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Establishing Psychological Safety in Teams and the Role of Vulnerability and Inclusive Leadership

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### Abstract

**Introduction.** Psychological safety is defined as feeling able to show and express yourself without fear of negative consequences to self-image, status or career and is seen as the foundation for high performing teams. Inclusive leadership – openness, accessibility, availability – and vulnerability are identified as two important factors in the creation of a climate of psychological safety. The goal of this research is to show the effectivity of the Natural Leap, a leadership program by de Transformatie Groep by showing an increase in psychological safety, inclusive leadership and vulnerability.

**Method.** Data was collected from employees of Ahold (N=70). This included 28 managers and 48 of their team members, only the managers participated in the Natural Leap.

Psychological safety, inclusive leadership and vulnerability were measured before and after the end of the Natural Leap. Additionally, four team members and their managers were interviewed.

**Results.** Data analysis revealed a significant increase in psychological safety, inclusive leadership and vulnerability. Vulnerability predicted psychological safety and inclusive leadership may predict psychological safety but results were inconclusive.

**Discussion.** We conclude that the Natural Leap was indeed an effective leadership program. As it succeeded in increasing the level of psychological safety, vulnerability and inclusive leadership. Suggesting that openness, accessibility, availability and willingness to show vulnerability are important for leaders looking to establish a climate of psychological safety.

*Keywords:* psychological safety; vulnerability; inclusive leadership; open; available; accessible; high performance; teams; intervention; leadership program; trust and safety; Lencioni

## Establishing Psychological Safety in Teams and the Role of Vulnerability and Inclusive Leadership

In today's organisations much work is accomplished collaboratively, which involves integrating perspectives, sharing ideas and information, and coordinating tasks. This collaboration often takes place at a team level. Teams are defined by the necessity for different individuals to work together to achieve a shared goal (Hackman, 1987). Working in teams is not always easy, different teams show great variation in their effectivity and performance output (Hackman, 1990). Edmondson (2004), has argued that psychological safety plays an important role in this process. Psychological safety describes a team climate characterized by interpersonal trust and mutual respect in which people feel comfortable being themselves and dare to take interpersonal risks. Previous research (Edmondson, 1999; 2003; Baer & Frese, 2003; Brown & Leigh, 1996) has linked psychological safety with better organisational learning outcomes and increased performance, making this topic relevant and interesting for companies looking to work on the team dynamics within their board or management teams and simultaneously increase their effectivity. Which brings us to *de Transformatie Groep*.

### **De Transformatie Groep**

De Transformatie Groep (DTG) is a consultancy firm in the field of leadership and organizational culture and they believe leadership is about making connections. Every program at the transformation group starts with a tough problem or a big ambition. The work that is done at the transformation group is diverse, as such that they are not really traditional consultants or trainers. Meaning that they do not train their customers in tangible skills, or specifically tell them how to behave. In their own words, they facilitate dialogue and bring people in connection with themselves and others. The program that will be studied in this research is called *the Natural Leap*. The foundation of this and virtually every DTG program is a base of trust and safety. Therefore this will be the main focus of this study. The scientific translation of a base of trust and safety would be psychological safety (Edmondson, 1999) and these two terms will be used interchangeably. The Natural Leap is a program for top managers and talents designed to guide them to a higher level of (personal) leadership. The DTG approach is defined by a number of elements. First and foremost, they believe leadership is about making connections. The sessions take place in a natural environment and nature is viewed as a facilitator of the process and as a gateway to connectivity. The consultants of DTG mainly act as facilitators, hence teaching hard tangible and measurable skills are not part of the process. The Natural Leap uses these elements to help the participants

find a deeper connections, with themselves and others. In order to enable them to lead themselves and subsequently lead others. This connection is obtained by, for example, having group sessions where participants are asked to share their personal background in a life story dialogue. In this sense showing vulnerability enables people to engage in deeper connections and this closely linked to the a base of trust and safety. The whole process is consolidated and facilitated by walking and being out in nature. Experiences in nature have been shown to have the potential to transform leaders (Van Droffelaar & Jacobs, 2017).

The objectives of this research are to show that the program is indeed effective and to test a model of the mechanism behind the program. In essence this is an attempt to provide what has been proven in practice with a solid theoretical basis and empirical support. In addition the current research addresses the increasing importance of evidence informed and evidence based practices.

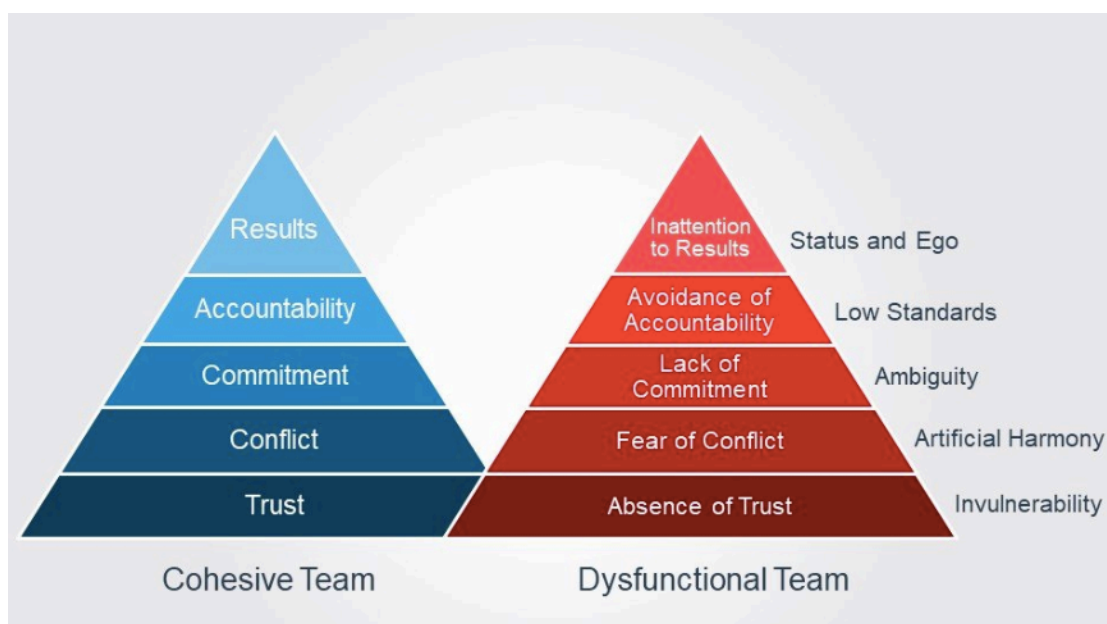


Figure 1: Lencioni's pyramid of high performance

**From Theory to Practice.** The theoretical base of the interventions at the transformation group can, amongst others, be found in the work of Lencioni (2002). In his book *The Five Dysfunctions of a team* Lencioni builds a model which explains the (dys)functionality of teams, as shown in Figure 1. Trust and safety lies at the base of every high performing team. Trust and safety enables team members to deal with conflict in a healthy manner and leads to better problem solving. This in turn leads in commitment, accountability, and finally results in high performance. The model also mentions of vulnerability, as such that an absence of trust leads to unwillingness to show vulnerability

which hinders the team performance. The concept of vulnerability will be explored in depth later. This model has proven to be effective in practice by DTG. There is a clear connection between the pyramid of Lencioni and concept of psychological safety, which will be illustrated below.

**Psychological Safety.** The term psychological safety was first introduced by Schein and Bennis (1965) as an essential part of the “unfreezing” process required for organizational learning and change. They hypothesized that psychological safety reduced perceived threats, removes barriers to change, and creates a context which encourages experimentation and tolerates failure without punishment or guilt. Kahn (1990) proposed that psychological safety was a condition necessary for work engagement. His definition: “feeling able to show and employ one’s self without fear of negative consequences to self-image, status or career” (p.708). Edmondson (2004) describes psychological safety as individuals’ perceptions about the consequences of interpersonal risks in their work environment. It consists of taken-for-granted beliefs about how others will respond when one puts oneself on the line, by asking questions, seeking feedback, reporting a mistake or proposing a new idea. Psychological safety is becoming increasingly relevant in literature on organisational work teams. As such that more work in today’s organisations is accomplished in a team structure, involving sharing information and ideas, integrating perspectives, and coordinating tasks. A team is viewed as psychologically safe when team members believe that taking an interpersonal risk, like asking for feedback or help, or admitting an error will not have any negative personal consequences (Edmondson, 2004). Team members are not afraid of being bullied, made ridiculous or penalised when they speak up about something. Hence, they feel that they can truly be themselves, contrary to teams where psychological safety is low. Team members who feel unsafe will avoid taking risks such as openly admitting errors in fear of punishment or embarrassment (Hofmann & Stetzer, 1998). In essence, this illustrates where theory meets practice (the work of DTG). As DTG believes that a base of trust and safety is of paramount importance. A base of trust and safety allows advancement towards the desired direction, or more specifically increased team performance. Thus psychological safety will be the focus of the current research, as an attempt to gain insight into psychological safety and how it is established.

**Psychological Safety and Team Performance: How Trust and Safety Leads to Better Results.** The practical relevance of the current research is derived from the link between psychological safety and increased team performance. Baer and Frese (2003) took a closer look at the relation between psychological safety and firm performance. They proposed that employees working in an organisation with a climate that was non-threatening and

supportive were more likely to take the risk of proposing a new idea than in an environment where “proposing a new idea will lead to an attack, to him or her being censored, ridiculed or penalized...” (West, 1990, p.312). In other words, organizations with a climate for psychological safety will increase learning behaviour and the use of employees’ creative potential. The scientific literature provides a number of potential mechanisms explaining the relation between psychological safety and increased performance; ease and reduced risk in presenting new ideas in a safe climate (Edmondson, 1999; West, 1990); better team learning (Edmondson, 1999); higher level of job involvement and exertion of greater effort, and smoother collaboration in solving problems (Brown & Leigh. 1996). Baer and Frese (2003) tested this by measuring psychological safety, self-reported firm goal achievement and firm profitability in 47 mid-sized German companies and found that psychological safety does indeed increase firm performance. This illustrates the connection between psychological safety and Lencioni’s model (2002). As such that it describes how trust or psychological safety leads to results or team performance.

Admittedly, team performance is an interesting and important factor, however it will not be tested in the current research design, because we feel that it is beyond the scope of the current research. Different kinds of teams with different kinds of performance output will be examined. For example, a treasury manager and a coffee factory director, making it challenging to measure and compare their performance . Moreover, the core focus of the natural leap program lies not with performance. Rather, the core of the program is trust and safety, hence the focus of this research will be on psychological safety.

**How to Create Psychological Safety: Inclusive Leadership.** Admittedly, the internal climate of a team is influenced by multiple factors including informal group dynamics, use of practice fields, supportive organisational context, task design, goal clarity, resources, organisational climate and personality traits (Edmondson, 2004; Mogelof & Edmondson, 2006). Nevertheless, this study will focus on team leader behaviour because the programs at the transformation group largely evolve around team leaders.

Team leader behaviours have, in general, been shown to affect the internal dynamics of a team, in particular influencing team climate and learning orientation (Baker, Murray, & Tasa, 1995; Edmondson, 1999; Hult, Hurley, Guinipero, & Nichols, 2000; Madhavan & Grover, 1998; Norrgren & Schaller, 1999; Shortell, Rousseau, Gillies, Devers, & Simons, 1991; Yukl, 1994; Zimmerman et al., 1993). Team members are highly attuned to leader behaviours and draw information from leader actions about what is expected and acceptable in team interactions (Tyler & Lind, 1992). If a leader assumes a defensive, unsupportive or authoritarian stance, team members are less likely to feel that speaking up in the team is safe.

In contrast, if a leader is supportive, democratic and welcomes questions and challenges, team members are likely to feel greater psychological safety in the team and within their interactions with each other (Nembhard & Edmondson, 2006).

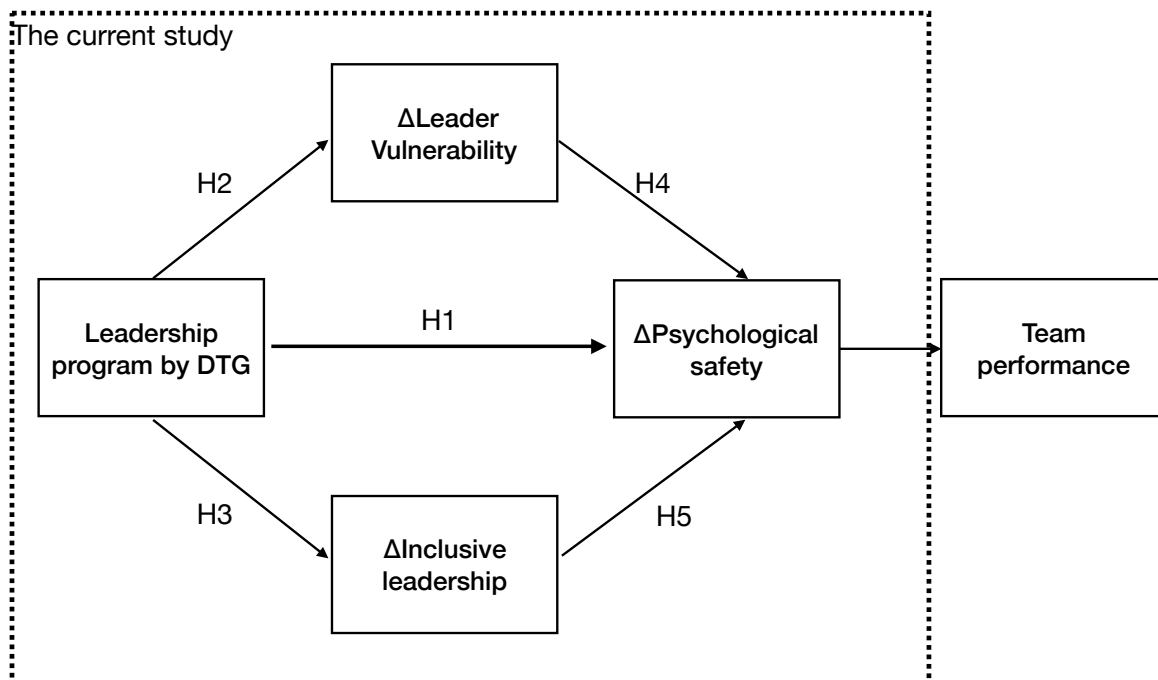
Research suggests that leader behaviours contribute to the perceptions of psychological safety (Edmondson, 1999; Nembhard & Edmondson, 2006; Carmeli, Reiter-Palmon & Ziv, 2010). Specifically, Edmondson (2004) proposed that leaders showing openness, availability and accessibility, are likely to facilitate the development of psychological safety with a team. This proposition will be tested in the current research. Carmeli and colleagues (2010) researched inclusive leadership and psychological safety. They developed a questionnaire and grouped openness, availability and accessibility together under the concept of inclusive leadership. They found that inclusive leadership was positively related to psychological safety. Leaders are able to encourage team members to come up with new ideas and take risks by communicating the significance of such behaviours and assuring team members that they will not suffer negative consequences from such behaviours. Being accessible, available and open permits leaders to communicate such expectations. If the leader is open, listens to team members and is inclined to discuss new opportunities and ways for achieving goals, team members are probable to feel that it is safe to bring up new ideas and take risks involved in coming up with ideas that defy the norm. Edmondson's (2004) theory about these leadership behaviours and their proposed effects on psychological safety is consistent with other research that pointed to behaviours that signal leader benevolence and leader support, increase trust (Burke, Sims, Lazzara, & Sales, 2007).

**Going Beyond the Existing Literature: Vulnerability.** "Vulnerability is the absolute heartbeat of innovation and creativity. There can be zero innovation without vulnerability" is the argument made by Brené Brown in her popular TED talk on vulnerability and leadership (Brown, 2010). Brown argues that fear of expressing vulnerability, admitting to and showing personal limitations and weaknesses, stops people from taking risks as they are scared to make mistakes and fearful of being seen as someone who fails. Consequently, to prevent showing these personal limitations and displaying vulnerability, people become risk averse and will be less inclined to come up with new ideas or openly admit to mistakes. Which is exactly what happens when team psychological safety is low (Edmondson, 1999). DTG also argues that showing vulnerability is of paramount importance for developing psychological safety within teams. Showing vulnerability is a vital element of the Natural Leap.

Consequently this research will also explore the effects of leader vulnerability on psychological safety. In this sense the current research will add to the existing literature as such that relatively little research has been done on the positive effects of showing

vulnerability. Answering the call of Nienaber, Hofeditz and Romeike (2015), who argue that there are only a few studies that take the concept of vulnerability into account while no single study explicitly addresses the role vulnerability plays. Bunker (1997) argued that: “personal vulnerability emerges as a core competency that lies at the heart of helping leaders understand and respond to the needs of others. Expressing vulnerability becomes a leadership tool when it opens the door to connecting with others at the level of basic humanness.” (p.124). Nienaber and colleagues (2015) argued that the expression of vulnerability is a key element in creating trust and safety for team members. By displaying vulnerability, leaders show that making mistakes is acceptable, which decreases the fear of risk taking. Showing vulnerability signals that leaders want and appreciate the input from followers, which results in members feeling safe to speak up and propose new ideas (Hu, Erdogan, Jiang, Bauer & Liu, 2017). Additionally, leader vulnerability includes admitting that as a leader, one does not necessarily know everything or does everything correct. Leaders who show vulnerability will admit that they also make mistakes and are often not sure about what decision to make (Ancona et al., 2007). This signals to followers that making errors is not wrong. As a consequence, followers will not be afraid of rejection for admitting to a mistake or coming up with a new idea (Edmondson, 1999).

*Figure 2: The conceptual model*





## The Current Study

The sample for this study will be drawn from Ahold Delhaize. Ahold is a large corporation with multiple brands and more than 200,000 employees worldwide. The Natural Leap was designed by DTG, for Ahold. During the Natural Leap program, the participants partake in multiple sessions in different locations in nature, the final session being a four day trail in the Swiss alps. During the trail, phones and watches are confiscated, cutting the participants off completely from the outside world. Participants are challenged to open up and show vulnerability by engaging in self disclosure. Allowing them to obtain deeper connections with themselves and others. The foundation of the program is a base of trust and safety, hence the expectation that the leadership program will increase psychological safety. The literature suggests that psychological safety is increased by inclusive leadership (Carmeli et al., 2010; Edmondson, 2004) and vulnerability (Nienaber et al., 2015). The current study will assess whether psychological safety will be increased by the Natural Leap and if this increase can be predicted by vulnerability and inclusive leadership. The following hypotheses have been formulated.

Hypothesis 1: The Leadership program by DTG will increase psychological safety

Hypothesis 2: The Leadership program by DTG will increase leader vulnerability.

Hypothesis 3: The Leadership program by DTG will increase inclusive leadership.

Hypothesis 4: The expected increase in vulnerability will be positively related to the expected increase in psychological safety.

Hypothesis 5: The expected increase in inclusive leadership will be positively related to psychological safety.

## Study 1

### Method

#### Participants

Data was collected from employees of Ahold Delhaize. Of the 160 employees contacted, 107 agreed to participate in the study (66.9%). Of these 107 participants, 70 (43.8% of total approached) completed both the first and the second questionnaire. The final sample consist of 48 men (68.6%) and 22 women (31.4%), N=70. Age ranged from 23 to 58 ( $M = 36.9$ ,  $SD = 8.11$ ). Experience ranged from 1 to 41 years ( $M = 10.7$ ,  $SD = 8.53$ ). This included 28 managers, 21 men (75.0%) and 7 women (25.0%) with age ranging from 29 to 52 ( $M = 37.7$   $SD = 5.89$ ) and experience ranging from 1 to 29 years ( $M = 9.9$   $SD = 8.01$ ). The

other 42 participants were team members working under the managers. This included 27 men (64.3%) and 15 women (35.7%) with age ranging from 23 to 58 ( $M = 36.3$ ,  $SD = 9.35$ ) and experience ranging from 1 to 41 years ( $M = 11.3$ ,  $SD = 8.93$ )

### **Procedure**

The research design is a field study using survey methodology which is a quantitative data collection method. The teams were selected using convenience sampling (Baker, 1999). The team leaders were approached during a session and were asked if they were willing to participate. Each manager was asked to fill in the questionnaire directly after the presentation. In addition, the managers were asked to have at least three people who they manage (team members) to fill in the questionnaire as well. This was done in order gain the perspective of both the team leader and the team members. The team members did not partake in the Natural Leap. Team members were approached via email. In order to strive for the highest possible response rate, a reminder was sent after two weeks and one week respectively for measurement 1 and 2.

The participants, completed a questionnaire designed to measure level of psychological safety, inclusive leadership and leader vulnerability. The managers then went on the trail as part of the natural leap program. The trail consisted of 4 days of hiking and councils in the Swiss Alps. During the four days, participants phones and watches were confiscated by DTG in order to cause a complete disconnect from the outside world. Through questions and assignments participants are guided to find the answer to their deepest personal and professional questions. There are councils for reflection and sharing of personal information and the hikes provide a physical challenge. After the trail, managers and team members were asked to fill in the same questionnaire again, in order to assess whether the level of psychological safety and leader showing vulnerability had changed. The data from the different teams, including managers and their team members was combined in one data set and data was not analysed at a team level. The response rate dropped significantly between the first and second measurement, creating large differences in team size. The smallest team was just one manager and the biggest team was one managers and twelve team members. Making it difficult to accurately compare the different teams.

### **Instruments**

All participants filled out the questionnaire in Dutch, therefore the psychological safety scale and the inclusive leadership questionnaire had to be translated. In order to make sure the translations were accurate, the back translation method was used. The questions were translated to Dutch by the researcher, subsequently they were translated back to English by a native speaker in order to assess whether the translation was accurate. Adjustments were

made where needed. The questionnaire consisted of three scales: the psychological safety scale (Edmondson, 1999), inclusive leadership (Carmeli et al., 2010) and the leadership vulnerability scale (Van Bunderen, 2018). All questionnaire items are shown in Appendix I.

**Psychological safety.** Psychological safety, at both T and T2, was measured with the psychological safety scale (Edmondson, 1999). This scale assesses the extent to which a member in a team feels psychologically safe to take risks, speak up, and discuss issues openly. This scale consists of seven items, responses were rated on a five point likert scale, from 1 (*Totally disagree*) to 5 (*Totally agree*). A sample item: *It is difficult to ask other members of this team for help* (reverse coded). The Cronbach alpha for this measure was .63, which is below the standard .70. Analyses showed no possibility to increase the internal consistency by deleting items. Item scores were averaged into a psychological safety score, a high score indicates a high level of psychological safety.

**Inclusive leadership.** Inclusive leadership, at both T1 and T2, was measured using the inclusive leadership scale (Carmeli et al., 2010). This measure assesses three dimensions of inclusive leadership: openness, availability, and accessibility. The scale consist of nine items, three for each component. Responses were rated on a five point likert scale from 1 (*Totally disagree*) to 5 (*Totally agree*). A sample item of openness: *The manager is open to hearing new ideas*. A sample item of availability: *The manager is available for consultation on problems*. A sample item of accessibility: *The manager is accessible for discussing emerging problems*. The Cronbach alpha for this measure was .78. Item scores were averaged into an inclusive leadership score, a high score indicates a high level of inclusive leadership.

**Vulnerability.** Vulnerability, at T1 and T2, was measured using the vulnerability scale (Van Bunderen, 2018). This measure assesses the extent to which a the team leader shows vulnerability towards the team. The scale consists of six items. Two item were removed, as the original scale contained seven items. This was done because the questionnaire couldn't be too time consuming as Ahold is a client of DTG. Responses were rated on a five point likert scale from 1 (*Totally disagree*) to 5 (*Totally agree*). A sample item: *My supervisor never shows a sign of weakness* (reverse coded). The Cronbach alpha for this measure was .88. Item scores were averaged into a vulnerability score, a high score indicates a high level of vulnerability.

### **Statistical Analysis**

Data-analysis was performed using SPSS 24.0. A mixed measures MANCOVA was used to assess whether there has been an increase in psychological safety, vulnerability and inclusive leadership, whilst controlling for age. A hierarchal multiple regression was conducted to see if psychological safety was predicted by vulnerability and inclusive

leadership. Differences between managers and team members have been explored using t-tests. G\*Power was used to calculate the required number of participants for this study. For the regression we need 36 participants for a power of .80, for a medium sized effect  $F^2 = .30$  in a model with two predictors. For the MANCOVA we need 90 participants for a power of .80, for a medium sized effect  $F^2 = .30$ . Acknowledging that we did not succeed in obtaining the desired power level at 90 participants as the final sample consisted of 70 participants.

## Results

### Descriptive Statistics

Table 1 displays the average scores at the first and second measurement. Independent sample t-tests were used to test whether there was significant difference in the scores of managers (n=28) and team members (n=42). No significant differences were found.

Table 1

#### *Descriptive Statistics*

	Managers	Team members	Overall
	M (SD)	M (SD)	M (SD)
Psychological Safety T1	3.75 (0.54)	4.06 (0.39)	3.93 (0.48)
Psychological Safety T2	3.90 (0.40)	4.04 (0.48)	3.99 (0.45)
Vulnerability T1	3.82 (0.50)	3.59 (0.63)	3.68 (0.59)
Vulnerability T2	3.84 (0.48)	3.71 (0.61)	3.77 (0.56)
Inclusive Leadership T1	4.30 (0.39)	4.29 (0.45)	4.28 (0.42)
Inclusive Leadership T2	4.34 (0.51)	4.34 (0.43)	4.34 (0.46)

Table 2 displays the correlations between the three main variables and age and experience. As expected psychological safety correlates with vulnerability and inclusive leadership at both the first and the second measurement. Psychological safety unexpectedly correlates with experience at T1. Finally, vulnerability surprisingly correlates with age and experience at T2, but not at T1.

Table 2

*Correlations among the study variables*

Variable	1	2	3	4	5
1. Psychological Safety	.49**	.42**	.61**	-.09	.01
2. Vulnerability	.25*	.55**	.52**	.36**	.25*
3. Inclusive Leadership	.33**	.52**	.68**	-.29	-.13
4. Age	.14	-.13	-.07	-	.62**
5. Experience	.29*	-.20	-.12	.62**	-

Note. Values below the diagonal represent correlations between the variables at T1. Those above the diagonal represent correlations between the variables at T2, and values on the diagonal represent correlations between the variables at T1 and at T2

\* $p < 0.05$ ; \*\* $p < 0.01$

### Main Analyses

To determine whether there has been a significant increase in psychological safety, vulnerability and inclusive leadership between T1 and T2 whilst controlling for age, a mixed method MANCOVA was conducted. Before conducting the MANOVA the data were examined to ensure all of its underlying assumptions<sup>1</sup> were met. Age was added into the model due to the correlation between vulnerability and age. The MANCOVA results show that there was a significant change over time,  $F(3, 64) = 3.53, p = .020, \eta^2 = .14$ . There was a significant increase in psychological safety before the intervention and after the intervention,  $F = 4.52, p = .037, \eta^2 = .07$ . There was a significant increase in vulnerability before the intervention and after the intervention,  $F = 4.61, p = .036, \eta^2 = .07$ . There was a significant increase in inclusive leadership before the intervention and after the intervention,  $F = 7.69, p = .007, \eta^2 = .11$ . In summary, these results have confirmed hypothesis one, two and three.

Correlations for the delta scores of all three variables were calculated.  $\Delta$ Psychological safety correlates with  $\Delta$ vulnerability,  $r(68) = .353, p = .003$  but not with  $\Delta$ inclusive leadership  $r(68) = .193, p = .109$ .  $\Delta$ Vulnerability correlates to  $\Delta$ inclusive leadership  $r(68) = .538, p < .001$ . Experience ranged from 1 to 41 years ( $M = 10.74, SD = 8.53$ ). To test whether vulnerability and inclusive leadership had any predictive power on psychological safety, a

<sup>1</sup> Univariate normality was assessed with Shapiro-Wilk tests and boxplots, and could be assumed. Additionally, no multivariate outliers were found in the data, supporting the assumption of multivariate normality. Furthermore, the relationships that did exist between the variables were roughly linear and multicollinearity was not of concern. Finally, Box's  $M$  was non-significant, indicating that homogeneity of variance-covariance matrices should be assumed.

hierarchical multiple regression was conducted. Delta psychological safety was the dependent variable, delta vulnerability and delta inclusive leadership were the predictors. Again, age was controlled for. Prior to interpreting the results of the regression, several assumptions were evaluated.<sup>2</sup> On step 1 of the hierarchical multiple regression, age and gender accounted for a non-significant 5% of the variance in psychological safety,  $R^2 = .05$ , adjusted  $R^2 = .04$ ,  $F(1, 67) = 3.76$ ,  $p = .057$ . On step 2, delta vulnerability and delta inclusive leadership were added to the regression equation, and accounted for an additional 11% of the variance in psychological safety,  $\Delta R^2 = .11$ ,  $\Delta F(3, 65) = 4.38$ ,  $p = .016$ . In combination all predictors explained 16.6% of the variance in psychological safety  $R^2 = .16$ , adjusted  $R^2 = .13$ ,  $\Delta F(3, 65) = 4.30$ ,  $p = 0.08$ . Unstandardized ( $B$ ) and standardized ( $\beta$ ) regression coefficients for each predictor in the regression model<sup>3</sup> are reported in Table 3. Further inspection of the coefficients tells us vulnerability predicted psychological safety, but inclusive leadership did not.

Table 3

*Unstandardized (B) and Standardized ( $\beta$ ) Regression Coefficients for  $\Delta$ Vulnerability and  $\Delta$ Inclusive Leadership Predicting  $\Delta$ Psychological Safety*

Variable	$B$ [95% CI]	$\beta$	$R^2$
			.166
Age	-.010 [-.024, .004]	-.170	
Vulnerability	.315* [.082, .547]	.364*	
Inclusive Leadership	-.064 [-.428, .300]	-.048	

\* $p < 0.05$

<sup>2</sup>First we assessed the ratio between the cases and the predictors by the standard supplied by Tabachnick and Fidell (2007). They suggest that  $N$  should be  $50 + 8(k)$  for a medium sized effect. For the current model that would be an  $N$  of 66, thus this assumption has not been violated. Second, stem-and-leaf plots and boxplots indicated that each variable in the regression was normally distributed, and free from extreme univariate outliers. Third, inspection of the normal probability plot of standardized residuals as well as the scatterplot of standardized predicted values indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. Fourth, Mahalanobis distance did not exceed the critical  $\chi^2$  for  $df = 2$  (at  $\alpha = .001$ ) of 13.82 indicating that multivariate outliers were not of concern. Fifth, relatively high tolerances indicated that multicollinearity would not interfere with our ability to interpret the outcome of the MRA.

<sup>3</sup> Apart from controlling for age, we also assessed a model in which experience was controlled for. However, the model with age proved to be a better fit.

## Study 2

### Introduction

In addition to the questionnaire, exploratory interviews were conducted with one of the managers and four of his team members. The main goal of the interviews was to add a qualitative layer to the current research. The programs of DTG are of a rather qualitative and interpersonal nature. Therefore, these interviews would allow for some more insight into how a climate of psychological safety, inclusive leadership and vulnerability is perceived and experienced by a team. The interviews also allow verification of the theoretical reasoning used in this research.

### Method

One of the managers participating in the Natural Leap volunteered his team to serve as a case study. In total 11 team members from the team filled in the questionnaire. Age in the team ranged from 23 to 50 ( $M = 37.17$   $SD = 7.48$ ). The team members were initially approached by the team leader, followed up by the researcher via email. Five interviews were conducted, one with the manager and four interviews with team members, this included four men and one woman. The team is responsible for the tactical supply chain management in a large distribution centre. The interviews were conducted at the distribution centre, and lasted approximately one hour each. The interview was semi-structured and for each of the variables two questions were prepared. An example: “How would you describe the team climate related to trust and safety?”. The rest of the information was obtained by asking follow up questions. The questions are disclosed in Appendix II. The interviews were conducted in Dutch, hence all the quotes have been translated and paraphrased.

### Results and Discussion

“Vulnerability creates the base for an environment of trust and safety” was a quote given by one of the interviewees. Being able to openly admit to mistakes and ask for help positively contributes to a feeling of trust and safety within the team. Individuals who indicated that they felt safe to show vulnerability in the team gave a relatively high rating of team psychological safety. Whereas individuals who indicated that they felt less comfortable to show vulnerability gave a relatively lower rating of team psychological safety. This finding is line with the literature and regression analysis regarding vulnerability and psychological safety (Nienaber et al., 2015). Interviewees described the level of trust and safety within the team as good, both before and after the intervention.

Quoting another interviewee: “Trust and safety is the foundation which allows people to work together effectively.” This is consistent with the reasoning used in the introduction (Edmondson, 1999; 2004; Baer & Frese, 2003). Vulnerability is about being able to accept criticism, admit to mistakes and being open to possible ways to do things better or more efficient. This in term was described as being closely tied into inclusive leadership. As being open, accessible and available are the core components of inclusive leadership. Hence the team leader plays a crucial role in this process as a model (Sims & Manz, 1982). As such that if the team leader signals the virtue of being open, team members are more likely to show similar behaviours. Meaning that they are more likely to openly admit to mistakes, thus showing vulnerability and hence contributing to a climate of psychological safety. This is illustrative of the connection between psychological safety and inclusive leadership as described by the interviewees.

Team members indicated that showing vulnerability could also harm the climate of psychological safety. If vulnerability is not handled with the required sensitivity and sensibility it has dire negative consequences for the working relationship and the base of trust and safety. The sharing of private information that was supposed to remain private leads to a situation of distrust and low levels of psychological safety. Once trust has been broken, it is very hard to regain.

The perspective given by the team leader largely matched the perspectives as given by the team members. The descriptions the leader gave of the level of psychological safety and vulnerability within the team were the same as the ones given by the team members. Data-analysis in study 1 already revealed that there was no significant difference between team leaders and team members. This is further supported by the data from the interviews, as both the team leader and the team members indicated the level of psychological safety was adequate. Furthermore, the team leader said that “Vulnerability is a very important theme, and I am openly able to admit I’m not perfect”. The team leader described his/her own leadership style as being very open, giving team members a lot of freedom to do things their own way. Again, this image was confirmed by the team members, showing the conformity between the perspective of the team leader and the perspective of the team members.

The relation between vulnerability, inclusive leadership and psychological safety is illustrated by the relation between the team members and the team leader. All interviewees indicated that they felt safe to show vulnerability and be honest and open about mistakes towards the team leader. This is perceived to have a strong positive contribution to the overall level of psychological safety within the team. This effect may be explained by the level of inclusive leadership shown by the team leader. Meaning that it is easier to show vulnerability



to a leader who is open, accessible and available. All interviewees described the team leader as open, available and accessible. Hence the overall positive evaluation of the level of psychological safety may be explained by the overall positive evaluation of the level of inclusive leadership shown by the leader and described by the team members.

### **General Discussion**

This research showed that the leadership program by DTG was indeed effective as a significant increase was detected in psychological safety, vulnerability and inclusive leadership. Furthermore an attempt was made to map the mechanism behind the program. More specifically to test a model of how psychological safety is created and the role vulnerability and inclusive leadership play in this process. A key contribution of the current study to the literature is our attempt explore the rather fuzzy concept of vulnerability (Nienaber et al., 2015) and offer an empirical account of the role of vulnerability in leadership and psychological safety. Furthermore we heeded the call of Edmondson (2004) to research the proposition that actions of team leaders – openness, availability and accessibility – promote team psychological safety.

The first three hypothesis have been confirmed, as the results indicated that there was a significant increase in psychological safety (H1), vulnerability (H2) and inclusive leadership (H1) after the trail, showing that the program was indeed effective. Hypothesis four has also been confirmed, as the increase in vulnerability shown by the team leader predicted the increase in psychological safety within the team. Results regarding hypothesis five were contradictory, as the data-analysis in study 1 did not indicate that inclusive leadership had predictive power on psychological safety. However, the descriptive statistics showed significant correlations between inclusive leadership and psychological safety. Similarly, data from the interviews in study 2 clearly described a relation between inclusive leadership and psychological safety as experienced within the team. Suggesting that there might be a relation between inclusive leadership and psychological safety, however caution is needed to interpret these results. We will first discuss the first three hypothesis before moving on to four and five.

**Theoretical and Practical Implications.** The increase in psychological safety, inclusive leadership and vulnerability may be attributed to three major elements of the trail: connectivity, mutuality and self-disclosure. Connectivity plays a central role in the work of DTG. To quote one of the partners: “Leadership is about making connections.” (D. Egeler, personal communication, July 9, 2019). Connectivity is defined as relationships that are open and encourage generativity (Dutton & Heaphy, 2003). For DTG, making connections is the

core of the program. The scientific literature also shows the importance of connectivity. Connectivity enables people to see the diverse influences that come from others as opportunities for learning and growth at work. It involves seeing the value in relationships for learning new things, generating new ideas and seeking opportunities to explore and grow, and truly paying attention to what is happening in front of you (Dutton & Heaphy, 2003). Connectivity is related to a safe environment for people to try new things and take risks which facilitate learning and growth. When there is connectivity people are more likely to feel comfortable to open up to new approaches, without fearing that their image and status will be damaged (Carmeli & Spreitzer, 2009). Thus the increase in psychological safety is attributed to connectivity as psychological safety was defined as: “feeling able to show and employ one’s self without fear of negative consequences to self-image, status or career” (Kahn, 1990). Similarly for inclusive leadership, as the increase in openness, accessibility and availability is related to being exposed to an environment where people are more likely to feel comfortable to open up (Carmeli et al., 2010). The impact of connectivity on psychological safety and inclusive leadership is strengthened by perceptions of mutuality. Mutuality is defined as: “Relating a shared activity in which the people involved are participating as fully as possible” (Miller & Striver, 1997. p. 43). Mutuality is especially salient in the trail, as the program really brings participants back to the basics. Accommodations are very basic, there is no access to internet, phones or watches. The days are filled with physically challenging walks through the mountains together as a group. These feelings of mutuality foster the connectivity within the group. Research shows that perceptions of mutuality increase the willingness of individuals to self-disclose (Jordan, 1991). Self-disclosure refers to the process of revealing personal information about oneself, including thoughts, feelings and experiences (Mathews, Derlega & Morrow, 2006) and is a vital part of the program. During the councils on the trail, participants are invited to show vulnerability by engaging in self-disclosure. As councils of self-disclosure are very prominent during the trail, the increase in vulnerability is attributed to these acts of self-disclosure.

In short we can conclude that the Natural Leap was indeed an effective leadership program. Our proposed explanation is the following. Connectivity is a vital part of the trail and a mechanism that enables individuals to feel psychologically safe and stimulates inclusive leadership (Edmondson, 1999; Carmeli, Brueller & Dutton, 2009; Carmeli et al, 2010). Mutuality is created by disconnecting from the outside world, being out in nature and being physically challenged together. Mutuality endorses connectivity and enables self-disclosure. Finally, acts self-disclosure enhance the willingness to show vulnerability (Greene, Derlega &

Mathews, 2006). Thus explaining how the Natural Leap increases psychological safety, vulnerability and inclusive leadership.

Moving on to hypothesis four, concerning the relation between vulnerability and psychological safety. Vulnerability becomes a tool for leadership when it opens the door the connecting with others (Bunker, 1997). Leaders shape the culture of communication and the culture within a team. Managers who explicitly demonstrate their own vulnerability by admitting mistakes, inviting questions and feedback, and responding non-defensively to questions reduce defensiveness (Edmondson, 2004). Disclosing personal vulnerability engenders the development of psychological safety. Effectively encouraging team members to willingly share their own thoughts and feelings and communicate more relevant and complete information about concerns than they would without such disclosure. (Mayer, Davis & Schoorman, 1995; Meyer, Le Fevre & Robinson, 2017). Thus explaining how vulnerability leads to psychological safety. This argumentation is also supported by the data from the interviews. Reciprocal disclosures not only build trust but increase the chances of effective concern resolution and thus increase team performance (Colquitt, Scott, & LePine, 2007). Effectively describing the model of Lencioni (2002), how vulnerability creates trust and safety, and how this in turn leads to higher performance. Implicating that vulnerability may play an important role in modern leadership.

The results regarding hypothesis 5 and inclusive leadership should be interpreted with caution as results were contradictory. We will first explain why initial analysis did not show a relation and next we will explain why there still might be a relation between inclusive leadership and psychological safety, based on the correlations and data from study 2. The first explanation why no initial relation was found is that leader inclusiveness is more influential in promoting perceptions of psychological safety when teams are not performing well (Hirak, Peng, Carmeli, & Schaubroeck, 2012). When a work environment is not functioning adequately, team members may become disoriented and uncertain about the work environment (Cameron, Sutton & Whetten, 1988; Weitzel & Jonsson, 1989; Whetten, 1988). Members of team who are lacking in performance may also lack understanding of cause and effect and consequently develop a less positive self-image in the work environment. This may cause them to become more sensitive to the cues provided by their managers, according to the plasticity hypothesis (Brockner, 1983). However, the participants in the current study primarily are a part of high performing teams, as that is a selection criterium for being allowed into the Natural Leap. Making them less susceptible to cues provided by their managers and thus explaining why initial result showed no relation between inclusive leadership and psychological safety. Second, the concept of inclusive leadership might be to

diffuse, as it contains three different elements. Openness might have a different interaction with psychological safety as compared to accessibility and availability, making it difficult to accurately predict psychological safety.

Data from study 2 however clearly did indicate a relation between inclusive leadership and psychological safety, and this was supported by the observed correlation between inclusive leadership and psychological safety. Inclusive leaders who appreciate the input of team members may give them a chance to contribute to generating, promoting and implementing useful ideas (Javed, Naqvi, Khan, Arjoon & Tayyeb, 2017). Such inclusive leaders contribute to a climate where team members' ideas and opinions are valued and respected. Inclusive leaders who exhibit openness and communicate the importance of innovation, give team members the feeling that they will not be punished in case of negative consequences (Walumbwa & Schaubroeck, 2009; Carmeli et al., 2010; Zhang, Tsui, & Wang, 2011). Thus there might be a relation between inclusive leadership and psychological safety, however more research is needed to further explore this relation.

### **Limitations and Future Research Directions.**

This study has several limitations which need to be acknowledged. First, there was no control group in the current study. A future study with a control group would make it possible to compare the effect of the intervention to a group of participants that did not undergo the intervention. This would provide more certainty on whether the predictive power could rightly be attributed to the intervention instead of other influences that co-occurred with the program.

Second, although we collected data at two points in time, it is not possible to infer cause-effect relations in our study. Further studies should pursue a longitudinal design, with multiple measurements after the intervention, to allow for stronger causal interpretations. On top of that, a point of criticism on programs like the Natural Leap is that it's effective in the moment. However, when participants return to their daily lives they tend to fall back into their normal behavioural patterns (Whelan et al., 2014). Underlining the need for longitudinal designs as there is an increasing need for interventions with sustainable effects over time. Having multiple measurements after the intervention would provide insight into when why the effects of interventions tend to diminish or disappear. Making it possible to start working towards interventions with sustainable effects over time.

Third, this research partly relied on self-reports, thus the results may be subject to common method bias (Conway, & Lance, 2010). Causing the results to be upwardly biased, thus incorrectly inflating the results. To counter this the perspective of the team members who

did not partake in the intervention was added. In addition, qualitative interviews were conducted to get a better comprehension of psychological safety, vulnerability and inclusive leadership. Future research should strive to assess the climate of psychological safety by observing the team in action. Or counter the common method bias by separating the measurement of the dependent and independent variables (Podsakoff, MacKenzie, Lee & Podsakoff, 2003).

Fourth, the current sample may be subject to a selection bias. Since all the data was collected from employees working under one corporation. On top of that, one a non-random selection of these employees has been made. Only high performing individuals are allowed to participate, limiting the ability to generalize the current results. In future research, different types of companies, through multiple layers within the organisation should be studied.

Fifth, team performance was not incorporated in the current model. The next step would be to test a more expansive model and test if an augmentation in psychological safety can be related to better team performance. A first step has been made to the explore the positive influence vulnerability can have on psychological safety and in leadership. Future research should also strive to gain a more comprehensive understanding of vulnerability.

Finally, future research should also strive to create a deeper understanding of the role of connectivity in leadership (programs). The current research made a first step in shedding light on the concept of connectivity. Other studies have already shown relations between the connectivity and positive organization outcomes such as thriving, innovation, learning and vitality (Carmeli & Spreitzer, 2009). More research is needed to explore the role of connectivity in leadership.

## **Conclusion**

This study provided one of the first empirical insights in the role of vulnerability in modern leadership and the establishment of psychological safety. The findings suggest that showing vulnerability as a leader helps fostering a climate of psychological safety. Data analysis revealed a correlation between inclusive leadership and psychological safety and this was supported by the data from the interviews. Suggesting that inclusive leadership may also play an important role in creating psychological safety, however this conclusion remains tentative as the results were inconclusive. More research is needed to further explore this relation. Finally, the most prominent finding to emerge from this study is that the Natural Leap is indeed an effective leadership program. As it succeeded in increasing the level of psychological safety as experienced by both team leaders and team members, by increasing

vulnerability and by increasing inclusive leadership. Hereby fulfilling the goal of helping the participants leap to a higher level of leadership.

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## Appendix I

**Psychological safety scale by Edmondson (1999)**

<b>English</b>	<b>Dutch</b>
If you make a mistake on this team, it is often held against you.®	Als je een fout maakt in dit team, dan wordt dit je vaak aangerekend. ®
Members of this team are able to bring up problems and tough issues.	Leden van dit team zijn in staat op problemen en lastige kwesties ter sprake te brengen.
People on this team sometimes reject others for being different. ®	Mensen in dit team wijzen anderen soms af omdat ze anders zijn. ®
It is safe to take a risk on this team.	Het is veilig om risico's te nemen in dit team.
It is difficult to ask other members of this team for help. ®	Het is moeilijk om andere teamleden om hulp te vragen in dit team. ®
No one on this team would deliberately act in a way that undermines my efforts.	Niemand in dit team zou bewust actie ondernemen om mijn inspanningen te ondermijnen.
Working with members of this team, my unique skills and talents are valued and utilized	In dit team worden mijn unieke vaardigheden en talenten op prijs gesteld en goed gebruikt. If you make a mistake on this team, it is often held against you.

**Leader Vulnerability scale by Van Bunderen (2018)**

My supervisor

Mijn leidinggevende

<b>English</b>	<b>Dutch</b>
Never shows a sign of weakness ®	Laat nooit een teken van zwakte zien®
Shows his/her/ weaknesses	Laat zijn/haar zwaktes zien
Is open about his/her insecurities	Is open over zijn/haar onzekerheden
Talks about his/her failures	Praat over zijn/haar mislukkingen
<del>Is open about his/her imperfections</del>	<del>Openbaart zijn/haar imperfecties</del>
Admits that he/she is not perfect	Geeft toe dat hij/zij niet perfect is
Shows his/her vulnerable side	Laat zijn/haar kwetsbare kant zien

**Inclusive leadership by Carmeli, Reiter-Palmon & Ziv (2010)**

<b>English</b>	<b>Dutch</b>
The manager is open to hearing new ideas (openness)	Mijn leidinggevende staat open om naar nieuwe ideeën te luisteren
The manager is attentive to new opportunities to improve work processes (openness)	Mijn leidinggevende heft aandacht voor nieuwe mogelijkheden om werkprocessen te verbeteren
The manager is open to discuss the desired goals and new ways to achieve them (openness)	Mijn leidinggevende staat open om de doelen van het team en nieuwe manieren om die doelen te bereiken te bespreken
The manager is available for consultation on problems (availability)	Mijn leidinggevende staat open voor overleg over problemen
The manager is an ongoing “presence” in this team – someone who is readily available (availability)	Mijn leidinggevende is gemakkelijk beschikbaar
The manager is available for professional questions I would like to consult with him/her (availability)	Mijn leidinggevende is beschikbaar voor professionele vragen die ik met hem/haar wil bespreken
The manager is ready to listen to my requests (availability)	Mijn leidinggevende is bereid om te luisteren naar mijn verzoeken
The manager encourages me to access him/her on emerging issues (accessibility)	Mijn leidinggevende moedigt mij aan om hem/haar aan te spreken als er een probleem is
The manager is accessible for discussing emerging problems (accessibility)	Mijn leidinggevende is toegankelijk voor discussie over opkomende problemen

## Appendix II

### Interview questions

#### *Psychological Safety*

“How would you describe the team climate related to trust and safety?”

“How is this climate established and what factors influence it?”

#### *Vulnerability*

“To what degree do you feel comfortable to show vulnerability within the team?”

“To what degree do you feel safe to openly admit to mistakes?”

#### *Inclusive Leadership*

“How would you describe your managers in terms of openness, accessibility and availability?”