2015; Sutter 2007; Zhang and Casari 2012.

[9] For example, Ambrus et al. 2015; Keller et al. 2007; Masclet et al. 2009; Sheremeta and Zhang 2010.

[10] For example, Baker et al. 2008; Harrison et al. 2013; Keck et al. 2014.

and that—when they have the choice—individuals choose team partners with similar risk preferences.

From all other decision-making rules, the dictatorship procedure has the most substantial similarity to our definition of compensation interdependence, even though it is less common in practice. The procedure is not a group-decision rule in a narrow sense, as only one person decides without coordinating the decision technically or personally. This procedure is related to compensation interdependence in the sense of not coordinating decisions, but not regarding the number of people making decisions that impact other people's compensation. Research considering the dictatorship procedure finds that group risk-taking is higher than individual risk-taking if individuals take turns in deciding for a group of three, with each person deciding for three out of nine rounds (Sutter 2009). Contrarily, one individual dictating the decision, and thus the compensation for all group members, leads to a cautious shift compared to individual risk-taking (Bolton et al. 2015; Ertac and Gurdal 2012).

2.1.3 Mutual monitoring

Mutual monitoring refers to the ability of individuals to observe each other's actions (Towry 2003). As we focus on risk-taking, mutual monitoring in this study's context consequently refers to the ability to observe each other's decisions that involve risk-taking.

Mutual monitoring is ascribed mainly positive effects. Prior literature has shown that mutual monitoring increases the pressure to act following behavior principles in social groups and, therefore, can increase productivity (Mas and Moretti 2009). Hannan et al. (2013) find that mutual monitoring can positively and negatively influence effort when employees are compensated based on rank-order tournaments depending on the tendency to either compete or collude. Towry (2003) shows that mutual monitoring can be utilized in contract design to increase effort, while Chong and Khudzir (2018) show that mutual monitoring mitigates budgetary slack creation.

2.2 Hypotheses development

Economic theory provides ambiguous explanations for risk-taking behavior depending on the level of compensation interdependence. The individual claim is ceteris paribus less risky under compensation interdependence because of diversification effects, which may increase individual risk-taking. Simultaneously, being dependent on others' decisions (as a larger part of the compensation is out of one's control) increases the level of external influences on compensation, which could motivate individuals towards taking less risk.

In this paper, we rely on impression management as a behavioral theory and predict that the influence of compensation interdependence on risk-taking depends on the presence of mutual monitoring, as impression management requires a working environment in which the decision-maker can observe peers' risk-taking and knows that his or her risk-taking can be observed. Hence, individuals get an impression of the others' preferences by their behavior and know that others form an impression

of them. Theories on impression management postulate that individuals care about how others see them and try to model others' impressions towards various dimensions (Jones and Pittman 1982; Goffman 1959). According to attribution sought, Jones and Pittman (1982) classify impression management strategies in five categories: ingratiation, intimidation, self-promotion, exemplification, and supplication. In this framework, opinion conformity is an important example of an ingratiation action conducted to manage the impression others form of a person. Notably, Jones and Pittman (1982) state that ingratiation is "shaped and constrained by moral or evaluative factors" (Jones and Pittman 1982, p. 237). This emphasizes the strong relation of actions within this strategy to conformity theories and to (descriptive) norms. Such norms describe how individuals commonly behave in a particular situation, i.e., a "'normal' or 'regular' behavior" (Bicchieri 2006, p. 29). Notably, it does not need acknowledgment (group pressure or punishment) when (not) following the norm; instead, the motive to follow a descriptive norm is (as the reason for impression management) self-interested, because individuals want to belong to a system or "do things right" (Bicchieri 2006). A descriptive norm can be to "do things right" in terms of risk-taking. What is considered as "right", however, depends on compensation interdependence.[11]

Individuals under individual compensation are solely responsible for themselves. Hence, other-regarding preferences should not play a role. This should reinforce that the "right" decision in this context is following the own risk preferences. Consequently, mutual monitoring enforces existing risk preferences in the absence of compensation interdependence, which is (at least for the majority of individuals) risk aversion. Also, if such individuals opted for higher risk in past decisions, seeing their peers taking lower risk could motivate them to take fewer risks as well, as they see that their peers even share their risk preferences. However, if such individuals took less risk than their peers in the past, there is no descriptive norm for increasing risk-taking, as everyone is solely responsible for themselves. To sum up, individuals under mutual monitoring without compensation interdependence have no incentives to adjust their risk-taking upwards if they took less risky decisions than their peers did in the past.

However, under compensation interdependence, a "right decision" in terms of risk-taking incorporates affected peers' preferences. Hence, a positive impression can be generated by opinion conformity to the average risk-taking of affected peers. Thus, individuals under compensation interdependence develop a desire to consider their peers' preferences motivated by impression management. More precisely, if individuals under compensation interdependence realize that they

---

[11] Another important stream of literature explaining why individuals follow other individuals' actions is the work on herding behavior (e.g., Bikhchandani et al. 1992; Banerjee 1992). A common notion in this literature is that people infer the private information of preceding individuals from their actions. As a result of this, individuals are likely to act in accordance with other people's decisions, even against the actions suggested by own private information. In our setting, we emphasize that nobody can receive any signals regarding the "true" states of nature; hence, subjects are aware that private information cannot exist. Thus, our experiment is closer to the "conformity preference" that can exist next to herding behavior (in a narrow sense) through informational cascades examined in Bikhchandani et al. (1992).

opted for higher risk than their peers due to mutual monitoring, they have an incentive to lower risk-taking to adjust themselves to the affected group. However, if individuals chose below-average risk levels, they have an incentive to increase risk-taking to live up to the (presumed) group expectations. Hence, unlike under individual compensation, there is a (behavioral) incentive to adjust risk-taking in the upward direction under compensation interdependence, as the decisions affect peers' compensation. Hence, following the descriptive norm regarding the average level of risk-taking can generate a positive impression.

To sum up, we argue that compensation interdependence only has an impact in a situation with mutual monitoring, and hence predict an interaction effect. When mutual monitoring is present, reasons to adjust risk-taking upwards under compensation interdependence lead to higher risk-taking. This is formally stated in our hypotheses:

H1: The influence of compensation interdependence on risk-taking depends on the existence of mutual monitoring.

H2: Under the presence of mutual monitoring, risk-taking is higher if compensation interdependence is present rather than absent.

3 Experimental method

3.1 Experimental manipulations

To test our predictions, we employ a laboratory $2 \times 2 \times 10$ mixed design experiment conducted in z-Tree (Fischbacher 2007). We manipulate the two factors compensation interdependence (*absent* versus *present*) and mutual monitoring (*absent* versus *present*) between subjects. The experiment consists of 10 rounds; hence, time is our third factor manipulated within subjects.

When compensation interdependence is present, participants' compensation for the main part of the experiment is the sum of five peers' financial returns sitting in a row equally divided between the peers. When compensation interdependence is absent, participants' compensation for the main part of the experiment is calculated based on the financial returns resulting from each participant's individual investment decisions. Most importantly, we neither refer to participants as "group members" nor use the term "group" at any time in the experiment to allow for a robust test of the concept of compensation interdependence instead of decision-making in groups.

When mutual monitoring is present, participants receive information about their own investment decision in the previous round and the four other participants' investment decisions sitting in the same row. In the absence of mutual monitoring, the only information participants receive about the previous round is their own investment decision. Importantly, participants in both conditions do not receive any further information, especially no information about investment decisions' outcomes. This is necessary to prevent former outcomes from influencing the participants, as documented in prior literature (Bault et al. 2008).

3.2 Experimental task

We employ a modified version of the investment task by Gneezy and Potters (1997), and each round, ask participants to decide how to split an endowment of 1000 Lira into two possible investment alternatives, "A" and "B".[12] In each round, one investment alternative (for the purpose of this paper called "L") offers a lower standard deviation and a higher payout in the low-paying state of nature than the other investment alternative (for the purpose of this paper called "H"). Investment alternative L offers an expected value of 100% of the invested amount. In contrast, investment alternative H offers an expected value of 83.33% of the invested amount.[13] Notably, alternative L also contains some risk. Hence, participants with the desire to take some risk are not forced to invest in H. Consequently, we use the amount invested in alternative H as our measure for higher risk-taking.

Figure 1 depicts the investment task structure: the amount invested is multiplied by the factor related to the investment alternative and the realized state of nature. If state of nature 1 is realized in the example, the amount invested in alternative A is multiplied by 122%, and the amount invested in alternative B by 162%. The sum of the returns of both investment alternatives represents the return of the overall investment decision. The outcomes of both investment alternatives in one round are determined by the same lottery, either resulting in a high-paying state of nature (state of nature 1) or a low-paying state of nature (state of nature 2) for both investment alternatives. The probabilities for the possible states of nature and the investment alternatives' multipliers vary across rounds to avoid boredom and habituated behavior.[14] Even though probabilities and return multipliers are identical for all participants in the same round, we use independent lotteries for all participants and rounds; hence, each realized state of nature is independent of the realized state of nature of any other participant and round. Participants do not learn about the outcomes of their investment decisions before the end of the experiment to rule out reactions to former outcomes as an alternative explanation for our results.

3.3 Participants and procedure

In total, 120 business students participated in the study, and they were randomly assigned to one of the four treatment conditions. Nine participants were excluded from the analysis as they did provide unclear ex-ante risk preferences; hence, the analysis is based on 111 participants.[15] The average age is 22.2 years, with 55.9%

---

[12] Lira is the experimental currency used. The exchange rate for the experimental currency is 65 Lira/€. Participants had to split their entire endowment of 1,000 Lira into the two investment alternatives in each round; hence, there was no possibility to carry over parts of the endowment in a subsequent round. The labels "A" and "B" have been determined randomly for each round to avoid any influence of the labels on participants' decisions.

[13] Notably, the expected value of H is smaller than one to represent negative expected returns.

[14] An overview about all multipliers and probabilities for the states of nature is depicted in Table 4 in Appendix 1.

[15] The nine participants excluded failed to provide consistent risk preference choices in the risk preference elicitation instrument introduced in this section. This consistency would be characterized by at most one switching point between the participation in the lottery and the safe payment. Including the nine participants using a fourth risk preference label for these participants did result in inferential identical results in our analyses for the hypotheses test (cf. footnote 21).
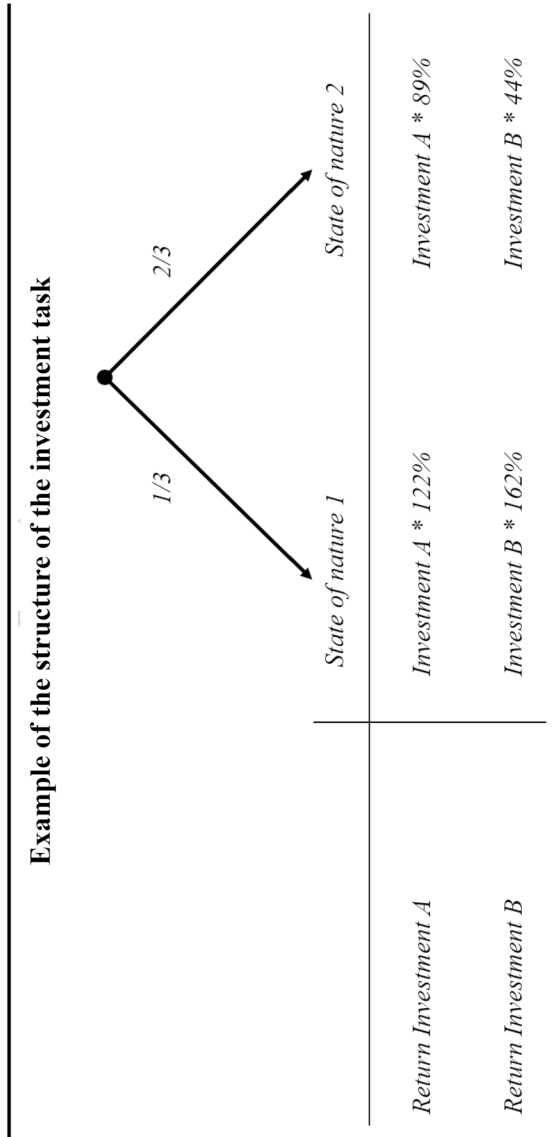
Example of the structure of the investment task

	State of nature 1	State of nature 2
Return Investment A	Investment A * 122%	Investment A * 89%
Return Investment B	Investment B * 162%	Investment B * 44%

1/3 — 2/3

Fig. 1 Example of the structure of the investment task

(44.1%) being male (female). On average, the number of math and statistics classes taken is 3.24. There are no significant differences across conditions for age ($p = 0.91$, two-tailed), gender ($p = 0.84$, two-tailed), course of study ($p = 0.84$, two-tailed), semester ($p = 0.82$, two-tailed), prior experience with laboratory experiments ($p = 0.31$, two-tailed) and number of math and statistics classes taken ($p = 0.48$, two-tailed). Thus, randomization was successful.

Upon arrival in the laboratory, participants were seated in rows of five, and they introduced themselves by announcing their row and their participant number.[16] After that, the participants had 13 min to read the written instructions. To ensure a sufficient understanding of the critical information and the experimental procedure, participants had to answer all questions of a quiz correctly before proceeding.

To measure the participants' ex-ante risk preferences before the investment task began, we employed a commonly used risk preference elicitation instrument (e.g., Sprinkle et al. 2008). For 15 different lotteries, the participants had to choose between a safe payment and participation in a lottery. The safe payment was 100 Lira for all choices, while the lotteries paid either 200 Lira with a probability of π or 0 Lira with a probability of $1 - \pi$. Probability π decreases from 85% (lottery 1) to 15% (lottery 15) in increments of 5%.[17] The participants were informed that one of the 15 options would be selected at random and that the respective payment would be part of the final compensation. However, they did learn neither about the drawn option nor about the realized state of the respective lottery before the end of the investment task to avoid wealth effects as well as an influence of the lottery outcome on decision-making in the investment task.[18] 70 (34, 7) subjects are risk-averse (risk-neutral, risk-seeking). There are no significant differences across conditions for ex-ante risk preferences ($p = 0.98$, two-tailed).

The main part of the experiment started with the first round of the investment task.[19] After each of the ten rounds, participants received feedback following their experimental condition. All participants within a session started each round at the same time.

After performing the investment task, participants were informed about the randomly drawn lottery outcome from the risk preference elicitation instrument. Further, one round of the main task was randomly drawn in front of the participants to determine their compensation for this part of the experiment. Overall, all participants received a fixed compensation for participation, a variable payment for

---

[16] Participants had to introduce themselves by standing up one by one and saying "I am participant number one/two/three/four/five in row number one/two/three." In the mutual monitoring condition, this procedure shall allow a connection of the investment decisions of participants in one row. To hold this feature constant across conditions, the introduction took place in all treatments.

[17] Based on subjects' decisions in the risk preference elicitation, they are labeled risk-averse (risk-neutral, risk-seeking) if they require a minimum of a 60% (50%, 15%) chance of winning to choose a lottery over a safe payment.

[18] Participants were also informed that the risk preference elicitation task was independent from the rest of the experiment.

[19] All participants had the possibility to use paper and pens as well as a calculator on their computers. Moreover, all participants were required to wear earmuffs since mouse or keyboard sounds may reveal the time other participants spend on calculations, and thus influence behavior.

the lottery, and their variable compensation from a randomly drawn round for the main experiment in accordance with the respective treatment (compensation interdependence absent or present). Participants earned an average of € 17.56. After the drawings, the participants had to answer a post-experimental questionnaire and were dismissed.

4 Results

4.1 Descriptive statistics

Table 1 shows descriptive data for our main dependent variable risk-taking, i.e., the amount invested in the investment alternative with higher risk (H) for each round and treatment (Panel A), and aggregated results of all rounds (Panel B).

On average, participants spent 2496.31 of a maximum of 10,000 Lira over all ten rounds on investments in alternative H (Panel B). When comparing the treatment effects, compensation interdependence (unconditionally) increases investments in H and hence, risk-taking, by 15.2% (presence 2677.74 vs. absence 2324.42). The presence of mutual monitoring decreases risk-taking by 9.4% (presence 2372.40 vs. absence 2618.00). Comparing the four cells individually gives rise to the hypothesized interaction effect. In the absence of mutual monitoring, the presence of compensation interdependence reduces risk-taking slightly by 13.8% (presence 2417.41 vs. absence 2804.76). In contrast, if mutual monitoring is present, introducing compensation interdependence magnifies risk-taking by 60.8% (presence 2938.07 vs. absence 1826.93). The data are in line with H1 to the extent that the effect of compensation interdependence on risk-taking hinges on the presence or absence of mutual monitoring. Further, the cell means are in line with H2 to the extent that compensation interdependence increases risk-taking in settings with mutual monitoring, but not in the absence of mutual monitoring.

4.2 Hypotheses test

H1 predicts that the effect of compensation interdependence depends on the existence of mutual monitoring. To formally test this hypothesis, we conduct a repeated-measures analysis of variance (RM-ANOVA) with risk-taking, i.e., the investment in the alternative H containing higher risk, as our dependent variable. Compensation interdependence, mutual monitoring, and round are our independent variables. Ex-ante risk preferences are included to rule out that subjects' risk preferences drive the results. As presented in Table 2, Panel A, we find a significant interaction effect for the influence of compensation interdependence and mutual monitoring ($F = 7.37$, $p < 0.01$, two-tailed). Hence, H1 is supported. Moreover, we do neither find a significant main effect of compensation interdependence ($F = 1.51$, $p = 0.222$, two-tailed) nor a significant main effect of mutual monitoring ($F = 0.76$, $p = 0.386$, two-tailed).[20]

---

[20] We also find a significant main effect of our variable round, which indicates a linear trend over the course of the experiment as well as a significant interaction effect of our variables round and mutual

H2 predicts that risk-taking under mutual monitoring is higher if compensation interdependence is present rather than absent. As H2 focuses on the effect of compensation interdependence under different conditions of mutual monitoring, we follow up on our analysis with simple effect tests based on the previous ANOVA results to test for the effect of compensation interdependence when mutual monitoring is present versus absent. Again, the ex-ante risk preference is included to rule out that risk preferences drive the results. As presented in Table 2, Panel B, we find that under mutual monitoring, participants with compensation interdependence invest more into the alternative that contains higher risk than participants without compensation interdependence ($F = 7.71$, $p < 0.01$, two-tailed). We also find that compensation interdependence does not affect risk-taking in the absence of mutual monitoring ($F = 1.12$, $p = 0.293$, two-tailed). For this reason, we conclude that mutual monitoring indeed moderates the effect of compensation interdependence on risk-taking and that compensation interdependence significantly increases risk-taking only under mutual monitoring.[21] Consequently, H2 is supported as well.

4.3 Additional analysis

This section ties the results to the proposed psychological mechanisms. The reasoning for H2 proposes that under mutual monitoring, individuals take higher risks when compensation interdependence is present instead of absent, as—based on impression management—they have a reason to increase their investment into higher risks, and thus possibly tend to carry out "upward changes" from one round to the other. If this holds, individuals under compensation interdependence should be far more concerned about being perceived as reasonable decision-makers (*impression*). In addition to this, they should think much more often about others' decisions (*thoughts*) and have a greater desire to consider (*consideration*) their peers' preferences. Finally, they should aim at incorporating these preferences in their own decisions (*incorporation*).

Table 3 reveals answers from the post-experimental questionnaire. Participants under mutual monitoring are significantly more concerned about being perceived as reasonable decision-makers if compensation interdependence is present rather than absent (*impression*, 4.37 vs. 2.68, $p < 0.01$, two-tailed). They think significantly more often about others' decisions (*thoughts*, 3.78 vs. 2.86, $p = 0.064$, two-tailed), and they have a greater desire to consider their peers' preferences (*consideration*, 3.33 vs. 2.43, $p = 0.058$, two-tailed). Further, they aim at incorporating these

---

Footnote 20 (continued)

monitoring. However, as our task is designed in a way that gives participants different investment opportunities every round, we cannot rule out that these effects are driven by participants having a (subjective) preference or aversion for a specific investment opportunity. Hence, we refrain from interpreting these effects for conservativeness reasons.

[21] The results of the analyses remain inferentially identical when we include the nine participants that have not been included in the analysis as they failed to provide consistent risk preference choices. In this case, we use "unclear risk preferences" as a fourth risk preference label for these participants (in addition to risk-averse, risk-neutral, and risk-seeking) in a robustness check for the hypotheses tests.

Table 1 Descriptive statistics

Panel A: Descriptive statistics per treatment and round (mean [standard deviation])

	Compensation interdependence (CI)[a]				Total
	Absent		Present		
	Mutual monitoring[b]		Mutual monitoring		
	Absent	Present	Absent	Present	
Number of subjects (n)	29	28	27	27	111
High risk-taking (in Lira)[c]					
Round 1 [d]	326.79 [205.46]	291.93 [199.88]	295.07 [184.92]	331.26 [195.90]	311.37 [195.00]
Round 2	309.55 [230.64]	260.82 [205.03]	289.63 [190.62]	368.52 [273.32]	306.76 [227.27]
Round 3	303.86 [236.49]	208.96 [180.25]	235.85 [145.69]	358.63 [221.48]	276.70 [205.53]
Round 4	239.90 [212.14]	180.18 [154.77]	206.85 [151.66]	255.59 [190.67]	220.61 [179.52]
Round 5	318.14 [273.32]	113.43 [124.80]	235.85 [181.21]	324.07 [206.83]	247.93 [219.26]
Round 6	238.07 [231.14]	154.86 [163.91]	223.00 [196.64]	225.26 [169.18]	210.30 [192.82]
Round 7	248.97 [259.55]	123.46 [125.28]	257.85 [280.25]	215.33 [179.46]	211.29 [223.72]
Round 8	296.62 [284.80]	168.11 [142.64]	252.78 [254.81]	339.33 [278.40]	263.93 [251.70]
Round 9	308.45 [252.83]	163.68 [134.98]	224.00 [225.89]	231.00 [188.24]	232.55 [209.58]
Round 10	214.41 [211.72]	161.50 [125.31]	196.52 [210.39]	289.07 [253.30]	214.87 [207.49]
Total high risk-taking (in Lira)	2,804.76 [1,702.72]	1,826.93 [1,216.90]	2,417.41 [1,606.15]	2,938.07 [1,416.64]	2,496.31 [1,540.83]

Panel B: Descriptive statistics (all rounds) by treatment (mean [standard deviation])

	Compensation interdependence		
	Absent	Present	Total
Mutual monitoring			
Absent	2,804.76 [1,702.72]	2,417.41 [1,606.15]	2,618.00 [1,653.37]
Present	1,826.93 [1,216.90]	2,938.07 [1,416.64]	2,372.40 [1,421.61]

Table 1 (continued)

Panel B: Descriptive statistics (all rounds) by treatment (mean [standard deviation])

	Compensation interdependence		
	Absent	Present	Total
Total	2,324.42 [1,551.40]	2,677.74 [1,522.85]	2,496.31 [1,540.83]

[a]In the presence of *compensation interdependence* (CI), subjects' variable compensation is calculated as the sum of the financial returns of five peers sitting in a row equally divided between the peers for each participant. In the absence of compensation interdependence, participants' variable compensation stems from the financial return from their investment. Compensation interdependence is a between-subjects factor

[b]In the presence of *mutual monitoring*, subjects are shown the amounts allocated onto the investment alternatives by themselves and their four peers in the preceding round. In the absence of mutual monitoring, subjects only see their own invested amounts. Mutual monitoring is a between-subjects factor

[c]*High risk-taking* is the dependent variable and measures the amount invested in the investment alternative H containing higher risk (in the experimental currency "Lira", 65 Lira/€)

[d]*Round* is a within-subjects factor. In every round, subjects need to make one investment decision

preferences into their own decisions more strongly (*incorporation*, 3.33 vs. 2.32, $p = 0.047$, two-tailed). These findings support our theoretical reasoning regarding the intentions of individuals.

Our argumentation further relies on the assumption that individuals change their behavior if they receive information under mutual monitoring. Hence, we analyze how participants under mutual monitoring change their investment decision from one round to another. As stated in the hypothesis development, individuals on average have—irrespective of compensation interdependence—personal motives to take less risks, that is, avoiding risks to raise the expected value of payoffs. However, only individuals under compensation interdependence have an impression-management-based reasoning to increase their risk-taking: they wish to harmonize their own decisions and their peers' decisions, provided they took less risk in the previous round than their peers. To test this prediction, we investigate the effect of compensation interdependence on risk-taking for subjects in the mutual-monitoring condition that took less than average risk in previous rounds. Therefore, we pool observations and run an ANOVA with the change in risk-taking from one round to another being the dependent variable. As independent variables, we include mutual monitoring, compensation interdependence, and the latter two's interaction. Further, we create a dummy that takes the value of 1 (0) if individuals took less or equal (more) risk than the average of peers' risk-taking in the previous round. This dummy also interacts with the two (original) independent variables and their interaction. We are only interested in the 55 subjects under mutual monitoring from rounds two to ten, as mutual monitoring is first present *after* round one ($n = 495$).

In the overall sample, risk-taking below or equal to the average value occurred 282 times, and above-average risk-taking 213 times. A post-hoc contrast for compensation interdependence under the mutual monitoring and below-or-equal-to-average conditions reveals that participants increased their risk-taking significantly stronger under compensation interdependence (79.99 vs. 29.63, $F = 4.71$, $p = 0.030$, two-tailed).[22] Further, we do not find a difference in adjustments under the same conditions if individuals took more risk than their peers did on average in the previous round, with both averages showing downward adjustments, as expected in this case (-108.78 vs. -77.28, $F = 1.39$, $p = 0.238$, two-tailed).[23] These findings support our prediction that the difference is driven by upward adjustments under mutual monitoring and compensation interdependence.

To further validate this result, we investigate if compensation interdependence makes a difference regarding risk-taking in the *first* round in mutual monitoring conditions. No difference in risk-taking between individuals with compensation interdependence and individuals without compensation interdependence under mutual monitoring is observed in the first round ($p = 0.453$, two-tailed). This highlights the

---

[22] These results are robust for a split of lower ($n = 258$) versus higher or equal ($n = 237$) risk compared to the peers' average in the previous round, with averages of 91.44 (34.40) for compensation interdependence present (absent) ($F = 5.57$, $p = 0.019$, two-tailed).

[23] Again, the results are robust for a configuration of lower versus higher or equal risk compared to the peers' average in the previous round (-104.85 vs. -70.02, $F = 1.91$, $p = 0.167$, two-tailed).

Table 2 Hypothesis test

Panel A: Repeated measures ANOVA results (n = 111)
Dependent variable = high risk-taking per round through rounds 1–10

Source	Df	Type 3 SS	F-value	p-value[a, b]
Between subjects				
CI (absent, present)	1	338,148.89	1.51	0.222
Mutual monitoring (absent, present)	1	169,860.40	0.76	0.386
CI × mutual monitoring	1	1,654,173.60	7.37	0.008***
Risk preference	2	236,428.55	1.05	0.352
Within subjects				
Round	9	78,940.29	3.36	0.001***
Round × CI	9	15,876.76	0.68	0.703
Round × mutual monitoring	9	40,937.87	1.74	0.091*
Round × CI × mutual monitoring	9	37,311.35	1.59	0.131
Round × risk preference	18	17,346.32	0.74	0.746

Panel B: Simple effects tests for CI (contrasts following pooled ANOVA)[c]
Dependent variable = high risk-taking through rounds 1–10

Source	Df	Mean difference	F-value	p-value[a]
CI under mutual monitoring present	1	1,111.14	7.71	0.007 ***
CI under mutual monitoring absent	1	− 387.35	1.12	0.293

[a]All p-values are reported on a two-tailed basis

[b]p-values within subjects are calculated based on the Huynh–Feldt correction to account for sphericity

[c]Panel B reports contrast testing following a pooled ANOVA containing the between-subjects factors CI, mutual monitoring, and CI × mutual monitoring. Ex-ante risk preferences are included in the pooled ANOVA to rule out that subjects' risk preferences drive the results

importance of the informational value mutual monitoring has for participants in our setting.

5 Conclusion

Compensation systems in practice often include aspects of compensation interdependence between employees for various reasons, such as an instrument to elicit effort and performance or increase team cohesion. We investigate whether compensation interdependence, besides its positive aspects, also involves hidden costs of higher risk-taking. Importantly, risk-taking is not necessarily a problem per se, as taking risks is essential to exploit entrepreneurial opportunities (Kreilkamp et al. 2020). Thus, as employees are frequently risk-averse, motivating them to take more risks is often necessary. However, we investigate a situation in which risk-taking is suboptimal from the firm's perspective in that additional units of risk go together with lower expected values. Thus, firms must carefully trade-off the benefits of

Table 3 Additional analysis

Responses to post-experimental questions (mutual monitoring present, n = 55)[a]

Item	CI absent (mean)	CI present (mean)	F-value	p-value[b]
Impression management concerns[c]	2.68	4.37	10.30	<0.01***
Thoughts about the decisions of other participants[d]	2.86	3.78	3.59	0.064*
Importance to *consider* what other participants likely regard as the correct decision[e]	2.43	3.33	3.75	0.058*
Incorporation of other participants' preferences[f]	2.32	3.33	4.14	0.047**

[a]This table reports the mean values for answers in the post-experimental questionnaire for the conditions in which mutual monitoring is present, separately for conditions with compensation interdependence absent and present. The means are tested for differences using an ANOVA, with *F-values* and *p-values* reported in the table

[b]All *p*-values are two-tailed

[c]*Impression management concerns* reports to what extent participants agree with the following statement: "I wanted to be perceived as reasonable by other participants.", based on a 7-point Likert scale (1-do not agree at all, 7-completely agree)

[d]*Thoughts about decisions of other participants* reports the answer to the question "How often did you think about the other participants' decisions during the experiment?" based on a 7-point Likert scale (1-never, 7-very often)

[e]*Importance to consider what other participants likely regard as the correct decision* reports to what extent participants agree with the following statement: "It was important to me to consider what other participants likely regard as the correct decision.", based on a 7-point Likert scale (1-do not agree at all, 7-completely agree)

[f]*Incorporation of other participants' preferences* reports to what extent participants agree with the following statement: "When making my decision I incorporated what other participants likely regarded as the correct decision.", based on a 7-point Likert scale (1-do not agree at all, 7-completely agree)

compensation interdependence against the hidden costs of higher risk-taking beyond the expected value-maximizing risk-neutral decision.

We analyze if the risk-inducing effect of compensation interdependence on risk-taking depends on an important aspect of the working environment: traditional workplaces or modern workplaces like telecommuting or hot-desking—with the ability (not) to mutually monitor peers' behavior as the key distinctive feature. To rule out alternative explanations, we focus on a major difference between these working environments: employees may observe each other in terms of mutual monitoring of risky decision-making.

In a laboratory experiment in which participants decide how to split an endowment between two investment alternatives, we find that the effect of compensation interdependence depends on mutual monitoring. Specifically, under mutual monitoring, risk-taking is higher if compensation interdependence is present rather than absent. We demonstrate that impression management is the driving force of this effect. We further show that individuals under compensation interdependence use "upward adjustments" more strongly to respond to their peer group's average decision in the previous rounds. Our results also show no difference in risk-taking

depending on compensation interdependence when mutual monitoring is absent. We attribute this to the absence of an impression-management-based motivation, as peers cannot observe the decision-making process in such situations.

Our findings have important implications for theory and practice. We add to prior research by identifying compensation interdependence as an important determinant for risk-taking. Prior research in this field has focused on the effect of compensation interdependence on misreporting (Church et al. 2012; Lill 2020; Maas and van Rinsum 2013) and free-riding (Holmstrom 1982), but it has not considered the effect on risk-taking in conventional and alternative workplaces. Moreover, we add to the stream of literature investigating the link between mutual monitoring and dysfunctional behavior (Hannan et al. 2013; Orr 2001; Towry 2003). Finally, we add to the stream of literature examining choice shifts in groups by separating the effect of a particular characteristic of decision-making in groups on risk-taking, that is, compensation interdependence. We also inform firms that the hidden costs of using compensation interdependence depend on the respective working environment. In traditional workplaces, where mutual monitoring of decisions is often present, firms should consider that compensation interdependence influences not only performance and cooperation but also the risk-taking behavior of employees. Compensation interdependence, however, does not increase risk-taking in workplaces where mutual monitoring is absent. This finding also emphasizes the necessity for managers and human resource management to develop different compensation systems depending on the working environment. For example, if firms wish to reduce or maintain overall risk-taking in their operations, they should be cautious when implementing interdependent compensation for traditional working environments, while this approach is less problematic in alternative working environments like telecommuting or hot-desking.

Risk-taking that goes beyond the expected value-maximization of risk-neutral decisions can be considered a facet of suboptimal decision-making from a firm's perspective. Thus, our results can potentially generalize to other types of suboptimal decision-making *beyond* different risk-taking forms, in which individuals have an impression-management-based reason to incorporate their affected peers' preferences in their decision-making process. Thereby, compensation interdependence can potentially lead to inferior decision-making in other domains as well.

Fruitful areas of research arise from limitations of our study. First, we assume a linear relationship between performance and compensation. While such a linear compensation component is usually contained in compensation contracts by the incentive zone of bonus payments, total compensation is often shaped differently. It would be interesting to investigate the effects of compensation interdependence under different functional forms between performance and compensation. Especially in settings with option-based compensation, which is only relevant for (larger) stock companies, visibility of decisions might play another role. Second, while we focus on mutual monitoring of decisions rather than on the outcomes of these decisions to provide a suitable test of our hypotheses, future research could examine the influence of mutually monitored decision outcomes to expand the findings to other areas of

practical relevance. Third, we can show how risk-taking differs depending on mutual monitoring—however, we do not test mechanisms that potentially reduce risk-taking under compensation interdependence. Moreover, as telecommuting agreements are gaining importance, future research might further explore the effects of alternative control mechanisms on risk-taking when mutual monitoring is absent.

Appendix 1

See Table 4.

Table 4 Multipliers and probabilities in the investment task

	Probabilities		Multiplier			
			Investment H		Investment L	
	State of nature 1	State of nature 2	State of nature 1 (%)	State of nature 2 (%)	State of nature 1 (%)	State of nature 2 (%)
Round 1	1/3	2/3	162	44	122	89
Round 2	7/15	8/15	142	32	116	86
Round 3	1/3	2/3	180	35	128	86
Round 4	1/3	2/3	150	50	116	92
Round 5	11/30	19/30	172	32	119	89
Round 6	1/3	2/3	166	42	124	88
Round 7	1/3	2/3	184	33	130	85
Round 8	13/30	17/30	140	40	117	87
Round 9	1/3	2/3	170	40	126	87
Round 10	1/3	2/3	160	45	120	90

References

Ambrus A, Greiner B, Pathak PA (2015) How individual preferences are aggregated in groups: an experimental study. J Public Econ 129:1–13

Asai K (2016) Is capping executive bonuses useful? International Monetary Fund 16/196

Baker RJ, Laury SK, Williams AW (2008) Comparing small-group and individual behavior in lottery-choice experiments. South Econ J 75:367–382

Banerjee AV (1992) A simple model of herd behavior. Q J Econ 107:797–817

Bault N, Coricelli G, Rustichini A (2008) Interdependent utilities: how social ranking affects choice behavior. PLoS One. https://doi.org/10.1371/journal.pone.0003477

Bennett B, Bettis JC, Gopalan R, Milbourn T (2017) Compensation goals and firm performance. J Financ Econ 124:307–330

Bicchieri C (2006) The grammar of society: the nature and dynamics of social norms. Cambridge University Press, Cambridge

Bikhchandani S, Hirshleifer D, Welch I (1992) A theory of fads, fashion, custom, and cultural change as informational cascades. J Polit Econ 100:992–1026

Blasi JR, Freeman RB, Mackin C, Kruse DL (2010) Creating a bigger pie? The effects of employee ownership, profit sharing, and stock options on workplace performance. In: Kruse DL, Freeman RB, Blasi JR (eds) Shared capitalism at work: employee ownership, profit and gain sharing, and broad-based stock options. The University of Chicago Press, Chicago, pp 139–165

Bolino MC, Kacmar KM, Turnley WH, Gilstrap JB (2008) A multi-level review of impression management motives and behaviors. J Manag 34:1080–1109

Bolton GE, Ockenfels A, Stauf J (2015) Social responsibility promotes conservative risk behavior. Eur Econ Rev 74:109–127

Bougheas S, Nieboer J, Sefton M (2013) Risk-taking in social settings: group and peer effects. J Econ Behav Organ 92:273–283

Brown B, O'Hara K (2003) Place as a practical concern of mobile workers. Environ Plan A 35:1565–1587

Brunette M, Cabantous L, Couture S (2015) Are individuals more risk and ambiguity averse in a group environment or alone? Results from an experimental study. Theor Decis 78:357–376

Bushman RM, Indjejikian RJ, Smith A (1995) Aggregate performance measures in business unit manager compensation: the role of intrafirm interdependencies. J Account Res 33:101–128

Chong VK, Khudzir NF (2018) The effect of mutual monitoring and need for achievement on budgetary slack in a team-based environment. In: Karim KE (ed) Advances in accounting behavioral research 21. Emerald Publishing Limited, Bingley, pp 1–19

Church BK, Hannan RL, Kuang X (2012) Shared interest and honesty in budget reporting. Account Organ Soc 37:155–167

Davis JH (1992) Some compelling intuitions about group consensus decisions, theoretical and empirical research, and interpersonal aggregation phenomena: selected examples 1950–1990. Organ Behav Hum Decis Process 52:3–38

Di Cagno D, Sciubba E, Spallone M (2012) Choosing a gambling partner: testing a model of mutual insurance in the lab. Theor Decis 72:537–571

Directive 2013/36/EU. CRD IV. European Parliament and the Council. Off J Eur Union. June 26. https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:En:PDF

Ertac S, Gurdal MY (2012) Deciding to decide: gender, leadership and risk-taking in groups. J Econ Behav Organ 83:24–30

Fischbacher U (2007) z-Tree: Zurich toolbox for ready-made economic experiments. Exp Econ 10:171–178

FitzRoy F, Kraft K (1987) Cooperation, productivity, and profit sharing. Q J Econ 102:23–35

Garner JL, Kim WY (2010) Does a salary cap really work?. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1546783

Global Workplace Analytics (2020) Telecommuting trend data (updated March 13, 2020). https://globalworkplaceanalytics.com/telecommuting-statistics. Accessed 1 Oct 2020

Gneezy U, Potters J (1997) An experiment on risk-taking and evaluation periods. Q J Econ 112:631–645

Goffman E (1959) The presentation of self in everyday life. Doubleday, Garden City

Hakenes H, Schnabel I (2014) Bank bonuses and bailouts. J Money Credit Bank 46:259–288

Hannan RL, Towry KL, Zhang Y (2013) Turning up the volume: an experimental investigation of the role of mutual monitoring in tournaments. Contemp Account Res 30:1401–1426

Harris L (2003) Home-based teleworking and the employment relationship: managerial challenges and dilemmas. Pers Rev 32:422–437

Harrison GW, Lau MI, Rutström EE, Tarazona-Gómez M (2013) Preferences over social risk. Oxf Econ Pap 65:25–46

Hirst A (2011) Settlers, vagrants and mutual indifference: unintended consequences of hot-desking. J Organ Chang Manag 24:767–788

Hislop D, Axtell C (2007) The neglect of spatial mobility in contemporary studies of work: the case of telework. N Technol Work Employ 22:34–51

Holmstrom B (1982) Moral hazard in teams. Bell J Econ 13:324–340

Jones EE, Pittman TS (1982) Toward a general theory of strategic self-presentation. In: Suis J (ed) psychological perspectives on the self. Lawrence Erlbaum Associates Publishers, Hillsdale, pp 231–262

Keating AS (1997) Determinants of divisional performance evaluation practices. J Account Econ 24:243–273

Keck S, Diecidue E, Budescu DV (2014) Group decisions under ambiguity: convergence to neutrality. J Econ Behav Organ 103:60–71

Keller LR, Sarin RK, Sounderpandian J (2007) An examination of ambiguity aversion: are two heads better than one? Judgm Decis Mak 2:390–397

Kreilkamp N, Matanovic S, Sommer F, Wöhrmann A (2020) The effect of compensation caps on risk-taking. J Manag Account Res. https://doi.org/10.2308/JMAR-18-053

Lahno AM, Serra-Garcia M (2015) Peer effects in risk-taking: envy or conformity? J Risk Uncertain 50:73–95

Lazear EP, Shaw KL (2007) Personnel economics: the economist's view of human resources. J Econ Perspect 21:91–114

Leary MR, Kowalski RM (1990) Impression management: a literature review and two-component model. Psychol Bull 107:34–47

Lefebvre M, Vieider FM (2013) Reining in excessive risk-taking by executives: the effect of accountability. Theor Decis 75:497–517

Lefebvre M, Vieider FM (2014) Risk-taking of executives under different incentive contracts: experimental evidence. J Econ Behav Organ 97:27–36

Lill JB (2020) When the Boss is far away and there is shared pay: the effect of monitoring distance and compensation interdependence on performance misreporting. Account Organ Soc 86:1–11

Linde J, Sonnemans J (2012) Social comparison and risky choices. J Risk Uncertain 44:45–72

Luft J, Shields MD (2009) Psychology models of management accounting. Found Trends Manag Account 4:199–345

Ma C (1988) Unique implementation of incentive contracts with many agents. Rev Econ Stud 55:555–571

Maas VS, van Rinsum M (2013) How control system design influences performance misreporting. J Account Res 51:1159–1186

Mas A, Moretti E (2009) Peers at work. Am Econ Rev 99:112–145

Masclet D, Colombier N, Denant-Boemont L, Lohéac Y (2009) Group and individual risk preferences: a lottery-choice experiment with self-employed and salaried workers. J Econ Behav Organ 70:470–484

Merriman K (2008) Low-trust teams prefer individualized pay. Harv Bus Rev 86:32

Murphy KJ (2001) Performance standards in incentive contracts. J Account Econ 30:245–278

Murphy KJ (2013) Regulating banking bonuses in the European Union. A case study in unintended consequences. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2235395

Nalbantian HR, Schotter A (1997) Productivity under group incentives: an experimental study. Am Econ Rev 87:314–341

Nieboer J (2015) Group member characteristics and risk-taking by consensus. J Behav Exp Econ 57:81–88

Orr S (2001) The economics of shame in work groups: how mutual monitoring can decrease cooperation in teams. KYKLOS 54:49–66

Rothschild M, Stiglitz JE (1970) Increasing risk: I. A definition. J Econ Theor 2:225–243

Schedlinsky I, Sommer F, Wöhrmann A (2016) Risk-taking in tournaments: an experimental analysis. J Bus Econ 86:837–866

Sheremeta RM, Zhang J (2010) Can groups solve the problem of over-bidding in contests? Soc Choice Welf 35:175–197

Shupp R, Williams AW (2008) Risk preference differentials of small groups and individuals. Econ J 118:258–283

Sitkin SB, Weingart LR (1995) Determinants of risky decision-making behavior: a test of the mediating role of risk perceptions and propensity. Acad Manag J 38:1573–1592

Sprinkle GB, Williamson MG, Upton DR (2008) The effort and risk-taking effects of budget-based contracts. Account Organ Soc 33:436–452

Sutter M (2007) Are teams prone to myopic loss aversion? An experimental study on individual versus team investment behavior. Econ Lett 97:128–132

Sutter M (2009) Individual behavior and group membership: comment. Am Econ Rev 99:2247–2257

Towry KL (2003) Control in a teamwork environment: the impact of social ties on the effectiveness of mutual monitoring contracts. Account Rev 78:1069–1095

Yechiam E, Druyan M, Ert E (2008) Observing others' behavior and risk-taking in decisions from experience. Judgm Decis Mak 3:493–500

Zhang Y (2008) The effects of perceived fairness and communication on honesty and collusion in a multi-agent setting. Account Rev 83:1125–1146

Zhang J, Casari M (2012) How groups reach agreement in risk choices: an experiment. Econ Inq 50:502–515

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.