The influence of risk propensity on the relation between training and cooperation

An experimental test

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Abstract

Understanding the effects of training is crucial for organisations as this often guides their human capital decisions. In this article, the relationship between training and cooperation is analysed by considering the effect of risk propensity. Risk propensity is differentiated in more general sensation seeking propensity and job related risk propensity. A contextualized laboratory experiment of 126 participants from the Experimental Laboratory for Sociology and Economics (ELSE) at Utrecht University was used for multiple regression analysis. The outcome of the analysis revealed that risk propensity did not significantly lower the relationship between training and cooperation. It was found that sensation seeking propensity positively affects cooperation.

Keywords

Risk propensity, risk, cooperation, training, trust, organisation, cohesion, teams

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Introduction

Previous research showed that organisational teams perform better when employees behave cooperatively (Koys, 2001; Podsakoff, Podsakoff, Mackenzie, Maynes & Spoelma, 2014). Behaving cooperatively is the willingness to pursue mutual interest in alliance or collaboration, the willingness to place and to honour trust, instead of showing opportunistic behaviour. Employee cooperation is voluntary behaviour to help co-workers and to achieve mutual goals (van Gerwen, Buskens & van der Lippe, 2018) . Employers can use a variety of tools to promote this cooperate behaviour; one of them is training.

It was found that training helps to promote the productivity levels among employees and encourages employees to cooperate (van Gerwen, Buskens & van der Lippe, 2018; Choi & Yoon, 2015; Evans & Davis, 2005; Huselid, 1995). Van Gerwen, Buskens & van der Lippe (2018) concluded that trained employees are "more willing to help their coworkers, contribute more resources to team effort, and are generally more willing to go beyond the call of duty than untrained employees". Training is thus a tool to help increase cooperation levels. The extent to which training is increasing the productivity and cooperation level of the employees depends on how effective training is in stimulating employees willingness to behave more cooperatively and more productively (van Gerwen, Buskens & van der Lippe, 2018).

An important decision in examining the effectiveness of training for employers is who to select for training. Those decisions are often guided by different skills and knowledge between the employees and are becoming important within organisational strategy (Tanova & Nadiri, 2005). This paper will look at the relation between training and cooperation, and takes into account a characteristic of employees that could be of influence: risk propensity, as explained below.

Risk propensity is defined here as one's tendency to take risk that is determined by personal traits and situations (Das & Teng, 1997, 2001c; Sitkin & Pablo, 1992, p. 12). So, risk propensity is a person's willingness to take risks and people can be described as either risk-takers or risk-averters (Das &Teng, 2004). Previous research stated that one's risk propensity affects one's assessment of the situation and one's perception of risk (Brockhaus, 1980). Perception of risk is closely related to decision making, because decision making is dependent on the perceived potential gains and potential losses involved in the decision (Das & Teng, 2004). Risk propensity

could alter the perceptions of employees about risk perception, resulting in cooperation in one case, but not in the other. The central question to be answered in this paper is:

To what extent does risk propensity influence the relationship between training and cooperation? And *Is it more profitable for employers to train those employees who show more risk-taking behaviour, or to train those employees who show more risk-averse behaviour?*

The literature investigating the effects of training has mostly focused on monetary performance indicators as returns of investments in training (Evertsson, 2004; Haelermans & Borghans, 2012; Zwick, 2006). Fewer studies examined training while considering non-monetary outcomes: in this paper cooperation between employees. Although a recent study by van Gerwen, Buskens & van der Lippe (2018) did explore this relationship, this paper will still be among the first to look at non-monetary outcomes. Besides, much research has been done to the relation between risk propensity and trust (Mayer, Davis & Schoorman, 1995; Delerue, 2004; Conger & Kanungo, 1987; Dirks, K. T., Ferrin, 2001; Whitener., Brodt, Korsgaard & Werner, 1998; Costa & Bijlsma-Frankema, 2007; Earle, Siegrist & Gutscher, 2010; Sanders & Schyns, 2006; Das & Teng, 2004; Das & Teng, 2001; Das & Teng, 1998), but less research has been done to risk propensity in combination with training and cooperation. This paper can create new insights in managerial theory and the effects of training.

An important risk for employers within organisations is formed by a team that does not cooperate well enough (Das & Teng, 2003). This paper can help employers to come up with more targeted investments in order to increase productivity and cooperation within organisational teams. As van Gerwen, Buskens & van der Lippe (2018) state: “to know the expected effects of training is crucial for organisations as this often guides their human capital decisions”.

This paper is set up using the following structure: in the theory section the main concepts are introduced and theory is provided for the hypotheses. In the method section the dataset is described and variables are operationalized for analyses. Subsequently results are presented and lastly I conclude and discuss the findings of this paper.

2. Theory and hypotheses

This section will look at the role of risk propensity in the relation between training and cooperation. First, the relation between training and cooperation is described. This paper builds to an understanding of the role of risk propensity in this relationship. Thereafter, more team specific factors regarding risk propensity are discussed.

2.1 Training and cooperation

Cooperation is the willingness of people to pursue mutual interest in alliance or collaboration, the willingness to place and to honour trust, instead of showing opportunistic behaviour. Opportunistic behaviour is defined as self-seeking behaviour of individuals, which can harm the collective outcome (Das & Teng, 1998). Although it is (in the short term) a rational choice to pursue self-interest instead of team interest, the team could be worse off if nobody chooses to cooperate. An example: a team within a firm has to develop a new product. The team will be assessed on the total team outcome. Each individual might be tempted to let the other do most of the work while benefiting equally from the result, the development of the new product. However, if nobody chooses to work on the new product the whole team will be worse off, because they didn't achieve progress in developing the new product.

Between an employer and an employee there exist an exchange relationship. The social exchange theory (Blau, 1964) states that actions of one party are dependent upon the actions of the interaction partner. The behaviour of an employer is likely to influence the behaviour of the employee and vice versa. This theory centers around Gouldner's (1960) reciprocity principle: "if you do something nice for me, I will do something nice for you". The mutual investment model builds upon this theory by stating that in an employee-employer relationship both parties try to achieve a balanced exchange relationship. This model predicts that when an employee receives training from an employer, the exchange relationship will be unbalanced. Previous research stated that training is valued by employees, because it is one of the central rewards employers can offer to enhance employee performance (van Gerwen, Buskens, van der Lippe, 2018; Boselie, Dietz & Boon, 2005). To restore balance in the exchange relationship the employee will reciprocate to this kind gesture by increasing his/her cooperative behaviour. In other words: employers exchange investments in training for cooperative behaviour of their employees (van Gerwen, Buskens, van der Lippe, 2018). However, in the described case there is no direct

reciprocity, which includes “if you do something nice for me, I will do something nice for you”. Instead, generalized reciprocity is tested in this paper: which assumes “if you do something nice for me, I will help someone else”. This means that the trained employee helps a co-worker and the employer will benefit indirectly from increased cooperation within his organisation, also restoring the balance in the relationship between the employee and employer. Following this reasoning I expect that:

Hypothesis 1: *Training an employee within an organizational team has a positive effect on the cooperation within that team.*

2.2 Risk propensity

As was stated, risk propensity is defined in this paper as one’s tendency to take risk that is determined by personal traits and situations (Das & Teng, 1997, 2001c; Sitkin & Pablo, 1992, p. 12). It is the willingness to take risks. Das & Teng (2004) state that risk taking is related to trust. Trust can be defined as: ‘The willingness of a party to be vulnerable to the actions of the other party, based on the expectation that the other will perform a particular action important to the trustor (first person who places trust), irrespective of the ability to monitor that other party” (De Cremer, Snyder & Dewitte, 2001). An example: within an organizational team person A decides to help person B with a problem. Person A has to do this next to his own regulatory tasks and places trust that person B won’t abuse the trust. Abusing trust would for example mean that person B does not help person A in a situation when person A needs help. Trust here is the willingness of person A to be vulnerable to the actions of person B, based on the expectation that person B will also help person A if person A has a problem. Trusting is taking the risk that another party will act contrary to opportunism behaviour (Earle, Siegrist & Gutscher, 2010; Mayer et al., 1995; Das & Teng, 2004). The trustor is the person who places trust, and the trustee is the person receiving trust, who can either choose to honour trust or abuse it (Buskens & Raub, 2002).

Coleman (1990) made a function for expected utility of a trust relationship and also describes that it relates to risk taking (see function 1). It is assumed that trust is based on rational decision making, which means that trust is only possible for the trustor as “the expected outcome

of placing trust is preferred over the expected outcome of not placing trust" (Buskens & Raub, 2002). Coleman (1990) describes the function to measure the expected utility of a trust situation with probability of q that trust is placed or honoured as:

(1) $V=qG - (1-q)B$

This function is about probability and outcomes. Here V is described as the expected utility of risk taking behaviour, q is the perceived probability of gaining and (1-q) is the perceived probability of losing. Gaining is defined as total gains involved in risk taking behaviour in a particular situation and losing is defined as the total loss involved in specific risk taking behaviour. The potential gain is described as G and the potential loss is described as B. Coleman describes that one would place trust when qG is greater than (1-q)B, so when V (the expected utility) is positive.

The tendency of risk takers (people with high risk propensity) is to assign more importance to potential gains and less importance to potential losses, hereby underestimating the probability of losses ((1-q)B) and overestimating the probability of gains (qG) in a decision (March & Shapira, 1987). The real risk could be higher than risk takers expect, but this underestimation of the potential losses will lead them to take a risk sooner. In contrast, risk averters (people with a low risk propensity) tend to give more importance to losses ((1-q)B) and thereby overestimate the probability of losses (Schneider & Lopes, 1986). This leads people with a low risk propensity to take a risk less soon.

The function of Coleman (1990) thus states that people who consider a positive expected utility of a trust relationship would place and honour trust. People with a high risk propensity are more likely to consider a positive expected utility of a trust relationship, because of their overestimation of gains and underestimations of losses perceived regarding the trust relationship. However, people with a low risk propensity are more likely to consider a negative expected utility of a trust relationship, because of their overestimation of losses regarding the trust relationship. The result is that people with a high risk propensity place and honour trust sooner than people with a low risk propensity. Research states that people higher in trust (who place and honour trust more) are more likely to cooperate than people lower in trust (Mayer, Davis & Schoorman, 1995; Delerue, 2004; Conger & Kanungo, 1987; Dirks, K. T., Ferrin, 2001; Whitener., Brodt, Korsgaard & Werner, 1998; Costa & Bijlsma-Frankema, 2007; Earle, Siegrist

& Gutscher, 2010; Sanders & Schyns, 2006; Das & Teng, 2004; Das & Teng, 2001; Das & Teng, 1998; Buskens & Raub, 2013; Raub & Buskens, 2008). Therefore I expect that:

Hypothesis 2: *Risk propensity has a positive effect on cooperation (figure 2).*

2.2.1 Risk propensity and training

Training is a tool which employers can use to increase cooperation. As explained, the social exchange theory (Blau, 1964) and the reciprocity principle with the mutual investment model (Gouldner, 1960) can explain how training leads to more cooperation. For an employer it could be beneficial to select those people for training which would yield the highest increase in cooperation within that team.

People high in risk propensity (risk taking people) are likely to overestimate gains and underestimate losses in a trust relationship. They are likely to trust sooner because of it. It is therefore likely that those people anyhow place and honour trust within their team, leading to cooperation. It is likely that cooperation levels among people in teams who have a high risk propensity is already high. Training a person with a high risk propensity could only increase cooperation a bit, because it was already on a high level. Or in other words: the expected utility of a trust relation is likely to already be positive before training and training those people does not yield much further progression in cooperation.

However people low in risk propensity (risk averse people) are likely to overestimate losses in a trust relation and are therefore not likely to be the first in a team to place or honour trust, which makes high levels of cooperation less likely. Training those people could possibly yield a higher result in cooperation. The reciprocity principle and corresponding mutual investment model would indicate that the relationship after training is unbalanced. In this case, the employer is the trustor and the employee the trustee. The employer takes the risk that the employee won't use the training to promote cooperation. The employer is the first one to place trust by giving training, this changes the expected utility of the trust relationship for the employee. For risk averse people, training might enforce the expected utility of the trust relationship to jump from negative to positive. This would mean that the employee would now honour the trust. Since in the experiment (described in the data section) the employee could not

reciprocate the generous gift from the employer in a direct way, generalized reciprocity meaning increasing cooperation in the team, also restores the exchange balance between the employee and the employer. Therefore I expect that:

Hypothesis 3: *Training an employee with a lower risk propensity has a higher positive effect on cooperation than training a higher risk propensity employee (figure 1).*

Important to note here is that this paper does not look at the specific content of training because of data restrictions (more on this in the method section) and assumes from previous research that training in general has a positive effect on cooperation. This relation will again be tested.

It is expected that risk propensity has a moderating effect because risk propensity is expected to alter the relationship between training and cooperation. It cannot be a mediator effect because a mediator effect would include that the mediator variable is predicted by the independent variable (Bennet, 2000). Risk propensity is seen as a characteristic independent of training (figure 1).

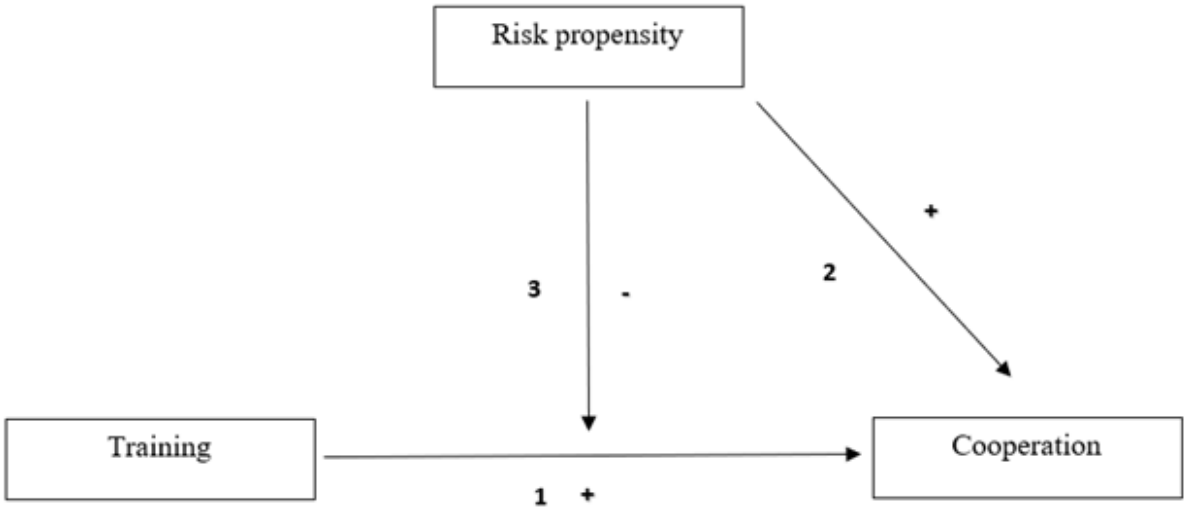

Figure 1: The expected positive effect of training on cooperation (hypothesis 1, arrow 1). The expected positive effect of risk propensity on cooperation (hypothesis 2, arrow 2) and the expected negative moderating effect of risk propensity on the positive relationship between training and cooperation (hypothesis 3, arrow 3).

2.3 Composition of the team

In order to evaluate the effect of risk propensity, this paper does not only look at the micro level (the individual) outcome of risk propensity but will also consider more macro level outcomes (team level).

Teams within organisations most likely work together for longer periods of time. If teams work together for a longer period of time, they can create a strong social identity that will lead to more cooperative behaviour by increasing trust within the group and reducing the risks of opportunistic behaviour (van Gerwen, van der Lippe & Buskens, 2018). In cohesive teams it is more likely that there are higher levels of trust because of the reciprocity norm. Employees within cohesive teams are expected to reciprocate past benefits. An employee who enjoyed team member benefits in the past is expected to contribute to team effort in the future. If this employee does not reciprocate a favor it is more likely that this opportunistic behaviour will be sanctioned than in less cohesive teams, because trust in cohesive teams is more valued. Sanctioning in turn can lead to more trust, which then also can lead to more cooperation, by restating the group shared values underlying the punishment (Raub & Weesie, 1990). Buskens & Raub (2013) stated that in cohesive and stable teams, long-term benefits of behaving cooperatively outweigh the short time benefits of free-riding, and that contributions are expected to increase. Lambooij, Flache and Siegers (2009) also stated that the cooperative behaviour of employees increases when employers and employees are embedded in a long-term relationship. Cohesion is thus likely to be positively related to cooperation.

Hypothesis 4: *Cohesion is positively related to cooperation (figure 2).*

Lambooij et al. (2009) also state that risk averse employees are less likely to cooperate in situations in which the rewards are uncertain, because of the greater perceived risk and potential losses. In less cohesive teams there is more uncertainty about the rewards from the risk of trusting than in more cohesive teams, because in less cohesive teams the overall trust level is expected to be lower than in more cohesive teams. In both situations however long term relationship increases cooperation (Lambooij et al., 2009). In stable teams this is done by strong reciprocity, reciprocity based on other-directed behaviour. This means that the trustee feels an obligation to help the trustor. In contrast, within unstable or less cohesive team cooperation

exists because of weak reciprocity (Fehr & Schmidt, 2006). Weak reciprocity appeals to one's individual self-interest (Buskens & Raub, 2013). Here it is important that the trustee would not cooperate when the biggest reward would not include a personal gain.

So in more cohesive teams there is more certainty about rewards from relational risk, because of likely strong reciprocity norms. However in less cohesive teams there is more uncertainty about rewards, because of absence of strong reciprocity norms (or present weak reciprocity norms). Having a higher risk propensity will matter less in a cohesive team than in a less cohesive team, because cooperation is assumed to already be high in more cohesive teams and which cannot increase much further. This is due to the likely more strong reciprocity in cohesive teams than in less cohesive teams. However in less cohesive teams, strong reciprocity norms are not expected to be present. A person with high risk propensity, which means that he/she underestimates the losses in a trust situation, might be the only one which perceives a positive expected utility of a trust relation in a non-cohesive team were overall trust is low. The result is that people high in risk propensity will be the first one to place trust, where people with a low risk propensity wouldn't do so. This could initiate a switch in trust and cooperative behaviour in the team following the reciprocity principle and mutual investment models. It changes the exchange relationship and becomes unbalanced. The other employees might now feel obliged to reciprocate and honour trust which would lead to cooperation. The positive effect between risk propensity and cooperation will thus be lower in cohesive teams than in less cohesive teams, meaning that high risk propensity can result in cooperation where there was no cooperation in non-cohesive teams before. However in cohesive teams, cooperation is assumed to be already high and high risk propensity is not likely to add much more increase to cooperation. Therefore I expect that:

Hypothesis 5: *The effect of risk propensity on cooperation will be less positive in cohesive teams than in less cohesive teams (figure 2).*

Training provided by employers to employees is a good example of promoting strong reciprocity (van Gerwen, van der Lippe, Buskens, 2018). As discussed, in more cohesive teams it is more likely that this strong reciprocity is already present, meaning that high trust indicates that the expected utility of a trust relation and risk taking will be positive. Training is not expected to

increase this high level much further. However, in less cohesive teams it is more likely that strong reciprocity is absent or less present, meaning that lower levels of trust most likely indicate a negative expected utility of a trust relationship, therefore risk taking is discouraged. Training can thus be of huge importance here. Training a person in a less cohesive team could mean that strong reciprocity norms are formed and that the expected utility of a trust relationship switches from negative to positive. This will lead to more cooperation than in cohesive teams, were cooperation was expected to already be high. It is expected that:

Hypothesis 6: *The positive effect of training on cooperation will be smaller in cohesive teams than in less cohesive teams (figure 2).*

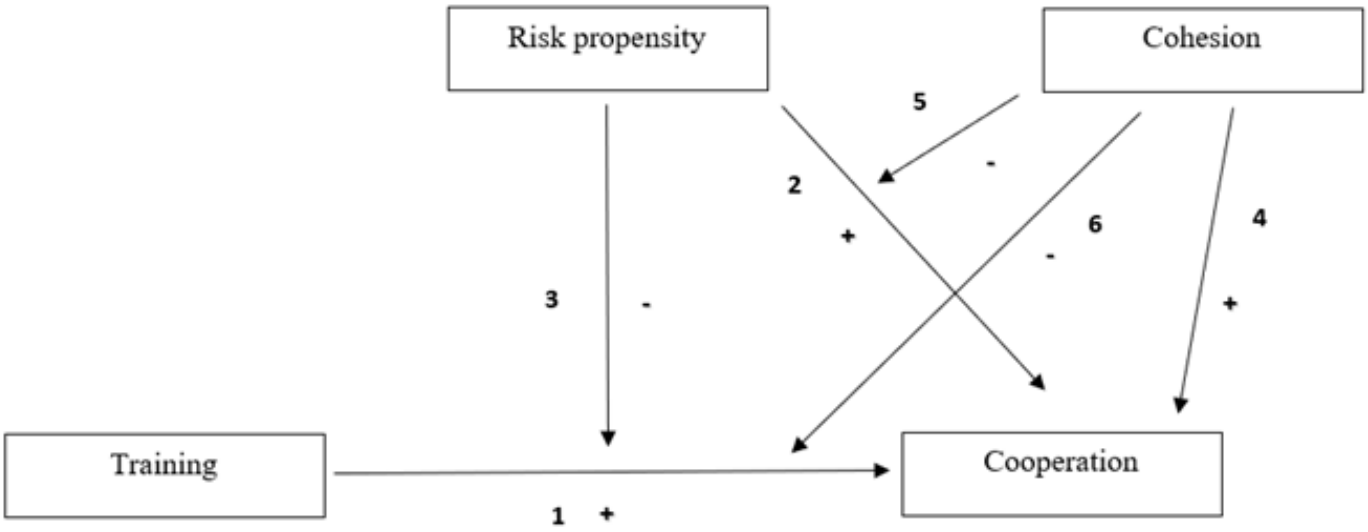

Figure 2: The expected positive effect of cohesion on cooperation (hypothesis 4, arrow 4). The expected negative effect of cohesion on the relation between risk propensity and cooperation (hypothesis 5, arrow 5). The expected negative effect of cohesion on the relation between training and cooperation (hypothesis 6, arrow 6).

3. Data and methodology

3.1 Dataset

To test the hypotheses, this paper uses data from the Experimental Laboratory for Sociology and Economics (ELSE) at Utrecht University. The participants in this dataset were recruited among students at Utrecht University using the Internet recruitment system ORSEE (Greiner, 2004). A contextualized laboratory experiment with a repeated and non-repeated Public Good Game was performed. In March 2016, six sessions were conducted with in total 129 participants, resulting in 4773 observations. Participants played 18 decision rounds in which participants were randomly assigned in teams of three participants where contributions to a team effort are seen as an indicator for cooperative behaviour. The participants were told that they can earn money by means of earning points during the experiment. Earning money is determined by the choices the participants will make. They were told that the team was seen as a team of colleagues, the lab as an organisation and the participants as employees. The identities of other team players were unknown and 70 points in the experiment equaled a gain of 1 euro which would be paid out in cash after the experiment. The subjects received printed English instructions and after the experiment participants had to fill in a short survey. The participants were not able to communicate with each other. There were 43 male subjects (33.3%) and 86 female subjects (66.6%) and the age ranged from 18 to 54 years of age with an average of 23.3. A typical experiment lasted 1.5 hours in which participants earned on average 13.07 euro.

At the start of each round, every participant *i* received an amount of skills and knowledge (y_i), which is the endowment for an employee. They were instructed that the organisation for which they work is introducing a technological innovation and every team member is asked to contribute their skills to a team effort. Only team efforts will help the innovation being used, from which the whole company benefits. This innovation is also named public good or team effort.

At the start of each round, participants are informed on their own endowments (skills) and on those of their two team members. Each round participants had to decide how many of their endowment they wanted to contribute to the innovation (team effort) and how many points they would keep in their personal account. Each participant could choose to contribute g_i ($0 \leq$

$g_i \leq y_i$) of their skills to team effort and this decision was made simultaneously and independently for all three participants in a team.

Next to this, every participant was assigned to a certain productivity level (δ_i) which determined how much contribution (g_i) one would add to team effort. The endowments points were multiplied by this productivity level to determine how many points an individual would add to team effort. Note that if a respondent did choose to keep his skill points in his personal account, they would not be multiplied with the productivity level. The standard productivity level was set at 1.5, meaning that every skill point (y_i) would contribute 1.5 to the innovation (team effort) when a participant decided to contribute skill points to team effort. Participants within a team knew the productivity levels of team members at the beginning of each round. The productivity level could change per round.

When all team members had decided how many skill points they would contribute, the contributions were multiplied by the associated productivity levels. This would be the total team effort of that round and this amount will be equally divided among all the team members (divided by three). The skills and knowledge (y_i) one did not contribute to team effort, would stay in the personal account of the participant. The payoff (π_i) for subject *i* per round thus consisted of the skill points not contributed and the equal share of the total contributed skill points to the team effort (see formula 1). Dividing this score by 70 resulted in the amount of euro's earned.

$$(1)\ \pi_i = (y_i - g_i) + \frac{\sum_{j=1}^{3}(g_j * \delta_j)}{3}$$

It is important to recognize that it was profitable for a participant not to contribute to team effort and hold all his endowments in his personal account plus receiving a part of the contribution made by the other team players. This would lead to the highest personal gain in points (which resulted in money). However if everyone would be contributing to team effort the whole team could be better off.

Important within this decision game is the following. The participants were told before the decision that the boss of the organisation decided to give one of the team members training which would increase his/her productivity level. Training would increase that employee's productivity level from 1.5 to 2.4, meaning that every skill point this person would contribute to team effort would be multiplied by 2.4. So, it is far more profitable for the team if the trained

person would contribute more, considering that every point he contributes will count 0.9 points more than the contributed skill points of the other two team members. Training thus created heterogeneity in terms of productivity. At the beginning of each round the participants were informed about the skill points of each team member, about who of the team members received training and also about each team member's productivity level. After each round, the participants were informed about the choices made by the other team members.

This experiment consisted of two treatments. The participants all completed both treatments and were randomly assigned to a treatment so that the order of treatment could change per respondent. In treatment 1 the above described decision situation was repeated in the same team for six rounds and subsequently a participant would move to a new team where he would stay another 6 rounds, and after that six rounds in a third team, totaling to 18 rounds in the end. Those participants would be considered operating in a more cohesive team, because they had the knowledge that they should stay together with the same people for six rounds. As cohesive teams are considered to value the importance of a longer relationship, a longer relationship of playing together would be indicated as a more cohesive team. In each round, participants received new skill points. Remaining skill points were not taken to the next round. When the participants went to new teams the skill points might change.

In the second treatment the same structure of the decision game was applied, but the difference was that participants were instructed to operate in a new team each round. There were also 18 rounds in this part, so this meant that a participant should have operated in 18 randomly assigned teams. Those people were indicated as operating in non-cohesive teams, because the knowledge of playing in a team for one round fosters short mind thinking, and is not likely to promote trust and cohesiveness. In each round the participant received new skill points and the participant did not take previous skill points to the next round. Within each team, one could see the parameters of endowment, who received training and the productivity level at the beginning of a round, and the contribution parameter at the end of a round. Different from treatment 1 was that people in treatment 2 could not observe the contribution team members made in previous rounds, only the contributions made during the current round could be observed.

To be able to investigate the effect of risk propensity I choose to only look at the first round of the eighteen rounds in each treatment. In the first round it is more likely that the effect

of risk propensity is observed more accurately, because the participants are not yet influenced by the decisions made by other participants. There would be too many other variables which could influence cooperation, and controlling for all of them would be hard. In order to achieve validity this decision was made. This means that there are still 129 participants in my dataset, diminishing the number of observations to 258. The used dataset contained 126 participants and 252 cases, as will be explained in next sections. There were 43 male subjects (34.1%) and 83 female subjects (65.9%) and the age ranged from 18 to 31 with an average of 22.8.

3.2 Operationalisation

3.2.1 Independent variables

Training

The first independent variable is training. The participants did not receive training but were assigned in a training condition. Two dummy variables were created. A first dummy variable showed score 1 for participants who were not trained, while another team member was. Participants who scored 1 here had a productivity factor of 1.5. The second and third team member scored either 2.4 or 1.5, which depended on who of them had received training. This variable was made to check what happened to the two persons who were not trained, did they change their contribution? A second dummy variable showed score 1 for participants who were trained in teams where other team members were not. Participants who scored one here, have a productivity factor of 2.4, and the two others receive 1.5. This measured the contribution of trained persons in a team where two others were not trained. The productivity factor in teams where no one was trained was set at 1.8 in order to keep the average productivity level in the two conditions constant, summing up to total team productivity factor of 5.4 in each round. The last group of team members were the reference category. The productivity factors were determined before the start of the experiment and distributed over the participants.

Risk propensity

The second independent variable was risk propensity. To measure risk propensity fifteen questions about risk from the Experimental Laboratory for Sociology and Economics (ELSE) were used. Those fifteen questions existed of propensity to risk taking within jobs and more general risk propensity. The following seven statements were used to indicate risk propensity

within jobs: "I am not willing to take risks when choosing a job or company to work for", "I prefer a low risk/high security job with a steady salary over a job that offers high risks and high rewards", "I prefer to remain on a job that has problems I know about rather than take a risk of working at a new job that has unknown problems even if the risk offers greater rewards", “I view risk on a job as a situation to be avoided at all costs", "I enjoy the excitement of uncertainty and risk", "I am willing to take a significant risk if this is necessary to obtain my fair share" and "I am willing to take a significant risk if the possible rewards are high enough". Participants had to answer on a seven point Likert scale ranging from “strongly disagree” (score of zero) to “strongly agree” (score of six). All statements were set in the same direction, meaning a lower score to indicate low risk propensity within jobs (minimum of 0) and a higher score to indicate high risk propensity within jobs (maximum of 6). A scale was made of the mean of those variables together. A reliability analysis of the scale of the constructed variables showed a sufficient Cronbach's Alpha (N=258, $\alpha = .807$). It showed that Cronbach's Alpha was not going to increase when an item would be deleted.

Ten questions indicated more general risk propensity and were investigated to indicate sensation seeking (more general risk propensity). Those questions were based on the sensation seeking definition from Zuckerman (1994): “Sensation seeking is a trait defined by the seeking of varied, novel, complex, and intense situations and experiences, and the willingness to take physical, social, and financial risks for the sake of such an experience”. It is a tendency to seek strong sensations and experiences by taking on different kinds of risk (Hansen & Breivik, 2000). Ten statements with answer categories A en B were used to define sensation seeking, in which participants had to choose which category they agree more:

1 "A: I often wish I could be a mountain climber. B: I can't understand people who risk their necks climbing mountains", 2 "A: A sensible person avoids activities that are dangerous. B: I would like to do things that are a little frightening", 3 "A: I would like to take up the sport of water skiing. B: I would not like to take up the sport of water skiing", 4 "A: I would like to try surf board riding. B: I would not like to try surf board riding", 5 "A: I would like not to learn to fly an aeroplane. B: I would like to fly an aeroplane", 6 "A: I prefer the surface of the water to the depth. B: I would like to go scuba diving", 7 "A: I would like to try parachute jumping. B: I would never want to try jumping out of a plane with or without a parachute", 8 "A: I would like to dive off the high board. B: I don't like the feeling I get standing on the high board (or I don'; t

go near it at all)", 9 "A: Sailing long distances in small sailing crafts is foolhardy. B: I would like to sail a long distance in a small but seaworthy sailing craft", 10 "A: Skiing down a high mountain slope is a good way to end up on crutches. B: I think I would enjoy the sensation of skiing very fast down a high mountain slope". All statements were set in the same direction, lower scores indicating lower sensation seeking (with a minimum of zero) and higher scores indicating higher sensation seeking (maximum of 1) and were computed to a scale by taking the mean of the variables. Cronbach's alpha for the 10-statements Sensation Seeking Scale was .66. A closer examination of the statements indicated that all variables were positively related to each other, except for statement 5. Along with statement 6 the explained variance on the other statements is relatively very low. These two asked about whether you would like to learn to fly and if you would prefer scuba diving or not, and could be perceived as too less dangerous sport for people to conceive it as really sensation seeking compared to the other more extreme sensation seeking statements. Because of that, statement 5 and 6 were removed from the analysis, resulting in a Cronbach's alpha of .70 .Although a Cronbach's Alpha score of .70 is not ideally, it is acceptable for this research.

Cohesion

The third independent variable is cohesion. Cohesion was measured by having cohesive teams and non-cohesive teams. Working together for longer periods of time can create a strong social identity by increasing the level of trust within the group and by decreasing opportunistic behavior (Chen, tang & Wang, 2009; van Gerwen, van der Lippe, Buskens, 2018). Knowing how long you will be in a team can also contribute to this process. Cohesive teams were measured by teams of three participants who knew they would spend six decision rounds in the same team. Non-cohesive teams consisted of teams of three participants who knew they would only spend one decision round with the current team and would go to a different team each round. A dummy variable was created where 0 score indicated a non-cohesive team and 1 score a cohesive team.

3.2.2 Dependent variable

Cooperation

Cooperation was measured as the total contribution to team effort divided by the endowment (skill points) of a team member. This was done in order to control for the endowments participants received. A person with more endowments could simply contribute more, and it would therefore be misleading to measure cooperation by only taking contribution into account. No cooperation indicates that none of the endowment (skill points) of the team were contributed to the innovation (team effort). This resulted in a scale variable with score between 0 and 1, a higher score indicating more cooperation.

3.2.3 Control variables

Finally, variables were controlled which could be of influence on risk propensity or on cooperation in general. Gender has been researched as an influencer of risk propensity. Research suggest that women are more risk averse than men of equal economic status and that when the result is more unknown men tend to be more risk taking (Jianakoplos, Bernasek, 1998; Sundén, Surette, 1998; Powell, Ansic, 1997/1998). Gender was measured via a dummy variable " Man" which has a value of 1 for men and 0 for women. Another control variable was game theory, indicating whether the participants ever followed a course in game theory, this could alter their decisions because of knowing what decisions would yield more results (meaning more money). A dummy variable was created where 1 indicated that participants did have game theory knowledge and 0 that they did not. A third control variable was used by age (continuous, ranging from 18-53) and a fourth 'part' by the order of the treatments performed. Lastly, I controlled the skill distribution in a team by indicating for three different skilled teams with the use of the variable "network". One team consisted of two team members with low endowment and one member with high endowment (12,11,22). A second team consisted of two team members with high endowment and one with low endowment (19,18,8) and a third team consisted of more homogeneous distribution of endowment (14,16,15). This data was transformed in order to fit with the analysis into two dichotomous variables: Network1Low2High and Network2High1Low. The third team, consisting the homogeneous team, is the reference category. Table 1 shows the descriptive statistics of the variables, N=252 indicates that every respondent participated in the

first round in a cohesive team, as well in the first round in a non-cohesive team. The total cases is thus the number of respondents multiplied by 2. There are 126 respondents in the dataset.

Table 1: Descriptive statistics of variables used.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Dependent variable					
Cooperation	252	0	1	.487	.345
Independent variables					
Training in training conditions	252	0	1	.159	.366
No training in training conditions	252	0	1	.325	.469
Job risk propensity	252	.860	5.710	3.369	.971
Sensation seeking propensity	252	0	1	.644	.265
Cohesion	252	0	1	.500	.501
Control variables					
Man	252	0	1	.341	.475
Age	252	18	31	22.802	2.993
Network 2Low1High	252	0	1	.329	.471
Network 2High1Low	252	0	1	.325	.469
Game Theory	252	0	1	.429	.496
Part	252	0	1	.508	.501

3.2.4 Interaction variables

In order to be able to test the hypothesis, also interaction variables were computed. In order to increase interpretability and to prevent multicollinearity, these interaction variables were standardized using the mean centering method. This only applied to interactions with continuous variables: the variables “Job Risk Propensity” and “Sensation Seeking Propensity”. Within these variables, the mean was subtracted from each individual score.

3.3 Analyses

For the analysis in this paper, a multiple linear regression modelling approach seems the best fit. This is because this research includes a continuous criterion (dependent) variable and more predictor (independent) variables which are either continuous or dichotomous. The variables “Job Risk Propensity” and “Sensation Seeking Propensity” are the only independent variables who are continuous, the other independent variables are dichotomous. The control variables are all dichotomous, except for age, which is continuous.

This paper will make use of a series of multiple regression models, sequentially adding blocks of variables. In this way incremental contribution of the independent variables can be considered. In the theory section was stated that this research tries to test whether the relationship between training and cooperation would change with the addition of risk propensity, and after that what would happen when cohesion is added in the analysis. Both main effects and interaction effects will be taken into account. A main effect is occurs through the influence of one independent variable on the dependent variable and an interaction effect occurs when the effect of one independent variable on the dependent variable changes on the level of another independent variable.

3.3.1 Assumptions

A multiple regression modelling approach (MRA) has five assumptions to be met before it can be used. They will be discussed below.

To produce a reliable regression model, a reasonable ratio of cases (respondents, N) to predictors (independent variables, k) is required. I therefore refer to Tabachnick and Fidell (2013), who state that N should be 50+8 (k) for testing a full regression model or N= 104 + k when testing individual predictors. I am using both in my analysis. Five predictors are used in the

model, which include two for training, two for risk propensity and one for cohesion (see table 1). Computing both resulted in the following N-statistics: N=50+(8*5)=90 and N=104+5=109. There are 126 respondents in my dataset, meaning that this condition is met.

A second assumption is normality of continuous variables. Stem-and-leaf plots, histograms and box-plots indicated that all continuous variables are normally distributed.

Next to this, multiple regression is sensitive to outliers and other cases of influence. I checked for outliers using box-plots and deleted six extreme outliers for age, two of above 36 years and four of above 50 years old. The mean of age changed from 23,4 years old to 22,8 years old. After deletion, four roughly symmetrical box plots indicated no outliers.

The fourth assumption is Multicollinearity, which means that predictors can't be highly correlated. If they would be, the multiple regression model would be unstable and very difficult to interpret. Because interaction effects are analyzed, the continuous independent variables and continuous control variables, which consist of sensation seeking propensity, job risk propensity and age, are standardized using the centration method in order to increase interpretability and prevent multicollinearity of the results. The multicollinearity was indicated by using the variance inflation factor (VIF) and tolerance. A tolerance of less than 0.1 and a VIF of more than 10 indicates multicollinearity (Mernard, 2002). In all variables, tolerance was more than 0.7 and VIF did not exceed 1.4. This means that multicollinearity would not interfere with our ability to interpret the outcome of MRA.

The last assumption is about normality, linearity and homoscedasticity of residuals. That is, the difference between the observed and predicted values on the criterion variables (residuals) are normally distributed, their relationship with predicted values on the criterion is linear and the variance across the range of the predicted values is linear. The Normal Probability plot of Regression Standardized Residuals indicated that the residuals are normally distributed. A scatterplot of standardized residuals against standardized predicted values indicated linearity and homoscedasticity of residuals.

3.3.2 Significance level

I will be testing with a significance level (alpha) of .05. This is because most research with a similar amount of cases used this criterion and it is acceptable to assume a significant effect.

Table 2: Multiple regression on cooperation.

	Model 1		Model 2		Model 3	
	B	**S.E**	**B**	**S.E**	**B**	**S.E**
Intercept	.493**	.174	.419*	.187	.467	.209
Training in training conditions (training)	.213**	.061	.237***	.061	.196*	.085
No training in training conditions (notraining)	.047	.047	.063	.047	.063	.048
Cohesion	.135**	.042	.135**	.042	.125**	.046
Job Risk Propensity (jobriks)			-.030	.023	-.041	.034
Sensation Seeking Propensity (ssp)			.279**	.100	.269	.146
Training*jobrisk					.112	.064
Training*ssp					-.241	.267
Cohesion*Training					.066	.117
Cohesion*jobrisk					-.014	.047
Cohesion*ssp					.098	.196
Man	.059	.046	.053	.045	.050	.045
Age	-.006	.007	-.006	.007	-.006	.007
Network 2Low1High	-.017	.052	-.031	.051	-.036	.052
Network 2High1Low	-.003	.052	-.009	.051	-.003	.052
Game Theory	-.019	.044	-.002	.043	-.009	.044
Part	-.006	.042	-.006	.042	-.007	.043
Explained Variance R^2	.091**		.120**		.133**	

N=2709, *=p<.05, **=p<.01, ***=p<.001

4. Results

Table 2 shows the results from the multiple regression analyses. Three models are described and will be analyzed below.

4.1 Hypothesis 1 and hypothesis 4

Hypothesis 1 expected that training would have a positive effect on cooperation. Model 1 in table 2 indicated the effect of training and cohesion on cooperation with addition of the control variables. The effect of training in training conditions is positive and significant (β=.213, p<.01). This means that training a person within a team increases the cooperation of that team with .213 units more than when nobody in the team would be trained. There was no significant difference between participants who were not trained in training conditions and participants in teams were nobody was trained. That means that we cannot conclude that people who are not trained when they could be selected for training, differ in their contribution to cooperation (team effort) from people in a team were nobody is trained. Model 1 accounted for 9,1% of the variance in cooperation and this was significant (R^2=.091, F(9,242)=2.694, p<.01).

Hypothesis 4 predicted that cohesion would have a positive effect on cooperation. Model 1 shows that cohesion is significantly and positively related to cooperation (β=.135, p<.01). It means that a cohesive team increases cooperation with .135 units more than a non-cohesive team. Hypothesis 4 is confirmed.

4.2 Hypothesis 2

In the data section two different kinds of risk propensity were specified: job risk propensity and sensation seeking propensity. Hypothesis 2 expected that risk propensity would have a positive effect on cooperation, which means that it is expected that both job risk propensity and sensation seeking propensity are expected to be positively related to cooperation. In model 2 of table 2 job risk propensity and sensation seeking propensity were added in the analysis. Job risk propensity does not have a significant effect on cooperation (β=-.030, p=.189). Sensation Seeking Propensity however does have a positive significant effect (β=.279, p<.01). It states that, holding constant all other variables, a 1-unit higher score on Sensation Seeking Propensity, will increase cooperation with .279 units. It indicates that people who have a higher sensation seeking

propensity, will increase cooperation more than people who have a lower sensation seeking propensity. Adding the two variables who define risk propensity in this research resulted in a significant additional 2,9% of the variance in cooperation (ΔR^2 =0.029, Δ F(2,240)=3.970, p<0.05). Hypothesis two can thus be confirmed for sensation seeking propensity, but not for job risk propensity.

4.3 Hypothesis 3, 5 and 6

Interaction variables were created to be able to get results for hypothesis 3, 5 and 6. Model 3 in table 2 shows the results. Hypothesis 3 expected that risk propensity would change the positive relation between training and cooperation, it would negatively influence this relationship. This meant that training a person with a lower risk propensity has a higher positive effect on cooperation than training a high risk propensity employee would have. The interaction was not significant, which means that it cannot be validated that risk propensity changes the relationship between training and cooperation.

Hypothesis 5 expected that cohesion would negatively change the relationship between risk propensity and cooperation, indicating that the positive relationship between risk propensity and cooperation would be less positive in cohesive teams. However, the interaction was not significant indicating that the effect does not differ from what one would expect by chance.

Hypothesis 6 expected that cohesion negatively changes the relationship between training and cooperation. This would mean that training somebody in a cohesive team would yield less gain in cooperation than training someone in a non-cohesive team. Also here, the interaction effect was not significant, meaning that we cannot reject the null hypothesis which stated that cohesion doesn't change the relationship between training and cooperation. Adding the interaction variables also don't contribute to explained variance on cooperation (ΔR^2 =0.013, Δ F(5,235)=.719, p<.610). In order to check those insignificant results two more models were created in which interactions involving job risk propensity were separated from the interactions regarding sensation seeking propensity. However, the results stay insignificant indicating that the effect of those interactions do not differ significantly from zero.

4.4 Control variables

In the three models performed the control variables were all not significant. This indicates that those variables were not able to explain variance within cooperation.

5. Conclusion and Discussion

This research investigated the relation of training given by employers on the cooperative behaviour among teams of employees. Much research has been done to monetary outcomes of investments in training, however much less to non-monetary outcomes. We tried to make a contribution to the still relatively little research regarding non-monetary outcome of training, by adding a variable to the relationship between training and cooperation which could be of influence: risk propensity. Next to this previously assumed positive relationships between training and cooperation, and cohesion and cooperation were analysed. This research especially elaborated on the research between training and cooperation done by van Gerwen, Buskens and van der Lippe (2018) and data was extracted from a contextualized laboratory experiment in which contributions to a team effort are seen as an indicator for cooperative behaviour.

Social exchange theory, reciprocity model and mutual investments model predicted a significant positive relationship between training and cooperation. In accordance with previous research, this was found and hypothesis 1 was confirmed. This indicated that cooperation increases more in a team were someone is trained, than would be the case in a team were nobody is trained. Also a significant positive relationship between cohesion and cooperation was found indicating that cohesive teams foster more cooperation than non-cohesive teams. This confirmed hypothesis 4. The addition of the two variables which indicated risk propensity in this research, job risk propensity and sensation seeking propensity, resulted in more significant explained variance in cooperation. However, only the effect of sensation seeking was significantly positive. On the basis of the available data no significant effect of risk propensity regarding job securities on cooperation can be found, and therefore hypothesis 2 cannot be fully confirmed. This research was not able to measure significant interactions effects, meaning that hypothesis 3, 5 and 6 could not be confirmed. From this result, different conclusions can be made.

First of all, it could be the case that an effect exists but is not found, and that future research will be able to detect an effect of job risk propensity on cooperation and of the

interaction variables on cooperation. It could be possible that in a research with a broader sample that is more representative for the general population, that those effects are found.

In this research, there are a few methodological flaws. Although a laboratory experiment has several advantages in testing a relationship to cross-sectional data designs, it is debated how well behaviour in an experiment really measures real life situations. In the experiment the external validity was improved by giving participants instructions which are highly similar to real life situations. However, the respondents have to imagine themselves being in that situation, and this imagination could be different from when they would actually be in such a decision situation. Also the participants only consisted of students, which could have had an influence on the results. Ideally these participants should be replaced with an employee sample. Future research could take a multi-method approach to be more sure about external validity, as for example would be the case when a contextualized laboratory experiments with employees, a vignette experiment among an employee sample and survey data responses from employees would be combined.

This experiment assumed that training increases the productivity levels of employees. There was no information on what kind of training was provided, for example whether it was within firm specific training or more general training. Future research could specify different kinds of training in order to get a better understanding of the effect of different training. It was also unknown if the participants desired training. When training would not be desired, it would not stimulate reciprocity, and therefore won't lead to cooperation. Future research could also look at how long the effects of training are expected to last. Ideally researchers should use longitudinal data here.

The non-significant effect of job risk propensity on cooperation and the non-significant effect of the interaction variables on cooperation could also indicate that there simply is no effect on cooperation to detect, and that cooperation is explained by other factors. For example, it could be that risk propensity regarding job security does not alter the perception about the expected utility of a trust relationship, because risk propensity regarding job is a different kind of risk taking and not integrated in more relational risk taking. However, the positive significant effect of sensation seeking propensity does indicate some effect of risk propensity on cooperation. Next to this, the non-significant interactions between cohesion and the other variables could also indicate no

relationship. However, cohesion was measured by only the knowledge of being in a team that would spend six rounds together. It is questionable whether this really presents cohesion, because cohesion is formed by a long process of interaction and trustful relationships in real life situations. In the experiment the participants did not receive time to create a strong social group identity. Future research should consider teams who already have a long process of interaction in real life settings to be more certain about the effect of cohesion.

Another shortcoming of this research is that the effects of training only investigated the employer-employee relationship. It could be that the effect of training on cooperation is also dependent on employee-employee relationships. Training could alter those relationships, for example there could be competition between employees. An employee could feel anxious that he/she was not selected for training and this could influence cooperation. Future research should also investigate this employee-employee relationship.

Concluding, this research set out to see what the effect of risk propensity is on cooperation and in the relation between training and cooperation. From my finding that sensation seeking propensity is positively related to cooperation, there is an indication that risk propensity at least partly effects cooperation. Future research can build on this finding by further examining the different kinds of risk propensity. The question however, whether risk propensity affects the relation between training and cooperation, remains.

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