



Improving employee performance

The effect of Managerial Behaviour on Employees' Risk Attitude

Abstract: Although risk aversion among employees is seen as ineffective, many companies have a risk-averse climate. Since managers affect employees' risk behaviour, this research investigated which managerial behaviour lowers employees' risk aversion. With an experiment, it is found that people who lack the experience of working under a manager, take fewer risks when starting to work under a positive manager. This effect does not hold when employees have experience working for a manager. Having a manager that shows confidence, empowerment or long-term perspective does not affect employees' risk-taking. Besides, it is found that none of the examined managerial behaviours leads to people taking excessive risks. The results of this research imply that a manager should limit the amount of positiveness shown to employees who have no previous experience of working for a manager.

Keywords: risk-attitude, risk-averse, risk-seeking, managerial behaviour, confidence, positiveness, long-term perspective, empowerment, employees

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Programme: Behavioural Economics
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Student: Jim van der Voort - 444481
Supervisor: Dr. T. Wang (Assistant Professor)
Second assessor: M.A.J. van Hulsen (PhD Candidate)
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Introduction

Go big or go home. That's Silicon Valley's mentality, where failure does not exist. The core competence of people working at Silicon Valley is entrepreneurship, where collaborative, adaptive and passionate people that question the status quo are highly valued (Steiber & Alänge, 2016). Suzuki, Kim & Bea (2002) found evidence that Silicon Valley is successful in supporting entrepreneurial thinking by stating that Silicon Valley is being less concerned about risks, compared to entrepreneurs in Japan. In 2008, Donald Keough, the COO of Coca-Cola, also highlighted the benefits of failure by stating that "I've learned more from my mistakes than I have from any lucky, happy, successful things that happened to me throughout my career".

From the Ivey conference in 2005, Krueger (2007) concludes that entrepreneurial thinking is the critical element for entrepreneurial action which benefits companies. Firstly, this is beneficial because it is the basis to respond to environmental changes (Covin & Slevin, 1989; Hitt, 2000; Ireland & Hitt, 1999). In the highly competitive landscape of the 21st century, adapting fast enough to a changing environment is needed even more (Brundin, Patzelt & Shepherd, 2008). Secondly, it is essential for the creation of new knowledge and its transformation into the market (Shane & Venkataraman, 2000). Lastly, McGrath & MacMillan (2000) state that having an entrepreneurial mindset allows people to continuously identify and exploit high potential business opportunities, which will result in new or improved products and/or processes (Krueger & Dickson, 1994).

A part of corporate entrepreneurship is the company's commitment to constructive risk-taking (Miller, 1983). Other determinants of entrepreneurial thinking, next to risk-taking, are drive, tolerance for ambiguity, perceived influence and potential, and goal setting (Shane, Locke & Collins, 2003). Another subjective element of entrepreneurial thinking is problem-based learning (Krueger, 2007). Since Zhang, Wang, Wenhong & Liuying (2010) state that research often uses risk-taking behaviour to compare entrepreneurs with other groups and because of the increasing importance of risk-taking in organizations (Weber, 2000), this research focuses on employees' risk-taking behaviour to increase employees' entrepreneurial thinking which eventually improves companies' performance. The importance of risk-taking within companies is highlighted by Keough (2008) who stated that failing businesses avoid taking risks. Consequently, organizations should actively pursue risk-taking (Neves & Eisenberger, 2014) to limit the gap of risk-taking between self-employed and employed workers (Masclat, Colombier, Denant-Boeremont & Lohéac, 2009). It is important to decrease risk-aversion but not to increase risk-seeking behaviour since both too little and too much risk-taking is dangerous for business performance (Wicks, Berman & Jones, 1999).

Being risk-averse, by choosing a safe option which has a lower expected value, is generally viewed as ineffective (Bozeman & Kingsley, 1998). Nevertheless, “a lot of companies have a risk-averse climate” (Debacker, 2016). This is supported by Artinger, Artinger & Gigerenzer (2019) who found that companies often call in consulting firms, even though it is already decided what to do, to avoid conflicts and to ensure that not the decision-maker, but the consulting firm is the scapegoat in case of failure. An explanation for this is that failures are “wrongly attributed to the decision-maker” which makes people feel threatened and in need to protect themselves (ibid.). Especially because the fundamental priority of workers is preserving their job (Galende, 2006). However, the consulting costs could be avoided by having people stand up for their decisions (Artinger et al., 2019). This also leads to employees being reluctant to risky investments “from which in principle they are not going to receive any additional rent but from which they may suffer the consequences if they fail” (ibid.). Hamel (1999) elaborates on this by stating that the risk-reward trade-off for internal entrepreneurs is often long on risk and short on rewards and therefore questions why employees should risk this battle. Employees might even lose their job and therefore go for a certain outcome (ibid.).

Risk-taking improves creativity and innovation (Neves & Eisenberger, 2014). When employees come up with an inventive idea that could significantly increase company values, they can either propose this idea or do nothing and continue their work. In this case, doing nothing is the status-quo and therefore, individuals are likely to stick with this option (Samuelson & Zeckhauser, 1988). This is supported by Kahneman, Knetsch & Thaler (1991) who state that individuals tend to remain at the status quo since the advantages of deviating seem to be smaller than the disadvantages. Besides, Dinner, Johnson & Goldstein (2011) mentioned that people prefer not to choose and go for the default option. Hence, due to risk-aversion, innovative ideas are not always presented although this would be beneficial for the company.

Decisions that employees make, do not always have a default option. A reason why employees are risk-averse in this case is given by Thaler, Tversky, Kahneman & Schwartz (1997). They showed that people are more likely to prefer an uncertain prospect (with a higher expected value) above a certain outcome when the bet is repeated. From this, it can be concluded that, if employees have responsibility for a combination of decisions, most employees will likely choose the riskier outcome, even if it can sometimes lead to a negative payoff. In contrast, when employees are evaluated per decision, they will likely be more risk-averse and go for a certain outcome (ibid.). Nevertheless, if the worst outcome of a risky investment does not lead to bankruptcy and if the risky investment has a higher expected value than the certain option, then the risky investment should always be chosen as this is

most beneficial for the company in the long-run. Even when there is a chance of having a low or negative pay-off.

The influence of managers on employees' risk-taking behaviour is highlighted by Momeni (2009) who found a positive correlation between managerial emotional intelligence and organizational climate, which influences employee behaviour. René Redzepi, manager of the two-Michelin-star restaurant Noma, four times world's best restaurant, embraces and highlights the importance of risk-taking with his Saturday night projects: "It is an experiment, it is a place for us to just learn and have a free forum to do whatever you want and essentially fail as much as you want as long as you do it a 100% and from there on we learn (...) each week" (KRO-NCRV, 2020).

Much literature, as shown above and in the literature review, investigated employees risk attitudes and the role of managers on the creativity, entrepreneurial thinking and performance of employees, for which risk-taking is needed. This, however, does not imply that certain managerial behaviour affects employees' risk-taking. To date, only Bozeman & Kingsley (1998) studied the association between managerial attitudes and employees risk attitude. Nevertheless, Bozeman & Kingsley (1998) did not measure the causal effect of managerial characteristics on employees risk-taking behaviour; they only evaluated an association where reverse causality is a potential issue. In consequence, to improve company performances and to fill the gap in earlier research, this thesis tries to find the causal effect between managerial behaviour and employees' risk-taking. Therefore, the research question in this paper is stated as:

"Which managerial behaviours improve employees' risk-taking behaviour?"

To prevent reverse causality and to measure the effect of managerial behaviour on the risk-taking of employees, an experiment is used to measure how employees' risk-behaviour is affected by having a certain manager. It is decided to only focus on the most influential managerial characteristics mentioned by Barbalet (1996), Brundin et al. (2008) and Thaler et al. (1997): confidence, empowerment, long-term perspective and positiveness.

For all four characteristics, this research found no significant improvement of employees' risk-taking behaviour. It is found that employees who start working for a positive manager are more risk-averse when having no previous experience working under any manager. Therefore, based on this research, it is recommended that managers do not encounter employees, who lack the experience working for a manager yet, with more positiveness than a neutral manager would do.

The next section will extensively elaborate on findings of earlier research. Subsequently, the experimental design will be explained. The results section presents which

data is collected, what methods are used to measure an effect and the corresponding findings. Afterwards, the paper discusses the main findings, implications and limitations of this research and gives recommendations for further research. Finally, the conclusion summarizes this research.

Literature review

Earlier research shows an effect of managerial behaviour on employees' willingness to think entrepreneurially (Brundin et al., 2008), performance in creative problem solving (Suifan, Abdallah & Al Janini, 2018; Cheung & Wong, 2011; Isen, Daubman & Nowicki, 1987; Hirt, Levine, McDonald, Melton & Martin, 1997) and employees' performance in general (Shea, 1999; Hao, He & Long, 2018; Salancik & Pfeffer, 1974; Conger & Kanungo, 1988). Positive associations between risk-attitude and managerial behaviour were found as well (Bozeman & Kingsley, 1998).

As mentioned, this research merely focuses on the behavioural attitudes: confidence, empowerment and positiveness, since earlier research found that these behavioural attitudes are likely to positively affect the risk-taking of employees (Barbalet, 1996; Brundin et al., 2008). Besides, the effect of managers' long-term perspective is evaluated since Thaler et al. (1997) found that people take more risk when several decisions are considered together. Given earlier research, it is likely that these attitudes mostly improve employees' risk attitude.

Risk-taking behaviour is defined as the willingness to commit large and risky resources to projects with a (high) cost of failure (Miller & Friesen, 1978). Besides, innovative thinking, accepting new tasks and stating unpopular opinions which benefit the company, are a part of risk-taking too (Neves & Eisenberger, 2014). Confidence is defined as the belief of managers that their employees can successfully deal with situations by using available resources and capabilities. Positiveness is the display of pleasure with a project (Brundin et al., 2008), giving employees respect, improving their self-esteem and to give pleasant surprises sometimes which creates 'a happy feeling state' (Isen et al., 1987). Empowering leaders share power and delegate responsibilities to employees (Conger & Kanungo, 1988), hence managers encourage employees to work independently (Poder, 2010). Leaders with a long-term perspective do not evaluate performance on one decision and go long on both risks and rewards (Hamel, 1999).

Confidence

Employees' willingness to act entrepreneurially is increased when managers show confidence and satisfaction about projects while it is decreased when managers behave

frustrated, worried or bewildered (Brundin et al., 2008). This was found within small Swedish firms, where the CEO is well-known and active in the company to ensure frequent interaction. Conjoint analysis was used where employees were given judgements about which managerial emotional displays were significantly related to their willingness to act entrepreneurially. In line with this finding, Barbalet (1996) states that “confidence brings the future into the present by providing a sense of certainty to what is essentially unknowable so that assured action with regard to it may be engaged”.

Furthermore, due to the positive association between employees’ risk-taking and managers’ confidence found by Bozeman & Kingsley (1998), it is likely that managers who show confidence indeed cause employees to be less risk-averse.

A suggestion for an increase in performance on manufacturing tasks, due to confidence shown by managers, was found by Shea (1999). In this research, participants had to assemble an electrical wiring harness for a leader that had a specific leadership role (charismatic, structuring and considerate). The charismatic leader had to exhibit confidence in subjects’ ability to meet expectations. Scripts were written to enlighten specific managerial characteristics. Each actor had to enact each script. According to undergraduate students, all leaders looked similar and had comparable abilities. Subjects were first shown their leader, an actor, who introduced himself, before assembling the first harness. After the first harness, the leader returned and gave a short explanation about the project. It appeared that subjects under the charismatic leader improved their qualitative performance significantly after the second intervention. Shea (1999) suggests that this might be due to the expression of confidence in the performance which encourages participants to exhibit more effort.

Empowerment

Hao, He & Long (2018) investigated the effect of empowerment on performance for employees in China by letting subjects fill in a questionnaire. The objective (academic research only) was told to ensure quality. Empowering leadership was evaluated with twelve statements such as “my leader makes many decisions together with me” and individual performance was measured with three statements (e.g. “this team member always completes his or her work on time” and “this team member often comes up with creative solutions to problems at work”). The statements were evaluated on a five-point Likert scale. They found that empowering leadership is positively associated with both employees’ tasks and creativity performance.

In 1974, Salancik & Pfeffer investigated whether university departments with more power performed better. The performance was evaluated by the number of grants and contracts. Department heads were asked to rate, on a seven-point Likert scale, the power of

each subunit (including their own). Where power was defined as “the ability of the department to affect decisions so that they conformed more closely to what the department wanted”. A positive correlation was found between the number of contracts and grants, and the empowerment measure.

Chan (2019) reasons that empowered leaders, who are perceived as supportive and helpful and who recognize employees’ input, make their personnel feel like an important part of the business which ultimately leads to more risk-taking as it increases employees’ confidence. This was tested with a survey, which included statements to be valued on a five-point Likert Scale, that was sent to employees and their supervisors in Hong Kongese financial institutions. To measure risk-taking, Chan (2019) used the statements that Neves & Eisenberger (2014) introduced. A significant (at 5%) relation between empowering leadership and willingness to take risk was found (ibid.).

These findings imply that empowerment improves risk-taking. However, when measuring the influence of philosophies from advertising agencies on risk-taking, West & Ford (2001) suggested that empowerment lowers employees’ willingness to take risks. They sent questionnaires to (creative) directors and asked respondents about their perceived willingness to take risk and whether they would choose a standard advertising option with an average rate of return for sure or an uncertain option with 50% chance of having respectively a higher or lower rate of return. It was found that subjects working in agencies with clear guiding philosophies on creativeness are more likely to choose a risky advertising plan (ibid.). West & Ford (2001) distinguished the groups by the number of philosophies a company has. Where having one philosophy is characterized as a clear guiding philosophy while having more philosophies is seen as an unclear guiding philosophy.

Long-term perspective

The need for improved risk-taking, as described in the introduction, is shown by Thaler (2015) when teaching a group of executives in the print media industry about decision-making. Thaler (2015) gave the executives the following investment opportunity: a 50% chance to make a profit of \$2 million and a 50% chance to lose \$1 million. This investment has an expected value of \$500,000. It was mentioned that the solvency of the company is not in danger when having million-dollar losses. Out of the 23 executives, three stated to take on the project. Afterwards, Thaler (2015) asked the executives’ CEO how many projects he would take on if they were independent. He responded: “All of them!”. This would result in an expected value of \$11.5 million and a chance of less than 5% to lose money at all. Thaler (2015) therefore reasons that the CEO is doing something wrong. An executive explained why he would not go for the project by saying that when the project is a success, he would get a

pat on the back and maybe a bonus. On the other hand, if the project failed, there is a decent chance of being fired. So, due to managers' narrow framing, employees are reluctant to bear risks. This causes the firm taking too little risk. A solution for this is to aggregate investments and to consider them as a package, i.e. having a long-term perspective and not evaluating personnel on a single decision. Thaler (2015) suggests creating an environment where managers will be rewarded for decisions that maximize value ex-ante (with the usage of current information available) even if that results in losses ex-post. This, however, might not be the most suitable solution due to the hindsight bias where the manager reasons that the outcome of a decision seemed obvious ex-post, while this was not the case when making the decision.

Thaler et al. (1997) found that people take more risk if they consider several decisions together compared to when they make each decision separately. This implies that people prefer a certain option above a lottery with a higher expected value, when this game is presented once, while they favour the gamble when the game is played multiple times (ibid.). This is caused due to the regression to the mean; with repetition, the outcome will get closer to the expected value of the gamble, which is higher than the value of the certain outcome. This causes people to prefer the risky bet. That employees are likely to be less risk-averse when evaluated over a long-term is suggested by Hamel (1999) too, who reasoned that the risk-reward trade-off for internal entrepreneurs is often long on risk and short on rewards which demotivates employees to take risks.

Positiveness

Isen et al. (1987) found that positive managers improve the performance of employees on creative problem-solving. This was tested by measuring the effect of watching a positive film on the performance to solve a task that demands creativity (let a candle burn without dripping wax on a table). Therefore, it is concluded that elation improves innovative thinking and ingenuity, which are needed to solve problems (ibid.). This is confirmed by Hirt et al. (1997) who found that Indiana University students who viewed humorous clips, compared to viewing sad clips, wrote more (creative) members of a category (e.g. ways of transportation). This rating is subjective but extensively discussed among the researchers to evaluate creativity as objectively as possible. Isen et al. (1987) argued that this could be extrapolated to business where leaders want to promote creativity and innovative problem-solving. These findings suggest that a positive manager improves employees' creativity. As mentioned in the introduction, this could be via increased risk-taking behaviour.

Hypotheses

Based on the earlier findings, four hypotheses are made. Each hypothesis evaluates the effect of a certain managerial characteristic (confidence, empowerment, positiveness and long-term perspective respectively) on employees risk-taking behaviour.

As both employees' performance and willingness to act entrepreneurially increase when managers show confidence (Brundin et al., 2008; Shea, 1999) and due to the positive association between employees risk-taking and managers confidence (Bozeman & Kingsley, 1998), it is expected that:

Employees take more risk when their manager shows confidence in them (H1)

Based on the associations found by Hao et al. (2018), who showed that empowering leadership is correlated with the likelihood of coming up with innovative ideas and the confidence in designing new procedures, and Chan (2019), who found that employees with empowered leaders take more risks, it is hypothesized that:

Employees take more risk when their manager empowers them (H2)

From the findings of Thaler et al. (1997), that people take more risk when considering several decisions together compared to considering these decisions separately, and the reasoning of Thaler (2015) and Hamel (1999), that executives avoid risks to prevent a chance of losing their job when results turn out to be negative while only getting a small reward when results are positive, it is probable that:

Employees take more risk when their managers take a long-term perspective in mind (H3)

As Isen et al. (1987) and Hirt et al. (1997) found that employees will be better in solving problems when managers are positive, the last hypothesis is as follows:

Employees take more risk when managers show positiveness to them (H4)

Experimental design

To evaluate the hypotheses and to measure the influence of managerial behaviour on employees risk-taking, an experiment is conducted. Much research that measured employees' risk-taking behaviour, focused on a specific country, without specializing on a particular sector (e.g. Bozeman & Kingsley, 1998; Neves & Eisenberger, 2014). As Weber and Hsee (1998) found that there are similarities between cultures towards risk, the subject pool that conducts the experiment will not be limited to a specific country. Thus, it is focused on measuring the effect among employees in general.

When measuring the influence of managers on the risk-taking behaviour of employees, it is important to construct an employee-manager situation. To limit the effect of co-workers and top managers' risk behaviour, as mentioned by Bozeman & Kingsley (1998), and general organizational variables, as mentioned by McNamara & Bromiley (1997), it is important to control for this in the experiment. This is attained by conducting an experiment where subjects just started at a new company. To create a company setting and introduce the manager, a cover story, based on Shea (1999), was used to make subjects believe they work at a firm. Five different stories were written and were randomly distributed to subjects. Due to the length of the scripts, it is decided to have a between-subjects experimental design. Having subjects doing five experiments is too demanding (doing one experiment takes approximately ten minutes) and their focus is also likely to be lost when having a repetitive task (reading five comparable texts). Randomly assigning subjects to treatments ensures that the groups are, on average, similar in absence of a treatment, react similarly to a treatment and are not exposed in isolation to a third factor. Each script represents a certain manager that is either neutral, confident, empowering, having a long-term perspective or positive. Subjects receiving the neutral text are the control group while the others are the treatment groups. To avoid biases, qualitative interviews are held to ensure that the manager in each script is evaluated similarly, except for the specific behavioural element from the treatment, compared to the neutral script.

After subjects read the scripts, they were asked to evaluate their hypothetical manager on their empowerment, confidence, long-term perspective and positiveness. In the third part of the questionnaire, the subjective risk-taking of subjects is measured with the six statements below. These are based on prior research, as shown in brackets after each statement. In line with Neves & Eisenberger (2014), the statements are evaluated with a seven-point Likert scale (1= strongly disagree 2=disagree, 3=slightly disagree, 4=neutral, 5=slightly agree, 6=agree and 7=strongly agree). To find small differences and to have a neutral middle point this is neither measured with a five-point Likert scale, as West & Ford (2001) did, nor a ten-point

Likert scale, as done by Bozeman & Kingsley (1998). This results in data being measured on an ordinal scale, where numbers do not have a real meaning. However, this method makes it easier for subjects to understand.

1. I am willing to take risks at this job. (Bozeman & Kingsley, 1998)
2. I am willing to accept tasks which have a high likelihood of problems. (Neves & Eisenberger, 2014)
3. I will design and present innovative (new) ideas to my manager. (Hao et al., 2018)
4. I feel able to bring up problems and tough issues at my work. (Artinger et al., 2019)
5. I will put myself in a position of risk to help the organization. (Neves & Eisenberger, 2014)
6. When completely responsible for a decision, I will go for an investment opportunity which has 50% chance to result in a profit of 2 million euros and 50% chance to result in a loss of 1 million euros. (West & Ford, 2001; Thaler, 2015)¹

The statements described above do not objectively measure subjects' risk-taking. To evaluate subjects' risk-taking objectively, a Multiple Price List, based on Holt & Laury (2002) is used. A cover story related to the scripts is made. Subjects are asked to imagine they came up with two plans that both improve the quality of the products (a more certain option, plan A or a riskier option, plan B). The corresponding payoffs of both plans in the two situations are shown in table A1. To measure subjects' preferences regarding the two plans, given the different chances, it is told that market research will give the actual chance to be in a certain situation (row) and that, before the results of this research are published, the subject's preferences should be known to directly start with a certain plan after the research is finished. Subjects are shown ten situations in which both plans can occur. Each time the pay-outs of both plans are kept similar and only the chances for a plan to occur, change. To prevent that subjects switch back and forth, it is asked from which row respondents prefer option B over option A. To ease interpretation, it is decided to use the framing from Holt & Laury (2002), although Andersen, Harrison, Lau & Rutström (2006) argue that this might incline subjects to

¹ It is decided to use a statement where numerical outcomes are used. West & Ford (2001) asked which statement subjects preferred where one option was a certain outcome (rate of return in line with what the client forecasted) and the other option was a risky outcome, where the rate of return had a 50% chance to be above and a 50% chance to be below the rate of return that client forecasted.

switch in the middle irrespective of their true preferences. As a multiplication of hypothetical values does not alter behaviour (Holt & Laury, 2005) and because this research measures investment decisions within a company, and not individual decisions, it is decided to multiply the payoffs, used by Holt & Laury (2002), by 100,000 to make the values more representative for the decision. Since most respondents are likely to be European, euros instead of dollars are used. This question is also used to evaluate whether subjects take excessive risks, as mentioned by Wicks et al. (1999), which means that there is too much risk-taking behaviour which could lead to major failures for both managers and employees (Neves & Eisenberger, 2014; Wicks et al., 1999).

Lastly, general questions will be asked about subjects their gender, age, culture and whether they ever worked for a manager. The exact design can be found in appendix A.

Results

The number of subjects needed to have enough power is most preferably based on a power calculation. However, this could not be used as the assumptions are not met. To execute a power calculation, the subjects should be equally distributed. To achieve this, for each group the price of collecting one observation and the variance should be equal. Other assumptions that have to be made for power calculations include that both the effect size and the variance are based on earlier findings or a theory. As earlier research did not investigate the effect of these managerial characteristics on employees' performance, the variance of each treatment and the effect sizes cannot be based on earlier findings or a theory. Furthermore, it is expected that the variance of the different treatment groups will differ. Therefore, because the assumptions do not hold, it is decided not to use a power calculation and to collect as many subjects as possible given time, ethical and costs constraints. Via LinkedIn, Facebook and WhatsApp people were approached in the period from April to May 2020 to participate in the experiment. They were asked to follow an anonymous link to Qualtrics.

From the total 530 people who started the experiment, 375 finished. 26 subjects dropped out after reading the introduction while 91 subjects stopped after reading the text from the manager and the questions about their perception of the manager. In the part where the subjective and objective risk-taking is measured respectively, ten and 28 subjects dropped out. From the 375 subjects, 83 had no previous experience working for a manager. These people either have not started their career yet or are self-employed. As this research measures how people behave when working for a manager, people who will never work for a manager are not of interest. These subjects should be removed from the sample. Subjects who are

above age 30 and have no experience working for a manager are extremely likely to be in this group. These fifteen subjects are therefore dropped.

The percentage of subjects that received a neutral, confident, empowering, long-term perspective or positive text are 20.56%, 23.89%, 18.61%, 15.83% and 21.11% respectively. 57.22% of the respondents are male and most observations are in their twenties (67.78%). Besides, people in their forties and around their sixties are more present (Figure C1). Two subjects reported zero and 100,000 respectively when asked their age. As this is almost certainly not their true age, these observations are not used in the regressions. The dataset represents a wide set of nationalities. However, from the nineteen countries, eleven countries have one observation (table C1). Most observations are Dutch (81.39%). Other countries include Germany (3.61%), Belgium (1.39%), France (3.33%), Italy (1.11%) and Morocco (1.94%). Eleven subjects did not state their nationality but reported to be non-Dutch. Because of the low amount of non-Dutch subjects, a binary variable is made which is one if a subject is Dutch and zero otherwise. This makes it possible to partially control for nationality effects.

The subjective risk-taking score is the sum of the scores given in each statement; choosing 'strongly disagree' gives a score of zero and choosing 'strongly agree' gives a score of six. This gives a maximum subjective risk-taking score of 36. In the subjective risk-taking score, it holds that the higher the score the more risk-seeking subjects are. For objective risk-taking, in the experimental design, the higher the row in which they switch the more risk-averse they are. To have the same interpretation, it is decided to multiply these values by minus one and to add ten (objective risk-taking score ranges from zero to ten). To give the same weight to both subjective and objective risk-taking in evaluating the total risk-taking score, the objective risk-taking score is multiplied with 3.6. In this way, the maximum score for total risk-taking is 72. In table 1 the average risk-taking scores can be seen, in total and per treatment.

Table 1: For each variable the average is shown of the total subject pool and per treatment. In brackets the standard deviation is shown. Next to this, for each variable it is evaluated with a non-parametric test whether the four treatments are significantly different compared to the control group. For the variables Gender, Dutch, Experience and Finished, a Fisher Exact test is used (2*2). While for the variables Subjective risk-taking, Objective risk-taking, Total risk-taking, CRRA, regarding perception, regarding the statements and age a Mann-Whitney U test is used.

Variable	Total	Neutral	Confidence	Empowerment	Long-term perspective	Positive
Subjective risk-taking	23.296 (4.868)	23.051 (5.149)	22.443 (5.069)	24.395 (4.883)	23.642 (4.855)	23.139 (4.205)
Objective risk-taking	3.725 (2.204)	3.770 (2.058)	3.779 (2.293)	3.687 (2.237)	3.895 (2.366)	3.526 (2.126)

Total risk-taking	36.716 (9.479)	36.627 (8.977)	36.081 (10.290)	37.690 (8.755)	37.775 (9.692)	35.866 (9.546)
CRRA	2.269 (0.959)	2.251 (1.003)	2.142 (0.962)	2.169 (0.797)	2.212 (1.080)	2.552 (0.909)
Excessive risk-taking	0.158 (0.367)	0.176 (0.383)	0.186 (0.391)	0.149 (0.359)	0.193 (0.398)	0.092 (0.291)
Perceived confidence	4.073 (1.535)	3.780 (1.626)	4.055 (1.523)	4.224* (1.448)	4.130 (1.688)	4.200 (1.382)
Perceived empowerment	4.633 (1.351)	4.646 (1.231)	4.451 (1.376)	4.763 (1.469)	4.391 (1.546)	4.913 (1.081)
Perceived long-term perspective	4.307 (1.436)	4.110 (1.532)	4.154 (1.429)	4.395 (1.386)	4.652** (1.381)	4.300 (1.409)
Perceived positiveness	4.543 (1.431)	4.122 (1.469)	4.473* (1.448)	4.842*** (1.286)	4.333 (1.587)	4.950*** (1.211)
Statement 1	4.111 (1.247)	4.090 (1.331)	3.864 (1.261)	4.382 (1.143)	4.104 (1.304)	4.152 (1.167)
Statement 2	3.969 (1.354)	3.885 (1.441)	3.841 (1.321)	4.224 (1.323)	4.090 (1.422)	3.848 (1.262)
Statement 3	4.869 (0.970)	4.590 (1.098)	4.886* (1.033)	5.105*** (0.858)	4.970** (0.797)	4.810 (0.948)
Statement 4	4.531 (1.135)	4.526 (1.125)	4.307 (1.226)	4.671 (1.193)	4.463 (1.185)	4.709 (0.894)
Statement 5	3.366 (1.499)	3.244 (1.479)	3.273 (1.645)	3.539 (1.501)	3.478 (1.407)	3.329 (1.439)
Statement 6	2.451 (1.633)	2.718 (1.720)	2.273* (1.617)	2.474 (1.661)	2.537 (1.664)	2.291 (1.503)
Gender	0.428 (0.495)	0.432 (0.499)	0.500 (0.503)	0.418 (0.497)	0.351 (0.481)	0.408 (0.495)
Age	31.128 (14.395)	31.781 (14.224)	32.035 (15.264)	30.418 (13.659)	31.982 (15.608)	29.440 (13.383)
Experience	0.8111 (0.392)	0.811 (0.394)	0.826 (0.382)	0.806 (0.398)	0.789 (0.411)	0.816 (0.390)
Dutch	0.814 (0.390)	0.811 (0.394)	0.849 (0.360)	0.776* (0.420)	0.789 (0.411)	0.763* (0.428)
Finished	0.699 (0.459)	0.698 (0.461)	0.804* (0.399)	0.713 (0.455)	0.648 (0.480)	0.809* (0.396)

*** p<0.01, ** p<0.05, * p<0.1

In table 1 it can be seen whether the treatments had the intended effect (i.e.: that the confident, empowerment, long-term perspective and positive texts are perceived as having more confidence, empowerment, long-term vision and positiveness respectively, compared to the neutral text). Both the confident and empowering text are not significantly perceived as more confident and empowering respectively compared to the neutral text at a 10% significance level (p-values of 0.247 and 0.139 respectively). The long-term perspective text is significantly perceived as having a more long-term perspective, compared to the neutral text at a 5% significance level (p-value of 0.019). The positive text is even perceived as significantly more positive, compared to the neutral text on a 1% significance level (p-value of 0.000). Hence, the confident and empowering texts are likely to be not representative.

Next to this, the Fisher-Exact test which evaluated whether the dropouts are randomly allocated over the treatment shows that there is, on a 5% significance level, a significant effect found against the hypothesis that the likelihood of finishing the experiment is equal for each script (P-value is 0.046). When comparing each treatment to the control, non-significant effects are found at a 5% significance level (table 1). However, caution should be made as the likelihood of dropping out increases significantly on a 10% significance level when receiving either a confident or positive text, compared to a neutral text (p-values of 0.052 and 0.050 respectively). A reason for this is that subjects see these texts as unnatural and therefore drop out of the experiment. However, based on the perception scores, this reasoning does not hold as these texts only differ significantly from the neutral text in their perceived positivity while the empowering text (that does not have significantly more dropouts than the neutral text) is also perceived as significantly more positive compared to the neutral text. It can furthermore be seen that, given the p-values of 0.058 and 0.000 respectively, both the confident and empowering text are perceived as significantly more positive, compared to the neutral text (significant at a 10% and 1% significance level respectively). This implies that positivity is not only enlightened in the positive text, which might bias the results.

Randomization

Despite randomly allocating subjects to treatments, there is a possibility that the groups are, on average, not similar. Based on the observable characteristics age, gender, nationality and whether the subject has experience working for a manager, non-parametric tests (as these variables are non-continuous) are used to evaluate whether the groups are indeed similar. In line with McCrum-Gardner (2008), a Kruskal-Wallis test is used for age and a Fisher-exact test (2*5) is used for the other variables.

The Kruskal-Wallis test, which evaluates whether the median of subjects their age in each treatment is equal, shows that this sample distribution, or a more extreme one, will occur in 18.62% of the cases, under the hypothesis that subjects are equally distributed. Therefore, on a 10% significance level, there is no evidence to reject that randomization worked. On a 10% significance level, the Fisher-exact test which evaluated whether subjects are randomly allocated based on their gender does not reject the hypothesis that subjects are randomly assigned too, since the p-value is 0.505. Whether a subject is Dutch or has experience working for a manager, does not significantly influence the text that a subject received at a 10% significance level (P-values of 0.288 and 0.988 respectively). From this, it can be concluded that subjects are randomly allocated.

When comparing each treatment to the neutral text with a Mann-Whitney U test, it can be seen that the distribution of age in all treatment texts, compared to the neutral text, are not

significantly different at a 10% significance level (table 1). However, according to a Fisher exact test, the amount of Dutch people is not evenly distributed on a 10% significance level when comparing the empowerment and positive text respectively, to the neutral text as the p-values are 0.082 and 0.052 respectively (table 1). These differences are likely to occur due to the low amount of non-Dutch subjects. Based on this, caution should be made whether the subjects in the empowering and positive text are similar to the subjects in the neutral text.

Hypotheses

The hypotheses are evaluated with both non-parametric tests (Mann-Whitney U-test) and, although the assumption of having a continuous variable does not hold, parametric tests (Ordinary Least Squares, OLS). With these tests, it is measured whether subjects that receive either a confident, empowering, long-term perspective or positive script have a significantly different subjective risk-taking, objective risk-taking, total risk-taking or Constant Relative Risk Aversion (CRRA) score respectively, compared to subjects who received a neutral text. CRRA is used because the marginal differences in the degree of risk-aversion may not be similar for each one-unit increase in the objective risk-taking score. Therefore, the objective risk-taking scores are converted into CRRA values that take this into account. Appendix B explains the calculation and shows the corresponding CRRA scores for the objective risk-taking scores.

In table 1 it can be seen that only the average of objective risk-taking in the confident text is higher than the neutral text. Compared to the neutral text, the empowering text has both a higher subjective and total risk-taking average while the text with a long-term perspective has a higher average subjective, objective and total risk-taking score. The positive text has, on average, both a higher subjective risk-taking and CRRA score, compared to the neutral text. The table also shows that, according to the Mann-Whitney U-test, each treatment, compared to the neutral text, does not lead to significantly different subjective, objective and general risk-taking distributions at a 10% significance level. Moreover, the CRRA values of the treatments do not differ significantly from the neutral text on a 10% significance level. Hence, from the Mann-Whitney U-test all four hypotheses are rejected: receiving a text from a manager that is either confident, empowering, with a long-term perspective or positive, compared to being neutral, does not significantly increase employees' risk-taking.

When evaluating the research question with a regression, it is decided, consistent with literature (Hessels, Arampatzi, Van Der Zwan & Burger, 2018; Larrson & Thulin, 2017), to treat the risk score as a continuous variable and to use an Ordinary Least Squares (OLS) regression to ease interpretation. The value of the coefficient has no meaning as the dependent variable is measured on an ordinal scale. The Ordinary Least Squares (OLS)

regression below will be used, to measure the effect of receiving a certain text on people's subjective, objective and general risk-taking behaviour.

To evaluate the effect of the text type on CRRA, a similar OLS regression is used. In this regression, unlike the regressions which have subjective, objective and total risk-taking scores as the dependent variable, a lower value means less risk-aversion. In line with the hypotheses, negative values for the coefficients are expected in this regression.

$$\begin{aligned}
 \text{Risk taking} = & \alpha + \beta_1 * \text{Confidence}_i + \beta_2 * \text{Empowerment}_i + \beta_3 * \text{Long term perspective}_i \\
 & + \beta_4 * \text{Positiveness}_i + \beta_5 * \text{Gender}_i + \beta_6 * \text{Age}_i + \beta_7 \\
 & * \text{Perceived influence manager}_i + \beta_8 * \text{Perceived managerial attitude}_i + \varepsilon_i
 \end{aligned}
 \tag{1}$$

Table 2 shows that none of the four treatments, compared to the neutral text, significantly increases the subjective, objective and total risk-taking scores at a 10% significance level, ceteris paribus. Moreover, at a 10% significance level, the treatments do not significantly decrease the CRRA scores, compared to the neutral text, ceteris paribus. What can be concluded is the being female, compared to being male significantly lowers subjective risk-taking at a 1% significance level, ceteris paribus. This is in contrast with the negative significant effect, at a 10% significance level, of being female, compared to being male on the CRRA scores, ceteris paribus. Table 2 also shows that a one year increase in age leads to a higher objective and total risk-taking score, ceteris paribus. These increases are significant at a 1% significance level.

Table 2: Regression of the treatments, with control variables, on subjective, objective, total, CRRA and excessive risk-taking scores. With the neutral text as the reference category. The first four regressions are OLS regression while the last regression is a logistic regression.

VARIABLES	Subjective	Objective	Total	CRRA	Excessive
Text received = Confidence	-0.711 (0.367)	-0.010 (0.978)	-0.747 (0.629)	-0.118 (0.492)	0.026 (0.952)
Text received = Empowerment	1.108 (0.182)	-0.017 (0.962)	1.046 (0.477)	-0.099 (0.553)	-0.148 (0.753)
Text received = Long-term perspective	0.338 (0.681)	0.169 (0.659)	0.948 (0.560)	-0.063 (0.754)	0.156 (0.739)
Text received = Positive	-0.095 (0.902)	-0.153 (0.651)	-0.644 (0.668)	0.279 (0.104)	-0.664 (0.194)
Female	-1.367*** (0.008)	0.383 (0.104)	0.012 (0.991)	-0.211* (0.066)	0.414 (0.178)
Age	0.025 (0.180)	0.030*** (0.004)	0.133*** (0.002)	-0.002 (0.666)	0.023** (0.027)
Experience working for a manager	0.752 (0.289)	0.038 (0.893)	0.888 (0.503)	-0.063 (0.676)	-0.138 (0.727)

Dutch	-0.892 (0.171)	0.060 (0.824)	-0.677 (0.562)	-0.070 (0.595)	0.369 (0.403)
Constant	24.571*** (0.000)	2.171*** (0.000)	32.387*** (0.000)	2.737*** (0.000)	-3.094*** (0.000)
Observations	358	358	358	296	358
R-squared	0.059	0.045	0.051	0.040	

Robust p-value in parentheses

*** p<0.01, ** p<0.05, * p<0.1

A reason for these non-significant treatment effects is that subjects that have experience working for a manager, might react differently to certain treatments than subjects without this experience. An interaction term between having experience working for a manager and the treatments is made to take these different reactions into account. From the regressions in table 3, below, it can be concluded that including this interaction term, like the regression without this interaction, does not give significantly different risk-taking scores and CRRA values when receiving a confident, empowering or long-term perspective text, compared to receiving a neutral text, *ceteris paribus*. As the number of people without experience in each treatment is relatively low, between twelve and fifteen (table C2), the explanation power of the interaction effect is negatively affected. What can be observed, is that the total risk-taking score is significantly decreased when receiving a positive text, compared to a neutral text at a 10% significance level, *ceteris paribus*. This effect is nullified when having experience working for a manager as the total risk-taking score significantly increases with approximately the same number when both having experience working for a manager and receiving a positive text at a 10% significance level. Hence, the combination of not having previous experience working for a manager and receiving a positive text from your manager diminishes the total risk-taking score. A reason for this negative effect could be that people with experience are not affected by any managerial behaviour (as found) while people without experience who receive a positive text, unlike people without experience receiving another text, are not focused on doing what is best for the company but just what they enjoy, as insisted by the manager. This might make them less focused. Compared to the neutral text, the CRRA values are not significantly affected by the interaction effect of a treatment. In this regression, it is also found that a one year increase in age increases both the objective and total risk-taking scores significantly at a 1% significance level, *ceteris paribus*. On a 1% significance level, being female compared to being male significantly lowers subjective risk-taking, *ceteris paribus*.

Table 3: Regression of the treatments, with control variables and an interaction effect between having experience working for a manager and the four treatments, on subjective, objective, total, CRRA and

excessive risk-taking scores. With the neutral text as the reference category. The first four regressions are OLS regression while the last regression is a logistic regression.

VARIABLES	Subjective	Objective	Total	CRRA	Excessive
Text received = Confidence	-1.643 (0.301)	-0.014 (0.985)	-1.692 (0.639)	0.033 (0.935)	-0.478 (0.637)
Text received = Empowerment	-0.093 (0.968)	0.062 (0.930)	0.129 (0.972)	-0.132 (0.696)	-1.012 (0.412)
Text received = Long-term perspective	-1.665 (0.233)	1.298 (0.130)	3.010 (0.389)	-0.696 (0.154)	0.669 (0.452)
Text received = Positive	-2.936 (0.132)	-1.004 (0.135)	-6.550* (0.062)	0.515 (0.145)	-0.411 (0.450)
Experience working for a manager	-0.921 (0.501)	0.101 (0.865)	-0.558 (0.842)	-0.123 (0.699)	-0.462 (0.543)
Confident text * experience working for a manager	1.165 (0.526)	0.004 (0.996)	1.179 (0.768)	-0.187 (0.677)	0.615 (0.583)
Empowerment text * experience working for a manager	1.483 (0.552)	-0.104 (0.899)	1.110 (0.784)	0.039 (0.921)	1.026 (0.439)
Long-term perspective text * experience working for a manager	2.493 (0.143)	-1.437 (0.134)	-2.682 (0.497)	0.824 (0.124)	-0.735 (0.480)
Positive text * experience working for a manager	3.471 (0.102)	1.022 (0.184)	7.151* (0.065)	-0.278 (0.491)	0.000 (.)
Female	-1.383*** (0.008)	0.353 (0.135)	-0.113 (0.912)	-0.181 (0.121)	0.368 (0.234)
Age	0.025 (0.177)	0.031*** (0.004)	0.135*** (0.002)	-0.002 (0.631)	0.023** (0.024)
Dutch	-0.921 (0.150)	0.008 (0.976)	-0.893 (0.427)	-0.069 (0.598)	0.288 (0.520)
Constant	24.578*** (0.000)	2.544*** (0.000)	33.735*** (0.000)	2.569*** (0.000)	-2.342*** (0.004)
Observations	358	358	358	296	345
R-squared	0.068	0.062	0.068	0.064	

Robust p-value in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Excessive risk-taking

As mentioned, it is important for companies to decrease risk-aversion among employees but not to increase risk-seeking behaviour. This is measured with the answers regarding the objective risk-taking question. In this question, risk-seeking behaviour takes place when subjects choose a row in which the expected value of the riskier plan is lower than

the expected value of the other plan. When subjects respond that they would switch before the fifth row, they take excessive risks. Hence, a binary variable is made which is one if the objective risk-taking score is five or higher and zero otherwise. As advised by McCrum-Gardner (2008) a Fisher-exact test will be used first. The Fisher exact test, which evaluates whether excessive risk-taking is equally distributed over all texts, gives a p-value of 0.409. Hence, at a 10% significance level, it is not rejected that excessive risk-taking is equally distributed over the treatments. When comparing each treatment to the neutral text, it is found that on a 10% significance level, all treatments, compared to the control, do not have a significantly different frequency of people taking excessive risks (table 1).

Whether a certain treatment, compared to the neutral text, leads to an increase in taking excessive risk-taking is evaluated with a logistic regression too (last rows in table 2 and 3). The logistic regression in table 2 shows no significant influence of a certain treatment on the probability of taking excessive risks. It can be concluded that, on average, an increase in age significantly increases the likelihood of taking excessive risk at a 5% significance level, *ceteris paribus*. The same conclusions for both the treatments and age hold when including the interaction term between experience working for a manager and the treatments (table 3).

Discussion

Risk-taking is a critical element for entrepreneurial thinking which eventually benefits company performance. As failing businesses avoid risk-taking, risk-aversion within companies should be limited. An increase in risk-taking lowers costs (not paying consultancy firms) and increases creativity and innovation. Because managerial emotional intelligence is correlated with employee behaviour, it is expected that managers play an important role to lower employees' risk-aversion. Therefore, this research investigated how managers can improve risk-taking among employees. With an experiment, it is evaluated whether subjects subjective, objective and total risk-taking scores is increased, and their CRRA score is lowered, when receiving a text from their hypothetical manager that is either confident, empowering, with a long-term perspective or positive, instead of when receiving a neutral text.

Both with parametric and non-parametric tests, no evidence is found in support with the hypotheses that receiving either a confident, empowering or long-term perspective text from your manager increases risk-taking, compared to when receiving a neutral text. Hence, these hypotheses are rejected. The hypothesis that receiving a positive text increases risk-taking is rejected too. This actually lowers the risk-taking of employees that lack the experience working for a manager. When having experience, this effect is cancelled out. Next to this, it is not rejected that people who have either a confident, empowering, long-term

perspective or positive manager are as likely to take excessive risks as people who receive a neutral text. Furthermore, it is found that age is a significant contributor to objective and total risk-taking scores. This means that the older an employee, the higher its risk-taking performance. However, it is also found that age significantly increases excessive risk-taking. A contrasting finding is that being female, compared to being male, significantly lowers subjective risk-taking while lowering the CRRA-score.

Potential reasons for the non-significant treatment effects include there is no effect, the script is too short to induce change or the scripts were not representing certain behaviour. As the confident and empowering text respectively, are not perceived as being significantly more confident and empowering there is partial evidence in line with the third argument. However, the other two texts did were perceived as significantly different than the neutral text. In the recommendations section, advice is given for future research to increase the likelihood to induce change which makes it possible to evaluate whether there is an effect.

As mentioned, this experiment objectively evaluated the risk-attitude of subjects with the Multiple Price List introduced by Holt & Laury (2002). Holt & Laury (2002) measured how subjects' risk behaviour changed when multiplying the initial payoffs used, by 20, 50 and 90. Harrison, Johnson, McInnes & Rutström (2005) criticized this within-subject approach by stating that order effects might significantly affect individuals risk attitude. Therefore, the research was repeated while randomizing the order (Holt & Laury, 2005). This gave similar results as before (ibid.). The disadvantages of the multiple price list, according to Andersen et al. (2006) are: only interval responses are elicited, subjects can have inconsistent preferences when switching back and forth and subjects can be susceptible to framing effects when subjects are inclined to switch in the middle row irrespective of their true preferences. As the ability of methods to elicit point estimates is disputed (Harrison, 1992), the best alternative is to elicit valuations via interval responses (Andersen et al., 2006). To prevent that the subjects switch back and forth, it is asked from which row respondents prefer option B over option A. When testing the framing effect, no significant difference was found at a 5% significance level when using a high or low skew frame, compared to the scale used by Holt & Laury (2002) (Andersen et al., 2006). Therefore, it is decided to keep the framing used by Holt & Laury (2005) which eases interpretation as well.

Implications

It is found that having a positive manager lowers the total risk-taking score and this effect is nullified when having experience working for a manager. Since Smith (1976) states that experimental results are relevant to interpret field data, it is recommended that managers who hire an employee who has no previous experience working for a manager, are not more

positive than a neutral manager would be. This should be taken into account especially when designing teams that take risky decisions. Departments without these responsibilities benefit from this as well because it does not decrease the likelihood that these new employees propose innovative ideas (Isen et al., 1987) and sacrifice themselves for the organization (West & Ford, 2001). Moreover, no managerial behaviour is needed to be limited to avoid excessive risk-taking.

Limitations

Due to budget constraints, a reward structure is not used in the experiment. Thus, no monetary value is induced to actions. This causes the violation of the precepts (rules to have control in an experiment, introduced by Smith (1980)) non-satiation (value more over less), salience (good decision paid more and bad decision paid less) and dominance (reward higher than subjects their mental effort). The parallelism precept is also violated as the environment in which subjects make decisions in the experiment is different compared to the actual field setting. Only the privacy precept is met as subjects only know how they do in the experiment. These violations lead to lower control and make it harder to find a causal relationship. As the subjects are real people who are aware of the experiment and take the experiment in their free time, this experiment is an artefactual lab experiment. This limits the external validity of the results as subjects know they are being watched and they are not making the decision in the environment where they normally would make these decisions.

Furthermore, this research makes subjects decide individually while in practice it is more often the team that makes a decision. Deciding as a group or individually influences risk taken; the bigger the group, the less risky these groups behave (Shimizu & Udagawa, 2011; Masclet et al., 2009).

As a between-subject design is used to evaluate the effect of managerial behaviour on employees' performance, it is not directly corrected for individual fixed effects. In a between-subject design, it is normally controlled for these effects, on average. However, as the subjects who receive a positive and empowering text appear to be different compared to the neutral text, caution should be made. Next to this, people receiving a confident or positive text, compared to a neutral text are also more likely to not finish the experiment. This gives an indication that the groups are different. Furthermore, it appears that the confident and empowering texts do not represent their intended behaviour. As both the confident and empowering text are perceived as more positive, it is concluded that the treatments should have been more different from each other. Furthermore, it cannot be guaranteed that certain unobserved behaviour is similar in all texts.

Lastly, the question asking people which country they feel most attached to, can be interpreted in different ways. Therefore, it is hard to ensure that people responding a certain country are indeed representative of that country. It would for example, be better to ask: "Where did you spend most of your first eighteen years?".

Recommendations

To prevent reverse causality, people are asked to assume they just started at a different company. Based on Shea (1999), people's risk-behaviour is likely to change when working longer for a company, irrespective of the company. Therefore, these time effects should be taken into account in future research to better evaluate the effect of the manager over time. Also, it is recommended for future research to have either a video from the manager or a face to face interaction to increase impact. However, due to budget constraints, it was not possible to find an actor to realise this.

In this experiment, there is an intense focus on the behaviour of the manager and how this would affect your decisions. In a real company setting, subjects could be less focused on managerial behaviour as in this experiment. However, as Smith (1980) mentions: this is pure speculation as there is no field data. Since this research is limited to certain managerial behaviour it is recommended, for future research, to consider other managerial attitudes, to create a broader picture about which managerial behaviour is beneficial, or not, for employees' risk-taking behaviour. Next to this, employees should be evaluated based on real decisions and work for real managers who just started at the company and are each perceived equally except for the certain characteristic evaluated. This could be achieved by hiring several actors, for each attitude, that are new managers of the company. Employees' performance should then be evaluated based on their actual behaviour, as done by Shea (1999). It is important to do this for several companies to control for company effects. Actual incentives can be implemented, for example by having subjects' bonuses depend on their risk-taking behaviour. This would meet the natural field experiment precepts of Smith (1980).

This research did not take company size and the role of the division manager into account while Leyden & Link (2004), found that small-sized firms typically engage in more risk-taking behaviour. Also, in big organizations, the behaviour of lower managers likely has more influence on the risk aversion of employees while the managerial attitudes of the CEO will have limited impact. For future research, it is recommended to evaluate if there is a difference in reaction on the division manager and CEO and how this differs in small and large firms. Also, in this research it is focused on employees in general. Since the influence of managerial behaviour might differ among industries, it would be interesting to measure how the effect of managerial behaviour differs across industries.

Conclusion

This research found that people without experience working for a positive manager take fewer risks. Besides this effect, no significant influence of a manager who shows confidence, empowers employees or has a long-term perspective on employees' risk-taking, is found. Next to this, it is not found that a manager who shows confidence, is empowering, has a long-term perspective or is positive, increases the likelihood of people taking excessive risks. Given the mentioned limitations (that the treatments where the manager should have confidence and empowerment respectively were not perceived as showing this and that the treatment groups are not similar) and the mentioned possibilities to overcome these limitations, it is highly recommended to elaborate on this research and to find how employees risk aversion might be lowered via managers as this greatly benefits the company and the economy.

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Appendix A - Experimental instructions

Subjects are told in a first step to imagine that they have taken on a job in a new company. Based on a letter from their new manager, which is either neutral or strengthened one of the four behavioural attitudes examined in this research, participants are asked to answer several questions and statements. The experiment is divided into six different parts: introduction, message from manager, perceived managerial behaviour, subjective risk-taking, objective risk-taking and general information. The full experimental instructions are listed below:

Introduction

Dear participant,

Thanks a lot for participating in this experiment about decision-making at work. For the purpose of the study, you are asked to imagine that you are just hired at a new company. You'll start the experiment by reading a letter from your hypothetical manager, which you'll find on the following page. Afterwards, you'll be given several statements regarding this manager as well as company decisions which you will be asked to give your opinion about. Please make sure that you base your answers on the letter above-mentioned. Reading and answering all the questions should not take you more than 10 minutes.

In case you have any questions, feel free to contact me.

Jim van der Voort

0623701975

jimvdvoort@student.eur.nl

Message from manager

In this section the text that subjects receive is shown. They receive one of the following five texts.

Neutral

Hello, I hope the onboarding process is going well so far. As you are in the onboarding process, I want to give you some background information on the company's situation.

We have become concerned about the apparent decline in the number of trades. This results in a decline in profits and a lower quality of our products and services.

We want to investigate this occurrence. Therefore, research from employees is needed. The goal is to determine what, if anything, needs to change in order to regain an acceptable level of quality and competitiveness in the industry.

What I am asking you, is to think, next to your regular tasks, about ways to improve the production process, quality or competitiveness of the company.

I do not expect you to directly come up with a perfect plan. Just give your best possible effort in finding the root cause.

In case you manage to identify the cause creating the current situation, we would appreciate it if you could work on an implementable solution.

Confidence

Hello, good to have you onboard in the company. You are exactly the person we were looking for. As you are in the onboarding process, let me give you some background on the company's situation.

We have become concerned about the apparent decline in the number of trades. This results in a decline in profits and a lower quality of our products and services.

We want to investigate this occurrence. Therefore, research from employees is needed. The goal is to determine what, if anything, needs to change in order to regain an acceptable level of quality and competitiveness in the industry. I am sure that you can contribute to overcome this issue.

What I am asking you, is to think, next to your regular tasks, about ways to improve the production process, quality or competitiveness of the company. I believe in your inventiveness and your ability to come up with a plan to improve the current situation.

I do not expect you to directly come up with a perfect plan. Based on your abilities, I am confident that you will find the root cause and come up with an implementable plan.

Your efforts will certainly help us understand how the quality and competitiveness of the company can be improved.

Empowerment

Hello, good to have you onboard in the company. Hopefully, you will enjoy the freedom and responsibilities given by the company. You will be able to work on your own projects, but first, let me give you some background on the company's situation.

We have become concerned about the apparent decline in the number of trades. This results in a decline in profits and a lower quality of our products and services.

We want to investigate this occurrence. Therefore, we need your, and your colleagues' help. You are the key to this important project which is why we want to provide you with as much freedom as needed. The goal is to determine what, if anything, needs to change in order to regain an acceptable level of quality and competitiveness in the industry.

What I am asking you, is to think, next to your regular tasks, about ways to improve the production process, quality or competitiveness of the company. You are not expected to provide us with detailed information about every step undertaken. Besides, you can decide whether you prefer to work independently or to build up a project team.

I do not expect you to directly come up with a perfect plan. Just give your best possible effort in finding the root cause and feel empowered working on this project.

Long-term perspective

Hello, good to have you onboard in the company. I am looking forward to our collaboration which will benefit both your personal growth and the growth of the business in the years to come. As you are in the onboarding process, let me give you some background on the company's situation.

We have become concerned about the apparent decline in the number of trades in the last periods. This results in a decline in profits and a lower quality of our products and services which is of great importance for our long-term business objectives.

We want to investigate this occurrence. Therefore, research from employees is needed to counteract the current trend. The goal is to determine what, if anything, needs to change in order to regain an acceptable level of quality and competitiveness in the industry. Since we are planning to extend the business to other countries in the future, it is very important for us to resolve it beforehand.

What I am asking you, is to think, next to your regular tasks, about ways to improve the production process, quality or competitiveness of the company.

I do not expect you to directly come up with a perfect plan as an inventive plan might come in the future. Hence, your performance is not evaluated on one decision. Just give your best possible effort in creating a solution. It would be great if the solution could be implemented since it would benefit the future health of the business.

Your efforts go a long way towards helping us understand how the quality and competitiveness of the company can be improved to ensure that we will stay competitive in the long run.

Positiveness

Hello, I am very happy to have you at the company and I hope the onboarding process is going well so far! I hope that you are comfortable and that you enjoy working here. As you are in the onboarding process, let me give you some background on the company's situation.

We have become aware of the apparent decline in the number of trades. This results in a decline in profits and a lower quality of our products and services. Nevertheless, we are positive that the situation will change.

Therefore, we want to dig deeper to find out the root cause. This is why research from employees is needed. The goal is to determine what, if anything, needs to change in order to regain an acceptable level of quality and competitiveness in the industry.

What I am asking you, is to think, next to your regular tasks, about ways to improve the production process, quality or competitiveness of the company.

I do not expect you to directly come up with a perfect plan. Just give your best possible effort in finding the root cause. Do not put yourself under too much pressure as I am positive that you will do a great job! Hopefully, you will enjoy working on this project. It is highly appreciated by everyone at the company; your efforts will be highly rewarded!

We are thankful for the effort you already gave.

Perceived managerial behaviour

Please state how much you agree with the following statements:

“This manager is empowering”

An empowering manager is defined as a manager who shares power, delegates responsibilities to employees and encourages employees to work independently (i.e.: gives freedom in taking decisions and does not demand employees to report everything in detail)

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“This manager shows confidence”

A manager who shows confidence is defined as a manager who can successfully deal with situations

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“This manager has a long-term perspective”

A manager who has a long-term perspective is defined as a manager who evaluates performance on more than one decision or action

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“This manager is positive”

A manager who is positive is defined as a manager who displays pleasure with a project, gives respect, improves employees' self-esteem and creates 'a happy feeling state'

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

Subjective risk-taking

Please state how much you agree with the following statements:

“I am willing to take risks at this job”

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“I am willing to accept tasks which have a high likelihood of problems”

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“I will design and present innovative (new) ideas to my manager”

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“I feel able to bring up problems and tough issues at my work”

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“I will put myself in a position of risk to help the organization”

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

“When completely responsible for a decision, I will go for an investment opportunity which has 50% chance to result in a profit of 2 million euros and 50% chance to result in a loss of 1 million euros”

Strongly disagree Disagree Slightly disagree Neutral Slightly agree Agree Strongly agree

Objective risk-taking

Imagine you came up with two plans which both improve the product-quality and increase profits of the multinational enterprise, from which only one can be implemented. Both plans increase profits irrespective of the market conditions. However, the likelihood of ending in a certain market condition is not known yet. Market research will reveal the exact chances of the two possible market conditions to take place. However, your hypothetical manager wants to know your preference beforehand. This would enable the company to directly implement one of the plans as soon as market research is finished. In the table below the chance of a market condition to occur is shown, for both plans. Per row, the chance of the condition to happen is changed.

At Row 0, Option A (profit increase of €160.000 with a 10/10 chance (and a 0/10 chance that the profit increases with €200.000)) is for sure better than Option B (profit increase of €10.000 with a 10/10 chance (and a 0/10 chance that the profit increases with €385.000)), as an increase in profits of €160.000 is higher than an increase in profits of €10.000. The opposite holds at Row 10, where Option B is for sure better than Option A. Hence, your preference between both Options should change between Row 0 and Row 10. From which row onwards do you prefer Option B over Option A? I prefer Option B from Row:

Table A1: The possibilities that were given to subjects. Subjects should report from which row onwards they prefer option B over option A. In the last column the difference in expected values between the two options is shown for each row.

Row	Option A	Option B	Expected payoff difference*
0	0/10 of €200,000, 10/10 of €160,000	0/10 of €385,000, 10/10 of €10,000	€ 150,000
1	1/10 of €200,000, 9/10 of €160,000	1/10 of €385,000, 9/10 of €10,000	€ 117,000
2	2/10 of €200,000, 8/10 of €160,000	2/10 of €385,000, 8/10 of €10,000	€ 83,000
3	3/10 of €200,000, 7/10 of €160,000	3/10 of €385,000, 7/10 of €10,000	€ 50,000
4	4/10 of €200,000, 6/10 of €160,000	4/10 of €385,000, 6/10 of €10,000	€ 16,000
5	5/10 of €200,000, 5/10 of €160,000	5/10 of €385,000, 5/10 of €10,000	€ -18,000
6	6/10 of €200,000, 4/10 of €160,000	6/10 of €385,000, 4/10 of €10,000	€ -51,000
7	7/10 of €200,000, 3/10 of €160,000	7/10 of €385,000, 3/10 of €10,000	€ -85,000
8	8/10 of €200,000, 2/10 of €160,000	8/10 of €385,000, 2/10 of €10,000	€ -118,000
9	9/10 of €200,000, 1/10 of €160,000	9/10 of €385,000, 1/10 of €10,000	€ -152,000
10	10/10 of €200,000, 0/10 of €160,000	10/10 of €385,000, 0/10 of €10,000	€ -185,000

* This column is not shown to subjects

General information

1. What is your gender? Male Female Other:
2. What is your age?
3. To which country do you feel most connected? The Netherlands Other:
4. Do you have experience working for a manager? Yes no

Appendix B – Calculation CRRA

The CRRA utility function looks the following: $U(X) = \frac{X^{1-r}}{1-r}$. For each row, the value of r is measured which gives indifference between the two options shown in table AX. These define the region of a person's r , who switched from a certain row. The average r is used to define subjects risk-score. As the lowest and highest row do not give a finite number of r , it is not possible to calculate a value of r for row 0, 9 and 10. Therefore, the regression with CRRA only has 296 observations. Table B1 shows the values.

Table B1: Transformation objective risk-taking scores to CRRA values.

Row switch	Risk-score	R	CRRA value
0	10	N.A.	N.A.
1	9	-1,31694304074888	-0,82005
2	8	-0,32315249306763	0,01266
3	7	0,34847284269610	0,627389
4	6	0,90630543260499	1,165307
5	5	1,42430911428868	1,686312
6	4	1,94831485678488	2,237273
7	3	2,52623120344183	2,883562
8	2	3,24089240789805	3,787995
9	1	4,33509750153518	N.A.
10	0	N.A.	N.A.

Appendix C – Descriptive statistics

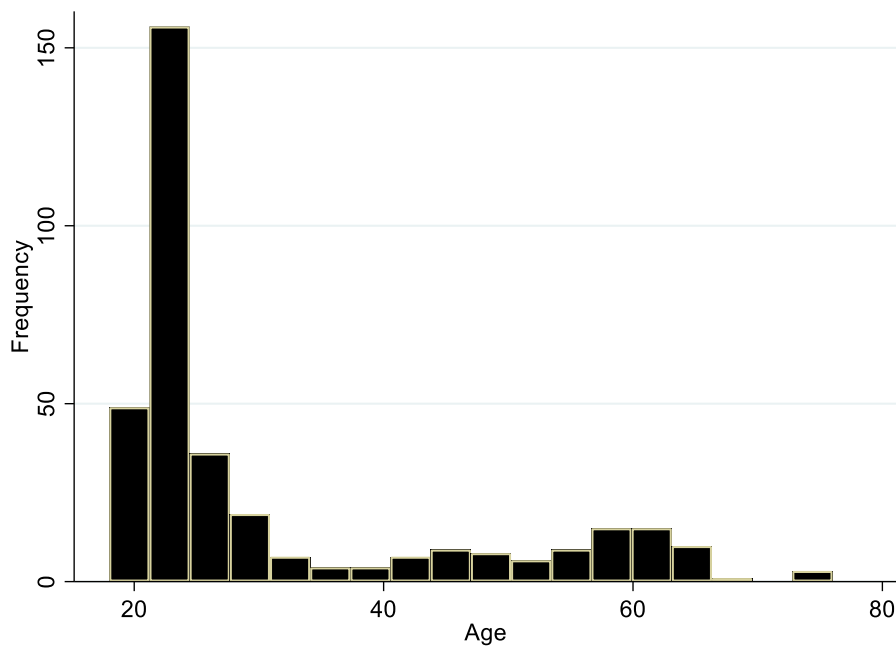


Figure C1: The amount of people that participated in the experiment, given their age.

Table C1: For each nationality, the amount of subjects that participated in the experiment.

Country resonate with	Frequency
The Netherlands	293
Norway	1
Germany	13
Spain	2
Belgium	5
France	12
Italy	4
England	1
Ireland	1
Turkey	1
Morocco	7
Palestina	1
India	1
China	1
Indonesia	2
Vietnam	1
Thailand	1
Argentina	1
America	1
Other	11

Table C2: For each text type, the amount of subjects that have and have no experience working for a manager. The last column shows the total amount of subjects that received a certain text.

Text received	No experience	Experience	Total
Neutral	14	60	74
Confidence	15	71	86
Empowerment	13	54	67
Long-term perspective	12	45	57
Positive	14	62	76