Exploring the process of changing psychological safety:

The effect of a team-building intervention

G. Elstgeest

University of Twente

Master thesis: Conflict, Risk and Safety Psychology

First supervisor: Dr. IR. Peter de Vries

Second supervisor: Dr. Marco van Bommel

Date: 08-07-2016

Abstract

Organizations are more effective when employees feel safe to discuss failures, which is referred to as psychological safety. This research examines the constructs that are related to changes in psychological safety, in the context of a team-building intervention. The aim of this research is to provide a broader framework of psychological safety and the change of psychological safety. Participants of the Dutch National police filled in a survey before and after a team-building intervention. In addition, several interviews were conducted. The combined results of both studies show that psychological safety is positively correlated with perceived organizational support, team cohesion, police work-efficacy. Changes in psychological safety are most positively correlated with intervention-related self-efficacy. However, there are several factors that moderate this change. The enthusiastic and open-hearted employees of an organization are most likely to enhance psychological safety among other employees.

Management samenvatting

Medewerkers van grote organisaties voelen zich niet altijd veilig om problemen op de werkvloer te bespreken, omdat zij bang zijn voor de persoonlijke negatieve gevolgen. Om te kunnen leren van fouten of problemen, is het van belang dat medewerkers psychologische veiligheid ervaren. Veronderstelde steun van en cohesie binnen een organisatie kunnen deze veronderstelde veiligheid vergroten. Nog onduidelijk is echter de verhouding van andere factoren die invloed hebben op de effectiviteit van teams ten opzichte van psychologische veiligheid. Daarnaast is het van belang om een breder inzicht te krijgen in factoren die van invloed zijn op de verandering van psychologische veiligheid.

Het doel van dit onderzoek is om meer inzicht te krijgen in de factoren die invloed hebben op de psychologische veiligheid. Daarnaast wordt onderzocht welke factoren invloed

hebben op de verandering van psychologische veiligheid in de context van een team-building interventie.

Vooraf en na afloop van een team-building interventie, voor medewerkers van Nederlandse Nationale politie, zijn vragenlijsten gestuurd naar de deelnemers. Het doel van deze team-building interventie was om meer vertrouwen en veiligheid te creëren onder medewerkers en om de verbintenis met de organisatie te vergroten. Aanvullend op de vragenlijsten zijn er een aantal interviews afgenomen, om meer inzicht te krijgen in de resultaten van de vragenlijsten.

Uit de resultaten van dit onderzoek blijkt dat steun van de organisatie, cohesie binnen het team en werk-gerelateerde self-efficacy overtuigingen gerelateerd zijn aan hogere psychologische veiligheid. De verandering van psychologische veiligheid blijkt positief gerelateerd te zijn aan interventie-gerelateerde self-efficacy overtuigingen. Leeftijd, werk-gerelateerde self-efficacy en welzijn hebben een modererend effect op deze verandering. Uit de resultaten van de interviews blijkt verder dat vooral jongere enthousiaste medewerkers, die altijd open zijn, de meeste baat hebben bij de interventie. Deze mensen zijn herkenbaar voor mensen binnen een organisatie en deze mensen zouden een belangrijke rol kunnen spelen in het verspreiden van meer psychologische veiligheid.

De resultaten van dit onderzoek pleiten voor ondersteunend leiderschap, waardoor werknemers zichzelf beter in staat achten om hun taken uit te voeren, hetgeen gepaard gaat met meer ervaren psychologische veiligheid. Het zijn voornamelijk de enthousiaste, en van zichzelf openhartige werknemers die psychologische veiligheid kunnen uitdragen naar andere werknemers. Hierbij moeten medewerkers het belang van psychologische veiligheid inzien en de huidige situatie als onveilig beschouwen.

De bevindingen van dit onderzoek moeten echter met enige voorzichtigheid worden geïnterpreteerd in verband met de specifieke context van de Nederlandse Nationale politie.

Table of content

Introduction

Over the past years the Dutch national police has been plagued by high absenteeism rates, troubles with the reorganization and maintaining a negative 'police culture' (NRC, 2016; AD, 2016). This police culture would be characterized by fear for holding other colleagues' accountable for their behaviours during surveillance, or questionable behaviour in general.

Previous research has shown that team effectiveness and performance is dependent on the extent to which teams learn from mistakes by discussing them within the team. Starkey (1998) reasoned that organizational innovation and adaptation to a changing environment is dependent on the extent to which employees learn from failures. To discuss failures, employees must feel safe to be open towards other people without fear of being rejected or experience other negative consequences of that self-expression (Kahn, 1990; Carmelli & Gittel, 2009). This concept is referred to as psychological safety and this concept could be at the heart of the problem with the police culture.

This research will adopt an explanatory approach. First, this research will take broader look into the antecedents and related constructs of psychological safety. This research will elaborate on findings of previous research about the positive effects of a supportive organization and positive interpersonal relationships on psychological safety and, in addition, to examine the effects of other performance-related constructs on psychological safety. To broaden the framework of psychological safety, this research will differentiate between the variables that affect the initially experienced psychological safety, and the variables that affect changes in the experienced psychological safety. The second part of this research examines changes in psychological safety, and aims to identify important employees in organizations to enhance psychological safety. These topics will be examined in the context of a team-building intervention that was conducted among three basic teams of the Dutch national police.

Psychological safety

Psychological safety is seen as one of the most important conditions for organizational learning (Edmonson, 1999). Psychological safety is the extent to which team members evaluate the environment as safe for interpersonal risk taking, which is a shared belief amongst team members. Organizational psychologists seem to agree that the presence of a psychologically safe environment is essential for organizational learning and team performance (Kahn, 1990; Edmonson, 1999; Cannon & Edmonson, 2001; Edmonson, Kramer & Cook, 2004; Carmeli, Brueller & Dutton, 2009)

In advance to constructs that are related to psychological safety, it is important to have a clear description of the construct and the related aspects of interpersonal relationships and trust.

Psychological safety as a shared belief. Repetti (1987) differentiated between the common social environment, which is the shared social climate of multiple employees, and the individual social environment, which is formed by the specific aspects of an individuals' environment. The perception of the common social environment can be seen as shared perceptions or beliefs about the environment.

The extent to which team members experience the environment as safe for discussing failures is an example of a shared belief (Edmonson, 1999). According to Cannon and Edmonson (2001), this shared belief is a tacit idea about how members of a team are supposed to cope with mistakes and conflict. In this sense, shared beliefs about psychological safety can be explained as the implicit organizational norms which will in turn affect group performance.

For a team to be effective, or to learn from failures, the shared belief must be that failures can be discussed. Different forms of learning behaviour are feedback seeking, asking for help, information sharing and talking about errors (Edmonson, 1999). The extent to which shared

beliefs about psychological safety can elicit these learning behaviours can be facilitated by effective coaching and good co-worker relationships. Both of these factors will be explained in the following section as factors of interpersonal relationships.

Psychological safety and interpersonal relationships. For employees to feel safe to discuss failures it is important to maintain good interpersonal relationships with other team members. Kahn (2007) referred to these relationships as co-worker relationships which can be applied from one co-worker to another, but also to a larger group of co-workers.

Good co-worker relationships will lead to more effective communication, which is essential when discussing failures (Carmeli et al., 2009). Also, the experience of good co-worker relationships will lead employees feel more connected to the team which enables them to overcome the uncertainty of discussing failures. In this sense good interpersonal relationships will directly affect organizational learning through better communication and indirectly by creating a psychologically safer environment.

Psychological safety and trust. Good interpersonal relationships are based on trust, which is also has similarities with psychological safety (Lewick & Bunker, 1996; Edmondson et al., 2004). Trust is the intention to accept vulnerability based on the expectation of the other's good intentions (Rousseau, Sitkin, Burt & Camerer, 1998). As does psychological safety, trust also involves an appraisal of possible outcomes after self-expression. However, there are some important differences between trust and psychological safety (Edmonson et al., 2004).

First, trust has a focus on other persons, where a person evaluates others' trustworthiness and their potential actions (Edmonson et al., 2004). Psychological safety focuses more on the self and how others will treat you, where someone will monitor his or her own behaviour to protect the self, instead of protecting the self by monitoring others' behaviour. In discussing

failures, the most important step is that the failure is mentioned. To illustrate, an employee can choose not to admit a mistake, because of the fear of being reprimanded. This employee will monitor his or her own behaviour, out of fear for the consequences for his or her self. Therefore, not discussing mistakes in organizations mainly arises from a lack of experienced psychological safety.

Secondly, the evaluated negative consequences in psychological safety are perceived as more direct consequences in terms of time, compared to the consequences of trust (Edmonson et al., 2004). For example, if a person decides not to report an error due to a lack psychological safety, this is to avoid the direct negative consequences of being scrutinized by others. Trust on the other hand, has a larger temporal frame, where the evaluated consequences can occur either shortly after a self-expression, or after a longer period of time.

Thirdly, there is a difference in the number of people that hold these tacit beliefs (Edmonson et al., 2004). Psychological safety can be described as a shared belief that spreads out to all the members of a group. Trust on the other hand, can be seen as a feature of a dyadic relationship which is susceptible to temperamental and individual differences.

Team-building programs. The differences between psychological safety and interpersonal trust are especially important in team-building interventions for larger teams (Edmonson et al., 2004). Most team-building interventions are short in duration, which makes it difficult to embrace all dyadic relationships in a large organization. The short term effect of psychological safety allows the concept of interpersonal relationships to be addressed in team-building interventions, in contrast to the concept of trust. In this sense, a team-building intervention can serve as a training for employees to express themselves without fear of being scrutinized directly after this self-expression (Edmonson et al., 2004).

In addition to the temporal benefit of psychological safety during a team-building intervention, psychological safety is more easily addressed in larger groups than the construct of trust (Edmonson et al., 2004). The experience of psychological safety in a short time-span, such as a team-building intervention, will more easily spread out among other members of the group than the concept of trust. Dyadic relationships, which can involve trust issues, can be more personal and are more difficult to address in large groups.

In sum, when addressing a large group that also experiences problems in communication, a team-building intervention should aim to affect the perceived psychological safety within that group (Edmonson et al., 2004; Dutton & Ragins, 2007). However, the improvement of psychological safety is, in this sense, mainly a goal of an intervention. To achieve this goal, psychological safety should be enhanced through other factors.

The extent to which this goal can be achieved, does not only depend on the addressed factors during the intervention. That is because participants of a team-building intervention will already experience a certain level of psychological safety before the intervention. This initial experienced psychological safety might depend on other variables than the variables that affect the actual change of psychological safety in the context of a team-building intervention.

Therefore, a distinction should be made between the antecedents and correlates of psychological safety, and the factors that can affect the change of psychological safety.

Antecedents of psychological safety

To enhance the perceived psychological safety, an intervention should aim at the constructs that either directly or indirectly affect the construct of psychological safety. There are several organizational factors that can influence the perceived psychological safety (Edmonson et al., 2004).

Organizational support. Besides the relationships between employees, there is also an experienced relation with the organization itself (Eisenberg, Huntington, Hutchison & Sowa, 1986). Employees have needs for approval, affiliation and appreciation of their organization or employers. The extent to which these needs are met by an organization, which are also seen as the extent to which an organization cares for its employees, is called perceived organizational support (POS).

The concept of POS can be explained by the social exchange theory (SET). SET can briefly be described as the way in which interdependent interactions have the potential to lead to high-quality relationships (Cropanzano & Mitchell, 2005). Applying this to a workplace setting, Cropanzano, Byrne, Bobocel and Rupp (2001) reasoned that interdependent contact with supervisors and the organization can be referred to as social exchange relationships. They also note that the same social exchange relationships occur between co-workers, however for explaining the key construct of SET in the context of POS, the focus will first be on supervisors and the organization.

Top-down POS. Supervisors of employees, or teams, are often in close contact with their employees, where an efficient working relationship is desirable for both sides. Building on the norm of reciprocity from SET, this relation can be seen as one of reciprocal influence (Cropanzano & Mitchell, 2005). When employees perceive a supervisor as just, fair and caring, this, according to SET, will lead to effective work behaviour and positive employee attitudes.

As is the case for supervisors, the organization itself can also be evaluated by fairness and caring (Cropanzano et al., 2001). This too will lead to a reciprocal tendency from employees to invest more into their job to meet these social gestures of the organization. This tendency derives from feelings of personal obligation, trust and gratitude which cannot be reciprocated by instrumental means (Cropanzano & Mitchell, 2005). Therefore this social exchange will

have longer lasting effects, since there is no clear compensation whereby the reciprocating process endures.

Effects of POS. POS involves a principle of reciprocity, as is explained by SET (Cropanzano & Mitchell, 2005). A study from Eisenberger, Armeli, Rexwinkel, Lynch and Rhoades (2001) pointed out that high POS lead to better job performance, due to the extra effort that results from the social exchange, and also, high POS will reduce rates of absenteeism (Eisenberger et al., 1986).

An organization can show commitment towards its employees by simply providing them with compliments to increase confidence and create a positive social identity, or by rewarding employees for a job well done. The prime factor here, is that the organization's or supervisor's action has to indicate care, interest and fairness towards its employees (Cropanzano & Mitchell, 2005).

This POS creates an environment in which employees are more committed to the organization which can enhance the likelihood of reporting failures, since employees are more eager to sustain an effective working process (Edmonson, 1999). Based on this premise the following hypothesis will be tested:

Hypothesis 1: POS will be positively related to psychological safety.

Cohesion. Another related factor of psychological safety is team cohesion. Cohesion can be described as team member commitment to the team's tasks and to other members (Forsyth, 2014). Members of cohesive groups tend to respond more positively towards other group members and experience fewer interpersonal problems, less anxiety and less tension (Hoyle & Crawford, 1994; Myers, 1962; Shaw & Shaw, 1962). This decrease in anxiety and

tension could also be described as a psychologically safer environment, which could cause increase team performance (Mullen & Copper, 1994).

Bradley, Postlethwaite, Klotz, Hamdani and Brown (2012) reasoned that teams who face task-related conflicts can only enhance their performance when the environment is psychologically safe. Here, the safe environment will prevent team members to take task-conflicts personal which will in turn leads to a more effective problem-solving process.

Despite the benefits of cohesion, there are also some downsides. Considering psychological safety, the most important downside is that cohesion can intensify group processes by creating pressure to conform which could decrease psychological safety (Forsyth, 2014).

As a correlate of psychological safety, the effect of cohesion can be twofold. On the one hand it can enhance psychological safety by preventing anxiousness and interpersonal problems, but on the other hand cohesion can provoke pressure to conform which decreases psychological safety (Forsyth, 2014; Hoyle & Crawford, 1994; Myers, 1962; Shaw & Shaw, 1962). However, the study of Edmonson et al. (2004) seems more in favour of the positive effects of cohesion on psychological safety. Based on these effects the following hypothesis will be tested:

Hypothesis 2: Cohesion will be positively related to psychological safety.

Correlates of psychological safety

There is growing body of research about psychological safety and related constructs such as POS, cohesion and interpersonal relationships. However, there are also some less researched constructs that could be of influence when it comes to psychological safety. The next sections will discuss possible correlates of psychological safety, which are tested in this study.

Well-being. Perceived psychological safety implicates that a person feels safe to be open towards others without fear of negative consequences (Kahn, 1990). Despite the notion that psychological safety is a shared belief within a team, there are still interpersonal differences within a team. One important difference between team members is their subjective well-being (SWB). SWB can be described as someone's long-term level of pleasant affect, lack of unpleasant affect and life satisfaction (Diener, 2005).

In a study about personality and well-being Hayes and Joseph (2003) found that extraversion was positively correlated with SWB. Considering psychological safety, this could imply that someone who is not comfortable with his or her life as a whole, may be more restrained to be open towards others.

However, SWB can also be seen as a composite of appraisals such as work, love and so forth (Diener, 2005). Because of the composite of SWB this research will also include the influence job satisfaction, since this research is conducted at the Dutch national police.

SWB and Job Satisfaction. Job satisfaction can be described as an appraisal of one's job which is constructed out of job experiences, affective appraisals and beliefs about one's job (Weiss, 2002). In the sense of psychological safety, one could reason that positive job experiences and affective appraisals together with the belief that self-expression will not be punished, constitutes a psychologically safe environment.

Wright and Cropanzano (2000) examined the separate influence of SWB and job satisfaction on job performance. They found that SWB more positively correlated with job performance than job satisfaction. However, they argued that job satisfaction might play a more important role in more complex jobs that demand increased worker decision discretion and autonomy.

In a study about psychological safety and learning in organizations Edmonson et al. (2004) reasoned that psychological safety is a requirement for better team performance.

According to Wright and Cropanzano (2000) SWB and, to a lesser extent, job satisfaction also affect team performance. In creating a broader framework for the understanding of psychological safety it is interesting to put these constructs into a larger model.

In line with creating a broader framework for psychological safety in the context of the Dutch national police, the construct of job satisfaction will be broken down one step further. In line with previous research of Edmonson (1999) the construct of self-efficacy will be taken into account, which will be elaborated in the next section.

Police work-efficacy. In this study self-efficacy will be referred to as police work-efficacy. Police work-efficacy refers to the belief of an individual that he or she has the capabilities to perform the tasks that he or she is expected to perform as a police officer (Bandura, 1982). McNatt and Judge (2008) identified self-efficacy as an important indicator of job satisfaction, which is why police work-efficacy will be included in this research.

Police work-efficacy can be low due to a lack of supportive leadership or the inability express one's self in the work environment (Choi, Price & Vinokur, 2003). This lack of police work-efficacy can in turn lead to stress and this could negatively affect interpersonal relationships at work (Taylor, 2003). Think for example about a stressed employee, due to low police work-efficacy, who is addressed by another co-worker to confront that employee about a performance failure. This highly stressed employee might react hostile which could lead to a relationship conflict instead of a task conflict (Felblinger, 2008).

These negative consequences occur more often in teams from complex environments where rapid decision making is required or where there is role ambiguity due to, for example a reorganization (Felblinger, 2008).

As a related factor of someone's job satisfaction, police work-efficacy also seems closely related to psychological safety since it could influence peoples' coping mechanisms during conflict which can affect interpersonal relationships (McNatt & Judge, 2008).

Based on the theoretical overlap in the constructs SWB, job satisfaction and police work-efficacy, the following hypotheses will be tested:

Hypothesis 3: Well-being correlates positively with psychological safety.

Hypothesis 4: Job satisfaction correlates positively with psychological safety.

Hypothesis 5: Police work-efficacy correlates positively with psychological safety.

Conceptual model 1

For an overview of hypotheses one to five a conceptual model is provided here (Figure 1)
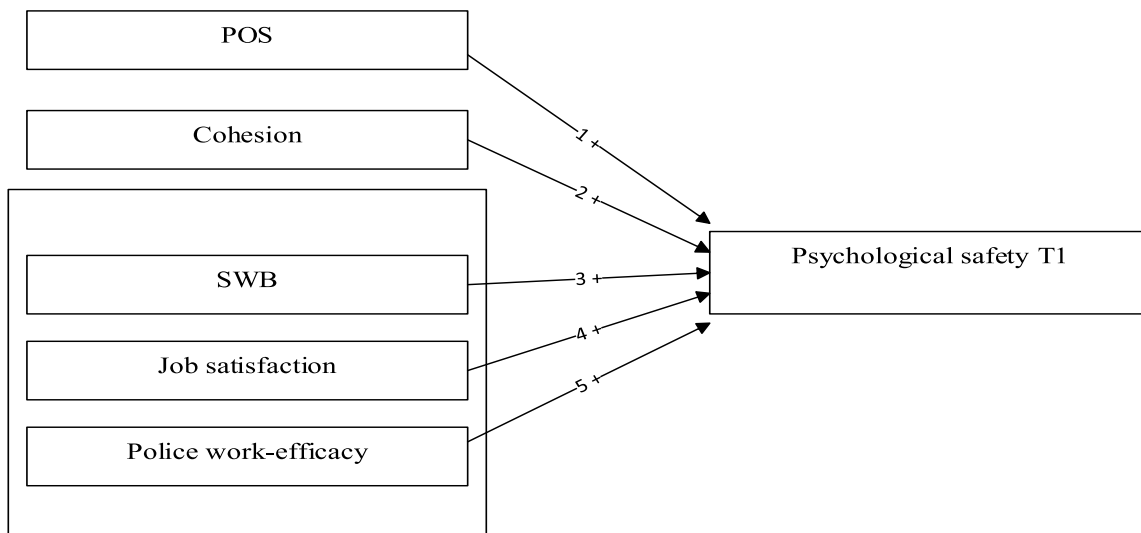

 Figure 1. A suggested conceptual model of the antecedents and correlates of psychological safety.

Changing employees' perceived psychological safety

So far, the discussed antecedents of psychological safety are aimed to explain the onset of psychological safety and the influence of other performance-related constructs. A next step in this research is to examine which constructs are of influence on a change in employees' experienced psychological safety. Here, the simple answer would be to enhance psychological safety through the suggested constructs of the model. However, since this research was conducted in the context of a team-building intervention, there could be other constructs at play as well.

The concept of self-efficacy has previously been mentioned as the extent to which someone believes that he or she is capable of doing what he or she is expected to do (Bandura, 1982). Ter Huurne, Griffin and Gutteling (2009), in a study about risk communication, found that for an intervention to have an effect, there are three important factors. First, the issue that the intervention is for, has to be perceived as a high risk. Secondly, the suggested response has to be interpreted as the right one, which is called response-efficacy. Thirdly, a person should be confident that he or she can execute the suggested response, which was already mentioned as self-efficacy.

The construct of response-efficacy and self-efficacy can also be attributed to the team-building intervention. For the intervention to elicit changes in behaviour or perception, the employees have to perceive the intervention as needed, as the right response and as one that can be executed. Therefore the following hypothesis will be tested:

Hypothesis 6: Psychological safety score differences before and after will be larger if response-efficacy and self-efficacy are high, then when response-efficacy and self-efficacy are low.

Conceptual model 2

In addition to the conceptual model in Figure 1, another conceptual model is provided here as a schematic representation of hypothesis six (Figure 2).
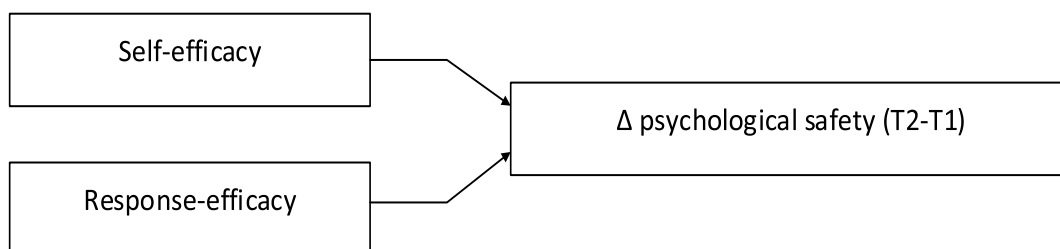

Figure 2. Conceptual model of the effects of self-efficacy and response-efficacy on the score difference of psychological safety before and after the team-building intervention

Exploratory research

The final goal of this study is to examine the circumstances under psychological safety will change after the intervention, in addition to the effects of response-efficacy and self-efficacy. These exploratory analyses will function as the basis for participant selection of the second study, and also to provide the main themes for the semi-structured interviews of this second study.

Structure of the remainder of this paper

The remainder of this paper will consist of two subsequent studies. Prior to the elaboration of the two studies, the next section will provide more information about the research context in which both studies were conducted. The remainder of the paper will first elaborate on the first study, of which the main focus was to examine the antecedents and related constructs of psychological safety. In addition to examining the effects of these constructs on psychological safety, the first study also examines the constructs that affect changes in psychological safety. Subsequently, a second study was conducted to gain more insight into the constructs that affected the changes in psychological safety. The results of the two studies are aimed to provide an identification process for larger organizations to identify employees who are most likely to initiate psychologically safe behaviours.

Research context

This research was conducted in the context of a team-building intervention that was conducted amongst three basic teams from the Dutch national police. Goals of the intervention were to create a safer working environment, more commitment towards other employees and more commitment towards the organization.

This team-building day itself was not part of this study, nonetheless this study will elaborate on the changes in employees' experienced psychological safety before and after the intervention. Inferences about the causality of these effects have to be interpreted with caution relative to the intervention. Nonetheless, it is helpful to have some insights about the activities of the team-building intervention.

The day started with activities that were aimed to take down the emotional and behavioural barriers of the participants. These activities are called 'energizers' and they are aimed to expressing yourself. These activities were conducted by all the members of the team, and this could be linked to the demonstration of openness (Edmonson et al., 2004).

Following the 'energizers' the group was divided in smaller groups of five to six persons. In these groups people were given turns to talk about more personal issues, like things they had struggled with at work or at home. After each monologue, the other members of the group were instructed to show a hand gesture, which meant 'respect' in sign language. This session was conducted twice during the day and participants were free in their choice of sharing or not. In line with the description of psychological safety of Carmeli and Vittel (2009), these small sessions could affect the expected consequences of being open. By hearing others share their stories, including team leaders, this could be linked to the demonstration of openness (Edmonson et al., 2004). Also, this reciprocity of information sharing could reduce the transaction costs and therefore also the expected negative consequences (Coleman, 1988).

During the most important session of the day, participants were asked to stand on one side of a drawn line while multiple statements were read. When participants themselves or acquaintances experienced similar events, they were supposed to step over that line. The participants that stepped over the line could see that they were not alone in their pain, which could be viewed as a form of emotional support.

At the end of the team-building day, participants were asked to compliment others to ensure that everyone went home with positive feelings. For people that were still emotional or stood out in any other way, there was emotional or even professional support provided afterwards.

Study 1

Method

The following sections will describe the methodology of the first study. First a description of the procedure will be provided followed by a participant description and finally the instruments will be discussed. For the sake of anonymity the three basic teams in this research will be referred to as team alpha, team beta and team gamma.

Procedure. One week before the team building intervention, participants received a link for the pre-intervention survey. First, all participants were informed about the goal of the study, which was to examine the effects of the team-building intervention on psychological safety, commitment to the police organization and trust in the organization. Participants were informed that all data was unanimously processed and that a personal code had to be made to match pre- and post-measures. After agreeing to the informed consent form, participants started the questionnaire. The psychological constructs were in randomized order and each consisted of a different amount of items. At the end of the pre-measure, participants were asked if they experienced any problems in their work by an open question. Afterwards, participants were thanked for their participation and a short notification was made for the post-test survey.

One week after the team building intervention, all participants received a 'url' link for the post-intervention survey. The format of the survey was similar to the pre-test questionnaire, except that some of the measured constructs were left out of the post-intervention survey.

Participants. Assuming that each basic team consists of approximately 150 employees, there are around 450 employees who participated in the team-building interventions. A more specific description of the participants in the pre-intervention survey and the post-intervention survey is provided in the next sections.

Pre-intervention survey. 312 participants started with the pre-intervention survey, however the usable sample consisted of 280 participants (response rate of 62 %) due to excessive amounts of missing values. Of those 280 participants 190 were male and 90 were female and gender scores were missing for 8 participants. The mean age of the respondents was 39.94 (*SD*=10.84) at the time that the survey was conducted with a range of 22 to 63. The majority of the participants were born in the Netherlands (262). Other countries of birth were Morocco (4), Turkey (4), and six participants were born in other countries. There were 39 participants who held a supervisor position and 247 followers. Finally, there were 105 participants from team alpha, 87 from team beta and 84 from team gamma who filled in the survey.

Post-intervention survey. 200 participants started with the post-intervention survey, however after deleting cases who filled in less than five percent of the survey, 172 participants remained. Only 42 of the pre- and post-intervention surveys could be matched. The post-intervention did not contain the same demographic items and therefore only the mean age can be provided, which was 41.56 (*SE*=10.96) with a range of 22 to 63. 54 participants who filled in the survey were from team alpha, 34 from team beta and 23 from team gamma. The team of the other 61 participants could not be verified due to a mistake in the distribution of the survey.

Measures. Prior to the stepwise description of each instrument, some similarities will be outlined to avoid repetition. First, every psychological construct was answered on a 5-point Likert scale, ranging from 1 (absolutely disagree) to 5 (absolutely agree). Second, all items in

this study were submitted to the participants in Dutch to avoid misconceptions. Also, some measurements contained items that required reversed scoring. Finally, it is important to note in advance that not all instruments were used in both the pre-intervention survey and in the post-intervention survey. The pre-intervention survey consisted of the following scales[1]: psychological safety, POS, cohesion, job satisfaction, SWB and efficacy. The post-intervention survey consisted of a psychological safety scale and two efficacy scales, where this conciseness was due to complaints about the duration of the first questionnaire. The next sections will provide specifics about each measurement.

Psychological safety. To measure psychological safety, a 5-item scale was conducted based on Edmonson's (1999) scale of psychological safety. This scale is based on the content of the construct of psychological safety, whereas the different items addressed shared beliefs about the extent to which it is safe to be open at work. The pre-intervention scale had a Cronbach's α of .71 and the post-intervention scale a Cronbach's α of .73. In addition to the Cronbach's alpha's, the Guttman's λ2 are provided. The pre-intervention scale had a Guttman's λ2 of .71 and the post-intervention scale a Guttman's λ2 of .73. Examples of questions are; "in this team it is easy to discuss difficult issues and problems" and "it is difficult to ask other members of this for help". High scores on this scale indicate high beliefs of psychological safety, whereas low scores indicate that people do not feel safe to be open in their working environment.

Organizational support. This study used a shortened version of the scale of Eisenberger et al. (1986), which was conducted by using only the highest loading items. This resulted in a 16 item scale with a Cronbach's α of .91 and a Guttman's λ2 of .91. Some examples of questions are; "the organization fails to appreciate any extra effort from me" (reversed scored), and "the

---

[1] This study was part of a larger research, whereas the total survey also consisted of; Team Identification, Subjective Diversity, Individual Diversity Perspective, Optimism and Collective Efficacy. These constructs were not used in this study, hence these scales will not be elaborated.

organization really cares about my well-being". High scores indicate high perceived organizational support, whereas low scores indicate low perceived support from the organization. The term 'organization' was adapted to the reference frame of each participant, which was addressed in a former item. Organization was therefore adaptable to 'basic team', 'care group' or 'cluster'.

Cohesion. To measure the extent to which employees feel united in achieving their goals, are socializing with colleagues and to which people feel attracted to the group, the revised scale for Team Cohesion (TC) was used (Carless & De Paola, 2000). This scale was derived from the Group Environment Questionnaire (GEQ), but was adapted to a shorter, work related scale. The scale consisted of 10 items with a Cronbach's α of .68 and a Guttman's λ2 of .69. Items were related to task cohesion (i.e. "our team is united in trying to reach its goals"), social cohesion (i.e. "our team would like to spend time together outside of work hours") and individual attraction to the group (i.e. "for me this team is one of the most important social groups to which I belong"). High scores on TC indicated high evaluations of team cohesiveness and low scores indicated low evaluations of team cohesiveness.

Well-being. Participants' well-being was measured with the short-form version of Oxford Happiness Questionnaire (OHQ) (Hills & Argyle, 2002). The short-form OHQ gives an indication of subjective well-being and does this by multiple reversed items from the Beck Depression Inventory (BDI). The short version is an 8-item scale with a Cronbach's α of .86 and a Guttman's λ2 of .87. Examples of items are: "I find beauty in most things" and "I feel that life is very rewarding". High scores indicate that participants are happy with their lives in general, whereas low scores indicate that their not.

Job Satisfaction. To measure the degree to which employees were satisfied with their job in general and in comparison with other employees, a short version was conducted based on the index of Brayfield and Rothe (1951). Their index of job satisfaction is described as a

scale to measure attitudes that can be evaluated as an index of job satisfaction. This study used an eight item scale, but after reliability testing the first item was removed. This resulted in a 7-item scale with a Cronbach's α of .73 and a Guttman's λ2 of .74, which was acceptable for this study. Some example questions are; "I enjoy my work more than my leisure time" and "I consider my job rather unpleasant" (reversed scored). High scores of participants indicate positive attitudes towards their job, whereas low scores indicate less positive, or in extreme even negative, attitudes towards their job.

Efficacy. Three types of efficacy were measured in the pre-test and two were measured in post-test. The two types of both tests are 'response-efficacy' and 'self-efficacy' (Guthrie & Schwoerer, 1994). The 'response-efficacy' 5-item scale of the pre-intervention had Cronbach's α of .93 and a Guttman's λ2 of .93. The post-intervention scale had a Cronbach's α of .93 and a Guttman's λ2 of .93. This scale measured the degree to which participants thought that the intervention was the right course of action to address the problems within the basic teams ("the team building intervention is capable of creating more commitment, trust and safety").

The 'self-efficacy' 5-item scale of the pre-intervention had a Cronbach's α of .93 and a Guttman's λ2 of .93. The post-intervention scale had a Cronbach's α of .91 and a Guttman's λ2 of .92. This scale measured the degree to which the individual participants thought that they could perform the suggested responses ("I think that I am capable of performing the suggested responses of the intervention").

The scale that was only used in the pre-intervention survey was that of 'police work-efficacy'. After deleting the fifth item, this 5-item scale had a Cronbach's α of .83 and a Guttman's λ2 of .84. This scale measured the extent to which participants felt that they were able to perform their work tasks ("I think I do well in performing my job") (Stajkovic & Luthans, 1998).

Results

This section will provide the results of the first study. Hypothesis one to five were tested simultaneously, since there were all part of the first conceptual model (Figure 1). This analysis was conducted by using only the scales of the pre-intervention survey. The sixth hypothesis used the matched cases of the pre-intervention survey and the post-intervention survey. Since only 42 cases could be matched, this analysis had a significantly smaller sample size. Following the results of the hypotheses an exploratory section was added which was aimed at identifying moderator variables. Finally, the constructs that were measured in both surveys are featured by T1, which is the pre-intervention survey, or T2, which is the post-intervention survey. The constructs without this feature are only measured in the pre-intervention survey.

Antecedents and correlates of psychological safety. Prior to testing the hypotheses of the first conceptual model, an analysis of all bivariate correlations of the first study was conducted. As can be seen from Table 1 all bivariate correlations of POS, cohesion, job satisfaction, police work-efficacy and SWB were statistically significant, and these constructs significantly correlated to psychological safety at T1. Secondly, only self-efficacy before the intervention correlated significantly with psychological safety after the intervention, and no significant correlation was found between response-efficacy and psychological safety. Also, the change in psychological safety (psychological safety Δ) significantly correlated with psychological safety at T1 and response-efficacy and self-efficacy at T2.

To test hypothesis one to five, that formed the first conceptual model, stepwise multiple regression was conducted with Psychological Safety at T1 as the dependent variable and Organizational Support (POS), Cohesion, Job Satisfaction, Police Work-efficacy and SWB as independent variables.

All inter-correlations from Table 1 between the antecedents of the first model were positively statistically significant. These statistically significant inter-correlations are indicative of collinearity, which can in turn inflate regression results. A solution for the problem of collinearity is stepwise regression.

Stepwise multiple regression was conducted with psychological safety at T1 as the dependent variable and POS, Cohesion, Police work-efficacy, job satisfaction and SWB as the independent variables. Since stepwise multiple regressions controls for collinearity, the positive inter-correlations did not violate the assumptions for the analysis. This was supported by the collinearity statistics of the analysis, were 'Tolerance' exceeded the critical value of .01 which indicates that multicollinearity is not a problem (Tabachnick & Fidell, 2001)

Regression results are summarized in Table 2. The analysis included four of the independent variables into the model where multiple R for regression was statistically significant, $F(4, 221)= 33.50$, $p < .001$, $R^2adj= .37$. POS was entered as independent variable in the first step of the stepwise analysis. The second step included cohesion as a significant independent variable, followed by police work-efficacy in the third step and job satisfaction was entered in the fourth and final step of the stepwise multiple regression. SWB was not included in the model.

The results of the stepwise multiple regression showed that higher scores POS, cohesion and police work-efficacy are significantly related to higher scores on psychological safety. Additionally, after controlling for POS, cohesion and police work-efficacy, higher scores on job satisfaction are related to lower scores psychological safety.

More specifically, experienced support from supervisors and the organization positively predicted participants' experienced psychological safety. Additionally, positively

Table 1. mean, standard deviation and correlations among all variables of the study

variable	Mean	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Age	40.24	10.94	383	1													
2 gender	1.32	0.47	280	-.10	1												
3 psychological safety T1	3.64	0.56	251	-.08	-.02	1											
4 POS	3.53	0.51	248	-.036	-.01	.54**	1										
5 Cohesion	3.19	0.43	253	-.12	.11	.49**	.59**	1									
6 Job satisfaction	3.16	0.42	227	.05	-.04	.14*	.31**	.32**	1								
7 Police work-efficacy	3.96	0.47	227	.00	-.07	.25**	.20**	.24**	.29**	1							
8 SWB	3.86	0.53	227	-.06	-.10	.17**	.23**	.19**	.36**	.52**	1						
9 Response-efficacy T1	2.99	0.69	224	.15*	.06	.06	.21**	.20**	.22**	.06	.16*	1					
10 Self-efficacy T1	3.55	0.63	224	.07	.10	.10	.27**	.26**	.29**	.18**	.23**	.65**	1				
11 psychological safety T2	3.57	0.62	152	.09	-.01	.49**	.48**	.44**	.08	.06	.01	.15	.32*	1			
12 Response-efficacy T2	3.10	0.83	148	.14	.10	-.13	.24	.16	.33*	.09	.21	.67**	.74**	.19*	1		
13 Self-efficacy T2	3.57	0.77	147	.18*	.16	.03	.24	.24	.29	.16	.17	.54**	.71**	.21*	.84**	1	
14 Psychological safety Δ^2	0.07	0.52	44	.13	-.24	-.48**	.08	.02	.10	.02	-.20	.25	.32*	.53**	.41**	.33*	1

*p<.05;**p<.01*

---

[2] Difference on psychological safety scores before and after the intervention. Positive scores indicate an increase in psychological safety and negative scores indicate a decrease in psychological safety after the intervention

Table 2. results of the stepwise linear regression, where POS, cohesion, police work-efficacy and job satisfaction were entered into the model

variables	B	SEB	β	t	sig.
POS	0.45	0.07	0.40	5.99	.00
Cohesion	0.36	0.09	0.27	4.05	.00
police work-efficacy	0.19	0.07	0.14	2.55	.01
job satisfaction	-0.17	0.08	-0.12	-2.04	.04

experienced interpersonal bonds positively predicted participants' experienced psychological safety. Also, after controlling for the influence of POS and cohesion, participants' confidence in their capabilities as a police officer positively predicted experienced psychological safety. Finally, after controlling for these positive relationships, satisfaction with one's job negatively predicted the experienced psychological safety. In Figure 3, the results of the stepwise linear regression are entered into the first conceptual model, where SWB is removed from the model.
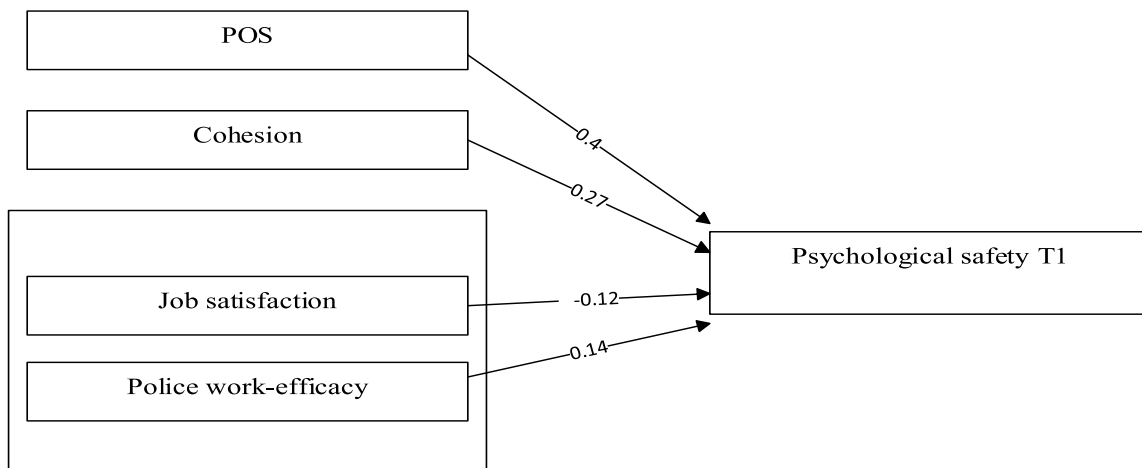
Figure 3. Conceptual model 1 adjusted after the regression analysis.

Efficacy effects on the outcome of the intervention. To test if psychological safety score differences before and after the intervention are positively related to response-efficacy and self-efficacy, a psychological safety difference variable was computed. Because of the low matching rate of the pre-intervention survey scores and the post-intervention scores, several analyses

were conducted in advance to check if the sample was representative for the larger population. Secondly, prior the analysis of the effects of efficacy beliefs, psychological safety scores before and after the intervention were compared.

Difference between groups. First, independent samples *t* tests compared the mean scores participants who conducted both surveys and those who only conducted the pre-intervention survey on the following variables: Age, Psychological safety, Response-efficacy and Self-efficacy. The results in Table 3 show that the participants who took both tests were significantly younger than participants who only completed the pre-intervention survey. There were no differences between these two groups based on the other variables.

In addition a Chi-square test was conducted to compare the gender distribution between the group who conducted both surveys and the group who only conducted the pre-intervention survey. The results in Table 3 show that there was no significant difference between the two groups except for the age of the participants.

Psychological safety before and after the intervention. A paired-samples *t* test compared psychological safety at T1 with psychological safety at T2. This test was found not to be statistically significant *t* (43) = -0.87, *p* = .39, which means that there were no differences in scores before (*M* = 3.60, *SD*= 0.51*)* and after (*M* = 3.67, *SD*= 0.53*)* the intervention on psychological safety for the group as a whole.

Despite that there was no significant difference in scores on psychological safety after the intervention, table 1 shows a significant negative correlation between the initial scores on psychological safety and the change in psychological safety. This correlation indicates that participants who experience high psychological safety prior to the intervention, experience less psychological safety afterwards. In contrast, participants who experience low psychological safety prior to the intervention, experience more psychological safety afterwards.

Table 3. Comparison of the group that conducted both surveys and the group that only conducted the pre-intervention survey on Age, Psychological safety, Response-efficacy, Self-efficacy and gender

Variable	pre- & post-test		only pre-test		t	Sig. (p)
	Mean	*SD*	*Mean*	*SD*		
Age	39.49	10.92	43.79	10.44	-2.36	0.02
Psychological safety T1	3.64	0.57	3.60	0.51	0.46	0.44
Response-efficacy T1	2.97	0.10	3.11	0.05	-1.24	0.22
Self-efficacy T1	3.52	0.09	3.64	0.05	-1.10	0.29
	% male	% female	% male	% female	χ^2	Sig. (p)
	75.00%	25.00%	68.60%	31.40%	0.70	0.40

Based on the negative correlation of the initial scores on psychological safety and the change in psychological safety, the sample was divided into two groups for a better visualisation of this effect. The division of the sample was conducted by using a median split on psychological safety at T1 to differentiate between participants with low and with high scores on this scale. A consequence of using the median to split the sample, was that one of the subgroups included the participants who's scores were exactly the median. As a result, the groups were not equal in sample size. However, since this analysis was conducted solely for visualization purposes, these results will be provided in this study.

Subgroups of psychological safety were analysed by means of a two-way mixed design ANOVA with psychological safety at T1 as the independent between-subjects variable (low, high) and psychological safety as the within-subjects dependent variable having two levels (T1 and T2).

The difference between the group that experienced low psychological safety before the intervention and the group that experienced high psychological was found to be statistically significant $F(2, 42) = 40.28$, $p < .001$, which was due to the median split on psychological safety at T1.

The interaction effect of Test X Group was found to be significant $F(1, 42) = 8.51$, $p < .05$, partial $\eta^2 = .17$. Participants in the low psychological safety group scored higher after the teambuilding intervention ($M = 3.51$, $SD = 0.09$) than before the intervention ($M = 3.29$, $SD = 0.06$), $F(1, 42) = 6.29$, $p < .001$ (table 4). Participants in the high psychological safety group scored lower after the teambuilding intervention ($M = 3.93$, $SD = 0.12$) than before the intervention ($M = 4.15$, $SD = 0.07$) $F(1, 42) = 3.1$, $p = .009$. Simple main effects analyses was used in SPSS to provide the statistics for the interaction effects. Figure 4 shows a visualization of the interaction effect.

Table 4. High versus low psychological safety in pre-test compared with scores after the teambuilding intervention

psychological safety	pre/post test	Mean	SD
Low	Pre-test	3,29	0,06
	Post-test	3,51	0,09
High	Pre-test	4,15	0,07
	Post-test	3,94	0,12
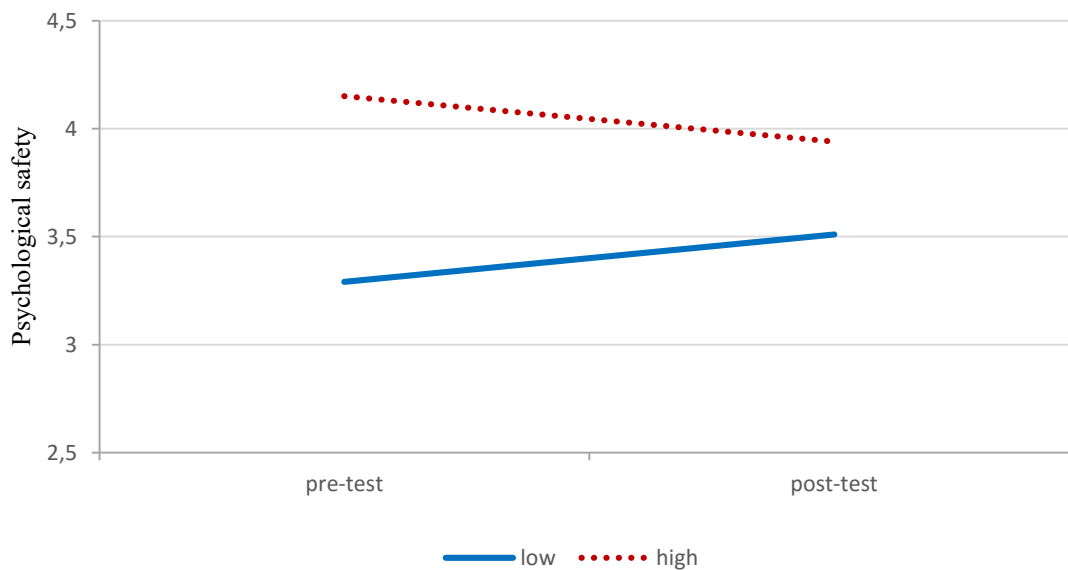
Figure 4. Scores of psychological safety at T1 and T2 based on high or low psychological safety scores at T1

Effects of response-efficacy and self-efficacy. To test whether the differences in psychological safety before and after the intervention could be explained by efficacy-beliefs prior to the intervention, a standard multiple regression was conducted with the score difference of psychological safety as the dependent variable and Response-efficacy pre-intervention (T1) and Self-efficacy pre-intervention (T1) as the independent variables. All variables were entered into the model simultaneously.

Regression results are summarized in table 5. Multiple *R* for regression was not statistically significant, $F(2, 38) = 2.13$, $p = .13$, $R^2adj = .05$. None of the predictors were found

to be statistically significant predictors of the score difference of psychological safety when entering all predictors simultaneously.

The extent to which participants perceived the intervention as a means to enhance psychological safety and the extent to which participants were confident that they could perform the suggested behaviours did not affect changes in psychological safety after the intervention.

Table 5. Regression analysis summary for efficacy scores predicting the score difference in psychological safety

variable	B	SEB	β	t	sig. (p)
Response-efficacy T1	0.03	0.19	0.04	0.18	.86
Self-efficacy T1	0.27	0.21	0.29	1.28	.21

Exploratory analyses. In addition to the original hypothesis, exploratory analyses were conducted to function as a framework for replication studies. Elaborating on the current data, the first step in this exploratory analysis examined if there was an actual difference in psychological safety before and after the intervention. Secondly several moderator analysis were conducted.

Moderator analyses. Since there seemed to be an opposite effect of the intervention based on the initial score of psychological safety, several moderator analyses were conducted to examine which variables influenced this effect. The moderator effects of age, police work-efficacy, job satisfaction and SWB will be examined.

For conducting the moderator analyses, the scales of psychological safety at T1, age, police work-efficacy, job satisfaction and SWB were centralized using the median instead of the mean scores of the matched sample, because of small number of matched surveys. In

addition, interaction terms of psychological safety and the other centralized scales were computed before conducting the hierarchical regressions.

The first hierarchical regression examined the moderator effect of age and the score of psychological safety at T1 on psychological safety Δ. The results of the hierarchical regression are summarized in table 6.

Table 6. Regression summary of the moderation effect of police work-efficacy and psychological safety at T1 on psychological safety Δ

independent variables	Psychological safety Δ	
	Step 1 β	Step 2 β
Psychological safety T1	-0.49***	-0.34**
Age	0.01	-0.05
Psychological safety T1*Age		0.31*
R²	.24	.31
R²adj	.20	.25

*p < .1;**p < .05;*** p< .01

At the first step the centralized scores of psychological safety at T1 and age were entered into the model. The results of step 1 showed that the initial score significantly predicted psychological safety Δ ($\beta = 0.49$, $p = .001$), and the effect of age was statistically not significant. The interaction term of psychological safety at T1 and age was entered in step 2 of the model.
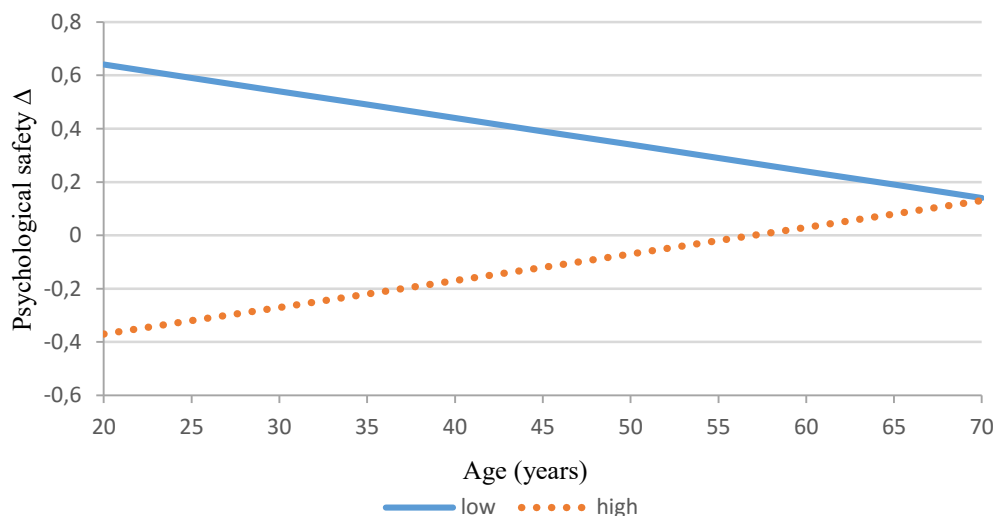

Figure 5. Interaction of psychological safety at T1 and age on the effect of the intervention, which is the difference in psychological safety at T1 and T2.

Multiple R^2 for regression was statistically significant, $F(3, 39) = 5.75$, $p = 0.002$, $R^2adj = .25$. The interaction term was a marginally significant predictor for psychological safety Δ ($\beta = 0.31$, $p = .06$).

A visualization of the moderator effect of age is shown in Figure 5. The Figure was conducted by using the unstandardized predicted values of the interaction effect. The vertical axis of the scatterplot represents the predicted values of the interaction effect of age and psychological safety at T1. The value of zero indicates that there was no change in psychological safety before and after the intervention. Positive scores indicate that there was an increase in psychological safety after the intervention, and negative scores indicate a decrease of psychological safety. The horizontal axis represents the age of the participants in years.

As can be seen in Figure 5, there seems to be a trend in which participants who experience low psychological safety at T1 experienced more psychological safety after the intervention, although this increase was smaller for older participants. Participants who experienced high psychological at T2 experienced less psychological safety after the intervention, where this decrease was also smaller for older participants. The overall trend shows that as participants are older, the change in psychological safety is closer to zero. This trend occurs regardless of the score on psychological safety at T1.

The second hierarchical regression tested if there was a moderation effect of police work-efficacy and psychological safety at T1 on the effectiveness of the intervention. The results of the moderator analysis are summarized in Table 7.

As in the first moderator analyses, the main effect of psychological safety at T1 in step 1 was a significant predictor ($\beta = -0.46$, $p = .002$) of psychological safety Δ. The main effect of police work-efficacy was not a significant predictor ($\beta = 0.05$, $p = .77$). The interaction term ($\beta = -0.30$, $p = .04$) was entered in step 2 and was a statistically significant predictor of psychological safety Δ.

For an interpretation of the moderation effect of psychological safety at T1 and police work-efficacy, a scatterplot was conducted which used the unstandardized predicted values of the interaction term from the hierarchical regression (Figure 6). Figure 6 shows that participants who experienced low psychological safety at T1 experienced more psychological safety after the intervention when they perceived themselves as capable in doing their jobs. Participants who experienced high psychological safety at T1 experienced less psychological safety after the intervention when they perceived themselves as capable in performing their jobs. In this sense, the changes in psychological safety, both positive and negative, were larger if participants perceived themselves as capable in performing their jobs.

Table 7. Regression summary for the moderator effect of police work-efficacy and psychological safety at T1 on psychological safety Δ.

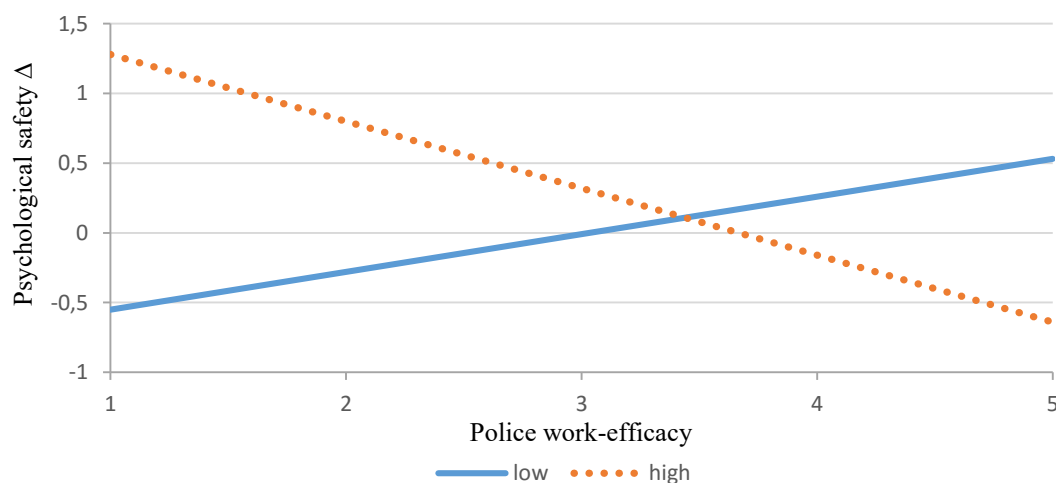|	Psychological safety Δ	
independent variables	Step 1 β	Step 2 β
Psychological safety T1	-0.46**	-0.43**
Police work-efficacy	0.05	-0.04
Psychological safety T1*police work-efficacy		-0.30*
R²	.21	.30
R²adj	.17	.24

*$p<.05$; **$p<.01$

Figure 6. Interaction of psychological safety at T1 and police work-efficacy on the change in psychological safety before and after the intervention.

The third hierarchical regression was conducted to test if there was a moderation effect of job satisfaction and psychological safety at T1 on psychological safety Δ. The results of the hierarchical regression are summarized in Table 8.

Table 8. Regression summary for the moderator effect of job satisfaction and psychological safety at T1 on psychological safety Δ.

| independent variables	Psychological safety Δ	
	Step 1 β	Step 2 β
Psychological safety T1	-0.46**	-0.41**
Job satisfaction	0.12	0.11
Psychological safety T1*Job satisfaction		-0.19
R^2	.23	.26
R^2adj	.19	.20

**p<.01

Psychological safety (β = -0.46, p = .009) at T1 and job satisfaction (β = 0.12, p = .39) were entered in step 1. The interaction term (β = -0.19, p = .21), entered in step 2, was statistically not significant, which indicates that there is no moderating effect of job satisfaction on the effects of the team-building intervention.

Finally, an hierarchical regression was conducted with psychological safety Δ as the independent variable and psychological safety at T1 and SWB in step 1 and the interaction term in step 2 as independent variables. The results of the hierarchical regression are summarized in table 9.

As can be seen from table 9, the main effect psychological safety at T1 was statistically significant (β = -0.44, p = .004) and the main effect of SWB was not statistically significant (β = -0.10, p = .48). The interaction in step 2 was found to be a statistically significant predictor ((β = -0.33, p = .019) of psychological safety Δ.

Table 9. Regression summary for the moderator effect of SWB on psychological safety Δ.

independent variables	Psychological safety Δ	
	Step 1 β	Step 2 β
Psychological safety T1	-0.44**	-0.41**
SWB	-0.10	0.06
Psychological safety T1*SWB		-0.33*
R^2	.22	.33
R^2adj	.18	.28

*$p<.05;$**$p<.01$
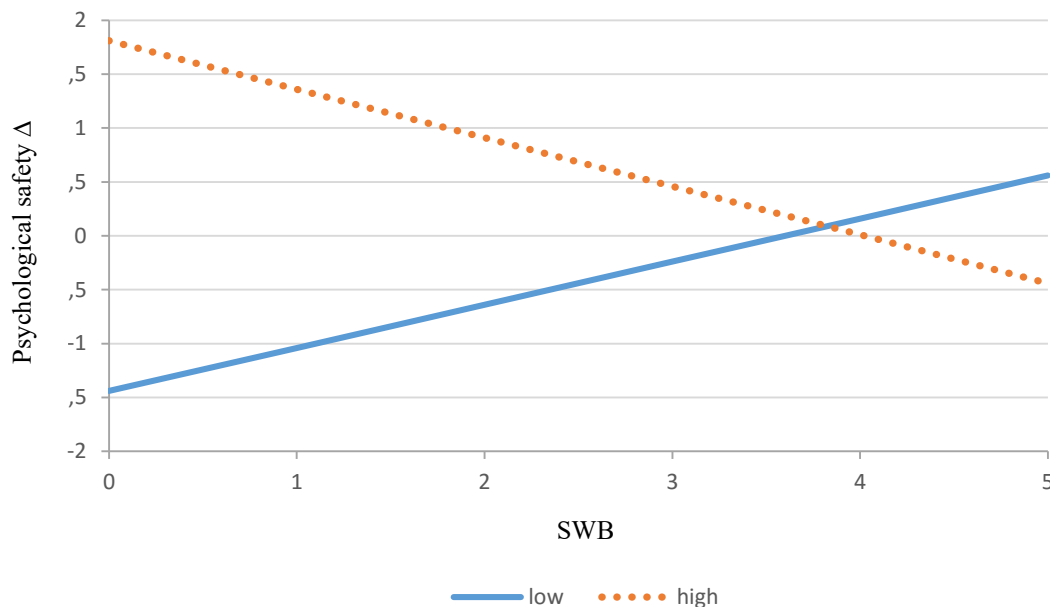
Figure 7. Interaction of psychological safety at T1 and SWB on the change in psychological safety.

For an interpretation of the moderation effect of psychological safety at T1 and SWB, a scatterplot was conducted which used the unstandardized predicted values of the interaction term from the hierarchical regression (Figure 7). As can be seen from Figure 7, participants who experienced low psychological safety at T1 experienced more psychological safety after the intervention when they were satisfied with their lives in general. Participants who experienced high psychological safety T1 experienced less psychological safety after the intervention when they were satisfied with their lives in general.

Overall analysis. In addition to the exploration of moderator variables, a final regression was conducted to function as an overall analysis of the variables that affect the difference in psychological safety before and after the intervention. This analyses included all significant correlates of psychological safety Δ, the significant predictors of the first conceptual model, the efficacy variables, and the significant moderators.

A stepwise regression was conducted with psychological safety Δ as the independent variable and POS, cohesion, police work-efficacy, job satisfaction, response-efficacy at T2, self-efficacy at T2 and the interaction terms psychological safety*age, psychological safety*police work-efficacy and psychological safety*SWB as the independent variables.

Regression results are summarized in Table 10. Multiple R^2 for regression was statistically significant $F(3, 37) = 9.62$, $p < .001$, $R^2adj = .39$. The interaction term of psychological safety at T1 and age ($\beta = 0.48$, $p = .001$) was entered in step 1 of the stepwise regression. In step 2 self-efficacy at T2 ($\beta = 0.38$, $p = .005$) was entered into the model and in step 3 the interaction term of psychological safety at T1 and SWB was entered into the model. The variables that were entered into the model were found to be the best predictors of the change in psychological safety.

Table 10. regression summary for the overall stepwise regression to explore the most influential variables on the change of psychological safety.

independent variables	Psychological safety Δ		
	Step 1 β	Step 2 β	Step 3 β
Psychological safety T1*age	0.50**	-0.49**	0.46**
Self-efficacy T2		0.35**	0.31*
Psychological safety T1*SWB			-0.26*
R^2	.25	.37	.44
R^2adj	.23	.34	.39

*$p<.05$; **$p<.01$

Discussion

The aim of the first study was to confirm previous findings that organizational support and cohesion positively predicted psychological safety, and to include other performance-related constructs into the framework of psychological safety. In addition to these antecedents and related constructs of psychological safety, this study examined the factors that affected changes in psychological safety after a team-building intervention to describe the participants that benefitted from the intervention and those who did not benefit from the intervention.

This research has provided a broader framework of the antecedents and related constructs of psychological safety in the context of a team-building intervention. Specifically, this research included performance-related constructs such as police work-efficacy, job satisfaction and SWB into the context of another performance related construct which is psychological safety.

The results provide support for the positive correlation between perceived organizational support and experienced psychological safety (Edmonson, 1999). The results also provide support for the positive correlation between cohesion and psychological safety (Edmonson, 2004). This indicates that the positive aspects of cohesion, such as good co-worker relationships and less anxiety, are more salient than the negative aspects like the pressure to conform.

Secondly, this study examined the effects of three performance-related constructs on psychological safety to determine which level of performance is most significantly affecting psychological safety. The analyses showed that police work-efficacy is the most important positive predictor of psychological safety. After controlling for police work-efficacy, job satisfaction negatively predicted psychological safety. The partial negative correlation of job satisfaction and psychological safety provides food for thought. After controlling for police

work-efficacy and job satisfaction, the predicted contribution of subjective well-being was not found during the model test.

Based on these findings, employees who perceive themselves as capable in doing their job, while also experiencing support from the organization and cohesion within this organization, are most likely to experience the environment is safe for interpersonal risk taking.

Thirdly, this study examined the influence of self-efficacy and response-efficacy in the context of a team-building intervention. The predicted positive effect of these efficacy constructs on the change in psychological safety was nog supported by the data. However, the results showed that the change in psychological safety was different based on participants' scores on psychological safety before the intervention. For a better understanding of this effect, additional analyses were conducted.

First, the results showed that participants with high scores on psychological safety before the intervention, had lower scores psychological safety after the intervention. Participants with low scores before the intervention scored higher on psychological safety after the intervention. This effect was moderated by age, police work-efficacy and subjective well-being.

The results of the moderator analyses indicate a trend that as participants are older, there is less change in psychological safety after the team-building intervention. Also, participants with low scores on initial psychological safety only benefitted from the intervention when police work-efficacy scores were high and when subjective well-being scores were high.

Finally an overall analyses showed that self-efficacy after the intervention, the interaction term of age and psychological safety before the intervention, and the interaction term of subjective well-being and psychological safety before the intervention, were the most influential predictors of the change in psychological safety.

Conclusion

The first study elaborated on previous research of psychological safety by adding several performance related constructs and also by examining efficacy beliefs in the context of a team-building intervention. The results showed that perceived organizational support, cohesion and police work-efficacy are positively correlated with psychological safety, whereas the partial correlation of job satisfaction is negative. However, with the aim to enhance the experienced psychological safety by means of a team building intervention, the most influential variable is self-efficacy and there is a moderating effect of age and the initially experienced psychological safety.

The findings of this first study provided important predictors of psychological safety and main descriptions of participants that benefitted from the intervention. For a better description of the changes in psychological safety before and after the intervention, a second study was conducted which aimed to provide a more qualitative description of the results of the first study.

Study 2

Based on the literature and the findings of the first study, additional semi-structured interviews were conducted to get more insight in the change in psychological safety after the team-building intervention[3]. The first study mainly provided quantitative information about the psychological constructs that related to psychological safety. The explanatory aspect of this paper also provided the opportunity to gain more insight into the findings of the analyses of the first study and specifically to gather additional information about the moderation effects.

---

[3] At the time of the second study, most participants attended a follow up intervention that was related to the first team building intervention. The follow up intervention was constructed on the same principles as the first and will therefore not be mentioned separately.

Edmonson et al. (2004) reasoned that psychological safety is a shared belief among members of a team about the extent to which it is safe for members to be open to each other. The aim of the semi-structured interviews was to identify participants who benefitted from the intervention and participants who did not. The next step in creating a psychologically safer environment is to identify initiators who could spread out psychological safety, since it is stated to be a shared belief amongst team members. These initiators will be referred to as 'change agents' in the next sections. In follow up studies in other teams, these change agents can enhance the consolidation of the suggested behaviours. As a reminder, these suggested behaviours include more openness and honesty about personal struggles, taking the time to listen to each other, respect each other and to take others' perspective.

Methodology

Semi-structured interviews were used to obtain more in-depth information about the intervention in relation to psychological safety. The semi-structured interviews were also useful to obtain information about psychological safety in the context of the 'police culture'.

Procedure. The interviews were conducted at the police station of the basic team from team Gamma and all participants of this study were active in this basic team. All interviews were recorded using a smartphone after they gave permission through an informed consent form. All interviews were conducted in Dutch, since this was the native language of all participants. The quotes in the results section are translated into English. All participants were told they were free to recall as much as possible and that they were allowed to decline to answer a question if needed. The next section will provide the topic list of the interview, which served as the main structure of the semi-structured interview.

First participants were asked to talk about their own experiences with the team-building interventions. Secondly, participants were asked to speculate about others' experiences with the interventions, which demanded some perspective-taking from their part. The next questions were aimed to identify people who benefitted the intervention and the people who did not. Finally, an attempt was made to identify change agents that can initiate the suggested behaviours and also to map the tools they will need to do that.

After the interviews the recordings were transcribed and participants were given the opportunity to look into the transcripts for approval[4].

Participants. In total 7 interviews were conducted of which there were two female respondents and five male respondents. All participants were employees of the gamma team and were proposed by the head of the basic team. All participants attended at least two team-building interventions and only interviewee 6 did not attend the first team-building intervention. Five interviewees had supervising roles and two had not.

Due to resistance concerning anonymity in the first study, no other demographics were accounted for.

Instruments. The semi-structured interviews were conducted using a question guideline. Some central questions were; 'how did you experience the team-building intervention' and 'how would you describe the people who benefitted from the intervention'.

After the interviews were transcribed, the statements were coded according to the topic or the psychological construct. Examples of codes are; 'psychological safety', 'change agents' and 'effects'. Considering the inter-rater reliability, only statements that were mentioned by at least two interviewees were used to create a topic or to adopt a psychological construct.

---

[4] None of the participants requested insight after the recordings were transcribed.

Results

This section will provide the results of the second study. In addition to the main topics of the semi-structured interview there is a section about psychological safety, since this construct was mentioned by all interviewees.

      Experiences with the team-building interventions. One of the interviewees did not attend the first team-building intervention (interviewee 6). Overall, the other interviewees are positive about the intervention. Examples of statements include: *"I was very positive about the first [team-building intervention-GE[5]]." (interviewee 1)* and *"I went in with an open mind and I thought it to be a very valuable day." (interviewee 2)* and "*It was a beautiful day, but it was intense" (interviewee 4)*. Interviewee 5 reasoned that the team-building intervention was not well adjusted to the Dutch national police, he stated *"I thought it came on very American-like. I actually felt uncomfortable right away"*.

      Despite the fact that five out of six of the interviewees who went to the first team-building day were quite positive about the team-building intervention, they all experienced resistance among other co-workers. Examples are: *"To be honest, I think that almost 80% thought it was a useless day" (interviewee 5)* and "*what I see, is that many are clearly hiding behind a mask […]" (interviewee 3)*. Despite this noticeable resistance, the interviewees also saw changes in this resistance in some employees. These interviewees illustrate *"[…] much resistance in advance, but this decreased during the day and many co-workers who were very resistant at first came out quite positive" (interviewee 1)* and *"Not everyone, but many people experienced the day as positive. […] but then you see that things change after that first day." (interviewee 4)*. Interviewee 7 also mentioned the variety between employees' opinions about

---

[5] In the case of unclear statements due to a lack of total context, additional context will be provided. These added context descriptions are featured with '-GE', which indicates the input of the researcher.

the team-building intervention. She stated: *"it varied, with total extremes from one side to the other side"*.

Overall, the interviewees were especially positive about the aspects of the day that involved perspective-taking. Here, the interviewees referred to the components 'over the line' and 'if you really knew me, you would know that'. Examples are: *"What I saw was that some people of whom I never expected it, stepped over the line at some point. […] an eye opener for me." (interviewee 5)* and *"[…] because the group sessions [perspective-taking components- GE] of the intervention were positively evaluated, by everyone, also the people who did not like it, did like these methods." (interviewee 7).*

Psychological safety. Without an explicit question in the semi-structured interview about psychological safety, most interviewees mentioned the current course of events about opening up. These statements illustrate the current level of psychological safety among the resistant participants of the team-building intervention and also of the entire team gamma. Interviewee 2 argued that the intervention has a lot of potential but that not everyone was able to be open to it, *"and that is mostly shame, 'what will someone else think of that'. I heard a colleague say "I will not do that, because then they think I am this or that".* Other examples are; *"[you] do not talk about your feelings and your emotions because that is weird" (interviewee 4)* and *"most older employees try not to show their emotions too much." (interviewee 6).*

Other statements related to psychological safety were more specific about the work environment. Interviewee 1 was describing participants that reacted in a negative fashion towards the intervention, where she brought up the 'police culture' and stated that *"policemen will often think that they have to be tough and that is a type of culture. I think that it has a lot to do with peer pressure".* Interviewee 4 also experienced problems with the 'police culture', where he explained his fear to be seen as someone who cannot cope with the incidentals of

being a policemen. He stated that "*When I just finished the academy I struggled with that myself too. When something was bothering me, I would not mention it.[…] They might think something of me and then they send me home*". A similar statement from interviewee 3 emphasizes the fear of being judged; "*in an organization as the police organization, weakness is often exploited by others to appear tougher [to make those others appear tougher-GE]." (interviewee 3)*.

Identification of the group that benefitted from the intervention. In evaluating the team-building intervention the interviews focussed on the identification of people who benefitted from the intervention and the people who did not. Descriptions of participants who benefitted the intervention might provide additional information to the analyses of study one.

Most interviewees mentioned that is was difficult to give specific descriptions of these people. There were statements that provided descriptions that are, in reality, only useful for people that are in close contact with a specific team. These statements presuppose a certain amount of knowledge about the people in a basic team that is needed to identify these employees. Interviewee 4 described these people as "*the enthusiastic colleagues, the colleagues who are always open, who are always open to conversation, who will always engage in conversations, who are always present." (interviewee 4)*. Interviewee 2 reasoned that those who benefitted from the intervention are identifiable by other colleagues, since these employees are already more open towards others. He stated that "*I think that these people generally speak out more freely*".

These statements identify participants who stood out positively during the team-building intervention and who were already identifiable in advance for employees of team gamma. However, some interviewees also managed to give a global description of the people who have shown changes in their behaviour during the intervention. Interviewee 7 mentioned that the more quiet employees, who did not stand out positively or negatively within the team, also benefitted from the intervention. She described this group as "*The surprising persons, so the*

people who really opened up, you can call them the people who didn't stand out until then". Interviewee 5 reasoned that the intervention was also beneficial for older employees who perceived the 'police culture' as psychologically unsafe. He stated: *"And I did notice that older colleagues, finally, opened up a bit more. [Because] in the old days they would have held it against you." (interviewee 5).*

Finally, interviewee 2 mentioned the potential of the intervention, which can be seen more as an indication of the response-efficacy of this interviewee. This interviewee stated that *"Basically everyone learns something from the day, one person a bit more than the other".*

Identification of the group that did not benefit from the intervention. The main goal of second study was to identify the people who reacted positively towards the team-building intervention. However, more insight into the group of people who did not benefit from the intervention could provide a basis for further development of interventions within the Dutch national police. As with the identification of the people who benefitted from the intervention, the interviewees found it difficult to give specific descriptions of this group.

Interviewee 1 gave a description of participants who did not benefit from the intervention that requires insight into the characters of the employees in team gamma. She described them as, "*real cops. The boys and girls who think that they come here to catch criminals".* Interviewee 5 gave a similar description, but he also explained that a closed attitude is perceived to be beneficial for some police officers: *"There are young people who don't want to talk, but they just want to work. [...], but using that attitude can be beneficial to perform your job right".* These statements seem to indicate a lack of awareness of the importance of psychological safety. Interviewee 4 also mentioned this lack of awareness, which can also be related to response-efficacy, *"No, not everyone sees the importance of that day [...]".*

In addition to these descriptions that require inside knowledge of the basic team, an attempt was made to characterize these people for outsiders. First participants were asked if age was of influence for the people that came out negative. Examples of statements were: *"[…]there are of course many colleagues, mostly the older ones, who think like 'I'm not doing that' [participate in intervention-GE], so those are the ones you will definitely not reach, but there are also younger colleagues who remain quite tough"* (interviewee 2) and *"What I do notice is that those who were stubborn in advance and some also afterwards, were mostly the older colleagues." (Interviewee 3).* Interviewee 6 noticed that especially the older employees complained about the intervention, he reasoned that "*because there are many older employees who thought it was way over the top" (interviewee 6).* Most participants state that mainly older employees express themselves negatively in relation to the intervention. However, interviewee 2 mentioned that some younger employees are expressing similar behaviour. Interviewee 4 explained this as: "*it has to do with age. In one situation there was a younger employee who saw others that showed resistance and the younger employee does look up to these older co-workers. And because of that he joins those others in their resistance".*

A nuance in these statements may come from interviewee 7 who stated the following: *"It's mental age, or mental years. So I don't want to classify it as age, but the subjective age".* An example of this comes from interviewee 5, who is almost retiring and thus belongs to the group of older employees, but nonetheless saw the potential benefits of the intervention. He stated: "*But I actually was very grateful, because I saw that it's okay to open up".*

Effects after the team-building intervention. All interviewees were asked if they experienced changes on their team during or in the period after the team-building intervention. Most interviewees experienced changes in their colleagues' behaviour shortly following the team-building intervention. Examples of such statements include, "*There was [a positive effect-*

GE] during the days and weeks after the team-building intervention. [People were] more open in speaking out wat was happening " (interviewee 1) . Most interviewees also stated that one aspect of the team-building intervention was still noticeable. Here, the interviewees referred to the amount of personal attention to co-workers. Examples of these statements are: *"what I do notice, in some groups, is that people make more time for eachother." (interviewee 4)* and *"That is something that I can see at work. People are listening better to each other, taking more time*." (*Interviewee 6).*

Interviewee 5, however, mentioned a cultural change over a longer period, which makes it difficult to ascribe this behaviour to the team-building intervention. He stated: "*There is already a huge cultural change. […] I ask people if they are feeling okay. […] That was very different in the old days".*

Most participants also mentioned that they lacked the tools to implement the team-building intervention in their work. This seems to be the main reason for the lack of effects on the long term. This states the importance of the identification of the change agents to establish more consolidation of the suggested behaviours.

Change Agents. At the final phase of the interview participants were asked which people are functioning as change agents and which tools they need for a better consolidation of the suggested behaviour. The identification of change agents is in line with the descriptions of the first group who benefitted from the intervention. These were employees who were already known as social, enthusiastic and caring.

Interviewee 1 mentioned the best position for a change agent to be influential. She stated: *"I think that those people should be from the workplace [and not administrative personnel-GE]. I also think that they should come from all segments of the basic team [and every segment should have its own change agents for a real effect-GE]" (interviewee 1).* Interviewee 7 also

mentioned some practical suggestions to enhance the position of change agents within the team. She reasoned: "*Then I think about a couple of things. One, space, time, financial aid [...] literally physical space. A sounding board to consult with others[about how they approach these issues-GE]. And I also think some motivation, incitement, some stimulant and support from the group, but certainly also from management.* These statements seem to address the issue of perceived organizational support.

Other interviewees also mentioned some more content-based suggestions. Examples of these statements are: "*[They should be], taking others serious, really listening, and doing that with empathy. Just having a conversation within the group about safety, in the sense of 'do I feel safe with him during an arrest to tell him what is bothering me'.*" (interviewee 2) and "*[a tool for change agents could be to implement the game-GE] 'if you really knew me, then', to use that in meetings, but then you do need a chairman that supports this idea.*" (interviewee 1). These suggestions are mainly related to rehearsal to anchor the suggested behaviours.

An interesting statement comes from interviewee 4, who stressed the importance of voluntary rehearsal. He stated: "*And you can make it an obligation, but we already have enough obligations. That makes it difficult, because that is why people become resistant in the first place*". In this sense, promoting openness and communication is not wrong per se, but to overcome resistance, it is important to avoid inflicting these behaviours.

Some interviewees also mentioned that the intervention did not provide enough tools to consolidate the suggested behaviour. Examples of these statements are: "*there weren't any new skills learned [which people can use outside of the intervention-GE]*" (interviewee 6) and "*of course it's nice to tell a co-worker that you have a problem and that they listen to you, but this also needs a continuation.*"(interviewee 5).

Discussion

In the next sections there will be a brief discussion of the results of the second study. In line with the explanatory aim an attempt was made towards a description of change agents and events related to the team-building interventions.

Most interviewees were positive about the team-building interventions, but all saw a lot of resistance amongst other colleagues. This resistance seems to be a result of the 'police culture' in which it is not customary to talk about your feelings or to be open towards others. These same statements are indications of the current psychologically unsafe environment, whereas all interviewees recognized this as a problem. However, they reasoned that the lack of psychological safety is recognized by many other colleagues or that those others cannot or will not adjust to the greater interest of the group. This group can be described by other team members as the 'mentally older employees' or as the 'old fashioned cops'. Most of the interviewees noticed that there are more older than younger employees who fit this description, which was stated as the only indicative for outsiders.

All interviewees mentioned that the team-building interventions were a stepping stone towards improvement, since they noticed positive changes in communication. However, the effects of the interventions faded after a few weeks due to a lack of guidelines and tools to implement the suggested behaviour from the intervention.

All interviewees confirmed the important role of change agents to promote a psychologically safer environment. These change agents can be described as positive, extravert and having a hands-on mentality. To create a psychologically safer environment there should be multiple of these change agents throughout the team and they would need supervisors to back up their initiatives.

Conclusion

Most employees experienced a lack of psychological safety in team gamma. Although the team-building interventions showed the members of the team that it is okay to be open, there was no consolidation of the suggested behaviour. A cause of this lack of consolidation, was that no explicit tools to implement the suggested behaviours in the working environment were learned. In order to create a better consolidation, change agents will need time and support from colleagues, and especially from supervisors, to normalize the suggested behaviour. The current tools that they can use, such as the perspective-taking components, can be implemented during team meetings or group days.

General Discussion

The aim of this research was to broaden the framework of the construct psychological safety and to examine the constructs that are related to changes in psychological safety. This research was conducted in the context of a team building intervention, which was held amongst three basic teams of the Dutch national police. By examining changes in psychological safety, this research aimed to describe employees who are most likely to benefit from a team-building intervention.

To broaden the framework of psychological safety, this research replicated previous studies to confirm antecedents and added other performance-related constructs that were not previously examined in the context of psychological safety. Secondly, this study examined constructs that affected the change in psychological safety after the intervention. These results provided the framework for the second study, which was aimed to provide a more detailed description of participants who benefitted from the intervention and those who did not benefit from the intervention. Finally, this research tried to identify change agents that could consolidate psychologically safe behaviours in an organization context.

Findings

The results of the first study provided constructs that were related to the change in psychological safety. These constructs were at the basis of the second study, in which these constructs were used to further explain the differences in the change of psychological safety amongst participants.

Antecedents of Psychological safety. The results of this research confirm previous results in psychological safety research of Edmonson (1999) by confirming the positive relationship of perceived organizational support and psychological safety. In addition to the perceived psychological safety that arises from employees' perceived organizational support, this research showed that the positive effects of team-cohesion also enhances psychological safety among team members. These results seems to indicate that psychological safety can derive from team level cohesion, and from organizational level in the form of perceived organizational support. Organizational support is mostly formed by employees' evaluations of their supervisors (Cropanzano & Mitchell, 2005), whereas cohesion derives from good interpersonal relationships with other co-workers (Forsyth, 2014).

In examining performance-related constructs this research adopted a convergent approach in which subjective well-being was the most all-embracing construct (Diener, 2005). Well-being can be divided into other constructs, among which is the construct of job satisfaction. Job satisfaction is in turn constructed of overall evaluations of one's job, affective experiences in one's job, and beliefs about one's job (Weiss, 2002). Police work-efficacy was the most specific performance-related construct in this study, which can be scaled under the beliefs about one's job.

In sum, police work-efficacy is construct of job satisfaction, and job satisfaction is a construct of subjective well-being. All of these constructs are related to performance, however

the aim of this research was to examine the importance of each layer of these performance-related constructs. The results of this study suggests that this most detailed performance-related construct of police work-efficacy was most positively correlated with psychological safety. Based on this finding, the most effective way to enhance psychological safety through performance-related constructs is to enhance the perceived capabilities of employees in doing their jobs. Employees' work-efficacy beliefs can be enhanced by providing clear job and task descriptions and by providing them with the right tools and resources to perform their jobs. In this sense, training programs can be seen as such a resource.

Difference in psychological safety after the intervention. Before the discussion of the changes in psychological safety after the intervention, it is important to note that this was a cross-sectional research with only one group. As a consequence no inferences can be made about the causal effects of the intervention, since there was no control group. In this sense, psychological safety was simply measured before and after the intervention, without ascribing these changes to the intervention.

The results showed no overall change in psychological safety after the team-building intervention. However, after dividing the sample based on participants who initially experienced low psychological safety and participants who initially experienced high psychological safety, there were changes after the intervention. Participants who initially experienced low psychological safety more often benefitted from the intervention, and participants with who experienced high psychological safety did not benefit from the intervention. These different effects of these groups appear to have neutralized the overall change in psychological safety, which explains the lack of change for the whole sample.

Efficacy beliefs and psychological safety after the intervention. In explaining the difference in changes of psychological safety between participants who experienced low and high initial psychological safety, the results of this study showed that this was not influenced by efficacy beliefs before the intervention. The results showed that the change in psychological safety was not affected by the extent to which participants perceived the intervention as the right method to enhance psychological safety prior to the intervention. Also, the change in psychological safety was not affected by the extent to which participants perceived themselves as capable in performing the suggested behaviours prior to the intervention.

Despite the lack of effect of efficacy beliefs prior to the intervention in study one, study two provided some interesting findings related to efficacy beliefs. In describing the 'police culture', all respondents described aspects that are indicative of a psychologically unsafe environment. They described the 'police culture' as one in which emotions are not discussed, and where employees are afraid that others might take advantage of them. Also, all respondents of study two reasoned that there were employees who did not acknowledge that lack of psychological safety as a problem. These findings suggest that not all participants were aware of the problem that rises from a lack of psychological safety. In this sense, it is possible that this awareness moderated the effect of response-efficacy on the change of psychological safety. Kievik and Gutteling (2011), in a study about self-protective behaviour with regard to flood-risks, showed that there has to be a perceived risk combined with high efficacy beliefs for people to engage in self-protective behaviour. Although the study of Kievik and Gutteling (2011) concerns self-protective behaviour in the context of natural disasters, it is possible that the perceived risk also plays an important role in these team-building interventions. Unfortunately, this could not be tested, since the survey did not account for the construct of awareness.

Moderating effects on the change of psychological safety. The findings of study one, that showed a difference in the change of psychological safety between participants who experienced low or high psychological safety prior to the intervention, could not be explained by the influence of efficacy. The results of the moderator analyses, which were part of the additional analyses, provided some interesting findings concerning the difference in changes of psychological safety.

Well-being. An explanation for the different effects on the change of psychological safety can come from the moderating effect of subjective well-being. This moderator analysis showed that participants who experienced low psychological safety before the intervention experienced more psychological safety after the intervention, but only when they were satisfied with their lives in general. Participants who experienced high psychological safety before the intervention experienced less psychological safety after the intervention when they were satisfied with their lives in general.

A possible explanation for these findings is provided by the results of the second study, which is also in line with the explanation of the lack of efficacy-effects. All respondents of study two mentioned that many employees did not acknowledge the lack of psychological safety as a problem. This could also explain the decrease in psychological safety for participants who experienced high psychological safety before the intervention. In this sense these participants were forced outside their comfort zone by imposing them to be more open to others, but since they were satisfied with the former status of psychological safety, they feel less psychologically safe after the intervention.

The results of the second study also showed that many participants lacked the tools to implement these behaviours in the working environment. This could also explain the decrease in psychological safety after the intervention for the participants who were generally satisfied with their lives before the intervention. For these participants, the intervention proposed a

problem that they were not aware of, and afterwards those participants lacked the tools to cope with problem, which could have led to a decrease in psychological safety.

Another explanation for this finding is more simple. It is also possible that the participants who experienced high psychological safety prior to the intervention became aware of the lack of psychological safety, which in turn caused the decrease in psychological safety. However, since participants' awareness was not measured, this could not be tested.

Age. Next, the results of study one showed a moderating effect of age and initially experienced psychological safety on the change of psychological safety. Younger participants who experienced low psychological safety before the intervention increased more in psychological safety after the intervention compared to older participants. In contrast, younger participants who experienced high psychological safety before the intervention decreased more in psychological safety compared to older participants. These results suggest that the changes in psychological safety were smaller for older participants.

An explanation for this finding comes from Resnick, Palmer, Jenkins and Spellbring (2000) in a study about self-efficacy beliefs and work-out intentions. They found that older adults more often perceived themselves as less capable in changing their behaviour, compared to younger adults. The findings of Resnick et al. (2000) suggested that age moderated the effect of self-efficacy and changes in training behaviour.

These findings are consistent with results from study one, where changes in older participants' perceived psychological safety were smaller, compared to younger participants. In addition, the overall regression analysis of the constructs related to changes in psychological safety showed that self-efficacy after the intervention and the moderating effect of age were positively related to changes in psychological safety. The results of the second study were consistent with these findings in that two respondents also mentioned that especially older

participants stated that they lacked the tools to implement the suggested behaviours from the intervention.

Police work-efficacy. Finally, the results of study one showed that police work-efficacy moderated the relation of the experienced psychological safety before the intervention and changes in psychological safety. Participants who experienced low psychological safety before the team-building intervention increased more psychological safety when they perceived themselves as more capable in performing their jobs. Participants who experienced high psychological safety before the intervention decreased more in psychological safety when they perceived themselves as more capable employees.

An explanation for this finding could be similar to that of the moderating effect of subjective well-being. Here, participants who were confident in performing their job became aware of the lack of psychological safety, which could have caused a decrease in the experienced psychological safety.

Participants that benefitted from the intervention. Although most respondents in study two mentioned that it was difficult to define participants who benefitted from the team-building intervention, the results of this study provided a framework to identify these participants. Based on the results of study two the participants that benefitted from the intervention can be divided in two groups. The first group was described as the employees who are known as enthusiastic, open for conversation and caring. These employees can be identified by other colleagues, since this requires knowledge of the people within a team.

A second group of participants who benefitted from the intervention was defined, by the respondents of study two, as the employees who are normally in the background. These employees were described as quiet and those who did not stand out until the intervention. This group is more difficult to identify prior to the team-building intervention.

Participants that did not benefit from the intervention. The results of study two showed that it was more difficult to identify participants who did nog benefit from the intervention. Most respondents described these participants as the employees with a mainly practical mind, who want to act instead of talk. In addition, the interview results also show that this group consisted mainly of older employees. An nuance in this result is that some respondents explained the influence of age as mental age, instead of years of age. However, the findings of age in study two confirmed the moderating effect of age in study one, which is more in favour of the influence of years of age. Interestingly, the results of the first study indicate that the changes in psychological safety were smaller as participants were older. In this sense, the younger participants who experienced high psychological safety before the intervention suffered the most from the intervention.

A possible solution for these younger participants who suffered from the intervention is to enhance belief that they can perform the suggested behaviours from the intervention. The results of the second study suggests that this can be achieved by providing more work-related tools to implement these behaviours.

Change agents. Based on the descriptions of the participants who benefitted from the intervention, this study identified potential change agents that could initiate the spread of behaviour that could lead to a psychologically safer environment. The results of study two suggest that first group who benefitted from the intervention, which were the enthusiastic, open and caring employees, are most suited to function as change agents. In this sense, change agents are those employees who are already trying to enhance psychological safety

Another important finding from the interviews is that it is possible to identify these change agents from within a team, but not for someone from the outside.

Finally, the interviews aimed to identify tools that change agents would need for a better consolidation of the suggested behaviours of the intervention. Complementing the finding of

self-efficacy in study one, the results of study two suggest that more time should be spent on interpersonal skills in the working environment. Next, it is important that these change agents are getting support from their supervisors in eliciting more openness. This is in line with previous research, and also the first hypothesis of study one, where perceived organizational support positively predicts psychological safety.

Practical implications

This research showed that perceived organizational support, cohesion and police work-efficacy are important predictors of psychological safety. Since psychological safety is positively related to team performance (Edmonson, 2004), organizations or teams within organizations should emphasize these related constructs to create a psychologically safe environment. Supervisors play an important role in the enhancement of perceived organizational support, where they should support, compliment and coach their team members in a constructive way.

Secondly, teams and their supervisors should enhance cohesion within a team. This can be established by team-building activities with achievable goals, since performance also enhances cohesion (Muller & Copper, 1994). However, in most cases cohesion arises after certain stages of group development (Tuckman & Jensen, 1977). This suggest that teams should be given the time to develop, which will eventually lead to a more cohesive team.

Finally, organizations should ensure that their employees perceive themselves as capable in performing their job, which increases their efficacy beliefs. One important aspect of this subjective appraisal, is that role descriptions have to be clearly defined. Besides the clear description of one's role, supportive leadership will also enhance job-related self-efficacy, which again stresses the importance of perceived organizational support.

Considering the effects of team-building interventions to enhance psychological safety, organizations should first stress the importance of a psychologically safe environment to create

awareness. Secondly, these team-building interventions should provide participants with tools that they can implement in their working environment to consolidate the suggested behaviours. For participants to implement these behaviours, they should perceive themselves as capable to perform these suggested behaviours. Also, to initiate this implementation, change agents should get the opportunity by their supervisors to explicitly address these issues in the work environment. Finally, for a broad spreading of psychological safety, every team or group within the larger organizational context, should have at least one change agent.

Limitations

There are some important limitations of this study that have to be considered in interpreting the results. First some content-based limitation will be discussed followed by several practical limitations of the study.

First the scale for job satisfaction did not specifically differentiate between overall evaluations of one's job, affective experiences in one's job, and beliefs about one's job, as was described by Weis (2002). This was due to the short time span in which the survey had to be constructed and the lack of other scales on the short term. A similar limitation applies to the construct of subjective well-being, which also does not specifically differentiate between life satisfaction, pleasant affect and unpleasant affect (Diener, Suh, Lucas & Smith, 1999).

Another important limitation is that most constructs of the pre-intervention survey were not measured in the post-intervention survey. This was due to complaints about the alleged amount of time participants spent in conducting the survey. The absence of these constructs in the post-intervention survey limited the interpretability of this study in that changes in perceived organizational support, cohesion and the performance-related constructs are not measured.

The first practical limitation of this study concerns the limited number of pre- and post-intervention data that could be matched. 312 participants started the pre-intervention survey

and 200 participants started the post-intervention survey, however only 42 cases were matched. This was due to an error in the link of the post-intervention survey that could not be restored afterwards.

Another explanation for the small number of matched cases is that there were complaints about the length of the survey. It is possible that participants resisted to conduct the post-intervention survey due to their experience on the pre-intervention survey.

Besides the aspect of the length of the survey, the matching variables created doubts and even distrust among participants about the anonymity of the survey. The combination of the complaints about the survey, with resistance against the team-building intervention itself, might have contributed to the low rate in matched cases.

Theoretical implications

This research confirmed previous findings that perceived organizational support and interpersonal bonds are positively associated with psychological safety. In addition, this research provided a broader framework of psychological safety by examining the influence of other performance-related constructs. First, the results of this study showed the positive relation of work-related efficacy beliefs and psychological safety, and the remaining effects of other performance-related constructs.

Another interesting finding is that changes in psychological safety depended on the initially experienced psychological safety. This research found that this effect was moderated by age, subjective well-being and police work-efficacy. Another variable that seemed to explain the changes of psychological safety is intervention-based self-efficacy. Here, only intervention-based self-efficacy after the intervention was found to be positively related to changes in psychological safety. This finding seems to emphasize the difference between self-efficacy before and after an intervention. This effect of intervention-based self-efficacy emerged only

after controlling for all other antecedents of initial psychological safety. In this sense, this research also provided some suggested new perspectives in efficacy studies.

Future research

The results of this research should be interpreted as the framework for a larger study concerning the same team-building intervention of the Dutch national police. Nonetheless, there are also some theoretical suggestions for future research.

This research provided a broader framework of psychological safety by including other performance-related constructs, where police-work efficacy was found to be most influential. However, future research should aim to explain the partial negative influence of job satisfaction on psychological safety. In explaining the partial contribution of job satisfaction on the model, it is also important to account for the different constructs out of which job satisfaction is constructed (Weiss, 2002)

For future research in the context of the team-building interventions, it is important to consider the practical limitations of this study. Since this research has provided some interesting insights about the related topics and moderators of psychological safety, future research should zoom in on one of these findings. By doing this, the survey could be shortened which could also lead to a higher response-rate.

Advice for the Dutch national police

The recommendations for the Dutch national police consists of two parts, since some teams have already conducted the team-building intervention, and others will do so in the upcoming years. This advice contains recommendations for teams of both situations, starting from the preparation of the team-building intervention. A Dutch rapport of this research, including concrete recommendations, is provided in Appendix I.

Prior to the team-building intervention participants should be made aware of the problems surrounding psychological safety in the work-environment. In creating this awareness it is important that employees who do not experience these problems themselves, understand that other colleagues are troubled by the lack of this psychological safety.

Secondly, naturally functioning change agents within each team should function as the initiating participants during the team-building interventions. Here lies an important task for the supervisors within each team, since these change agents can only be identified from within the team. To enhance self-efficacy beliefs in older employees, a team could choose to adopt more older employees to function as change agent. However, it is important that these employees are naturally open and enthusiastic.

Also, it is important that all employees of the basic team are present during the intervention. Here, supervisors should encourage their team members to actively participate in the upcoming team-event.

After the team-building intervention, the change agents should be enabled to continue the practised openness within the location of the basic team. This can be established by replicating some of the exercises, for example 'If you really knew me, you would know that', during team meetings.

Another important factor is that supervisors create an environment in which employees feel safe to be open and to admit mistakes. To accomplish this, supervisors should also openly admit mistakes in the presence of other co-workers (Edmonson, 2004). By admitting mistakes in the presence of other team members, these members are more likely to follow this behaviour.

In addition to the rehearsal of the exercises of the team-building intervention, the change agents should be provided with other tactics and practical tools to implement within the context of the basic team by the organization of the team-building intervention.

Finally, to maintain a psychologically safe environment it is important that supervisors accept their role as facilitators of perceived organizational support. In this sense, supervisors should be supportive, coaching and complimenting towards their team members and, in addition, they should create an environment in which it is safe to discuss failures.

References

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*(2), 122-147.

Bradley, B. H., Postlethwaite, B. E., Klotz, A. C., Hamdani, M. R., & Brown, K. G. (2012). Reaping the benefits of task conflict in teams: the critical role of team psychological safety climate. *Journal of Applied Psychology*, *97*(1), 151-158.

Brayfield, A. H., & Rothe, H. F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, *35*(5), 307-311.

Cannon, M. D., & Edmondson, A. C. (2001). Confronting failure: Antecedents and consequences of shared beliefs about failure in organizational work groups. *Journal of Organizational Behavior*, *22*(2), 161-177.

Carless, S. A., & De Paola, C. (2000). The measurement of cohesion in work teams. *Small group research*, *31*(1), 71-88.

Carmeli, A., Brueller, D., & Dutton, J. E. (2009). Learning behaviours in the workplace: The role of high-quality interpersonal relationships and psychological safety. *Systems Research and Behavioral Science*, *26*(1), 81-98.

Carmeli, A., & Gittell, J. H. (2009). High-quality relationships, psychological safety, and learning from failures in work organizations. *Journal of Organizational Behavior*, *30*(6), 709-729.

Choi, J. N., Price, R. H., & Vinokur, A. D. (2003). Self-efficacy changes in groups: effects of diversity, leadership, and group climate. *Journal of Organizational Behavior*, *24*(4), 357-372.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, S95-S120.

Cropanzano, R., Byrne, Z. S., Bobocel, D. R., & Rupp, D. E. (2001). Moral virtues, fairness heuristics, social entities, and other denizens of organizational justice. *Journal of Vocational Behavior*, *58*(2), 164-209.

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, *31*(6), 874-900.

Diener, E. (2005). Assessing subjective well-being: Progress and opportunities. In *Citation Classics from Social Indicators Research* (pp. 421-475). Springer Netherlands.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: three decades of progress. *Psychological Bulletin, 125 (2)*, 276-302.

Dutton, J. E., & Ragins, B. R. E. (2007). *Exploring positive relationships at work: Building a theoretical and research foundation*. Lawrence Erlbaum Associates Publishers.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350-383.

Edmondson, A. C., Kramer, R. M., & Cook, K. S. (2004). Psychological safety, trust, and learning in organizations: A group-level lens. *Trust and Distrust in Organizations: Dilemmas and Approaches*, *12*, 239-272.

Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied Psychology*, *86*(1), 42-51.

Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*. 71. 500-507.

Felblinger, D. M. (2008). Incivility and bullying in the workplace and nurses' shame responses. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*,*37*(2), 234-242.

Forsyth, D. R. (2014). Cohesion and Devolopment. In D. R. Forsyth (ED), *Group Dynamics* (6th edition, pp. 133-164). Belmont, CA: Wadsworth Cengage Learning.

Guthrie, J. P., & Schwoerer, C. E. (1994). Individual and contextual influences on self-assessed training needs. *Journal of Organizational Behavior*, *15*(5), 405-422.

Hayes, N., & Joseph, S. (2003). Big 5 correlates of three measures of subjective well-being. *Personality and Individual Differences*, *34*(4), 723-727.

Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Personality and Individual differences*, *33*(7), 1073-1082.

Hoyle, R. H., & Crawford, A. M. (1994). Use of individual-level data to investigate group phenomena issues and strategies. *Small Group Research*,*25*(4), 464-485.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, *33*(4), 692-724.

Kahn, W. A. (2007). Meaningful connections: Positive relationships and attachments at work. In J. E. Dutton, & B. R. Ragins (Eds.), *Exploring positive relationships at work: Building a theoretical and research foundation* (pp. 189–206). Mahwah, NJ: Lawrence Erlbaum Associates.

Kievik, M., & Gutteling, J. M. (2011). Yes, we can: motivate Dutch citizens to engage in self-protective behavior with regard to flood risks. *Natural Hazards*, *59*(3), 1475-1490.

Lewick, R., & Bunker, B. (1996). Developing and maintaining trust in work relationships. *Trust in Organizations: Frontiers of Theory and Research*, *1*, 114-139.

McNatt, D. B., & Judge, T. A. (2008). Self-efficacy intervention, job attitudes, and turnover: A field experiment with employees in role transition. *Human Relations*, *61*(6), 783-810.

Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, *115*(2), 210-227.

Myers, A. E. (1962). Team competition, success, and the adjustment of group members. *Journal of Abnormal and Social Psychology, 65,* 325-332.

Repetti, R. L. (1987). Individual and common components of the social environment at work and psychological well-being. *Journal of Personality and Social Psychology*, *52*(4), 710-720.

Resnick, B., Palmer, M. H., Jenkins, L. S., & Spellbring, A. M. (2000). Path analysis of efficacy expectations and exercise behaviour in older adults. *Journal of Advanced Nursing*, *31*(6), 1309-1315.

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, *23*(3), 393-404.

Shaw, M. E., & Shaw, L. M. (1962). Some effects of sociometric grouping upon learning in a second grade classroom. *The Journal of Social Psychology*, *57*(2), 453-458.

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, *124*(2), 240-261.

Starkey, K. (1998). What can we learn from the learning organization?. *Human Relations*, *51*(4), 531-545.

Taylor, B. (2003). Identifying and reducing nurse-nurse horizontal violence and bullying through reflective practice and action research in an Australian hospital. *Violence in nursing*, 177-197.

Ter Huurne, E. F., Griffin, R. J., & Gutteling, J. M. (2009). Risk information seeking among US and Dutch residents: An application of the model of risk information seeking and processing. *Science Communication*, 1-23.

Tuckman, B. W., & Jensen, M. A. C. (1977). Stages of small-group development revisited. *Group & Organization Management*, *2*(4), 419-427.

Weiss, H. M. (2002). Deconstructing job satisfaction: Separating evaluations, beliefs and affective experiences. *Human Resource Management Review*, *12*(2), 173-194.

Winterman, P. (2016, may 20). Vernieuwing en betere politiecultuur nodig. *The AD*. Retrieved from http://www.ad.nl

Wright, T. A., & Cropanzano, R. (2000). Psychological well-being and job satisfaction as predictors of job performance. *Journal of Occupational Health Psychology*, *5*(1), 84-94.

Zeeuw, H. de (2016, march 2). Het ziekteverzuim bij de politie neemt flink toe. *The NRC*. Retrieved from https://www.nrc.nl/

Appendix I

Rapport Nationale Politie

Organisaties zijn effectiever wanneer werknemers zich veilig voelen om elkaar aan te spreken over fouten of wangedrag. Deze mate van veiligheid wordt psychologische veiligheid genoemd. Dit onderzoek kijkt naar factoren die van invloed zijn op de psychologische veiligheid die politieagenten ervaren op de werkvloer, en daarnaast naar de factoren die invloed hebben op de verandering van deze psychologische veiligheid. Deze factoren worden onderzocht in het kader van een team-building interventie die is gehouden in drie basisteams van de Nederlandse Nationale politie.

Vooraf en na afloop de interventie zijn vragenlijsten verstuurd naar de deelnemers. Het doel van de interventie was om meer vertrouwen en veiligheid te creëren onder medewerkers en om de verbintenis met organisatie te vergroten. De resultaten van de vragenlijsten zijn aangevuld met interviews met deelnemers uit één van de basisteams.

Uit de resultaten van dit onderzoek blijkt dat steun van de organisatie, cohesie binnen het team en werk-gerelateerde self-efficacy overtuigingen positief gerelateerd zijn aan psychologische veiligheid. De verandering van psychologische veiligheid blijkt positief gerelateerd te zijn aan interventie-gerelateerde self-efficacy overtuigingen. De verandering in psychologische veiligheid lijkt echter kleiner naarmate de deelnemers ouder zijn. Ook is de verandering in psychologische veiligheid afhankelijk van de ervaren psychologische veiligheid vooraf aan de interventie. Uit de interviews blijkt dat veel deelnemers de psychologische veiligheid voor de interventie niet als risico ervaren, hetgeen het gebrek aan een positieve verandering zou kunnen verklaren. Tot slot blijkt uit de interviews dat de mensen die voor medewerkers van een basisteam bekend staan als enthousiaste, openhartige medewerkers, ook de mensen zijn die een belangrijke rol kunnen spelen bij het verbeteren van de psychologische veiligheid.

Voor het verbeteren van de psychologische veiligheid buiten de team-building interventies, is het van belang dat medewerkers steun ervaren vanuit de organisatie. Deze steun kan het beste worden uitgedragen door leidinggevenden van de kleinere teams binnen het basisteam. Hierbij is positieve coaching belangrijk, waarbij medewerkers meer vertrouwen moeten krijgen in hun vermogen om de taken van het politiewerk uit te voeren. Leidinggevenden zouden in het bijzijn van andere werknemers fouten kunnen toegeven, waardoor andere werknemers kunnen ervaren dat het niet erg is om fouten te maken en deze vervolgens te bespreken. Daarnaast is het belangrijk dat complimenten en beloningen van leidinggevenden, door medewerkers worden ervaren als persoons-gericht en niet als algemene waardering.

De cohesie binnen een team kan worden vergroot door middel van team-activiteiten waarbij haalbare doelen worden gesteld. Deze activiteiten kunnen zich richten op het verbeteren van de interpersoonlijke relaties, of op het creëren van een sociale identiteit als lid van het team.

Het verbeteren van werk-gerelateerde self-efficacy overtuigingen komt voornamelijk voort uit het vergroten van de ervaren steun vanuit de organisatie. Hierbij is het van belang dat leidinggevenden op de hoogte zijn van de thema's waar medewerkers mee worstelen, om zo training en advies op maat te kunnen geven. Door middel van open communicatie en aanwijsbare personen waar mensen naar toe kunnen stappen met een bepaalt probleem, zouden medewerkers meer vertrouwen kunnen ontwikkelen in hun eigen vermogen.

Met betrekking tot de team-building interventies zouden basisteams vooraf moeten zorgen dat medewerkers het belang inzien van psychologische veiligheid. Hierbij kunnen voornamelijk de enthousiaste en openhartige medewerkers (change agents) worden ingezet.

Tijdens de team-building interventie is het belangrijk dat alle medewerkers van het basisteam aanwezig zijn. De leidinggevenden en change agents kunnen vooraf andere medewerkers enthousiast maken, zodat er meer draagvlak ontstaat voor de interventie.

Tijdens en na de interventie is het belangrijk dat alle medewerkers, maar vooral ouderen, concrete tools meekrijgen om ook buiten de interventie psychologische veiligheid te blijven promoten. Een suggestie zou kunnen zijn om tijdens teamvergaderingen tijd in te plannen waarin iedereen veilig kan vertellen waar hij of zij op dat moment mee worstelt, of juist om positieve thema's te bespreken.

Uit dit onderzoek blijkt dat een de ervaren psychologische veiligheid na de interventie voor bepaalde deelnemers is toegenomen. Dit onderzoek leent zich echter niet voor causale gevolgtrekkingen, waarbij volgend onderzoek zich hier wellicht op zou kunnen richten.