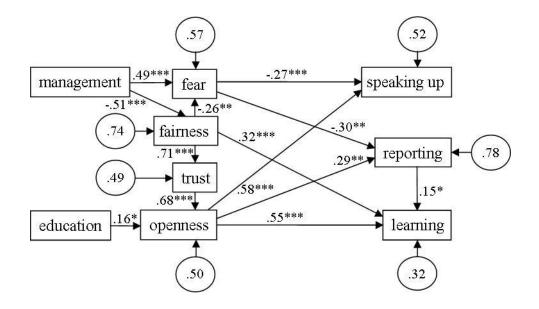


Psychologie Faculteit der Sociale Wetenschappen

Understanding Blame Culture in Healthcare

A quantitative model based on the Just/Blame Culture Questionnaire



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Date: 26-09-2016

Cognitive Psychology

Thesis M.Sc. Applied Cognitive Psychology

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Abstract

Background

Blame Culture is an important determinant of preventable hospital adverse events and deaths, by reducing openness about incidents and thereby inhibiting organizational learning. This study aims to define a model explaining the mechanism behind blame culture, based on a questionnaire which measures important aspects of blame culture described in literature.

Research question

What is the mechanism behind blame culture, based on psychometrically sound aspects of blame culture?

Method

131 hospital employees filled in the online Just/Blame Culture Questionnaire. A reliability analysis was executed on all used variables. With two multiple regression analyses was measured which aspects of blame culture predicted blame culture and learning. With a path analysis in R, the quality of the theoretical model of blame culture and the iteratively improved models was assessed. Semi-structured interviews were held to deepen understanding of the paths in the final path model.

Results

The internal consistency of the scales was improved by moving items between aspects of blame culture and by deleting items. The fit of the initial model was poor, after which relationships between Fear and Trust, Education and Fear, Speaking Up and Learning, and Learning and Trust were removed from the model. Arrows were added from Education to Openness, Fear to Speaking Up, Fairness to Learning and Fairness to Fear. The adjusted model had a good fit and was confirmed by the semi-structured interviews.

Conclusion

A final model of the aspects of blame culture was defined, which indicates that reducing blame culture in healthcare starts with fair treatment of employees by the management, which enhances trust and openness and subsequently increases the amount of speaking up and organizational learning. These insights can help in developing effective interventions for tackling blame culture in healthcare.

1. Introduction

Hospital incidents involving a certain 'blame culture' are a hot topic in the news (Franck, 2016; Knapton, 2016; Kreulen, 2016; Middleton, 2016; Van Yperen, van Sadelhoff & Strijker, 2016). Unfortunately, the medical sector is not faultless, and many medical errors occur yearly, sometimes with lethal consequences. Medical errors can be defined as deviations from standard practice with negative outcomes (Espin, Levinson, Regehr, Baker, & Lingard, 2006). The influential report 'To err is human' (Kohn, Corrigan, & Donaldson, 1999) led to a substantial increase in attention to preventable errors in healthcare. The report stated that preventable adverse events occurred in 2.9% to 3.7% of all hospital admissions in the U.S., costing the U.S. billions of dollars and thousands of lives every year. Adverse events are defined as 'unintended injuries that result in temporary or permanent disability, death or prolonged hospital stay, and are caused by healthcare management rather than the patient's underlying disease process'. Of these adverse events, 2.6% caused disabilities for life. Even more disturbing were the numbers on medical errors resulting in death. The writers of the report stated that each year in the U.S. more people died from medical errors than from motor vehicle accidents, breast cancer or AIDS. A recent study reviewed four studies providing data on the percentage of hospital deaths that could have been prevented in the U.S. in the years 2000 until 2008. They calculated an estimated number of preventable deaths a year of 251,454 people, based on the U.S. 2013 hospital admissions. This is 0.71% of all hospital admissions in the U.S. (Makary & Daniel, 2016). In the Netherlands the number of preventable deaths in healthcare has been studied as well. A monitoring study followed the occurrence of adverse events detected during or within 12 months after index admission within Dutch hospitals in the period of 2004 until 2012. The amount of preventable adverse events in all hospitalizations varied between 1.6% in 2012, 2.3% in 2004 and 2.9% in 2008. Of all hospital deaths, shockingly large amounts were associated with preventable medical errors: 2.6% in 2012, 4.1% in 2004 and 5.5% in 2008 (Langelaan et al., 2013; Zegers et al., 2008).

Why are these numbers so high? The earlier mentioned report by Kohn and colleagues stated that a shift needed to be made from blaming the individual who caused the adverse event to learning from the error and changing the system (Kohn et al., 1999). A high occurrence of blame culture in hospitals can keep employees from reporting errors and providing feedback or suggestions. Errors are not investigated thoroughly as should be done with a root cause analysis (Kaissi, 2006). This all leads to less openness and less organizational learning, which means the same errors will be made over and over again.

Furthermore, a blame culture inhibits innovation by keeping employees from generating new ideas, which inhibits organizational learning as well (Goh & Richards, 1997; Khatri, Brown, & Hicks, 2009). Not only patient safety suffers from this, but the medical staff will feel the consequences as well. An alternative for blame culture is defined as just culture, which entails an open atmosphere where errors are reported and not made again through organizational learning (Khatri et al., 2009).

1.1 Organizational learning

A very important term in studying blame culture and just culture is organizational learning, because it is seen as one of the most important factors influencing organizational safety (Akselsson, Jacobsson, Bötjesson, Ek, & Enander, 2012) and competence of hospital staff (Hoff, Pohl, & Bartfield, 2004). In a literature review, Shipton defined different types of organizational learning: individual learning within an organization versus learning at the organizational level (Shipton, 2006). In studying just and blame culture, the type focusing on organizational level based learning is most important, since these are organizational cultures. One definition of organizational learning as such is 'the principal means of achieving the strategic renewal of an enterprise' (Crossan, Lane, & White, 1999). Learning is seen as a process going from the individual level to the group level and finally to the organizational level; and possibly backward (4I Framework). The process starts with Intuiting: recognizing a pattern or possibilities at the individual level. When the individual continues to Interpreting, the insight is explained to oneself or someone else. Through Integrating, this knowledge is shared at the group level. Finally, Institutionalizing is the transfer of the insight into rules, systems or routines at the organizational level (Crossan et al., 1999). In trying to lower blame culture and heighten just culture, organizational learning is seen as the end goal. An organization that gives learning from mistakes priority can improve safety, leading to fewer incidents (Akselsson et al., 2012; Drupsteen, Groeneweg, & Zwetsloot, 2013).

Organizational learning specific to the healthcare context has everything to do with incident reporting and subsequently incident investigation. This can be compared to the 4I Framework earlier described. The process always starts with an incident, which needs to be recognized by an individual (Intuiting). The individual may then share this insight with others and eventually the individual or someone else may report it to the official reporting system (Interpreting). After reporting the incident, it needs to be investigated to find out what exactly went wrong and why. This knowledge needs to be shared with all people involved (Integrating). When the investigation is done correctly, the system can be adjusted

to prevent future similar incidents (Institutionalizing). The system can be further adjusted when there are still unsafe working conditions, by going through the same process again. This cycle is illustrated in Figure 1 (Cooke & Rohleder, 2006). In this figure, some important factors affecting the several steps in this cycle are provided. To report incidents, there needs to be willingness to report and the requirement to report. There are several reasons why employees would not be willing to report incidents, such as believing it will not make a difference, fear of legal consequences or perfectionism (Castel, Ginsburg, Zaheer, & Tamim, 2015).

To investigate incidents, there needs to be willingness to investigate (Cooke & Rohleder, 2006). Investigating incidents is time consuming and costly (Macrae & Vincent, 2014), so these barriers need to be overcome before an investigation can take place. Of course, a very important factor influencing all this is the organizational culture, so the extent of blame or just culture in the organization (Kaissi, 2006; Khatri et al., 2009).

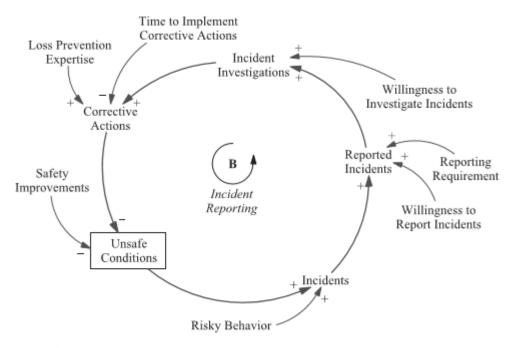


Figure 1. The incident reporting, investigating and learning system

1.2 Blame culture

To understand how to shift from a blame culture to a just culture, the mechanism behind the blame culture needs to be understood. By understanding this mechanism, crucial points of action can be discovered and effective interventions can be developed. Although there are articles describing aspects of blame culture or even articles stating a definition of blame culture, these descriptions are often not in line with each other or incomplete. One definition of blame culture is 'a tendency within an organization not to be open about

mistakes, suggestions and ideas, because of a fear of being individually held accountable for them' (Khatri et al., 2009). Reason, one of the first to mention blame culture, argues that the high amount of individual autonomy in Western cultures contributes to the development of a blame culture. When something goes wrong, Western people are taught to be individually responsible. This produces a habit to search for a culprit to blame when incidents happen (Reason, 1997). When blame is prevalent in the workplace, this will reinforce more blame. This is due to the fact that when an employee is blamed, he or she will try to protect the selfimage and avoid blame by blaming someone else (Fast & Tiedens, 2009; Mitchell, 2014). The goal of protecting the self-image can easily be adopted by colleagues and rapidly spread a culture of blame (Fast & Tiedens, 2009). A blame culture can be prevalent without employees explicitly blaming each other as well; the fear of being blamed is just as effective in constituting this culture (Gorini, Miglioretti & Pravettoni, 2012). The onset of blame culture can be as early as during the medical education stage, since this education is often mostly focused on increasing performance instead of increasing safety or organizational learning. Healthcare providers are taught to make no mistakes, but rather to show a degree of perfection in their work that is humanly impossible (Cresswell et al., 2013). This may lead to a fear of taking responsibility for errors, which in turn enhances blame culture (Mitchell, 2014).

There are many negative consequences to blame culture in an organization. First of all, when a blame culture is prevalent and incidents occur, the focus is on the one who caused the incident instead of the system that might be unsafe. Hereby, attention is drawn away from the cause of the incident and the system is not improved. Instead, there is made use of disciplinary actions, training or cautionary tales. These serve no effect rather than to demoralize employees (Kaissi, 2006). They try to protect themselves and blame others, and thus their attention shifts from patient safety to unnecessary actions like paperwork or currying favor (Khatri et al., 2009). Those who blame others can experience a decrease in health and well-being (Fast & Tiedens, 2009). Providing compassionate care becomes harder with a high prevalence of blame culture as well, since the experience of blame or threat can lead to compassion fatigue (Crawford, Brown, Kvangarsnes & Gilbert, 2014). Blame Culture has many more negative effects, like enhancing the occurrence of defensive medicine (Catino, 2009). This means that healthcare employees choose not to perform risky procedures or perform unnecessary procedures, both to decrease the amount of damage claims. Defensive medicine can endanger and harm patients, as well as increase healthcare costs enormously (Catino, 2009). All these negative consequences take up valuable time and

energy, which could have been directed towards analyzing the errors that are made and learning from them.

1.3 Just culture

For just culture the same stands as for blame culture: there are many definitions and theories, but they are not completely consistent. It is important to understand just culture, since this is supposed to be the ideal culture for an organization. Generally speaking, a just culture can be defined as a supportive environment in which concerns or dissent can be expressed and mistakes admitted without suffering ridicule or punishment. In this culture, incidents are identified, reported and investigated, in order to correct the system (Khatri et al., 2009). Medical errors are seen as system failures, which are important for the entire organization, because they teach important lessons (Sammer, Lykens, Singh, Mains, & Lackan, 2010). In short, where blame culture inhibits organizational learning, just culture enhances this. However, just culture is not solely the opposite of blame culture. In a just culture, fear of blame is replaced by the ability to be held accountable for mistakes. This way, healthcare employees stay precise and alert in their work, without letting the fear of being blamed for mistakes getting the best of them (Beyea, 2004).

1.4 Aspects of blame culture

Several aspects of blame culture are mentioned in the available literature. Ten of the most important ones are the following.

Management

The management has the power to extend contracts, fire employees, or set employees up against each other. This means that the management can have huge effects on the attitudes and behavior of employees, and on the atmosphere in their team. They can either enhance an atmosphere of fear or an atmosphere of openness and trust (Castel et al., 2015; Lowe, 2012). The management can also lead by example by providing efficient feedback and reporting incidents (Derickson, Fishman, Osatuke, Teclaw, & Ramsel, 2015) The typical management to create a blame culture is strict, demanding, controlling, and does not listen to the opinions of employees. A large amount of hierarchy and bureaucracy is also common in departments suffering from blame culture. On the other hand, the type of management that would inhibit blame culture would be one that assumes employees to be self-motivated and seeking responsibility, providing them with trust and autonomy. In a department directed by such a management, there would be less hierarchy, more open communication and more

psychological safety. This all would lead to more speaking up about and reporting of incidents, which when investigated and acted upon can lead to organizational learning (Derickson et al., 2015; Khatri et al., 2009). When managers are trustworthy, by providing a fair treatment and open communication to employees, not only blame culture is inhibited, but employee engagement is enhanced as well. High levels of employee engagement will in turn be beneficial for performance (Lowe, 2012).

Fairness

Fairness deals with the norms and regulations present in the department and hospital and the way they are executed by the management. Yet not only the procedures are important, but also the fairness of the outcomes for employees plays a role in this aspect. In a blame culture, employees feel they are not treated in a fair manner and are thus afraid to make mistakes or speak up about incidents (Firth-Cozens, 2004). When employees on the other hand feel they are treated in a fair and just manner, there will be a higher amount of trust and psychological safety, and they can be more open about errors. This in turn will lead to more incident reporting, more organizational learning and less blame culture (Weiner, Hobgood, & Lewis, 2008).

Openness

An open atmosphere is characterized by being able to discuss everything with the team and management, including concerns, incidents and suggestions. Employees are informed about errors made in the department and suggestions for improvement are taken seriously by the management (Petschonek et al., 2013). The management plays an important role in establishing an open environment (Khatri et al., 2009). They can give space for openness and lead by example by communicating openly and providing feedback (Derickson et al., 2015). An open atmosphere will in turn lead to more speaking up about errors and a framework to learn from these errors (Khatri et al., 2009).

Fear

In a blame culture, employees fear being blamed for mistakes and therefore remain silent (Khatri et al., 2009). Fear is mostly an expectation of the consequences one will suffer from reporting errors. When an employee beliefs to be the cause of an incident, this fear is even more substantial. Negative consequences that are feared are for example harm to an employee's reputation, social exclusion, disciplinary actions, limited career opportunities

and liability. These consequences keep employees from reporting errors (Brubacher, Hunte, Hamilton, & Taylor, 2011; Castel et al., 2015).

Psychological Safety

Feeling safe in the working environment means that employees feel assured that risks can be taken and suggestions can be made. Problems are discussed and new ideas or disagreements are appreciated. Mistakes are never used against the ones who made them, so there is the space and freedom to make mistakes and discuss them. Employees help each other in creating an atmosphere of (social) safety. Psychological safety has similarities with trust (Derickson et al., 2015; Edmondson, 1999; Vogus, Sutcliffe, & Weick, 2010). When employees feel psychologically safe, there is more openness and less fear of blame for error reporting (Derickson et al., 2015). In a blame culture, however, feedback is focused on placing blame instead of helping others improve. Thus, employees do not feel safe in communicating openly and trusting their colleagues (Edmondson, 1999).

Trust

It is essential for a group of people to trust each other and for employees to trust their management. When there is an atmosphere of trust, people dare to be vulnerable and open. This is beneficial in a hospital department, since employees will speak up about their own or other's mistakes. Trust is also related to a high amount of cooperation and support, which can have a positive impact on quality of patient care. The management plays an important part in ensuring an atmosphere of trust. When they investigate errors in a fair and integer manner, and do not place blame on anyone without having good reasons, it will be easier for staff to trust them (Firth-Cozens, 2004).

Speaking Up

To speak up mainly means that employees feel safe to share concerns (even when others disagree). The management should stimulate sharing worries about matters concerning (social) safety. Concerns are then not cast aside directly, but taken seriously. Often however, clinicians silence those matters that should be communicated, leading to decreased patient safety, since there can be no improvement. Blame Culture plays an important role in inhibiting speaking up by inducing fear of unfair treatment, blame or other negative consequences to speaking up. Feeling committed to the success or well-being of the organization makes the likelihood of speaking up greater (Brubacher et al., 2011; Martinez et al., 2015; Morrison, 2014).

Reporting

In a blame-free culture, there is enough space and stimulation to report incidents or calamities to the management and/or the official reporting system. There are no negative consequences standing in the way of reporting and employees are even stimulated to report incidents. Not only do involved employees report the incident, but their colleagues feel free to report an incident they are witness of as well (Ehrich, 2006). It is of the utmost importance that reporting of incidents is encouraged, since reporting can lead to organizational learning (Cooke & Rohleder, 2006) and thereby a higher quality of patient care. In departments with large amounts of fairness, trust and open communication, incidents will be reported more often (Firth-Cozens, 2004).

Learning

A high degree of organizational learning entails an active focus on enhancing (social) safety and positive change after incidents or calamities occurred. After errors are made, there are discussions about why this happened and how it can be prevented from happening again. This changes the current procedures to an updated version (Akselsson et al., 2012). A blame culture hinders organizational learning by silencing employees with fear for being blamed when speaking up or reporting incidents. The way incidents are investigated is influenced by blame culture as well: incidents are not investigated at all, or in an unfair and corrupt manner (Cooke & Rohleder, 2006). When this is the case, employees will be even less likely to report incidents, further reducing the amount of organizational learning (Brubacher et al., 2011).

Education

To be able to report incidents, there needs to be knowledge about (social) safety and the reporting system, resulting from adequate education. An education system leading to the required knowledge to report errors deals with the questions how and why to report incidents, what is done with reports after they are filed, and how the litigation system around reporting is structured (Brubacher et al., 2011; Tella et al., 2015; Wolff, Macias, Garcia, & Stankovic, 2014). A fear of blame is already prevalent among nursing and medicine students, and just as high as in nurses and physicians (Gorini et al., 2012). It is therefore very important to educate medical students and junior physicians on how to handle errors in a blame-free way (Baruch, 2014).

1.5 Theoretical mechanisms

There are several theories discussed in the literature as to how a blame culture develops within an organization. Most of these theories focus only on part of the mechanism behind blame culture. The aspects of blame culture (1.4 Aspects of blame culture) can be recognized in the following theories.

One important possible cause lies in the type of management. A **bureaucratic management** enhances fear of criticism in staff members. They distrust each other and are careful with taking risks or taking responsibility for adverse events. Thus, errors are silenced and there can be no innovation or learning within the organization (Khatri et al., 2009).

The management may also play a role in the perception of **fairness** by employees (Lowe, 2012; Weiner et al., 2008). After all, the management has great power over the execution of rules and regulations. If employees perceive the acts of the management as unfair or unjust, they will have a hard time trusting the management, or even the hospital (Firth-Cozens, 2004; Lowe, 2012). With no atmosphere of trust there can be no atmosphere of openness (Firth-Cozens, 2004; Mitchell, 2014), as well as no reporting of or speaking up about errors, malpractices or ideas for improvement (Detert & Burris, 2007; Firth-Cozens, 2004; Garon, 2012). This way, no organizational learning can take place (Cooke & Rohleder, 2006; Drupsteen et al., 2013; Firth-Cozens, 2004; Mitchell, 2014). This may cause a downward spiral, because less learning can lead to less trust, since no changes are made. A decrease in trust can then again lead to a decrease in openness, which can decrease reporting and speaking up, which again can decrease learning, and so on (Firth-Cozens, 2004).

Another way in which management may lead to less learning, is through **psychological safety**. Feeling safe in the workplace is related to the management (Derickson et al., 2015; Detert & Burris, 2007) and can enhance the reporting of errors (Derickson et al., 2015), speaking up about ideas and concerns (Detert & Burris, 2007; Morrison, 2004) and the amount of organizational learning (Derickson et al., 2015; Weiner et al., 2008).

Another cause may be found in the medical **education system**. When employees have a lack of knowledge concerning how to report incidents, consequences of reporting, or why reporting is important, they may feel inadequate to report (Bagenal, Sahnan, & Shantikumar, 2014). Lacking knowledge about reporting may cause employees to be afraid of reporting or of the negative consequences of reporting (Cresswell et al., 2013; Gorini et al., 2012). Fear in turn can directly or indirectly lead to less reporting of incidents (Derickson et al., 2015; Firth-Cozens, 2004).

2. The current study

To shift from a blame culture to a just culture in healthcare, it is important to thoroughly investigate the mechanism behind blame culture. There has been research on blame culture in healthcare settings, but the previous research is not sufficient to draw conclusions about the mechanism influencing blame culture. Most studies focus only on some aspects of the culture, but few studies incorporate all these different aspects in one analysis. Therefore, the current study investigates the possibility that all these aspects together form one model, explaining the mechanism behind blame culture. If a comprehensive model can be formed, this will indicate that the aspects of blame culture form a unity and should be regarded together while studying blame culture.

If the mechanism behind blame culture is better explained, interventions focusing on the source of the problem can be created. The most important aspects of blame culture can be influenced and the effects can be measured. In the end, the interventions can help shifting towards a just culture, which entails high amounts of organizational learning. The goal of the current study was to determine the mechanism behind blame culture in healthcare institutions by forming a path model containing the aspects related to blame culture assessed in the Just/Blame Culture Questionnaire. In this path model, aspects were only added if they were internally consistent.

2.1 Research question

The main research question focused on in the current study is the following:

What is the mechanism behind blame culture, based on psychometrically sound aspects of blame culture?

2.2 Hypotheses

Based on the current literature, the model shown in Figure 2 was expected to result from the data. In path modeling, observed variables are expressed by rectangular elements. A directional relationship is expressed by a single-headed arrow. In this model, relationships which were hypothesized to be mediated through other variables are expressed by dashed arrows, while direct relationships are expressed by solid arrows. Arrows expressing positive relationships are supplied with a '+' and arrows expressing negative relationships with a '-'.

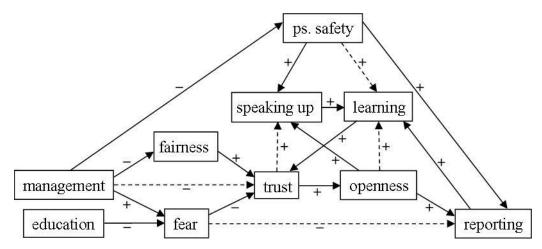


Figure 2. Theorized model with direct and indirect relationships

The following hypotheses were used to answer the research question.

- 1. Reliability analysis (Cronbach's α + principal component analysis). The theorized aspects of blame culture, Blame Culture itself and the complete Just/Blame Culture Questionnaire are internally consistent (α > .70).
- 2. **Multiple regression analysis I.** The regression coefficients of the variables Reporting, Learning, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education are significant in predicting Blame Culture.
- 3. **Multiple regression analysis II.** The regression coefficients of the variables Reporting, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education are significant in predicting Learning.
- 4. **Path analysis.** Learning is directly predicted by Reporting and Speaking Up, indirectly predicted by Management, Education, Fear, Fairness, Trust, Openness and Psychological Safety, and Learning predicts Trust.
 - a. Management predicts Trust through Fear and Fairness.
 - b. Education predicts Fear.
 - c. Fear and Fairness predict Trust.
 - d. Fear predicts Reporting through Trust and Openness.
 - e. Trust predicts Speaking Up through Openness.
 - f. Management predicts Psychological Safety.
 - g. Openness and Psychological Safety predict Learning through Reporting and Speaking Up.
 - h. Reporting and Speaking Up predict Learning.
 - i. Learning predicts Trust.

- 5. **Path analysis.** The theoretical model fits the data, with a non-significant χ^2 at the p < .05 level, an RMSEA lower than .05, an NNFI higher than .97 and a CFI higher than .97.
- **6. Semi-structured interviews.** The qualitative data confirms the path model resulting from the quantitative data and literature.

3. Method

3.1 Participants

Hospital employees (including interns) working in the Netherlands were invited to participate by filling in the questionnaire. The minimum age for participation was 18 years old. The participants were acquired through personal networks and social media (healthcare-related Facebook groups). They either received an e-mail with some information on the study and the link to the online survey, or they only received the link to the online survey (depending on their preferences). From all participants, two were chosen for the semi-structured interviews and asked to participate by the researcher.

3.2 Instruments

The quantitative data was collected using the Just/Blame Culture Questionnaire. This questionnaire is developed by Iris Doorgeest and is based on a literature review concerning blame culture and just culture. It was slightly adjusted in the current study to fit the healthcare industry. The questionnaire consists of 65 questions concerning blame culture, organizational safety and ten theorized aspects of blame culture. The initial nine aspects are divided in three sections: Perceptions (Management, Fairness and Openness), Feelings (Fear, Psychological Safety and Trust) and Behavior (Speaking Up, Reporting and Learning).

Management contains the degree in which the managers are strict, demanding and controlling in the eyes of their employees, and the degree of bureaucracy in the department.

Fairness contains the degree in which employees perceive to be treated and judged fairly compared to others and specifically while investigating incidents.

Openness contains the degree of communication and space for feedback by the management, but also an overall open atmosphere in the department.

Fear contains the degree in which employees think there will be negative consequences in place when an incident occurs (like blame, sanctions or reputation loss).

Psychological Safety contains the degree in which employes feel safe in discussing issues, disagreeing, making mistakes and improving social safety in the workplace.

Trust contains the degree of cooperation and support in a department, and mainly the extent in which employees trust each other and the management.

Speaking Up contains the degree in which sharing suggestions and concerns is stimulated and experienced as safe to do.

Reporting contains the degree in which employees tend to report incidents and feel free and stimulated to do so.

Learning contains the degree in which past incidents have been analyzed and improvements were made in a department.

The tenth aspect of blame culture, Education, was added later to test the role of prior medical education in blame culture.

Education assesses the amount of prior education on how and why to report incidents, how reports are handled, litigation concerning incidents and safety culture.

All aspects of blame culture are based on the available literature and consist of 5 or 6 questions. All questions have a 7-point Likert scale ranging from 'completely not agree' to 'completely agree'. Other options are 'don't know' or 'does not apply'.

Additionally, the questionnaire has 5 questions concerning Blame Culture itself. These questions investigate how common it is within the department to blame others for your own mistakes, prevent being blamed for mistakes and have one individual being blamed after finding out about an error. The direct question whether there is a blame culture prevalent at the department is included as well.

Two questionnaires were added measuring leadership. The first one is the Safety@ Core Business questionnaire (Gort & Starren, 2007). The second questionnaire is the Multifactorial Leadership Questionnaire (Avolio, Bass, & Jung, 1999). All questions have a 5-point Likert scale ranging from 'never' to 'always'. Other options are 'don't know' or 'does not apply'. The leadership questionnaires were added because the current study is part of a larger study. These questionnaires will not be taken into account in the current study.

Two questions were added measuring the amount of experienced incidents and reports of incidents in practice. A question assessing the reason for not reporting an incident was added as well.

The remaining questions assessed sex, age, function and function-specific questions. For interns these questions assessed their current specialization and for how long they had been an intern already. For other hospital employees these questions assessed their department, whether they fulfilled a leadership role, their (medical) education background, for how many years they had worked in healthcare and for how many years they had worked in their current function.

All questions were combined in one online survey, made in Qualtrics (Qualtrics, Provo, UT). Qualtrics is online software enabling researchers to create surveys, send surveys with a specific link to participants, and collect responses. The questionnaire is added in Appendix 1.

Additionally, qualitative data was collected after the quantitative data had been analyzed, using semi-structured interviews with two hospital employees with different functions. The questions focused on the experience of blame culture in their department and the views of the interviewed employee on the causes and mechanism behind this culture. The qualitative data was mainly used to explain relationships that were found after analyzing the quantitative data. Summaries of the interviews in English, as well as fully written interviews in Dutch, can be found in Appendix 4.

3.3 Procedure

Participants filled in the questionnaire by either following a link in an e-mail (when acquired through personal networks) or by following a link on social media (when acquired through healthcare-related Facebook groups). All participants gave informed consent before filling in the questionnaire and had the option to refuse anonymously. The questionnaire took about 15 minutes to fill in. All participants filled in the same questionnaire except for the function-specific background questions (see 3.2 Instruments). Furthermore, the questions concerning the aspects of blame culture were randomized in the following order. The aspects were distributed in three sections (Behavior, Perceptions, Feelings), which were randomized together with the aspect Education. Furthermore, the aspects within the sections were randomized (for Behavior these are Reporting, Learning and Speaking Up; for Perceptions these are Management, Openness and Fairness; for Feelings these are Psychological Safety, Trust and Fear). All participants had 30 days to fill in the questionnaire and received a reminder after ten days. Data collection was completely anonymous. Five bol.com gift vouchers of €20,- were presented to five randomly chosen participants who filled in their email address after finishing the survey. The procedure had been approved by the Leiden University Psychology Ethics Committee.

After all data was collected, it was transferred from Qualtrics to the statistical analysis programs SPSS (IBM Corp, Armonk, NY) and R (R Core Team, 2016) to be analyzed in order to answer the research question. After all the data was analyzed, semi-structured interviews were held with two participants in different functions.

3.4 Analysis: preparation

Before the path model was computed, the aspects of blame culture were tested on internal consistency and relevance, to possibly be revised. This was done using the statistical analysis program SPSS (IBM Corp, Armonk, NY).

Hypothesis 1. The theorized aspects of blame culture, Blame Culture itself and the complete Just/Blame Culture Questionnaire are internally consistent ($\alpha > .70$).

To determine whether items within the aspects of blame culture as well as within the construct Blame Culture were internally consistent, their reliability was determined using the **Cronbach's \alpha**. Items that severely weighed the Cronbach's α down were moved to another aspect if possible and otherwise excluded from the analysis. A **principal component analysis** on all items of the aspects to be included in the path model aided this process, by providing information on the latent components underlying the items. If an item that weighed the Cronbach's α of an aspect down loaded highly (> .40) on a component on which many items of a different aspect loaded highly on, the fit of the item within that aspect was assessed. This was done by computing the Cronbach's α of the aspect together with the item from the other aspect. If the Cronbach's α became higher or stayed as high as it was, and the item seemed fitting within the context of the aspect, it was moved to this aspect. If an item that weighed the Cronbach's α down did not load highly on any component, it was excluded from the analysis. If variables still had a Cronbach's α < .50, they were excluded.

Hypothesis 2. The regression coefficients of the variables Reporting, Learning, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education are significant in predicting Blame Culture.

To determine whether the aspects Reporting, Learning, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education were related to blame culture, a **multiple regression analysis** was executed using the 'Enter' method. The dependent variable was Blame Culture and the independent variables were the aspects of blame culture. The analysis was executed on the means of the items contributing to each aspect. The R^2 gave the portion of Blame Culture that was predicted by the aspects. The ANOVA showed whether the model was significant, by calculating the F value and its significance. If the model was significant, the regression coefficients of the particular aspects and their significance were shown. When variables had a p value > .05, these variables could

be bad predictors of blame culture, but the insignificance could also be due to the validity of Blame Culture.

Hypothesis 3. Multiple regression analysis II. The regression coefficients of the variables Reporting, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education are significant in predicting Learning.

To determine which aspects predicted most of the variance of Learning, a **multiple regression analysis** was executed using the 'Enter' method. The dependent variable was Learning and the independent variables were Reporting, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education. The analysis was executed on the means of the items contributing to each aspect. The R^2 gave the portion of Learning that was predicted by the other aspects. The ANOVA showed whether the model was significant, by calculating the F value and its significance. If significant, the regression coefficients of the aspects and their significance were shown. If variables had a p value > .05, these variables could be bad predictors of learning, but the validity of the aspect Learning could also be low.

3.5 Analysis: forming the model

After the data was prepared, the main analysis was executed: computing the model. This was done with a **path analysis** (a structural equation modeling technique) using the lavaan package (Rosseel, 2012) in the program R (R Core Team, 2016). Aspects that had proven to be incoherent or overlapping with other aspects were excluded from the model prior to the path analysis. Items that had proven to fit better within other aspects were moved to these aspects prior to the path analysis.

With a structural equation modeling analysis in lavaan, the correspondence between the theorized model and the data can be measured. This is done by comparing the matrices of theorized and observed covariances. In structural equation modeling, dependent variables are called endogenous variables (variables which have arrow heads pointing to them) and independent variables are called exogenous variables (variables which only have arrow tails going out of them). Every endogenous variable has an error term, which is calculated by default in lavaan. The path coefficient from the error term to the endogenous variable is by default set to 1.

A model first needs to be defined, including a regression analysis for every endogenous variable. Other features of the model that need to be defined are theorized latent

variables, indirect effects and (co)variances. After defining a model, the analysis can be executed and results can be obtained.

Hypothesis 4. Path analysis. Learning is directly predicted by Reporting and Speaking Up, indirectly predicted by Management, Education, Fear, Fairness, Trust, Openness and Psychological Safety, and Learning predicts Trust.

- a. Management predicts Trust through Fear and Fairness.
- b. Education predicts Fear.
- c. Fear and Fairness predict Trust.
- d. Fear predicts Reporting through Trust and Openness.
- e. Trust predicts Speaking Up through Openness.
- f. Management predicts Psychological Safety.
- g. Openness and Psychological Safety predict Learning through Reporting and Speaking Up.
 - h. Reporting and Speaking Up predict Learning.
 - i. Learning predicts Trust.

The model was first defined in R. Fear was regressed by Management and Education. Fairness was regressed by Management. Trust was regressed by Fear, Management, Fairness and Learning. Psychological Safety was regressed by Management. Openness was regressed by Trust. Reporting was regressed by Openness, Fear and Psychological Safety. Speaking Up was regressed by Openness, Trust and Psychological Safety. Learning was regressed by Speaking Up, Openness, Reporting and Psychological Safety. The analysis was executed on the means of the items contributing to each aspect. There were no latent variables or (co)variances defined. The theorized indirect effects were Management to Trust through Fear, Management to Trust through Fairness, Fear to Reporting through Trust and Openness, Trust to Speaking Up through Openness, Openness to Learning through Reporting, Openness to Learning through Speaking Up, Psychological Safety to Learning through Reporting and Psychological Safety to Learning through Speaking Up (see *Appendix 3 R syntax for testing the model*).

After defining the model, the analysis was executed with a maximum likelihood approach (default in lavaan). With this approach, estimate parameters were calculated that had the highest likelihood of resembling the observed values. Missing values were deleted listwise.

After executing the analysis, a summary of the output was obtained. This summary presented fit measures like the χ^2 , CFI, AIC, BIC and the RMSEA. Unstandardized and standardized path coefficients (comparable to partial regression coefficients) were calculated for every regression. Their significance of differing from the z score was also calculated, as well as remaining (co)variances and the R^2 of every endogenous variable.

Hypothesis 5. The theoretical model fits the data, with a non-significant χ^2 , an RMSEA lower than .05, an NNFI higher than .97 and a CFI higher than .97.

An overall model fit analysis was needed to determine the overlap between the data and the theorized model. The goodness-of-fit measures that were used in this study are the χ^2 , the RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), NNFI (Non-Normed Fit Index), AIC and BIC (Akaike and Bayesian Information Criteria). A non-significant χ^2 indicates a good fit because of little difference between the observed and the model-implied covariance matrix (Beaujean, 2014). An RMSEA value < .05 indicates a good fit and < .08 a reasonable fit (Browne & Cudeck, 1992). A CFI and NNFI value > .95 indicate an acceptable fit and > .97 a good fit compared to the baseline model (Hu & Bentler, 1999). When revising a model, the AIC and BIC can be used to compare different models, for which a lower value indicates a better fit (Beaujean, 2014).

Hypothesis 6. The qualitative data confirms the path model resulting from the quantitative data and literature.

In the semi-structured interviews, questions were asked to further deepen understanding of the paths in the final model. The role the healthcare employees thought every aspect had in establishing a blame culture was assessed, as well as their personal view on the mechanism behind blame culture. The interviews were held after all quantitative data was analyzed.

4. Results

4.1 Participants

All participants (N = 131; 77% women) were hospital employees of which 97 (74%) finished the full questionnaire. Descriptive data concerning the distribution of participants between ages, tenure and function (intern/non-intern) is presented in Table 1.

Table 1. Descriptive statistics of the participants

	Finished $(n = 97)$					Not finished $(n = 34)$		
	n	Range	M	SD	n	Range	М	SD
Age		19-64	30.30	11.00		19-62	26.50	8.98
Interns	41				16			
Tenure (months)		1-26	11.83	5.92		2-24	11.75	6.92
Non-interns	56				18			
Tenure healthcare (y)		0-43	13.61	11.57		1-30	7.39	9.02
Tenure function (y)		0-29	5.29	6.12		0-30	3.72	6.88

The 57 interns worked in eleven different departments of hospitals throughout the Netherlands. The 74 non-interns worked in eighteen different departments of hospitals throughout the Netherlands. Among the 74 non-interns were 24 nurses, fourteen physicians, seven doctor's assistants, five physician assistants, four student assistants, three dietitians, three medical social workers, two operational managers, two secretaries, two team leaders, two medical laboratory workers, a junior physician, a nursing consultant, a nursing specialist, an occupational therapist and a nutritional assistant. Prior education from non-interns ranged between medicine, nursing, movement science, management and development, dietetics, occupational therapy, laboratory school, social work, diagnostic imagery, nursing teaching, advanced nursing practice, doctor's assistance and medium care nursing.

4.2 Missing data

Before the data was prepared to be processed into the path model, the used variables were screened for missing values. There were two types of missing values: participants who did not finish the questionnaire and participants who answered 'don't know' or 'does not apply'. The missing values were handled differently for each analysis.

For the multiple regression analysis, missing values were screened for within every construct. If a participant answered less than 60% of the items of a construct, the answers of the participant on this aspect were not included in the analysis.

For the principal component analysis, participants who completed less than 40% of the entire questionnaire were excluded. The missing values of remaining participants were all replaced with a value based on mean substitution.

For the path analysis, missing values were screened for within every construct. If a participant answered less than 60% of the items of a construct, the answers of the participant on this aspect were not included in the analysis.

4.3 Results: preparation

Hypothesis 1. The theorized aspects of blame culture, Blame Culture itself and the complete Just/Blame Culture Questionnaire are internally consistent ($\alpha > .70$).

First a reliability analysis was executed measuring the **Cronbach's** α . For the reliability analysis, no mean substitution was executed for missing values, because the scales became less reliable when using this technique. Instead, missing values were excluded listwise. The number of remaining participants was different for every scale and can be seen in Table 2. The results of the initial reliability analysis are also shown in Table 2.

Table 2. *Initial Cronbach's α of constructs*

Construct	n	α	α without items
Complete questionnaire	32	.707	
Behavior	53	.440	.722 (without Reporting 3, Learning 5 and Speaking Up 2)
Reporting	66	.196	.546 (without Reporting 3)
Learning	70	.374	.636 (without Learning 5)
Speaking Up	108	052	.385 (without Speaking Up 2)
Perceptions	61	.487	.547 (without Management 3 and Fairness 3)
Management	95	.687	.705 (without Management 3)
Openness	99	.864	
Fairness	67	.465	.799 (without Fairness 3)
Feelings	79	.506	.611 (without Psych. safety 4, Trust 3 and Fear 3)
Psych. safety	94	.413	.680 (without Psych. safety 4)
Trust	92	.529	.843 (without Trust 3)
Fear	102	.471	.727 (without Fear 3)
Education	115	.910	
Blame Culture	84	.870	
Other aspects	77	.363	

The hypothesis was partly confirmed, because most aspects were nog internally consistent, except for Management, Openness, Education, Blame Culture and the complete questionnaire. The scale Other aspects had a low reliability, but this was as expected, since this scale consisted of eight leftover items. A **principal component analysis** was executed on all items of the aspects of blame culture, together with Other aspects. Assumptions for doing a principal component analysis were met. The sample size for this analysis was n = 119. The Kaiser-Meyer-Olkin statistic was .770, confirming that a principal component analysis was appropriate for the data (because of a clustering around a couple of variables in the pattern of correlations instead of diffusion). The Bartlett's test of sphericity was significant (p < .001).

The unrotated component matrix was used. There were sixteen components with an eigenvalue > 1. The scree plot showed a kink at around the one and five components, which is shown in Figure 3. The first component consisted mainly of Openness, Fairness, Psychological Safety, Trust, Speaking Up, Learning and some items from other constructs. The second component consisted mainly of Management and Fear. The third component

consisted mainly of Education. The fourth component consisted of items from Speaking Up, Learning, Openness, Psychological Safety and Trust. The fifth component consisted of two items from Learning.

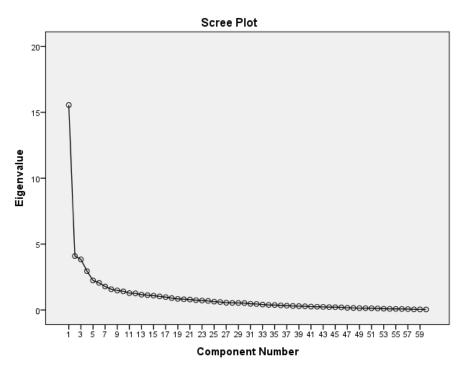


Figure 3. Scree plot PCA

The results of the principal component analysis together with the reliability analysis were used to further adjust the categorization of items into aspects of blame culture. There were eight items that were moved to different aspects: Reporting 3, Learning 5, Speaking Up 2, Speaking Up 5, Fairness 3, Psychological Safety 4, Trust 3 and Fear 3. The only item that was deleted was Reporting 4. Information on the contents of these items, where they were moved to and why they were moved can be seen in Appendix 2. After moving and deleting items, the Cronbach's α was computed again over the constructs. The Cronbach's α of every construct was improved, except for the Cronbach's α of the scales Perceptions (.254) and Feelings (.599). This led to the assumption that the constructs were not distributed well over the three scales Behavior, Perceptions and Feelings and/or different scales needed to be formed.

The output of the principal component analysis together with the contents of the items was used to form the two scales Fear of Consequences and Atmosphere. These scales replaced Perceptions and Feelings, whereas the scale Behavior stayed as it was. The scale Fear of Consequences consisted of the constructs Fear and Management (the second component). The scale Atmosphere consisted of the constructs Openness, Fairness and Trust

(part of the first component). The remaining items of the construct Psychological Safety were distributed among the constructs Learning, Fear and Openness. Psychological Safety only consisted of four items, of which two seemed to fit better in the context of Learning, one in the context of Fear and one in the context of Openness. Seven of the items of Other aspects were distributed over the constructs Trust, Openness, Management, Fear and Learning. One of the items of Other aspects was deleted (Other aspects 4). This followed from the output of the principal component analysis and the contents of these items. The reliability of all scales became higher. The final distribution of constructs over the scales and their reliability can be seen in Table 3. Information on the items that were moved or removed and their influence on the Cronbach's α can be seen in Appendix 2.

Table 3. Final Cronbach's α of constructs

Construct	α	Moved	Added
Complete questionnaire	.706		
Behavior	.873		
Reporting	.700	Reporting 3	
Learning	.797	Learning 5	Psych. safety 2 & 5, Other aspects 6 & 8
Speaking Up	.799	Speaking Up 2 & 5	
Fear of Consequences	.862		
Management	.792		Speaking Up 5, Learning 5, Fairness 3, Trust 3,
			Other aspects 4
Fear	.817	Fear 3	Speaking Up 2, Reporting 3, Psych. safety 4,
			Other aspects 5 & 7
Atmosphere	.933		
Openness	.882		Psych. safety 1 & 3, Other aspects 3
Fairness	.803	Fairness 3	Fear 3
Trust	.887	Trust 3	Other aspects 1 & 2
Education	.910		
Blame Culture	.870		

Table 4 shows descriptive statistics of the final, internally consistent constructs of the Just/Blame Culture Questionnaire. The aspects Reporting, Learning, Speaking Up, Management, Fear, Openness, Fairness, Trust and Education were used to form the model. Among these aspects, there were eighteen outliers detected (six for Reporting, one for

Learning, two for Fear, three for Openness, two for Fairness and three for Trust). Multivariate outliers were screened by computing the Mahalanobis distance for each case on the ten continuous variables, of which three were detected (p < 0.001). Since Reporting had a significant Kolmogorov-Smirnov statistic at the p < .001 level, was very skewed to the left and had many outliers, this variable was transformed using a Power transformation to the third power. Table 4 shows the final descriptive statistics of Reporting. The new variable had no outliers.

Table 4. *Descriptive statistics of the final constructs*

Construct	α	Items	n	M	SD	Skewness	Kurtosis	Kolmogorov -Smirnov
Behavior	.873	14	54	5.025	.832	904	2.640	.097**
Reporting	.700	3	73	179.474	78.680	.052	401	.100
Learning	.797	8	65	5.258	.750	868	2.021	.093
Speaking Up	.799	3	110	5.007	.830	123	398	.097
Fear of Consequences	.862	19	54	3.369	.845	.169	117	.058
Management	.792	10	65	3.396	.830	123	398	.070
Fear	.817	9	72	3.063	.925	.127	419	.045
Atmosphere	.933	19	59	4.495	.836	-1.090	2.317	.078
Openness	.882	8	88	5.440	.891	966	1.586	.099
Fairness	.803	5	68	5.665	.829	-1.324	3.898	.102*
Trust	.887	6	99	6.001	.783	-1.445	3.688	.130**
Education	.910	6	115	4.618	1.365	556	161	.087
Blame Culture	.870	5	84	2.212	.926	.514	502	.109*

^{*} *p* < .05, ** *p* < .01, *** *p* < .001

Concluding, after moving items between constructs and removing items from the questionnaire, the first hypothesis could be confirmed.

Hypothesis 2. The regression coefficients of the variables Reporting, Learning, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education are significant in predicting Blame Culture.

A multiple regression analysis was executed with the mean of Blame Culture as the dependent variable and the means of the newly defined aspects of blame culture as the independent variables. Specific assumptions for doing a multiple regression analysis were

met. All variables had an interval scale and the aspects of blame culture theoretically predicted Blame Culture. There was no perfect multicollinearity between predictors (correlations no higher than -.460; VIF was not higher than 10 and tolerance not lower than .01). The model was linear and showed homoscedasticity. Errors were independent (Durbin-Watson value was 1.965) and errors were normally distributed.

The hypothesis was partly confirmed. The model was significant (F(9,67) = 9.087, p < .001, $R^2 = .550$). There were only two variables significant in predicting Blame Culture: Fear ($\beta = .320$, t(67) = 2.697, p < .01) and Education ($\beta = -.179$, t(67) = -2.006, p < .05).

When the non-transformed values of Reporting were used, Fairness was a significant predictor of Blame Culture ($\beta = -.297$, t(67) = -2.015, p < .05). This means that the skewness of Reporting influenced the relationship between Fairness and Blame Culture.

Hypothesis 3. Multiple regression analysis II. The regression coefficients of the variables Reporting, Speaking Up, Management, Openness, Fairness, Psychological Safety, Trust, Fear and Education are significant in predicting Learning.

Another **multiple regression analysis** was executed with the mean of Learning as the dependent variable and the means of the other aspects as the independent variables. All assumptions were met. All variables had an interval scale and the aspects of blame culture theoretically predicted Learning. There was no perfect multicollinearity between predictors (correlations no higher than -.479; VIF was not higher than 10 and tolerance not lower than .01). The model was linear and showed homoscedasticity. Errors were independent (Durbin-Watson value was 2.234) and errors were normally distributed.

The hypothesis was partly confirmed. The model was significant (F(8,69) = 23.928, p < .001, $R^2 = .735$). There were only three variables significant in predicting Learning: Reporting ($\beta = .177$, t(69) = 2.409, p < .05), Openness ($\beta = .438$, t(69) = 4.013, p < .001) and Fairness ($\beta = .357$, t(69) = 3.513, p < .001).

When the non-transformed values of Reporting were used, then Reporting was a significant predictor at the p < .01 level. This means that the skewness of Reporting was important for the relationship between Reporting and Learning.

4.4 Results: forming the model

Hypothesis 4. Path analysis. Learning is directly predicted by Reporting and Speaking Up, indirectly predicted by Management, Education, Fear, Fairness, Trust, Openness and Psychological Safety, and Learning predicts Trust.

- a. Management predicts Trust through Fear and Fairness.
- b. Education predicts Fear.
- c. Fear and Fairness predict Trust.
- d. Fear predicts Reporting through Trust and Openness.
- e. Trust predicts Speaking Up through Openness.
- f. Management predicts Psychological Safety.
- g. Openness and Psychological Safety predict Learning through Reporting and Speaking Up.
 - h. Reporting and Speaking Up predict Learning.
 - i. Learning predicts Trust.

The aspects of blame culture were internally consistent after executing the reliability analysis. The items of the aspect Psychological Safety were distributed over Learning, Openness and Fear, so Psychological Safety was excluded from the path model. Most of the aspects showed a normal distribution, except for Learning, Openness, Fairness and Trust. Therefore a Satorra-Bentler scaled χ^2 was used as a fit measure (robust for non-normally distributed variables; Satorra & Bentler, 1988). Relationships between all variables were linear and errors were independent (Durbin-Watson value was 1.965).

A **path analysis** was executed in R (see *Appendix 3 R syntax for testing the model*). There were 78 participants included in the analysis after listwise deletion of cases with missing values. The initial model with standardized path coefficients between variables and error variances of endogenous variables (the error variance is the amount of variance not explained by the exogenous variables predicting the variable) is shown in Figure 4.

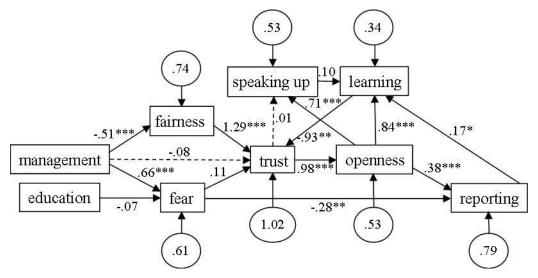


Figure 4. Initial model with standardized path coefficients and standardized error variances; p < .05, *** p < .01, **** p < .001

More information on the path coefficients is provided in Table 5.

 Table 5. Path coefficients and explained variance in the initial model

Regression	Unstandardized	SE	Standardized	p	R^2
Fairness ~					.26
Management	49	.10	51	***	
Fear ~	.	•		•	.39
Management	.66	.10	.61	***	
Education	07	.06	10		
Trust ~	_	•		-	02
Fear	.11	.13	.13		
Fairness	1.29	.23	1.29	***	
Management	08	.16	08		
Learning	93	.30	87	**	
Management*Fear	.07	.09	.08		
Management*Fairness	63	.18	65	***	
Openness ~					.48
Trust	1.10	.12	.98	***	
Speaking Up ~					.47
Openness	.93	.16	.71	***	
Trust	.01	.18	.01		
Trust*Openness	1.03	.21	.69	***	
Reporting ~		-			.21
Openness	31.92	8.88	.38	***	
Fear	-23.53	8.59	28	**	
Fear*Trust*Openness	3.95	4.80	.05		
Learning ~		•		·	.66
Speaking Up	.06	.06	.10		
Openness	.70	.09	.84	***	
Reporting	.00	.00	.17	*	
Openness*Speaking Up	.06	.06	.07		
Openness*Reporting	.05	.03	.06		

[~] stands for 'regressed by'; * p < .05, ** p < .01, *** p < .001

The sections of hypothesis 4 were answered according to the standardized path coefficients and their significance.

a. Management predicts Trust negatively through Fear and Fairness.

This hypothesis was partly confirmed. The direct path coefficient from Management to Trust was -.08 and not significant, as hypothesized. The indirect path from Management to Fairness to Trust was significant at the p < .001 level, as hypothesized, with a path coefficient of -.65. Separate path coefficients were -.51 for Management to Fairness and 1.29 for Fairness to Trust; both significant at the p < .001 level. The indirect path from Management to Fear to Trust, however, was less obvious from the data. The path coefficient for Management to Fear was .61 and significant at the p < .001 level. The path coefficient for Fear to Trust was .13 and not significant. The valence of the path coefficient from Fear to Trust was not as hypothesized (positive instead of negative). The path coefficient of the entire indirect path was .08 and not significant.

b. Education predicts Fear negatively.

This hypothesis was not confirmed. The path coefficient from Education to Fear was -.10 and not significant.

c. Fear predicts Trust negatively and Fairness predicts Trust positively.

This hypothesis was partly confirmed. The path coefficient from Fairness to Trust was 1.29 and significant at the p < .001 level. The path coefficient from Fear to Trust was .13 and not significant. The valence of this path coefficient was not as hypothesized (positive instead of negative).

d. Fear predicts Reporting negatively through Trust and Openness.

This hypothesis was partly confirmed. The direct path coefficient from Fear to Reporting was -.28 and significant at the p < .01 level. The path coefficient of the entire indirect path was .05 and not significant. The path coefficient from Fear to Trust was .13 and not significant. However, the path coefficient from Trust to Openness was .98 and the path coefficient from Openness to Reporting was .38, both significant at the p < .001 level.

e. Trust predicts Speaking Up positively through Openness.

This hypothesis was confirmed. The path coefficient of the direct path from Trust to Speaking Up was .01 and not significant. The path coefficient of the entire indirect path was .69 and significant at the p < .001 level. The path coefficient from Trust to Openness was .98

and significant at the p < .001 level. The path coefficient from Openness to Speaking Up was .71 and significant at the p < .001 level.

f. Management predicts Psychological Safety negatively.This hypothesis was not answered, since Psychological Safety was excluded.

g. Openness and Psychological Safety predict Learning positively through Reporting and Speaking Up.

This hypothesis was partly confirmed. The path coefficient of the direct path from Openness to Learning was .84 and significant at the p < .001 level. The path coefficient of the indirect path from Openness to Reporting to Learning was .06 and not significant. The path coefficient of the indirect path from Openness to Speaking Up to Learning was .07 and not significant. However, the path coefficient from Openness to Reporting was .38 and significant at the p < .001 level. The path coefficient from Openness to Speaking Up was .17 and significant at the p < .05 level. The path coefficient from Openness to Speaking Up was .71 and significant at the p < .001 level. The path coefficient from Speaking Up to Learning was .10 and not significant.

h. Reporting and Speaking Up predict Learning positively.

This hypothesis was partly confirmed. The path coefficient of the path from Reporting to Learning was .17 and significant at the p < .05 level. However, the path coefficient of the path from Speaking Up to Learning was .10 and not significant.

i. Learning predicts Trust positively.

This hypothesis was not confirmed. The path coefficient from Learning to Trust was -.87 and significant at the p < .01 level. However, the valence of the path coefficient was not as hypothesized (negative instead of positive).

Hypothesis 5. The theoretical model fits the data, with a non-significant χ^2 at the p < 0.05 level, an RMSEA lower than .05, an NNFI higher than .97 and a CFI higher than .97.

All fit measures indicated a poor fit ($\chi^2 = 43.56$; df = 20, p < .01; RMSEA = .14; NNFI = .85; CFI = .91). The AIC was 2295.31 and the BIC was 2363.65.

The model was adjusted according to the fit measures, path coefficients, standardized residual matrix, output of the multiple regression analyses and output of the principal component analysis. The dashed arrow between Management and Trust was deleted, since the path coefficient was low and not significant, and the relationship between Management and Trust was hypothesized to be indirect. The arrow between Fear and Trust was deleted, since the path coefficient was positive instead of the hypothesized negative. The arrow between Education and Fear was deleted, since the path coefficient was low and not significant. The dashed arrow between Fear and Reporting was made solid (a direct relationship), since the indirect path through Trust and Openness was not significant and the direct path was. The dashed arrow between Trust and Speaking Up was deleted, since the path coefficient was low and not significant, and the relationship was hypothesized to be indirect. The arrow between Speaking Up and Learning was deleted, since the path coefficient was low and not significant. The arrow between Learning and Trust was deleted, since the path coefficient was negative instead of the hypothesized positive. Another reason to delete this arrow was that the R² of Trust was negative and the standardized path coefficient of Fairness was higher than 1, which both should be impossible. This was due to the fact that the path from Learning to Trust created a loop, because Trust predicted Learning indirectly and Learning predicted Trust directly. The dashed arrow between Openness and Learning was made solid, since the direct effect was stronger than the indirect effect through Reporting.

After removing these non-significant arrows, Education did not predict any variable. In the principal component analysis, the six items of Education loaded highly on component three, but no other items did. Yet Education was a significant predictor of Blame Culture in multiple regression analysis I. Speaking Up was still predicted by Openness, but did not predict any other variable. In the principal component analysis, the three items of Speaking Up loaded highly on component one, together with most other items. The standardized residual matrix of the initial model revealed that the ill fit was caused by the omission of the paths between Education and Openness, Education and Speaking Up, and Speaking Up and Fear. Therefore an arrow was added from Education to Openness (so Education indirectly predicted Speaking Up) and from Fear to Speaking Up.

The new model was defined and tested in R. There were 78 participants included in this analysis after listwise deletion of cases with missing values. All fit measures indicated a poor fit ($\chi^2 = 44.41$; df = 23, p < .01; RMSEA = .12; NNFI = .88; CFI = .92). The AIC of the initial model was 2295.31 and the BIC was 2363.65. The AIC of the second model was

2289.28 and the BIC was 2350.55. The initial model had higher values, so the second model showed a better fit. Overall, the second model had a slightly better fit than the initial model, but the fit was still poor. However, all path coefficients were significant. The standardized residual matrix of this model was studied to find out what caused the poor fit. The highest standardized residuals were for the paths between Learning and Fairness, Education and Fairness and Fear and Fairness. The path between Education and Fairness did not seem realistic, so two arrows were added: one from Fairness to Learning and one from Fairness to Fear.

The new model was defined and calculated. There were 78 participants included in this analysis after listwise deletion of cases with missing values. Now, the fit measures indicated a good fit ($\chi^2 = 26.94$; df = 21, p = .17; RMSEA = .07; NNFI = .96; CFI = .98). The AIC of the second model was 2289.28 and the BIC was 2350.55. The AIC of the third model was 2273.13 and the BIC was 2339.12, both lower than the second model. All path coefficients were significant. The final model with standardized path coefficients and standardized error variances is shown in Figure 5. More information on the path coefficients is provided in Table 6.

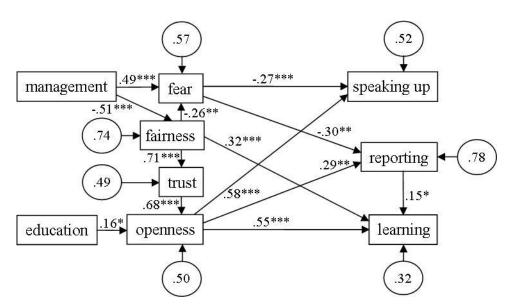


Figure 5. Final model with standardized path coefficients and standardized error variances; p < .05, *** p < .01, **** p < .001

Table 6. Path coefficients and explained variance in the final model

Regression	Unstandardized	SE	Standardized	p	R^2
Fairness ~					.26
Management	49	.10	51	***	
Fear ~		-	,		.44
Management	.53	.11	.49	***	
Fairness	29	.11	26	**	
Trust ~					.51
Fairness	.67	.08	.71	***	
Openness ~					.50
Trust	.76	.09	.68	***	
Education	.10	.05	.16	*	
Speaking Up ~			•		.48
Openness	.79	.12	.58	***	
Fear	34	.11	27	***	
Reporting ~	.				.22
Openness	25.58	9.26	.29	**	
Fear	-25.51	8.74	30	**	
Learning ~				:	.68
Reporting	.00	.00	.15	*	
Openness	.45	.06	.55	***	
Fairness	.28	.06	.32	***	

 $[\]sim$ stands for 'regressed by'; * p < .05, ** p < .01, *** p < .001

After the final model was defined, the entire indirect paths from either Management or Education to Learning or Speaking Up were calculated. Significant paths with their standardized path coefficients were 1) Management to Fairness to Learning (-.16, p = .001), 2) Management to Fairness to Trust to Openness to Speaking Up (-.14, p = .001), 3) Management to Fairness to Trust to Openness to Learning (-.13, p = .001), 4) Management to Fear to Speaking Up (-.13, p < .01) and 5) Education to Openness to Learning (.09, p = .05).

Non-significant paths with their standardized path coefficients were 1) Education to Openness to Speaking Up (.09, p = .051), 2) Management to Fairness to Fear to Speaking Up (-.04), 3) Management to Fear to Reporting to Learning (-.02), 4) Management to Fairness to

Trust to Openness to Reporting to Learning (-.01) and 5) Education to Openness to Reporting to Learning (.01).

This means that the final model fitted the data well, but still not perfectly, since some indirect paths were non-significant.

Hypothesis 6. The qualitative data confirms the path model resulting from the quantitative data and literature.

The hypothesis was partly confirmed, since the data resulting from the semi-structured interviews showed that the final path model could be partly confirmed and explained by the personal experiences of the two healthcare employees (see *Appendix 4 Qualitative data*). The most important findings were the following.

Management has a crucial role in blame culture, and determines whether incidents are reported and spoken about, by seeing them either as an opportunity for learning or as a failure. They can create either an open atmosphere or an atmosphere of fear, because of the power they have and the example they can set. In reducing blame culture, the management should be honest and treat employees fairly. They should focus on giving employees space to learn. Thus, the links between Management and Fear, Fairness, Openness, Speaking Up, Reporting and Learning became evident from the interviews.

Fairness is very important in creating an open atmosphere, in which errors can be discussed and admitted. Fairness can also influence the degree in which employees feel safe and comfortable at work. Thus, the links between Fairness and Openness, Speaking Up and Trust came forward in the interviews.

Trust is also important to be able to share errors and feel like you will not be blamed for a mistake, but have space to learn. More trust leads to less fear for making mistakes and more reporting of errors. For junior physicians, competition for the few job openings is standing in the way of an atmosphere of trust. The links between Trust and Openness, Speaking Up and Reporting became evident. However, the relationship between Trust and Fear was not hypothesized as such.

Openness has everything to do with fairness and trust, and grows when employees know they do not have to fear being hurt. This is the case when making a mistake does not have negative consequences. The links with Fairness and Trust became evident, but there was no hypothesized relationship between Fear and Openness.

Education is important for the simple reason that not knowing how to report means less reporting. However, reporting does not always occur officially and also should not

always be done through the official system. When incidents happen, you should contact that person directly. Also, education may not be necessary, since you can learn how reporting is done in practice. Thus, the link from Education to Reporting became obvious, but also two reasons were provided which may explain why Education seems not to fit the other aspects of blame culture that well.

Fear is present when employees are punished or blamed for mistakes. It also has to do with a feeling of shame or loss of face. This leads to silencing mistakes. Fear may not be that visible in departments, but what you can see is that many healthcare employees are very critical to themselves and do not permit themselves to make any mistakes. Of course, mistakes can have very negative consequences, and it is good to feel responsible, but it also leads to a fear of taking risks. Healthcare employees should give themselves time to learn. A link between Fear and Speaking Up became obvious from the interviews, as well as a direct connection to blame.

Speaking Up is different from openness in the aspect that it has to do with feeling taken seriously and seeing your suggestions are considered. The atmosphere needs to be safe for speaking up, which is achieved when speaking up leads to a positive reaction. Speaking up also has to do with personality. Indirectly, the link between Fear and Speaking Up became visible, since feeling safe means having no fear. Yet aspects became clear that were not included in the model as well: feeling taken seriously, seeing results and personality.

Reporting will occur more when employees are taught how, when and where to report. Also, a positive reaction to reporting and follow-up information are necessary. Yet reporting should not be too easy, since employees may find it easier to report than to discuss incidents in person. The link between Education and Reporting became visible from the interviews, as well as the link between Fear and Reporting (a positive reaction to reporting reduces fear).

Learning occurs less in a blame culture, but should be done to prevent making the same mistake over and over again. Reporting can lead to learning, especially when the same incident is reported many times. The link between Reporting and Learning became obvious from the interviews.

5. Discussion

5.1 Interpretation

This study intended to define a model of the mechanism behind blame culture, in which organizational learning was the end variable. This model was based on data gathered using the Just/Blame Culture Questionnaire. This questionnaire was based on a vast amount of literature concerning blame culture. What was found was first of all that all the variables defined in the questionnaire except for Psychological Safety could together form a path model fitting the data. However, some changes were made in the initial model to make the model fit the data.

Education did not predict Fear in the final model. This may be due to invalidity of the construct Education or Fear, or Education does not relate to Fear after all.

Education did predict Openness in the final model, and thereby also Learning, Reporting and Speaking Up. However, the indirect paths from Education to Reporting and Education to Speaking Up were not significant. Education was expected to indirectly influence Reporting, since most of the items of Education were about Reporting. Yet this was not the case, so either the construct Reporting was invalid or Education did not lead to Reporting after all.

Fairness predicted Learning and Fear directly in the final model. This showed how important Fairness is in inhibiting or enhancing blame culture, which was also reflected by the qualitative data.

Fear did not predict Trust in the final model. In the initial model, the path coefficient was positive, while it was hypothesized to be negative. Interestingly, the Pearson correlation between these variables was significant and negative. This means that the other variables in the model caused Fear and Trust to be positively related.

Fear, however, did predict Reporting in the final model. This was a direct relationship, instead of the hypothesized indirect. This was due to the fact that Fear did not predict Trust in the final model.

Fear did not only predict Reporting directly in the final model, but also Speaking Up. However, Reporting and Speaking Up were quite related since they were often used similarly in the literature, so this is not a surprise.

Speaking Up did not predict Learning in the final model, but had the role of outcome variable. This is in contrast with the literature, which states that Speaking Up may lead to innovation, error correction, crisis prevention and learning in general (Morrison, 2014). In

other words, this is an interesting finding. Further research should examine whether Speaking up does not predict Learning when a larger group of participants is used, which would indicate a fault in previous research.

Openness did not solely predict Learning indirectly through Reporting in the final model, but also directly. This shows the importance of an atmosphere of openness in organizational learning, which may also lead to informal ways of reporting. This was also found in the qualitative data: many reports are not made through the official reporting system (which is mainly what the variable Reporting measured), but also simply by talking to the person(s) involved.

Learning did not predict Trust in the final model, and the path coefficient was even negative instead of the hypothesized positive. This was probably due to the fact that Learning made a loop by predicting Trust directly and Trust predicting Learning indirectly. This means that Learning might predict Trust, but this could not be measured with the current method.

The most important path in the model was the one from Management to Fairness to Openness to Speaking Up. This path had the highest path coefficients and the indirect path was significant at the p = .001 level. The indirect path from Management to Fairness to Openness to Learning was also significant at the p = .001 and had high path coefficients, as well as the path from Management to Fairness to Learning. Management and Fairness appeared to play an important role in constituting a blame culture. Openness and Trust appeared also of utmost importance, which was also found in the qualitative data. According to the final model, Learning appeared to be an important end variable, but there were significant paths leading to Speaking Up as well. This could also be seen in the output of multiple regression analysis II. The R^2 of Learning was .74, which is substantial, but the only significant predictors were Reporting, Openness and Fairness. This could be due to the validity of Learning, but it could also indicate that Learning is not the only thing that is inhibited by blame culture. Fear was also important, because the path from Management to Fear to Speaking Up was significant at the p < .01 level. However, the indirect path from Management to Fear to Reporting to Learning was not significant, so Fear may have to do more with Speaking Up than with Reporting. Education was a less important predictor than Management, but still the path from Education to Openness to Learning was significant at the p = .05 level. The path from Education to Openness to Speaking Up was almost significant (p = .051). It is possible that Education is important for an open atmosphere,

because it provides self-confidence. If people know how to report, they feel qualified to report (Bagenal et al., 2014) and may dare to be more open.

5.2 Limitations

There were some limitations in this study that may have influenced the final results. The group of participants showed much variability in function as well as in age and tenure. However, this could be both negative as well as positive: negative because there was less control over the test variables this way, but positive because the sample did give a realistic representation of the people working in a hospital. All different kinds of functions may experience blame culture, since it is an organizational culture (Khatri et al., 2009).

Another limitation was that the questionnaire was not fine-tuned much before using it in this study. There were some items with quite an extreme formulation, like the item 'The same mistakes are made over and over again, because nothing changes here'. Other items had a formulation such that they could have measured two things, like the question 'I am willing to make suggestions for change, because I feel involved'. There were many participants who filled in 'don't know' or 'does not apply' for items, possibly due to these imperfections.

Another limitation to the questionnaire was that it probably did not measure all variables relevant in blame culture. The R^2 of Blame Culture was only .55 in multiple regression analysis I and Blame Culture was only predicted by Fear and Education. This could also be due to the validity of the Blame Culture scale or the scales of the aspects of blame culture. Also, the R^2 of the variables in the path analysis ranged from .22 to .68, while the model should explain blame culture in total. This again could be due to the validity of the variables, but it could also indicate that the model was not entirely complete. Indeed, some alternative factors involved in blame culture were found in the literature and qualitative data.

5.3 Implications

To make the model of blame culture more complete, several variables could be added that stood out from the semi-structured interviews. An important factor may have to do with the type of work in the healthcare sector. In these professions you need to be compassionate with and helpful to patients, but at the same time you need to deal with negative outcomes patients experience because of medical circumstances or because of your own making. This leads healthcare employees to be less involved and compassionate with patients, in order to block out any negative emotions. However, this causes negative emotions like fear at the

same time, and might thus enhance blame culture (Gabriel, 2015). When there is a blame culture present, compassion will even decrease (Crawford, 2014). Related to this factor is the performance culture and perfectionism that, from the interviews, seems to be present amongst many healthcare employees, and in particular amongst junior physicians. Healthcare employees have a heavy responsibility to carry by knowing their actions can affect patients very negatively. As for junior physicians, they need to show they are the best in order to get a job offered, so they do not permit themselves to make mistakes. This all may lead to the hiding of errors and/or feelings of shame, which are related to blame culture (Khatri et al., 2009). Another important factor in blame culture found in the qualitative data may be the reaction of colleagues and the management to an employee who reports an error. A negative or even aggressive reaction may lead to less reporting and speaking up, and will probably enhance blame culture. A positive and affirming reaction may lead to more reporting and inhibit blame culture. This reaction can be either from the management or colleagues, but from the interviews stood out that the management has a crucial role in giving a good example. They have the power to enforce behavior like reacting positively on someone who reports an incident, simply by doing it themselves. Another factor influencing blame culture that stood out from the interviews is the feeling that it is helpful to report. This feeling results from seeing that things change due to previous reports. When this is present, employees will report more and speak up about matters concerning them more (Castel et al., 2015).

More research is needed to confirm the identified mechanism. This can be done with the improved Just/Blame Culture Questionnaire, using the new scales formed in the current study. Attention should be paid to the formulation of questions in order to make sure every question measures only one thing and is not too extremely formulated. In measuring reporting, it is important to note that not only the amount of reports is important, but also the contents of the reports. Both interviewed participants mentioned that reports are sometimes made too quickly. The important role of openness and speaking up resulting from the current study also shows that not only official reporting is important, but also informally talking to colleagues about incidents that occurred needs to be enhanced.

To shift from a blame culture to a just culture, the mechanism behind just culture needs to be understood as well. After all, just culture is more than the opposite of blame culture (Beyea, 2004). Another model needs to be defined to understand the mechanism behind just culture. This way, blame culture can be inhibited and just culture can be enhanced, leading to optimal culture changes. Yet just culture is the opposite of blame culture in the sense that where blame culture inhibits organizational learning, just culture

enhances this. So the model might to be able to say something about just culture and thereby provides a first step in the right direction.

The defined model gives indications for where attention should go to in trying to lessen blame culture. The paths from Management to Fairness to Trust to Openness, resulting in either Learning or Speaking Up, showed the highest path coefficients and highest indirect path coefficients. This means that Management, Fairness, Trust and Openness are most important in inhibiting blame culture. In result, these are the variables that should be investigated more thoroughly in further research on blame culture and/or organizational learning. In creating interventions for blame culture, the focus should be on the management, since they are the starting point in enhancing or inhibiting blame culture and have great influence on the perception of fairness, openness and trust.

6. Conclusion

A model has been defined, which illustrates the mechanism behind blame culture. In this model, Management, Fairness, Trust and Openness are the most important variables influencing the end variables Learning and Speaking Up. Management plays the most important role in influencing blame culture and predicts Fairness, which predicts Trust, which predicts Openness. However, Education plays a role as well, and predicts Openness. Openness in turn predicts Speaking Up, Reporting and Learning. Fear, predicted by Management, is important in predicting Speaking Up and Reporting. This model provides a better understanding of the mechanism behind blame culture. Further research is needed to confirm the defined model and investigate the exact role of the important factors Management, Fairness, Trust and Openness in the mechanism behind blame culture.

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I. Appendix 1 Just/Blame Culture Questionnaire

Informed consent (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

Hartelijk dank dat u aan dit onderzoek wilt deelnemen.

Wij verzoeken u vriendelijk het onderstaande aandachtig door te nemen:

Dit onderzoek gaat over de relatie tussen just/blame culture, leiderschap en 'organizational learning' binnen dit ziekenhuis en wordt uitgevoerd door de Universiteit van Leiden, instituut Psychologie, sectie Cognitieve Psychologie.

Deelname aan dit onderzoek duurt ca. 15 minuten, is geheel vrijwillig en kan op elk gewenst moment zonder opgaaf van reden worden beëindigd. Onder de deelnemers zullen bol.com cadeaubonnen verloot worden.

opgaaf van reden worden beëindigd. Onder de deelnemers zullen bol.com cadeaubonnen verloot worden.
Alle informatie die in het kader van dit onderzoek wordt verzameld, zal strikt vertrouwelijk behandeld worden. De gegevens worden in anonieme vorm verwerkt en opgeslagen. Tot deze gegevens hebben alleen de direct betrokken onderzoekers toegang. De resultaten worden gebruikt in wetenschappelijke publicaties en/of rapportages. Uw persoons-, afdelings- en instituutsgegevens zijn daarin niet te herleiden.
Voor eventuele vragen of klachten kunt u een e-mail sturen naar k.m.vanwijk@umail.leidenuniv.nl, s.komen@umail.leidenuniv.nl of groeneweg@fsw.leidenuniv.nl.
Verklaart u het bovenstaande te hebben doorgenomen en begrepen, en wilt u deelnemen aan dit onderzoek? O Ja O Nee
If Nee Is Selected
Weet u zeker dat u niet wilt deelnemen? O Ja (uw deelname wordt beëindigd) (1) O Nee (doorgaan) (2)
If Ja (uw deelname wordt beëin Is Selected, Then Skip To End of Survey
KNow (decompose) to Colored . There has been
If Nee (doorgaan) Is Selected , Then back to start
Achtergrondvragen (tussenkoppen worden niet weergegeven in definitieve vragenlijst)
Achtergrondvragen (tussenkoppen worden niet weergegeven in definitieve vragenlijst) We beginnen met een aantal achtergrondvragen. Deze worden alleen gebruikt voor statistische doeleinden en kunnen niet herleid worden naar uw persoon.
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We beginnen met een aantal achtergrondvragen. Deze worden alleen gebruikt voor statistische doeleinden en kunnen niet herleid worden naar uw persoon. Geslacht O Vrouw (1)
We beginnen met een aantal achtergrondvragen. Deze worden alleen gebruikt voor statistische doeleinden en kunnen niet herleid worden naar uw persoon. Geslacht O Vrouw (1) O Man (2)
We beginnen met een aantal achtergrondvragen. Deze worden alleen gebruikt voor statistische doeleinden en kunnen niet herleid worden naar uw persoon. Geslacht Vrouw (1) Man (2) Leeftijd Wat is uw functie? arts verpleegkundige verzorgende co-assistent arts-assistent physician assistant
We beginnen met een aantal achtergrondvragen. Deze worden alleen gebruikt voor statistische doeleinden en kunnen niet herleid worden naar uw persoon. Geslacht O Vrouw (1) O Man (2) Leeftijd Wat is uw functie? O arts O verpleegkundige O verzorgende O co-assistent O arts-assistent O physician assistant O overig

De vragen die volgen, zullen gaan over het ziekenhuis waar u het bovengenoemde co-schap hebt gelopen/loopt.

If overig is selected

Geef aan wat uw functie is. ...

If arts, verpleegkundige, verzorgende, arts-assistent of physician assistant is selected

Hoeveel jaar werkt u al in de zorg? ...

Hoeveel jaar bekleed u uw huidige functie?...

Op welke afdeling werkt u? ...

Welke opleiding heeft u gehad voorafgaand aan uw huidige functie?

- O geneeskunde
- O HBO verpleegkunde
- O MBO verpleegkunde
- O MBO verzorging
- O overige opleiding (define...)

Geeft u leiding?

- O Ja (1)
- O Nee (2)

If Geeft u leiding? Ja Is Selected

Aan hoeveel personen? ...

Hoe veilig ervaart u het werken in deze instelling?

NB: hier wordt sociale veiligheid bedoeld, i.e. de cultuur die heerst onder het personeel m.b.t. communicatie, niet zozeer de kans op ongevallen.

Vul in: Heel onveilig (- - -) tot Heel veilig (+++)

- O --- (1)
- O -- (2)
- O (3)
- O (4)
- O + (5)
- O ++ (6) O +++ (7)
- O Weet niet (8)

Blok 1: Gedrag (Rapporteren, leren en zich uitspreken) (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

In hoeverre bent u het eens met de volgende stellingen? Vul in: Helemaal mee oneens (- - -) tot Helemaal mee eens (+ + +)

	(1)	(2)	(3)	0 (4)	+ (5)	++ (6)	+++ (7)	Weet niet (8)	Nvt (9)
In mijn team/op mijn afdeling worden de meeste incidenten en/of calamiteiten gemeld. (1)	0	0	O	O	O	0	O	o	O
Mijn direct leidinggevende stimuleert me om incidenten en/of calamiteiten te melden. (2)	0	0	0	O	O	O	0	•	O
Angst voor de eventuele negatieve gevolgen weerhouden mij ervan om incidenten en/of calamiteiten te melden. (3)	0	0	0	0	O	0	0	•	0
Incidenten en/of calamiteiten die zich binnen mijn team/op mijn afdeling voordoen, worden door anderen gemeld. (4)	0	0	0	0	0	0	0	•	0
Incidenten en/of calamiteiten die zich binnen mijn team/op mijn afdeling voordoen, worden door diegene zelf gemeld. (5)	0	0	0	0	0	•	0	•	0

In hoeverre bent u het eens met de volgende stellingen?

	Helemaal						Helemaal	Weet	N Is at
	mee oneens (1)	(2)	(3)	(4)	(5)	(6)	mee eens (7)	niet (8)	(9)
In mijn team/op mijn afdeling zijn we actief bezig om (sociale) veiligheid te vergroten. (1)	•	o	o	o	0	o	O	O	0
In mijn team/op mijn afdeling hebben eerder gemaakte incidenten en/of calamiteiten tot positieve veranderingen geleid. (2)	•	O	O	0	O	O	O	O	O
Onze procedures zorgen ervoor dat er geen fouten gemaakt worden en/of geen incidenten voorkomen. (3)	•	•	•	o	•	o	O	O	O
In mijn team/op mijn afdeling besteden we tijd om gemaakte fouten te analyseren en te bediscussiëren, zodat ze de volgende keer niet meer gebeuren. (4)	•	o	o	0	o	0	O	O	0
Dezelfde fouten worden steeds opnieuw gemaakt, omdat er hier niets verandert. (5)	O	•	O	O	•	•	O	O	0

	(1)	(2)	(3)	0 (4)	+ (5)	++ (6)	+++ (7)	Weet niet (8)	Nvt (9)
Ik ben bereid om suggesties voor veranderingen te doen, omdat ik mij betrokken voel. (1)	0	0	0	O	O	0	O	0	O
Ik ben niet bereid om suggesties voor veranderingen te doen, omdat ik bang ben voor de gevolgen. (2)	0	O	0	O	O	o	O	o	O
Ik geef mijn leidinggevende suggesties hoe we dingen beter zouden kunnen aanpakken, zelfs als anderen het niet me met eens zijn. (3)	•	0	0	0	0	0	O	•	O
Ik word gestimuleerd om mijn zorgen over (sociale) veiligheid te delen. (4)	0	0	0	O	O	0	O	0	O
Het is zonde van mijn tijd om ideeën voor verbetering te delen. (5)	0	O	O	O	O	o	0	o	O

Blok 2: Perceptie over (Management, Openheid, Eerlijkheid/rechtvaardigheid) (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

In hoeverre bent u het eens met de volgende stellingen? Vul in: Helemaal mee oneens (- - -) tot Helemaal mee eens (+ + +)

Vulli. Helenidal mee oneens (* * *) tot Helenida	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
Over het algemeen is het verstandiger om te zeggen dat je het eens bent met het management, zelfs als dat niet waar is. (1)	•	0	O	O	o	0	O	•	0
Op mijn afdeling/in mijn team is het moeilijk om een beslissing te nemen zonder toestemming van een leidinggevende. (2)	•	O	0	0	O	O	O	•	0
Op mijn afdeling/in mijn team zijn er strikte procedures en richtlijnen die bepalen hoe er gewerkt dient te worden. (3)	•	0	0	0	0	0	O	O	0
Op mijn afdeling zijn er flinke statusverschillen tussen verschillende functiegroepen. (4)	O	0	0	0	•	•	•	O	0
Tijdens mijn werk word ik door mijn leidinggevende wel erg in de gaten gehouden. (5)	O	•	0	0	•	0	O	0	O

	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
We worden geïnformeerd als er iets mis is gegaan op mijn afdeling/in mijn team. (1)	•	•	o	o	•	0	O	•	O
Als ik een goed idee zou hebben voor verbetering, denk ik dat mijn suggestie goed bestudeerd en serieus genomen zou worden. (2)	O	0	0	0	0	O	O	•	0
We krijgen feedback over veranderingen die plaatsvinden als gevolg van gemelde incidenten en/of calamiteiten. (3)	O	O	O	0	0	0	O	•	0
Ik kan mijn leidinggevende gemakkelijk benaderen om mijn zorgen te uiten. (4)	•	0	o	0	o	o	•	O	o
Op mijn afdeling/in mijn team heerst een open sfeer, waarin alles besproken kan worden. (5)	O	•	•	•	•	•	O	•	o

	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
Dit ziekenhuis gebruikt eerlijke en rechtvaardige methoden om de betrokkenheid van medewerkers bij gemaakte incidenten en/of calamiteiten te onderzoeken. (1)	•	•	0	o	O	0	•	•	O
Ik vertrouw erop dat dit ziekenhuis haar medewerkers eerlijk en rechtvaardig behandelt. (2)	O	0	0	0	0	0	O	•	0
De beoordeling van mijn functioneren is niet in lijn met mijn kwaliteiten. Een onafhankelijk persoon zou een ander oordeel over mijn werkzaamheden hebben (3)	•	•	0	•	0	0	•	•	O
Op mijn afdeling/in mijn team heerst een sfeer van rechtvaardigheid en eerlijkheid. (4)	•	0	0	0	0	0	O	•	0
Op mijn afdeling/in mijn team gelden de regels voor iedereen op dezelfde manier. (5)	O	0	0	0	0	0	•	•	0

Blok 3: Gevoelens (Psychologische veiligheid, vertrouwen, Angst) (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

In hoeverre bent u het eens met de volgende stellingen? Vul in: Helemaal mee oneens (- - -) tot Helemaal mee eens (+ + +)

	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
Op mijn afdeling/in mijn team kunnen problemen besproken worden. (1)	•	0	0	0	0	o	•	o	0
Op mijn afdeling/in mijn team worden nieuwe ideeën gewaardeerd. (2)	•	0	0	0	0	0	•	o	O
Op mijn afdeling/in mijn team wordt het hebben van meningsverschillen toegejuicht. (3)	O	0	0	0	0	0	•	•	0
Als je een fout maakt op mijn afdeling/in mijn team, wordt die vaak tegen je gebruikt. (4)	O	0	0	0	0	0	•	•	0
Op mijn afdeling/in mijn team geven we elkaar tips om de (sociale) veiligheid te vergroten. (5)	O	•	0	•	•	O	O	•	O

In hoeverre bent u het eens met de volgende stellingen?

Vul in: Helemaal mee oneens () tot Helema	al mee eens (+ + +)							
	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
Op mijn afdeling/in mijn team vertrouwen we elkaar. (1)			ם ا						ם ا
Ik vertrouw erop dat mijn leidinggevende de juiste dingen doet. (2)		۵	٥	۵	۵	٥		۵	
Het management houdt zich niet aan de eigen regels. (3)			ם ا						ם ا
Op mijn afdeling/in mijn team heerst een sfeer waarin we met elkaar samenwerken en elkaar ondersteunen. (4)	۵			-	<u> </u>			۵	_
Ik kan met zekerheid zeggen dat de mensen op mijn afdeling/in mijn team hun best doen. (5)		۵		۵	۵	٥		_	

	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
lk ben bang dat een fout mijn reputatie schaadt. (1)	•	0	O	O	O	O	•	0	O
lk ben bang voor eventuele sancties als ik een fout gemaakt heb. (2)	O	•	0	0	0	0	O	•	0
Ik vertrouw erop dat ik rechtvaardig word behandeld als ik een fout toegeef. (3)	O	•	o	0	o	O	O	•	o
Op mijn afdeling/in mijn team is het beter om fouten maar niet toe te geven. (4)	O	•	o	O	o	o	O	•	O
Ik ben bang dat ik de schuld krijg, ook al is het niet (alleen) mijn fout. (5)	O	•	O	O	O	C	O	•	O

Onderwijs (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

In hoeverre bent u het eens met de volgende stellingen? Tijdens mijn medische opleiding heb ik nuttige informatie gehad over... Vul in: Helemaal mee oneens (- - -) tot Helemaal mee eens (+ + +)

	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
hoe ik incidenten en/of calamiteiten kan rapporteren. (1)	O	0	•	0	•	0	•	•	0
waarom ik incidenten en/of calamiteiten zou rapporteren. (2)	•	0	0	0	0	•	•	•	0
(sociale) veiligheid in de zorg. (3)	•	0	0	0	0	0	•	0	O
het belang van leren van incidenten en/of calamiteiten. (4)	•	0	0	0	0	•	•	•	0
wat er gedaan wordt met gerapporteerde incidenten en/of calamiteiten. (5)de rechtmatige procedures en gevolgen voor mij en de patiënt na een incident en/of calamiteit. (6)	O	•	•	•	•	•	O	O	o

Beschuldigingscultuur (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

In hoeverre bent u het eens met de volgende stellingen? Vul in: Helemaal mee oneens (- - -) tot Helemaal mee eens (+ + +)

Helemaal Helemaal Weet Nvt mee oneens (2) (3)(4) (5) (6) mee eens niet (8) (9) (1) (7) Op mijn afdeling/in mijn team is het gebruikelijk om iemand anders de 0 0 0 0 0 0 0 0 0 schuld te geven van je eigen fout. (1) Op mijn afdeling/in mijn team is het gebruikelijk om te voorkomen dat je de 0 0 0 0 0 0 0 0 0 schuld krijgt van een fout. (2) Op mijn afdeling/in mijn team ligt de focus op het individu als er een fout 0 0 0 0 \mathbf{O} 0 O 0 wordt geconstateerd. (3) Op mijn afdeling/in mijn team krijgt iemand de schuld als zich een incident 0 0 0 0 0 0 0 0 0 en/of calamiteit voordoet. (4) Op mijn afdeling/in mijn team heerst 0 0 0 0 0 0 0 0 0 een cultuur van verwijten. (5)

Overige aspecten (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

In hoeverre bent u het eens met de volgende stellingen? Vul in: Helemaal mee oneens (- - -) tot Helemaal mee eens (+ + +)

vuriii. Helemaai mee orieens (***) tot Helemaai	Helemaal mee oneens (1)	(2)	(3)	(4)	(5)	(6)	Helemaal mee eens (7)	Weet niet (8)	Nvt (9)
Op mijn afdeling werken we samen. (1)	•	O	0	0	0	0	O	O	o
Op mijn afdeling ondersteunen we elkaar. (2)	•	0	o	o	0	0	•	o	O
Op mijn afdeling wordt goed gecommuniceerd. (3)	•	0	0	0	0	0	•	O	0
Op mijn afdeling is een sterk hiërarchische structuur. (4)	•	o	o	o	0	o	•	o	O
Op mijn afdeling wordt verwacht dat je altijd perfect functioneert. (5)	•	o	o	0	0	0	•	O	0
Op mijn afdeling wordt bij de analyse van incidenten en/of calamiteiten verder gekeken dan de rol van de direct betrokkene. (6)	•	O	O	O	O	O	o	0	O
Op mijn afdeling wordt er bij incidenten en/of calamiteiten vooral gekeken of de regels zijn overtreden. (7)	•	o	o	o	0	o	O	•	O
Op mijn afdeling zoeken we naar een oplossing naar aanleiding van een fout en/of incident in plaats van iemand de schuld te geven (8)	•	O	O	o	O	O	O	O	O

Rapporteren: praktijk (tussenkoppen worden niet weergegeven in definitieve vragenlijst)

Nu volgen enkele vragen over uw ervaring met het rapporteren van incidenten/calamiteiten.

Kunt u een inschatting maken van hoe vaak u in de afgelopen 12 maanden een incident en/of calamiteit heeft gerapporteerd via het officiële meldingssysteem van uw ziekenhuis? ...

Kunt u een inschatting maken van hoe vaak u in de afgelopen 12 maanden een incident en/of calamiteit (mede) heeft veroorzaakt? ...

Indien u een incident en/of calamiteit niet rapporteerde, wat was hiervoor de reden?...

Nu volgen enkele stellingen over uw leidinggevenden.

Safety @core business (tussenkoppen worden niet week	rgegeven in de	efinitieve vrage	enlijst)				
	Nooit (1)	Soms (2)	Regelmatig (3)	Vaak (4)	Altijd (5)	Weet niet (6)	Nvt (7)
Mijn leidinggevenden hechten veel belang aan veilig en gezond werken (1)	o	0	0	0	0	0	0
Mijn leidinggevenden geven veiligheid een hoge prioriteit (2)	o	O	•	•	o	O	0
Mijn leidinggevenden nemen de veiligheidsregels serieus (3)	0	o	•	O	0	O	o
Mijn leidinggevenden hebben een geloofwaardige veiligheidsboodschap (4)	0	o	•	•	0	O	o
Mijn leidinggevenden zijn consistent (5)	0	o	•	0	O	•	0
Mijn leidinggevenden komen beloftes na (6)	0	O	•	•	o	O	0
Mijn leidinggevenden geven het goede voorbeeld (7)	0	o	•	•	0	O	o
Mijn leidinggevenden inspireren medewerkers om zich veilig te gedragen (8)	0	o	•	•	0	O	o
Mijn leidinggevenden doen ook zelf wat zij van anderen vragen (9)	0	o	•	•	0	O	O
Mijn leidinggevenden begrijpen goed wat er op de afdeling gebeurt (10)	0	o	•	•	0	O	o
Mijn leidinggevenden hebben inzicht in de manier waarop er gewerkt wordt (11)	0	o	•	•	0	O	o
Mijn leidinggevenden zijn op de hoogte van problemen op de afdeling (12)	0	o	•	•	O	•	O
Mijn leidinggevenden begrijpen wat op de afdeling belangrijk is (13)	0	o	•	•	0	O	o
Mijn leidinggevenden vinden integriteit belangrijk. (14)	o	o	•	•	o	O	0

Tot slot enkele stellingen over uw direct leidinggevende.

Multifactoriële leiderschapsquestionnaire (tusse	enkoppen wor	den niet weerg	gegeven in definitieve	vragenlijst)			
	Nooit (1)	Soms (2)	Regelmatig (3)	Vaak (4)	Altijd (5)	Weet niet (6)	Nvt (7)
Wanneer alles gaat zoals gepland, probeert hij/zij mij niet te verbeteren. (1)	0	O	0	O	o	•	O
Hij/zij neemt de tijd om te ontdekken wat ik nodig heb. (2)	•	o	O	O	o	0	o
Ik kan krijgen wat ik wil, als ik werk lever zoals dat is afgesproken. (3)	0	•	O	O	O	0	0
Ik vertrouw hem/haar in het oplossen van obstakels. (4)	0	O	0	O	o	0	O
Hij/zij besteedt aandacht aan de fouten die ik heb gemaakt. (5)	0	O	0	O	o	0	O
Hij/zij verandert bedreigende situaties in mogelijkheden. (6)	•	o	•	O	o	0	o
Hij/zij zorgt ervoor dat ik nadenk over zaken die ik altijd aan heb genomen. (7)	0	O	0	O	o	0	O
Het werk wat ik doe voor hem/haar, bepaalt wat ik ervoor terugkrijg. (8)	•	O	•	O	o	0	•
Hij/zij onderneemt pas actie als er iets fout gaat. (9)	•	O	o	O	o	•	0

Hij/zij beveelt ons aan voor promotie en/of bonussen, wanneer ik dat verdiend heb. (10)	0	0	O	0	0	•	0
Hij/zij werkt één-op-één samen met mij. (11)	o	o	•	o	o	o	o
Hij/zij coacht mij. (12)	O	o	0	o	O	o	o
Hij/zij neemt de eerste stap als er een risico is voor ons beiden. (13)	O	o	O	o	o	O	o
Hij/zij vertelt me wat ik moet doen om beloond te worden. (14)	•	•	•	•	•	0	0
Hij/zij wekt nieuwsgierigheid bij me op over nieuwe manieren van werken. (15)	•	•	•	o	o	0	0
Hij/zij beloont me als ik goed werk aflever. (16)	O	o	•	0	•	0	o
Hij/zij zorgt dat ik minder kritisch kijk naar creatieve ideeën. (17)	o	o	•	0	O	o	O
Hij/zij handhaaft de regels als taken niet gedaan worden. (18)	O .	O	•	•	O	0	o
Hij/zij geeft mij redenen om te geloven in wat ik kan. (19)	O	0	0	o	o	o	O
Hij/zij houdt mijn gemaakte fouten nauwlettend in de gaten. (20)	•	•	•	o	o	0	0
Hij/zij laat mij geen nederlaag accepteren. (21)	o	o	•	•	O	0	o
Hij/zij laat bezorgdheid zien om fouten te voorkomen. (22)	0	•	•	o	0	•	o
hij/zij zorgt ervoor dat ik krijg wat ik wil in ruil voor mijn prestaties. (23)	•	•	O	•	•	•	0
Hij/zij is voor mij een symbool van succes en bekwaamheid. (24)	•	•	O	0	O	0	o

Dit was de laatste vraag. Hartelijk dank voor uw deelname aan dit onderzoek! Onderstaand vindt u aanvullende informatie over de achtergrond en reden van dit onderzoek.

In ziekenhuizen kan de cultuur binnen de organisatie een sterke invloed hebben op de patiëntveiligheid. In een open cultuur worden fouten gemeld en kan personeel kritisch zijn op elkaar. Dit wordt een just culture genoemd. Aan de andere kant van dit spectrum ligt een blame culture. Als er een hoge mate van just culture is, kan er geleerd worden van gemaakte fouten, wat positief is voor de patiëntveiligheid en kwaliteit van zorg. Hoewel deze just/blame culture al tot op bepaalde hoogte is onderzocht, blijft het precieze mechanisme hierachter onduidelijk. Om dit te onderzoeken is een vragenlijst ontwikkeld, die wij willen testen op psychometrische kwaliteiten.

Door deelname aan dit onderzoek, heeft u een bijdrage geleverd aan het onderzoek naar de cultuur binnen zorginstellingen. Hiermee kan het leervermogen van de organisatie verhoogd worden en daarmee ook de patiëntveiligheid. Uiteindelijk leidt dit tot een betere kwaliteit van zorg, waar niet alleen patiënten maar ook personeel van zorginstellingen baat bij hebben.

Bij eventuele vragen of opmerkingen kunt u contact opnemen met <u>k.m.vanwijk@umail.leidenuniv.nl</u>, <u>s.komen@umail.leidenuniv.nl</u> of groeneweg@fsw.leidenuniv.nl.

Onder de deelnemers verloten wij bol.com cadeaubonnen. Wilt u kans maken? Vul dan hieronder uw e-mailadres in.

NB. Dit e-mailadres wordt niet gekoppeld aan uw antwoorden en zal enkel gebruikt worden voor verloting van de cadeaubonnen.

Klik op volgende om uw antwoorden op te slaan en de enquête te beëindigen.

II. Appendix 2 Items that were moved or deleted

Reporting 3	Angst voor de eventuele negatieve gevolgen weerhouden mij ervan om incidenten en/of calamiteiten te melden.
	Moved to Fear. Reporting went from .196 to .546. Fear went from .471 to .549. Item related to fear.
Reporting 4	Incidenten en/of calamiteiten die zich binnen mijn team/op mijn afdeling voordoen, worden door anderen gemeld.
	Removed. Reporting went from .546 to .700. Ambiguous item.
Learning 5	Dezelfde fouten worden steeds opnieuw gemaakt, omdat er hier niets verandert.
	Moved to Management. Learning went from .374 to .684. Management went from .687 to .705. Item related to
	management.
Speaking Up 2	Ik ben niet bereid suggesties voor veranderingen te doen, omdat ik bang ben voor de gevolgen.
	Moved to Fear. Speaking Up went from052 to .387. Fear went from .549 to .652. Item related to fear.
Speaking Up 5	Het is zonde van mijn tijd om ideeën voor verbetering te delen.
	Moved to Management. Speaking Up went from .387 to .799. Management went from .705 to .740. Item related to
	management.
Fairness 3	De beoordeling van mijn functioneren is niet in lijn met mijn kwaliteiten. Een onafhankelijk persoon zou een ander
	oordeel over mijn werkzaamheden hebben.
	Moved to Management. Fairness went from .465 to .792. Management went from .740 to .763. Item related to
	management.
Psych. Safety 4	Als je een fout maakt op mijn afdeling/in mijn team, wordt die vaak tegen je gebruikt.
	Moved to Fear. Psych. Safety went from .413 to .738. Fear went from .652 to .716. Item implies fear.
Trust 3	Het management houdt zich niet aan de eigen regels.
	Moved to Management. Trust went from .529 to .830. Management stayed .763. Item related to management.
Fear 3	Ik vertrouw erop dat ik rechtvaardig wordt behandeld als ik een fout toegeef.
	Moved to Fairness. Fear went from .716 to .815. Fairness went from .792 to .803. Item related to fairness.
Psych. Safety 1	Op mijn afdeling/in mijn team kunnen problemen besproken worden.
	Moved to Openness. Openness went from .864 to .877. Item related to openness.
Psych. Safety 2	Op mijn afdeling/in mijn team worden nieuwe ideeën gewaardeerd.
	Moved to Learning. Learning went from .684 to .713. Item related to learning.
Psych. Safety 3	Op mijn afdeling/in mijn team wordt het hebben van meningsverschillen toegejuicht.
	Moved to Openness. Openness went from .877 to .866, which was considered OK. Item related to openness.
Psych. Safety 5	Op mijn afdeling/in mijn team geven we elkaar tips om de (sociale) veiligheid te vergroten.
	Moved to Learning. Learning went from .713 to .757. Item related to learning.
Other aspects 1	Op mijn afdeling werken we samen.
	Moved to Trust. Trust went from .830 to .858. Item implies trust.
Other aspects 2	Op mijn afdeling ondersteunen we elkaar.
	Moved to Trust. Trust went from .858 to .887. Item implies trust.
Other aspects 3	Op mijn afdeling wordt goed gecommuniceerd.
	Moved to Openness. Openness went from .866 to .882. Item related to openness.
	Op mijn afdeling is een sterk hiërarchische structuur.
Other aspects 4	Op mijn ajaeting is een sterk merarchische structuur.
Other aspects 4	Moved to Management. Management went from .763 to .792. Item related to management.

	Moved to Fear. Fear went from .815 to .799, but together with Other aspects 7, Fear went to .817. Item important fo complete questionnaire.
Other aspects 6	Op mijn afdeling wordt bij de analyse van incidenten en/of calamiteiten verder gekeken dan de rol van de direct betrokkene. Moved to Learning. Learning went from .757 to .766. Item related to learning.
Other aspects 7	Op mijn afdeling wordt er bij incidenten en/of calamiteiten vooral gekeken of de regels zijn overtreden. Moved to Fear. Fear went from .815 to .828. Item implies fear.
Other aspects 8	Op mijn afdeling zoeken we naar een oplossing naar aanleiding van een fout en/of incident in plaats van iemand de schuld te geven. Moved to Learning. Learning went from .766 to .797. Item related to learning.

III. Appendix 3 *R syntax for testing the model*

Initial model

```
library(lavaan)
```

model <- '#Regressions

TrustMean ~ a*FearMean + b*ManagementMean + c*FairnessMean + d* LearningMean

FairnessMean ~ e*ManagementMean

FearMean ~ f*ManagementMean + g*EducationMean

OpennessMean ~ h*TrustMean

SpeakingupMean ~ i*OpennessMean + j*TrustMean

ReportingPowerMean ~ k*OpennessMean + l*FearMean

 $Learning Mean \sim m*Speaking up Mean + n*Openness Mean + o*Reporting Power Mean$

#Indirect effects

indmantotrust_fear:=f*a

 $indmantotrust_fair := e^*c$

indfeartorep:=a*h*k

indtrusttospup:=h*i

indopentolearn_spup:=i*m

indopentolearn rep:=k*o'

fit <- sem(model, data = data, test = "Satorra-Bentler", missing = "listwise")

summary(fit, standardized=TRUE, fit.measures = TRUE, rsquare = TRUE)

Second model

library(lavaan)

model <- '#Regressions

TrustMean ~ c*FairnessMean

FairnessMean ~ e*ManagementMean

FearMean ~ f*ManagementMean

OpennessMean ~ h*TrustMean + EducationMean

SpeakingupMean ~ i*OpennessMean + FearMean

ReportingPowerMean ~ k*OpennessMean + 1*FearMean

LearningMean ~ n*OpennessMean + o*ReportingPowerMean

#Indirect effects

indmantotrust fair:=e*c

indtrusttospup:=h*i

indopentolearn_rep:=k*o'

fit <- sem(model, data = data, fixed.x=FALSE, test = "Satorra-Bentler", missing = "listwise")

summary(fit, standardized=TRUE, fit.measures = TRUE, rsquare = TRUE)

Final model

library(lavaan)

model <- '#Regressions
TrustMean ~ c*FairnessMean
FairnessMean ~ e*ManagementMean
FearMean ~ f*ManagementMean + FairnessMean
OpennessMean ~ h*TrustMean + EducationMean
SpeakingupMean ~ i*OpennessMean + FearMean
ReportingPowerMean ~ k*OpennessMean + l*FearMean
LearningMean ~ n*OpennessMean + o*ReportingPowerMean + FairnessMean

#Indirect effects indmantotrust_fair:=e*c indtrusttospup:=h*i indopentolearn_rep:=k*o'

fit <- sem(model, data = data, test = "Satorra-Bentler", missing = "listwise")

summary(fit, standardized=TRUE, fit.measures = TRUE, rsquare = TRUE)

IV. Appendix 4 Qualitative data

Summary of interviews in English

Interview 1 – Physician Assistant, 49, Gastroenterology

The Physician Assistant has experienced blame culture in her work multiple times when people make mistakes and experience negative consequences. The manager is important in determining whether there will be learned from mistakes, but things have changed before after reports were made. The official reporting system is good and inviting, but reports are made too easily by nurses who think something is an incident too quickly. She and her colleagues use the reporting system to try to change things by reporting them over and over again. She thinks management is important because they can create either an atmosphere of openness or fear, because they have power. They can use your mistakes to help you by giving you the right training. The management can inhibit blame culture by being honest, open, careful with feelings, trustworthy and focused on making their employees grow. The management of the nurses does this, but physicians do this less, since they are more tough and mistakes they make have a bigger impact. Physicians are less focused on the human side of caregiving and more on the businesslike side. They try to protect themselves from getting too involved, to prevent themselves from getting hurt. Education is important because you need to know how to report; the reporting system should be clear. She has learned about reporting during nursing school. Not every report goes through the official system, but also simply by talking to someone when something goes wrong. Fear is important; it is also some kind of shame: being afraid not to come across like a professional. She thinks healthcare employees are very critical towards themselves and do not allow themselves to make mistakes. Healthcare employees feel a big responsibility, because they know consequences can be very negative. It is good to be critical to stay focused, but too much makes you freeze. Some experience helps, so people should give themselves the time to learn and make mistakes. She thinks fairness from people around you leads to more openness about mistakes. Trust leads to more reporting and less fear to make mistakes. There can be openness when you know you do not have to be afraid to get hurt. Speaking up is about being taken seriously and knowing something changes when you speak up. But you also need to feel like you have something to add; and personality determines whether you have the boldness to speak up (in large or small groups). There will be more reporting when people have proper education and know something is done with their reports. A negative/aggressive reaction to a report will enhance blame culture. The most important aspect in developing a blame culture is the fear to get hurt. Some people are more sensitive and blame will have a bigger impact on them. People do not report because they have no time, do not think it necessary, do not know how or are afraid of negative consequences. The management should pay attention to reporting, help employees with it, thank them for it and tell them what has been done with the reports. Colleagues can stimulate each other to report as well. Patient safety will be better in her department with more knowledge, openness to each other's mistakes and helping each other grow, listening to the patient and family, and an open and safe reporting system.

Interview 2 – Intern, 23

The intern does not think she has experienced blame culture or seen things change due to reports. The management (which she thinks are the physicians) have to give a good example on discussing incidents and improvements. They need to give junior physicians the space to make mistakes. If you are treated badly for reporting, you will not report the next time. She does not know about an official reporting system, but has seen people report about others. She has not had education about reporting or patient safety and does not believe this necessary. She thinks you will learn this in practice. Fear is important: feeling it is wrong to

make mistakes or feeling like someone is watching you will enhance blame culture. Young physicians all want to be the best to receive one of the few jobs, so they do not allow themselves to make mistakes. This does not go for interns, because they have less responsibilities. Fairness is important, because it influences the atmosphere and whether you can work easily. Trust is important, because if you respect each other, you can share that you made mistakes. Then you know people react normally to it. For this to happen, the performance pressure needs to lessen. She does not know if this is possible, because there are not enough job openings for everyone. This is not merely negative, because it keeps you focused and motivated. Competition between young physicians does not have a good effect on trust. Openness, so an atmosphere in which mistakes can be made and people react well to this, will inhibit blame culture. For speaking up, the atmosphere needs to be good. Reactions to you speaking up determine whether you will do this again sometime. Reporting should not happen too quickly, because you should first discuss incidents with the person involved. Learning is important to change the system and improve quality of care. She thinks that patient safety will improve when there is constant supervision of physicians on junior physicians or interns.

Interviews in Dutch

Interview 1 – Physician Assistant, 49, Gastroenterology

Bedankt dat u mee wilt doen aan dit interview. De vragen zijn naar aanleiding van een vragenlijst die is uitgezet onder ziekenhuispersoneel. Deze vragenlijst mat een aantal aspecten van de ziekenhuiscultuur die bij kunnen dragen aan patiëntveiligheid. In afdelingen of teams kan er sprake zijn van een zekere mate van blame culture dan wel just culture. Een blame culture zorgt ervoor dat medewerkers fouten niet rapporteren, omdat ze bang zijn persoonlijk de schuld te krijgen. Een just culture zorgt ervoor dat fouten wel gerapporteerd worden, omdat fouten gezien worden als iets dat mis is in het systeem en niet de schuld is van één iemand. De gegevens die uit deze vragenlijst kwamen zijn geanalyseerd, en door middel van dit interview wil ik graag meer inzicht krijgen in deze uitkomsten. De vragen zullen gaan over de cultuur die u persoonlijk ervaart op de afdeling waar u werkt. Uw antwoorden zullen alleen gebruikt worden in mijn scriptie en uw naam of ziekenhuis zullen daarbij niet genoemd worden. Heeft u nog vragen voordat we beginnen?

1. Kunt u me allereerst kort iets vertellen over uw functie? Wat zijn uw taken en verantwoordelijkheden?

Zaalarts (physician assistant): verantwoordelijk voor een aantal patienten, ik stuur verpleegkundigen aan, doe lichamelijk onderzoek. Ik geef geen directe leiding.

- 2. Wat weet u zelf over blame culture?
- Systeem waarbij mensen iets negatiefs ervaren als ze een fout maken. Ik ervaar dit zelf regelmatig.
 - 3. Hoe wordt er op uw afdeling omgegaan met fouten die gemaakt worden door medewerkers? Worden ze gerapporteerd? Kan erover gepraat worden? Waarom wel/niet?

Hangt af van de leidinggevende. De ene ziet het als een leermoment en de ander als een blunder. Er is een officieel systeem voor incidenten, dat wordt besproken door een commissie. Er wordt zorgvuldig en netjes omgegaan met meldingen. Het is uitnodigend om meer te vertellen over incidenten. Maar: meldingen worden vaak gemaakt door verpleegkundigen die de ernst van een situatie niet goed in kunnen schatten, dus dan is de melding te snel gemaakt.

4. Hebben gemaakte incidenten op uw afdeling ertoe geleid dat er bepaalde manieren van werken veranderd zijn? In andere woorden, is er geleerd van incidenten? Waarom wel/niet?

Ja, bijv. melding dat iemand te laat medicijnen heeft gehad. Wordt dan uitgezocht waar het door kwam. Dit komt dan in de belangstelling en vervolgens wordt de regel aangescherpt. Ander voorbeeld: er is nieuwe apparatuur op het laboratorium voor bloedwaarden. Hierop is echter een nierwaarde niet meer te zien als iemand ook een andere hoge waarde heeft; maar erg belangrijk. Ik en mijn collega's sturen daarom steeds een melding zodat uiteindelijk de apparatuur veranderd wordt. Het management heeft ook geprobeerd het aan te passen, maar dit is niet gelukt.

5. Wat denkt u dat de rol is van het management in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Essentiële rol: open atmosfeer creëren of angst veroorzaken. Zij hebben macht en zijn de baas; zij kunnen straf geven. Zij kunnen ook jouw fouten gebruiken om te zien waar jij zelf in kan leren en je daarbij helpen of je een cursus aanbieden. Een management dat een blame culture vermindert moet eerlijk zijn, niks wegmoffelen, niks verzinnen, zorgvuldig zijn met gevoelens, de mond houden over privé zaken en bedenken hoe je je personeel nog kan verbeteren. Ik zie veel hiervan terug in de managers van de verpleging. Kleiner deel onder mijn management (hoe artsen worden opgeleid). Artsen zijn veel harder naar elkaar. Fouten hebben ook grotere gevolgen. Artsen zijn veel zakelijker dan verpleegkundigen, omdat zij veel zakelijke dingen doen, en als ze te veel denken over het mensgerichte dan gaan ze eraan onderdoor. Dit is dus een soort zelfbescherming.

6. Wat denkt u dat de rol is van opgeleid zijn in hoe te rapporteren en veiligheid te bevorderen in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Belangrijk omdat als je niet weet hoe het moet, je niet rapporteert. Dan worden dingen steeds weggemoffeld. Een duidelijk systeem hebben is belangrijk. Dit is onderdeel van de HBO-v opleiding, want iedereen moet het kunnen. Maar je rapporteert niet altijd via het officiële systeem. Als er iets bijna fout gaat, neem je vaak contact op met de persoon zelf. Als iets niet klopt moet je iemand daarop aanspreken. Verpleegkundigen zeggen het wel als een arts iets vergeet, maar niet als ze denken dat je iets niet goed doet (zij hebben minder kennis).

- 7. Wat denkt u dat de rol is van de hoeveelheid angst op de afdeling in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Grote rol, want angst is de belangrijkste motivator om iets niet te zeggen. Het is ook een soort schaamtegevoel, bang zijn om niet als professional over te komen, voor gezichtsverlies. Je ziet er niks van dat er angst is op een afdeling. Wat je wel ziet is dat mensen enorm kritisch naar zichzelf kijken en zichzelf geen fouten toestaan. Bij dokters én verpleegkundigen. Dat komt doordat mensen een sterk verantwoordelijkheidsgevoel hebben. Als je fouten maakt kan dat héle slechte gevolgen hebben. Het weegt dus zwaar door mogelijke consequenties. Het is ook goed, want het zorgt ervoor dat je scherp blijft, maar het kan doorslaan en dan verlamt je kritische blik je. Je moet niet te negatief zijn en risico durven nemen. Wat helpt is veel ervaring opdoen. Jezelf de tijd geven iets te leren, niet meteen verwachten dat je het goed in je vingers hebt.
 - 8. Wat denkt u dat de rol is van een eerlijk behandelen vanuit het management dan wel ziekenhuis in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Hoe eerlijker mensen met je omgaan, hoe opener de sfeer is om over je fouten te vertellen.

9. Wat denkt u dat de rol is van een sfeer van vertrouwen op het management en elkaar in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Ook een schaal: hoe meer vertrouwen dat er eerlijk met je om wordt gegaan en naar je wordt geluisterd, hoe makkelijker je fouten zal melden en hoe minder bang je zal zijn om fouten te maken.

- 10. Wat denkt u dat de rol is van een sfeer van openheid in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Eerlijkheid, vertrouwen, openheid → allemaal met elkaar verbonden. Openheid ontstaat als je weet dat je niet bang hoeft te zijn en dat mensen je niet kwetsen.
 - 11. Wat denkt u dat de rol is van het uitspreken van ideeën, bezwaren en twijfels in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Net weer anders dan openheid, want het gaat ook over je serieus genomen voelen en zien dat er iets met je ideeën wordt gedaan. Het denken dat je iets toe te voegen hebt. Dit hangt ook af van persoonlijkheid; binnen een kleinere groep is het bijvoorbeeld makkelijker voor mij om iets te zeggen.

- 12. Wat denkt u dat de rol is van het rapporteren van incidenten in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Door onderwijs hoe, wanneer en waar wordt er meer gerapporteerd. En een goede terugkoppeling nadat er iets is gemeld. Binnen blame culture zie ik de rol van rapporteren zo dat als je een melding maakt, iemand jou daar agressief op aanspreekt. Een negatieve reactie op een melding leidt tot blame culture.
- 13. Wat denkt u dat de rol is van het leren van incidenten in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Is leren in een blame culture iets positiefs? Het gebeurt minder in een blame culture. Sommige mensen zijn gevoeliger en blame heeft dan een grotere impact. Angst om gekwetst te worden is het belangrijkste in het ontwikkelen van de blame culture.
 - 14. Waarom denkt u dat incidenten in ziekenhuizen vaak niet gerapporteerd worden? Zou hier verbetering in moeten komen? Zo ja, hoe?

Weinig tijd, geen zin (nut er niet van inzien), niet weten hoe het moet of bang voor negatieve feedback of gevolgen. Dit zou verbeterd kunnen worden vanuit de leidinggevenden door regelmatig aandacht te geven aan het rapporteren en personeel te helpen met rapporteren. Ook door ze daarna te bedanken voor de melding en terug te koppelen wat er mee is gedaan. Het hoeft niet alleen vanuit de leidinggevende te komen, je kan ook je collega's stimuleren om te rapporteren \rightarrow dan wordt het normaal.

- 15. Wat zou er op uw afdeling gedaan moeten worden om de zorg veiliger te maken? Aantal dingen: kennis vergroten, open houding naar elkaar voor dingen die nog niet lukken (elkaar helpen groeien), goed luisteren naar de patiënt en familie, open en veilig systeem om fouten te melden.
 - 16. Heeft u nog ervaringen of ideeën die u graag wilt delen over blame culture, just culture of het rapporteren en leren van incidenten in de zorg?

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Hartelijk bedankt voor uw tijd.

Interview 2 – Intern, 23

1. Kunt u me allereerst kort iets vertellen over uw functie? Wat zijn uw taken en verantwoordelijkheden?

Co-assistent: arts assistenten ondersteunen, poli-patienten zien en over hen overleggen met een arts, spoedeisende hulp als dat bij een co-schap zit, diensten draaien en zorgen dat je zoveel mogelijk leert.

2. Wat weet u zelf over blame culture?

Weet ik niet. Geen ervaring in.

3. Hoe wordt er op uw afdeling omgegaan met fouten die gemaakt worden door medewerkers? Worden ze gerapporteerd? Kan erover gepraat worden? Waarom wel/niet?

Weet ik niet.

4. Hebben gemaakte incidenten op uw afdeling ertoe geleid dat er bepaalde manieren van werken veranderd zijn? In andere woorden, is er geleerd van incidenten? Waarom wel/niet?

Weet ik niet.

5. Wat denkt u dat de rol is van het management in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Artsen hebben de verantwoordelijkheid over o.a. arts-assistenten. Je hebt vaak dat het wisselt wie er verantwoordelijk is op een afdeling. Artsen moeten het goede voorbeeld geven: eigen fouten bespreekbaar maken en bespreken hoe het beter kan. Zij moeten arts-assistenten de ruimte geven om fouten maken. Het begint met de opleiding, want als jij heel erg op je donder krijgt als je een fout maakt, dan vertel je het die keer daarna niet. Ik ken het officiële meldingssysteem in ziekenhuizen niet; alleen het klachtsysteem voor patienten. Wel over anderen, dat ze zeggen dat er even een melding van gemaakt moet worden. Een VIM melding ofzo? Die persoon zelf doet het dan niet omdat hij niet doorheeft dat het fout gaat of het het niet waard vindt om te melden.

6. Wat denkt u dat de rol is van opgeleid zijn in hoe te rapporteren en veiligheid te bevorderen in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Ik heb wel opleiding gehad in ethische colleges, de toetsingscommissie, tuchtrecht etc. maar niet in meldingen. Die kennis heb je niet nodig, dat moet je in de praktijk ervaren: van een collega horen of zelf een fout maken en ervan leren.

7. Wat denkt u dat de rol is van de hoeveelheid angst op de afdeling in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Maakt heel veel uit. Als er zo erg op je vingers wordt gekeken of als het verkeerd is om fouten te maken, dan heeft dat wel invloed. Alle jonge artsen willen de beste zijn en een plek aangeboden krijgen. Dus fouten zijn fataal voor je opleidingsplek. Als co-assistent speelt dat minder, want je hebt geen verantwoordelijkheden dus je bent vrij om fouten te maken. Er zijn geen consequenties, maar je wil natuurlijk geen fouten maken. Als co-assistent ben je nog niet BIG-geregistreerd: alle zorgmedewerkers zijn daarin geregistreerd en zijn daardoor aansprakelijk voor fouten, er kan dan een klacht ingediend worden door patiënten.

8. Wat denkt u dat de rol is van een eerlijk behandelen vanuit het management dan wel ziekenhuis in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Als diegene je opleider is, dan wil je dat diegene je goed vindt. Eerlijkheid is goed, want het heeft invloed op de sfeer, hoe je jezelf kan ontplooien en of je op je gemak aan het werk kan.

9. Wat denkt u dat de rol is van een sfeer van vertrouwen op het management en elkaar in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Heel belangrijk. Als je elkaar respecteert kan je beter delen dat je fouten hebt gemaakt. Dus als je weet dat er normaal op gereageerd wordt. Wat daar voor nodig is, is dat de prestatiedrang afzwakt. Dat het prima is om fouten te maken en dat je natuurlijk super secuur moet werken, maar zeker als je net begint kan je niet alles goed doen. Je hebt dan ook nog een soort concurrentie. Dat zorgt niet voor een vertrouwelijke, fijne sfeer. Onder artsen die een baan hebben is het waarschijnlijk anders, maar zo is het bij arts-assistenten.

- 10. Wat denkt u dat de rol is van een sfeer van openheid in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Hoe meer openheid, des te minder blame culture. Openheid is er als de sfeer ernaar is dat het prima is om fouten te maken, dus de verwachting dat er goed wordt gereageerd op fouten. In plaats van 'chill, hij heeft een fout gemaakt, dan heb ik meer kans'.
 - 11. Wat denkt u dat de rol is van het uitspreken van ideeën, bezwaren en twijfels in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

Het ligt eraan hoe erop gereageerd wordt. Eerst moet de sfeer ernaar zijn, dan geef je iets aan, en met een goede reactie daarop, is het de volgende keer minder moeilijk. Angst voor consequenties zou lager zijn door die hele prestatiecultuur te verminderen. Weet niet of die prestatiecultuur verandert kan worden, dat hou je als er te weinig plekken zijn voor het aantal mensen. Het is niet altijd verkeerd, je wordt gestimuleerd om het beste uit jezelf te halen, maar het kan ook slecht zijn.

- 12. Wat denkt u dat de rol is van het rapporteren van incidenten in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe?

 Je moet niet te snel rapporteren. VIM meldingen worden echt supersnel gedaan, terwijl je het ook gewoon kan bespreken met die persoon zelf. Dan hoef je niet meteen een melding te maken, want dan hoort die persoon zelf dat later van boven. Dus het moet ook weer niet te laagdrempelig zijn om te rapporteren.
- 13. Wat denkt u dat de rol is van het leren van incidenten in het stimuleren dan wel verminderen van blame culture? Waardoor komt het? Waar leidt het toe? Van fouten kan je altijd leren. Als meerdere mensen dezelfde fout maken, kan dat veranderd worden. Dan kan de kwaliteit van de zorg verbeteren.
- 14. Waarom denkt u dat incidenten in ziekenhuizen vaak niet gerapporteerd worden? Zou hier verbetering in moeten komen? Zo ja, hoe?

 Mensen hebben misschien het idee dat er toch niks mee gedaan wordt, of dat ze liever zelf even op diegene afstappen dan een melding te doen.
 - 15. Wat zou er op uw afdeling gedaan moeten worden om de zorg veiliger te maken?

Daar heb ik niet echt over nagedacht. Het enige wat ik kan bedenken is supervisie van een arts op je werk: dat er altijd iemand meekijkt met een co-assistent of arts-assistent. Bij één ziekenhuis werkte het systeem niet zo. Daar heb ik met nog één co-assistent een afdeling gerund en toen we een arts belden om hulp vroeg hij of specifiek hij moest helpen en er niet iemand anders was.

16. Heeft u nog ervaringen of ideeën die u graag wilt delen over blame culture, just culture of het rapporteren en leren van incidenten in de zorg?

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Hartelijk bedankt voor uw tijd.