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The influence of leadership style on the existence of a just/blame culture in hospitals

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Abstract

Objective. Two percent of patient deaths during hospital admissions are caused by preventable adverse events. To decrease the amount of preventable adverse events, learning from these events is necessary. This is only possible if they are reported. Just/blame culture can influence reporting of adverse events, and thus to patient safety. Leadership is a factor that could be of influence on just/blame culture. The goal of this study is to test a recently developed just/blame culture questionnaire on its reliability and validity for the use in healthcare institutions and to examine the relation between just/blame culture and having a transactional or transformational leader.

Methods. The just/blame culture questionnaire and the short Multifactor Leadership Questionnaire (MLQ-24) were distributed via social media to people working in healthcare.

Results. The just/blame culture questionnaire was not constructually valid and some sub-constructs were not reliable. The questionnaire was transformed to acquire higher reliability and validity. The adjusted questionnaire was more reliable and had a higher validity, but was still not valid. There was a significant, positive relation between the score on the MLQ-24 and the score on the just/blame culture questionnaire ($F(df = 1, 87) = 6.976$, $p = .010$). The score of the transformational scale was related significantly ($F(df = 1, 87) = 10.115$, $p = .002$) to the score on the just/blame culture questionnaire, but the transactional leadership scale was not ($F(df = 1, 87) = 2.806$, $p = .098$). People with a transformational leader experienced significantly more openness, fairness and trust than people with a transactional leader ($F(df = 1, 94) = 9.289$, $p = .003$).

Conclusion. The current model of just/blame culture on which the questionnaire was based, seems to be incomplete. Leadership style has an influence on segments of just/blame culture, namely openness, fairness and trust. More research is necessary to broaden the definition of just/blame culture and to define the role of leadership in hospital culture. This can contribute to creating a safer hospital environment.

Introduction

Adverse events in health care institutions

Adverse events are a common occurrence in healthcare institutions. Adverse events affect patient safety. Zegers and colleagues (2009) define an adverse event as "an unintended injury that results in temporary or permanent disability, death or prolonged hospital stay, and is caused by healthcare management rather than by the patient's underlying disease process." Adverse events per hospital admission were examined by Zegers et al. (2009). They found that in a sample of 7926 hospital admissions, one or more adverse events had occurred in 5.7%. Of these adverse events, 39.5% was considered to be preventable. They also discovered that the incidence of preventable adverse events contributing to death was nearly 2%, which means that in 157 of the 7926 hospital admissions, preventable adverse events contributed to the death of the patient. This would mean that in the general population, around 2% in all hospital admissions, preventable adverse events occur that contribute to the death of a patient. Baines, Langelaan, de Bruijne, Spreeuwenberg and Wagner (2015) compared adverse event rates of patients in Dutch hospitals, based on 16000 patient records from 2004, 2008 and 2011/2012. Adverse event rates of patients with at least one adverse event were 4% in 2004, 6% in 2008, and 5.7% in 2011/2012. Adverse events decreased between 2008 and 2011/2012, but adverse events still occur in a considerable amount of hospital admissions.

These results show that preventable adverse events in healthcare are still an important factor contributing to patient safety (Baines et al., 2015) and patient mortality (Zegers et al., 2009). This raises the question: how can the number of preventable adverse events be reduced? In this thesis, one of the pathways to reduction of preventable adverse events will be studied, namely just/blame culture in healthcare institutions. The existence of a just/blame culture influences the reporting of adverse events, which is needed to enable learning of these events, and prevention of adverse events in the future.

There are defenses in place to prevent adverse events, but despite these defenses, adverse events still occur. The Swiss cheese model describes how mistakes can occur even though there are barriers in place to prevent them. The model consists of several levels that each work as a barrier to prevent incidents from occurring. Each of the barriers has a possibility of failing. When one barrier fails, another one will stop the mistake from occurring, but sometimes several barriers fail. When all barriers fail, an adverse event can occur (Stein & Heiss, 2015). Ruchlin and Callahan (2004) state that errors occur when organizational, human, and technical defenses are lacking or not good enough. Stein and Heiss (2015) describe how five slices of the Swiss cheese model can be used to increase patient safety and prevent mistakes, i.e. training, healthcare technology and electronic medical records, checklists, policies and procedures, and communication.

Wagner et al. (2008) stated that the errors in healthcare as a result of technical failure are decreasing, as opposed to the errors caused by human factors. These errors are not caused by one single person. The system, not the person is to blame for an error, as the system should take cognitive and physical shortcomings of humans into account. Thus, the entire system needs to be evaluated. In order to be able to evaluate the system and lower the number of preventable adverse events, medical errors should be reported, analyzed and evaluated in every case (Stein & Heiss, 2015; Wagner et al., 2008). When adverse events are reported, people can learn from previous experiences, and possibly change the cause of the error (Kohn, Corrigan & Donaldson, 2000; Sammer, Lykens, Singh, Mains & Lackan, 2010; Wagner et al., 2008). This could help decrease the number of preventable adverse events, and thus increase patient safety (Heuver, Heijboer, Schilp & Wagner, 2015). When incidents are reported, measures should be taken to prevent this error to occur again (Wagner et al., 2008). Drupsteen, Groeneweg and Zwetsloot (2013) add that next to prevention of recurrence of the same mistake, making the organization safer and improving the learning process should also be a priority.

Organizational learning

To prevent errors and adverse events from occurring again, health care settings need to promote a culture of organizational learning and not a culture of blame (Stein & Heiss, 2015). Organizational learning is defined by Carroll and Edmondson (2002) as "a process of increasing the capacity for effective organizational action through knowledge and understanding".

The learning from incidents model. Drupsteen and colleagues (2013) proposed a model about learning from incidents in organizations, which has eleven steps that are divided in four stages: investigating and analyzing incidents, planning interventions, intervening, and evaluating (figure 1). Each of the stages is a part of the learning process and vital to learning from incidents. Each stage leads to a result, and when this result is incomplete or lacking, the next stage is less useful. When a step is not executed or not executed well, it is a bottleneck in the learning process. This leads to a loss of learning potential. The first stage is investigating and analyzing incidents, which has the following steps: incident reporting, incident registration, determining the depth and scope of research, fact finding and incident analysis.

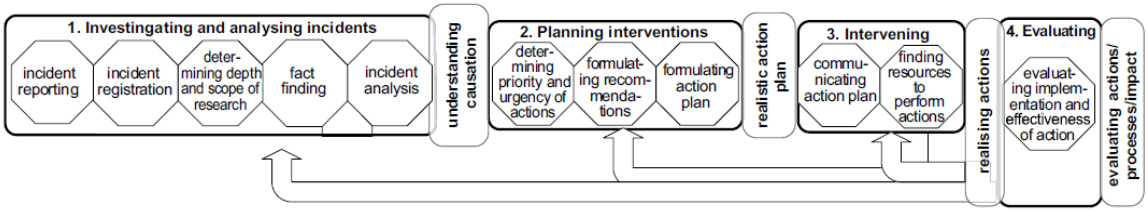

Figure 1. Model of the learning from incidents process. Reprinted from "Critical Steps in Learning from Incidents: Using Learning Potential in the Process From Reporting an Incident to Accident Prevention" by Dupsteen, L., Groeneweg, J. and Zwetsloot, G., 2013, *International Journal of Occupational Safety and Ergonomics 19*(1), 65.
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Several factors can promote organizational learning in health care settings. The organizational culture needs to be one which is psychologically safe and where people are free to speak up about issues or incidents that concern them, without facing the blame or consequences (Edmondson, 2004; Wagner et al., 2008). Also, workers need to be part of the

collective or group, instead of seen as an individual (Edmondson, 2004).

Another important factor influencing organizational learning, is the management and leadership style in a hospital (Amitay, Popper, Lipshitz, 2005). The management should support reporting adverse events (Wagner et al., 2008), and leaders should support organizational learning by creating an environment where people can reflect on actions and take action accordingly (Carroll & Edmondson, 2002). There is evidence that leadership style has an influence on the amount of organizational learning in a hospital (Amitay et al., 2005; LeBrasseur, Whissell & Ojha, 2002). Amitay and colleagues (2005) found that transformational leadership is highly correlated with organizational learning in community clinics. LeBrasseur and others (2002) conclude that transformational leaders are more equipped to implement *continuous quality improvement*, and thus organizational learning in hospitals.

Khatri, Brown and Hicks (2009) state that the kind of environment that promotes organizational learning needs to have a just culture instead of a blame culture. A just culture is defined by Khatri and colleagues (2009) as "an environment supportive of open dialogue to facilitate safer practices". Having a just culture promotes organizational learning, as an organization with a just culture is able to identify, report, and investigate incidents and adverse events. Only then, learning from previous adverse events and making improvements to the health care system is possible (Khatri et al., 2009).

As mentioned by Drupsteen and colleagues (2013), incident reporting is the first step in the model of learning from incidents, and when this first step is not taken or not executed properly, organizational learning is stunted. According to the research of Drupsteen and others (2013), the reporting and evaluating steps were the steps where most of the learning potential was lost. Whether incidents are reported and organizational learning is possible, depends on several factors, such as feelings of psychological safety, management and leadership style, and the organizational culture. Khatri and colleagues (2009) mention that

the existence of a blame or just culture can determine whether incidents are reported and can therefore influence patient safety.

Just and blame culture

There have been numerous studies on the existence of a just or blame culture in health care and its influence on patient safety. Frankel, Leonard and Denham (2006) state that a just culture, together with the engagement of leadership in safety and good teamwork are essential to safe and reliable care for patients. A blame culture is defined by Khatri and colleagues (2009) as "a set of norms and attitudes within an organization characterized by an unwillingness to take risks or accept responsibility for mistakes, because of a fear of criticism or management admonishment". However, there is no clear view of the exact constructs just/blame culture consists of, and there is no tool to measure the amount of just/blame culture. Just/blame culture consists of several different components, i.e. behavior, perception, feelings, education, and psychological safety. Just/blame culture influences reporting of adverse events, learning, and thus patient safety (figure 2).

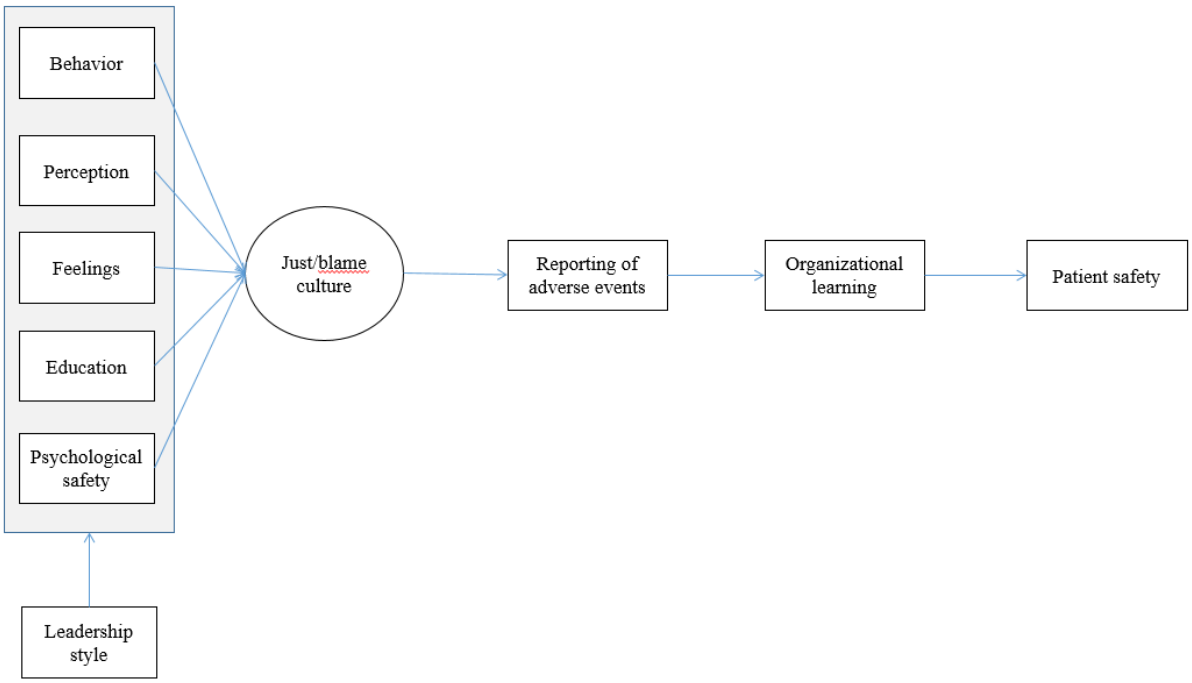

Figure 2. Just/blame culture model

The first component of blame culture that influences the reporting of adverse events are the perceptions hospital employees have about openness, management and fair treatment when an error occurs. Edmondson (2004) states that a climate of openness makes it easier to report and discuss an adverse event. In a just culture, an open and blame-free climate is supported (Khatri et al., 2009). This climate is influenced by the relationships between colleagues in a team and the leader of a team (Edmondson, 2004). The influence of management on blame culture is also mentioned by Khatri et al. (2009). People should also expect to be treated fairly when reporting an error (Khatri et al., 2009).

The second component determining blame or just culture is psychological safety. Employees need to feel psychologically safe, trust their team and management and not fear consequences of reporting mistakes (Khatri et al., 2009). Gorini, Miglioretti and Pravettoni (2012) add to this that healthcare employees should not fear being blamed. Psychological safety means that people have the impression that they can question the current protocols, express concerns, and admit mistakes (Khatri et al., 2009). In a just culture, people can rely on management to help them and support them when adverse events do occur (Khatri, 2009), and can rely on their team to communicate (Frankel et al., 2006). Edmondson (2004) states that people need to feel free to voice their concerns and errors. Also, people should be without fear of repercussions when reporting adverse events (Beyea, 2004; Van Thaden et al., 2006; Waring, 2005).

These components determine the existence of a blame or just culture, which in turn influences the reporting of errors. Reporting errors enables organizational learning (Drupsteen et al., 2013). Blame culture can be a barrier for employees of health care institutions to report adverse events (Waring, 2005). When errors are not reported, learning from previous errors and improving patient safety is inhibited (Khatri et al., 2009). In a just culture, errors can be reported (Khatri et al., 2009). Kirk, Parker, Claridge, Esmail, and Marshall (2007) state that a just culture should include communication on safety issues and

staff training and education in patient safety. It is also clear in a just culture what is or is not acceptable behavior (Von Thaden, Hoppes, Li, Johnson & Schriver, 2006).

Leadership style and just/blame culture in health care settings.

The relation between leadership style and just/blame culture. McFadden, Henagan and Gowen (2009) state that increasing patient safety depends on the top management of the organization. They argue that a blame free, safe environment stems from leaders that listen to and care about patient safety concerns. Khatri et al. (2009) name a control-based and rule-oriented management style as an influencing factor on the existence of a blame culture in hospitals. Against this, a commitment-based management supports learning and motivates employees, which supports a just culture. Henriksen and Dayton (2006) predict that leadership conditions where errors can be discussed, will lead to an increase in reporting errors, which promotes organizational learning. A leader who usually seeks blame and attributes failing to individual error, raises fear of punishment, which decreases the reporting of errors.

The style of leadership has been found to correlate with a culture of patient safety (Clarke, 2013; Squires, Tourangeau, Spence Laschinger & Doran, 2010) and blame culture (Merril, 2015). The transformational-transactional leadership model states that there are three types of leadership styles: transformational, transactional, and laissez-faire (Bass, 1990). This study focused on transactional and transformational leadership and the relationship between these types of leadership and just/blame culture.

Transactional leadership. Transactional leadership is characterized by a transaction between the employee and the employer (Bass, 1990), and is hierarchical in nature (Gluck, 2010). An employee is motivated by rewards or penalties the leader can give. Organizational learning is promoted by transactional leadership, but organizational learning with a transactional leader mainly focuses on the learning that reinforces the existing process, not on changing or challenging the current process (Vera & Crossan, 2004).

There are two different types of transactional leaders: contingent reward, and active and passive management by exception (Bass, 1990; Judge & Piccolo, 2004). Contingent reward refers to the extent to which a leader is clear about his/her expectations and the reward set for meeting those expectations. Management by exception is whether the leader takes corrective action towards the follower, when it is necessary. Active management by exception is characterized by monitoring the situation and taking corrective actions immediately. A passive management by exception style is characterized by the leader only taking action when behavior is causing problems (Judge & Piccolo, 2004). Transactional leadership is associated with safety compliance, i.e. following the regulations and rules (Clarke, 2013).

Transformational leadership. Transformational leaders motivate employees to broaden their interests, generate awareness and inspire employees to look beyond their own interests. A transformational leader promotes organizational learning in a way that challenges the current practice and promotes change (Vera & Crossan, 2004).

There are four dimensions in transformational leadership: charisma or idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Judge & Piccolo, 2004). Charisma or idealized influence means the extent to which a leader behaves in a way that causes people to identify themselves with the leader. Inspirational motivation is the whether the leader has a vision that is appealing and inspiring. Intellectual stimulation is the degree in which the leader stimulates the people intellectually by asking critical questions, taking risks and by listening to his/her followers' ideas. Individualized consideration means to extent to which a leader listens to concerns and needs, and acts as a mentor to his/her follower (Judge & Piccolo, 2004).

Transformational leadership is characterized by safety participation, i.e. partaking in safety activities (Clarke, 2013). This leadership style is also associated with a lower number of adverse events and patient mortality compared to other leadership styles (Wong,

Cummings & Ducharme, 2013). Transformational leadership is also associated with low turnover, leads to staff stability and helps to increase staff expertise. This leads to better outcomes for the patients (Capuano, Bokovoy, Hitchings & Houser, 2005; Houser, 2003).

As stated before, transformational leadership is positively correlated with organizational learning in healthcare settings (Amitay et al., 2005; LeBrasseur et al., 2002). Transactional leadership is also related to organizational learning, but the way transactional and transformational leaders promote organizational learning differs (Vera & Crossan, 2004). Organizational learning is positively related to a just culture in healthcare settings (Khatri et al., 2009). This brings into question whether a just culture is correlated with the style of leadership in healthcare settings.

Hypotheses

As stated earlier, there is no existing questionnaire that can be used to assess the existence of a just and/or blame culture in health care institutions and the influence of leadership on just and/or blame culture. In this study, a recently developed questionnaire was used. Because this questionnaire has not been used in healthcare settings before, the first hypothesis (1A) is about the construct validity of the just/blame culture questionnaire. Hypothesis 1B focuses on the internal validity of the leadership style questionnaire, when it is used in hospitals, as there has been no previous research with the MLQ-24 in health care settings.

There is some research that states that leadership style could have an influence on the existing just or blame culture in a health care institution. However, there is no solid evidence of a relationship between leadership style and just/blame culture in hospitals and it is not clear how leadership style exactly influences just/blame culture. Therefore, the other question posed in this study is: is there a relation between leadership style and the existence of (components of) just or blame culture in hospitals? This leads to four hypotheses (2A, 2B,

2C, and 2D) about the relation between leadership and constructs of just/blame culture in hospitals.

Hypothesis 1 – the questionnaire

a. The constructs of the just/blame culture questionnaire are constructually valid when used in hospitals.
b. The leadership questionnaire is a constructually valid predictor of leadership style when used in hospitals.

Hypothesis 2 – leadership and blame culture

a. There is a relation between the score on the leadership questionnaire and the just/blame culture questionnaire, when measured in hospitals.
b. There is a relation between just/blame culture and transactional leadership, in hospitals.
c. There is a relation between just/blame culture and transformational leadership in hospitals.
d. There is a difference between the scores on the separate constructs on the just/blame culture questionnaire in people with a transformational leader and people with a transactional leader.

Method

Design

The research questions were answered by conducting a survey amongst employees in healthcare settings. The design of the study was cross-sectional. This means that the participants were not be influenced during the study and the questionnaire was filled out at one specific point in time (Field, 2013).

Procedure

Participants were recruited through posts on social media, which included a link to the questionnaire. First, participants read and signed an informed consent form. When they gave their consent to participate in the study, the questionnaire started automatically. The questionnaire took approximately fifteen minutes to fill out and it could be filled out online with the program Qualtrics.

Participants

The questionnaire was filled out by 131 employees at healthcare settings. The participants were at least 18 years old and an employee or intern at a hospital in the Netherlands. The aim was to have at least a hundred participants, but it was preferable to have more participants, because of the use of exploratory and confirmatory factor analysis that was used in this study. It is recommend to have a sample size of at least a hundred participants for this type of analysis (Williams, Onsman & Brown, 2010). The participants were be recruited through posts on social media, like Facebook. Five participants could win a €20,- gift certificate for filling out the questionnaire.

Materials

The questionnaire used in this study consisted of two parts, a questionnaire about just/blame culture and a questionnaire about leadership style, the Multifactor Leadership Questionnaire (MLQ-24). The questionnaire started with several background questions about their position in the hospital and a block of questions especially for interns and a block of questions for other hospital employees. The block of questions for hospital employees

included questions about their educational level, their position at the hospital and how many years of experience they had working in health care. The block of questions for interns focused on which internship they were doing presently.

Blame culture questionnaire. The questionnaire was developed for a previous master thesis and was based on a literature review concerning just and blame culture. It is a compilation of several questionnaires on aspects of blame culture. The questionnaire was not developed for the use in healthcare specifically. For the purpose of this study, the questionnaire was adapted to suit just/blame culture research in health care institutions. While adapting the questionnaire to be suitable for healthcare institutions, a check was done to see if the questionnaire had face validity. Items that did not seem to relevant for the study of just/blame culture in healthcare were deleted. The questions were answered with a seven point Likert-scale from 'strongly disagree to 'strongly agree'. Also, 'I do not know' and 'does not apply' were included as options.

The questionnaire consisted of eight constructs: behavior, perception, feelings, education, blame culture, other aspects, reporting and the safety@corebusiness questionnaire. The behavior, perception and feelings scales consist of three subscales: behavior consists of reporting, learning and speaking up; perception consists of management, openness and honesty; and feelings consists of psychological safety, trust and fear. The safety@corebusiness scale consisted of questions of the 'Priority for Safety', 'Leadership consistency', 'Leading by Example', and the 'Managerial Work Floor Knowledge' of the complete safety@corebusiness questionnaire. The just/blame culture questionnaire and the MLQ-24 can be found in appendix A.

MLQ-24. The Multifactor Leadership Questionnaire (MLQ) was developed by Bass and Avolio (1990), based on Bass' research on transactional and transformational leadership. Tepper and Percy (1994) developed a 24 item version of the MLQ (MLQ-24). In this study,

the MLQ-24 was included, as it was shorter than the regular MLQ and could be used to predict transactional and transformational leadership (Tepper & Percy, 1994).

The MLQ-24 consists of eight scales, four of which that predict transactional leadership and four of which that predict transformational leadership. The four scales for transactional leadership are split into two contingent reward scales, one for promises and one for rewards, and two management-by-exception scales, one for passive and one for active management-by-exception. The transformational leadership scales were charismatic leadership, inspirational leadership, individualized consideration and intellectual stimulation (Tepper & Percy, 1994). The MLQ-24 was translated from English to Dutch for this study.

The MLQ-24 did not have a cutoff score to decide if somebody has a transformational or a transactional leader. Therefore, people were divided into the group with a transformational leader or the group with a transactional leader based on what he or she had experienced the most. Thus, people with a higher score on subscale of transformational leadership were in the transformational leadership group and people with a higher score on the transactional leadership subscale were in the transactional leadership group. People who had the same score on both subscales were excluded from the analysis.

Statistical analysis

In order to test the hypotheses in this study, the statistical computer programs SPSS 23 and R were used. The variables were treated as interval variables, as all the questions in the questionnaire could be answered with a Likert scale. Thus, the variables could be treated as interval variables (Field, 2013).

Before the hypotheses were tested, the just/blame culture questionnaire and the MLQ-24 were tested on reliability and inter item correlations were calculated. Also, an exploratory factor analysis was used to see which underlying structure exists in the questionnaire (Williams et al., 2010). Based on these analyses, the just/blame culture questionnaire was adjusted.

To test hypothesis 1a and 1b, confirmatory factor analysis was used. The model based on hypothesis 1a assumed that the latent variable behind the questions in the just/blame culture constructs was just/blame culture. To test this model, a confirmatory factor analysis was used (Williams et al., 2010). First of all, a factor analysis was done to test whether the latent variable behind these questions was indeed just/blame culture. The following constructs were tested separately: blame culture, behavior, perception on management, openness and honesty, feelings (psychological safety, trust and fear), education, and the safety@corebusiness scale (figure 3). After testing these constructs, a factor score per construct was calculated. This factor score was used to test whether blame culture is the latent variable behind the constructs of the just/blame culture questionnaire. This was done, instead of testing the complete model (figure 3), because the number of participants was too low to test the complete model all at once.

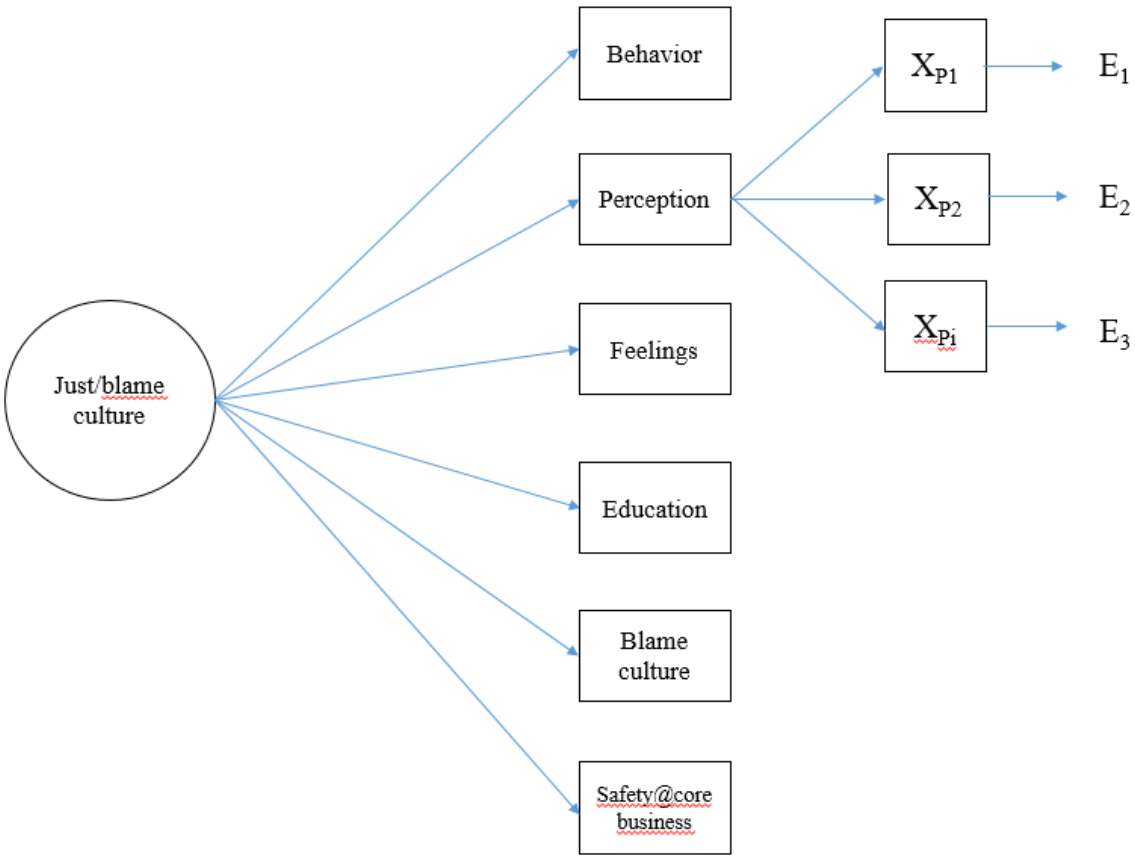

Figure 3. Just/blame culture as a latent variable behind the separate constructs in the questionnaire

Hypothesis 1b stated that the MLQ-24 was constructually valid to test whether someone works for a transactional (TA) and transformational (TF) leader in a hospital. The model assumes that transactional and transformational leadership are latent variables behind the questions in the MLQ-24.

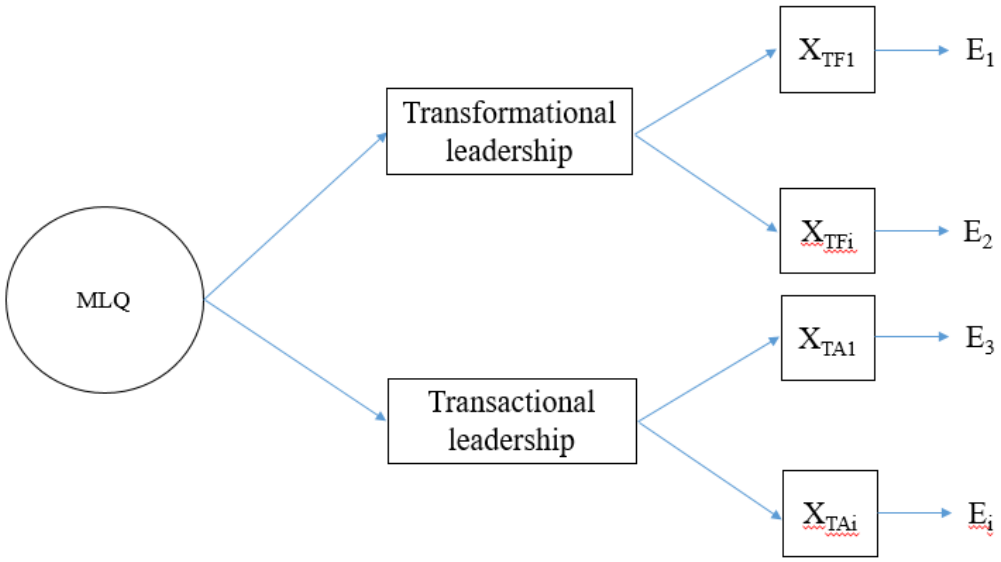

Figure 4. TF and TA leadership as latent variables behind the questions in the MLQ.

To check whether the proposed model was correct, the model was tested with a chi-square test and the fit indices of the model. The comparative fit index (CFI), normed fit index (NFI), the non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA) was checked. A score below .95 on the CFI, and below .90 on the NFI and the NNFI meant that the model did not have a sufficient fit on the data. The score on the RMSEA below .05 meant the data have an excellent fit, between .05 and .08 meant a good fit, and between .08 and.10 meant that the model has a sufficient fit. A score above .10 on the RMSEA meant that the model does not have a sufficient fit to the data (Brown, 2015).

Hypothesis 2a posed the question whether just/blame culture is related to leadership in general. Hypothesis 2b and 2c focused on the relation between blame/just culture and transactional leadership and transformational leadership. Hypothesis 2d tested the relationship between just/blame culture and the separate constructs of the just/blame culture

questionnaire. To test hypotheses 2a, 2b and 2c, simple linear regression analysis was used to determine the relationship between leadership and just/blame culture. To see whether leadership style can be used as a predictor for the score on the just/blame culture questionnaire. Just/blame culture was used as the dependent variable and leadership was the independent variable. A linear regression analysis was done. First, the assumptions of standard multiple regression (linearity, normality, multicollinearity, and homoscedasticity) were checked. To test whether just/blame culture can be predicted by leadership style, an ANOVA was used. It was assumed that $\alpha < .05$ on the F-test in the ANOVA meant that leadership style was a useful predictor for the existence of a just/blame culture. The multiple correlation coefficient (R) was used to check the usefulness of leadership style as a predictor for just/blame culture. R^2 was used to determine the amount of variance in the just/blame outcome that is explained by leadership style (Field, 2013).

To test hypothesis 2d, the participants were divided in groups, depending on whether they experience more transactional or a transformational leadership from their leader. An ANOVA was conducted to measure the differences in these groups on the subscales of the just/blame culture questionnaire. The assumptions of a one-way ANOVA were checked, i.e. homogeneity of the variances and normality of variances. There is no check for the third assumption of ANOVA, the independence of variances, it is a matter of a good study design (Field, 2013).

Results

Participants

The questionnaire was filled out by 131 participants. Table one shows a detailed overview of the characteristics of the participants. Of the 131 participants, 57 worked as an intern, 15 as a doctor, 8 as a physician assistant, 23 as a nurse, and 28 in other fields. The participants were employed at several different departments in hospitals, namely: cardiology, surgery, gynecology, hematology, general practitioner, intensive care, internal care, pediatrics, otorhinolaryngology, pulmonology, gastroenterology, nephrology, neurology, ophthalmology, plastic surgery, psychiatry, radiology, emergency care.

Table 1 Characteristics of the participants

	Males (n = 30)			Females (n = 101)			Complete group (n = 131)		
	M	*SD*	*Range*	*M*	*SD*	*Range*	*M*	*SD*	*Range*
Age	32.57	10.54	19-58	28.35	10.49	19-64	29.31	10.61	19-64
HC	13.10	11.67	2-40	11.72	11.21	0-43	12.09	11.27	0-43

HC = number of years working in healthcare

Reliability of the questionnaires

MLQ-24. The MLQ-24 had a Cronbach's α of .917, which means the reliability is considered good. Table two shows the descriptive statistics of the MLQ-24 and its subscales. The Kolmogorov-Smirnov tests were not significant for the complete questionnaire and the transformational leadership subscale. Therefore, it can be assumed that the population distribution in this scale and these subscales was normal. This is also in line with the skewness and/or kurtosis of the scales. The Kolgomorov-Smirnov test for the transformational leadership subscale was significant.

Table 2 Descriptives of the MLQ-24

	α	*items*	*n*	M	SD	Kurtosis	Sk	KST
Complete questionnaire	.917	24	98	2.923	.628	-.654	-.099	.071
Transactional leadership	.803	12	98	3.002	.600	-.242	-.133	.068
Transformational leadership	.875	12	98	2.837	.816	1.293	.672	.063*

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

Just/blame culture questionnaire. The questionnaire had a Cronbach's α of .763, which is considered reliable, but the separate constructs of the questionnaire were not reliable (see table three). Listwise deletion was used to exclude participants when calculating the reliability. The reliability of the constructs and sub-constructs can be seen in table three. The reliability if item deleted presented that the removal of some items could increase reliability.

Table 3 Cronbach's alpha just/blame culture questionnaire

	n	*α*	*α without items*
Complete questionnaire	32	.707	
Behavior	53	.440	.722 (R3, L5, SU2)
reporting (R)	66	.196	.546 (R3)
learning (L)	70	.374	.636 (L5)
speaking up (SU)	108	-.052	.385 (SU2)
Perceptions	61	.487	.547 (M3 and Fa3)
management (M)	95	.687	.705 (M3)
openness (O)	99	.864	
fairness (Fa)	67	.465	.799 (Fa3)
Feelings	79	.506	.611 (PS4, T3 and F3)
psych. safety (PS)	94	.413	.680 (PS4)
trust (T)	92	.529	.843 (T3)
fear (Fe)	102	.471	.727 (F3)
Education	115	.910	
Blame culture	84	.870	
Other aspects	77	.363	
Safety@corebusiness	104	.920	

Factor analysis. Inspection of the questionnaire showed some items did not seem to fit in the construct they were placed in, but they could still provide useful information. Therefore, instead of deleting the items, a principal component analysis was conducted to see whether items could be moved to other scales.

The sample size was considered too small to perform a factor analysis (N = 131). However, the Kaiser-Meyer-Olkin measure was .803, which meant that the data had a clear factor structure, and that a principal component analysis could be done despite the small sample size. Bartlett's test of sphericity was significant (χ_2 (df = 1431) = 3950.721, p < .001). It could be assumed that the correlations between variables were not zero. As both of these assumptions were met, a principal component analysis could be conducted.

The unrotated solution was used, which showed sixteen components with an eigenvalue higher than one. Based on the scree plot, the solution could have one or five components (appendix B, figure B1). The components generated by the principal component analysis consisted of items of several different scales. The first component mainly included questions of the openness, fairness, psychological safety, trust, speaking up and learning scale. The second component was composed of questions mostly from the management and the fear scale. The third component mainly consisted of questions from the education scale. The fourth component included questions from the speaking up, learning, openness, psychological safety and trust scales. The fifth component only included two questions of the learning scale.

The scales of the questionnaire were adjusted, based on the principal component analysis and the reliability analysis. This provided a general idea of the new structure of the questionnaire. The questions eligible for moving to another scale were checked on content and their fit with the other questions in the scale. Eight items were moved to another scale, as can be seen in table four. The item reporting 4 ('Incidents and/or calamities that occur in my team/department, are reported by others.') was deleted from the questionnaire, as this

item did not seem to fit to any of the scales according to the factor and reliability analyses. These measures improved the reliability of all the scales, except for the scales perceptions (α = .254) and feelings (α = .599). This lead to the assumption that these subscales did not fit together in a scale. Based on the content of the items and the principal component analysis, two new scales were formed: 'fear of consequences' and 'atmosphere'. Atmosphere consisted of the subscales trust, openness, fairness, and some items of psychological safety. Fear of consequences consisted of the subscales management, fear and some items of other aspects and psychological safety. The items of the other aspects scale that were left, were distributed over several scales, based on the content and the principal component analysis. Item four of other aspects was removed from the questionnaire. The final version of the questionnaire can be seen in table three. A description of the moved and deleted items can be found in appendix C. Table four shows the Cronbach's alpha of the adjusted just/blame culture questionnaire.

Mean substitution was used to substitute missing values, except in cases where less than 50% of the questions in a (sub)construct were completed. In that case, the participant was not used in the calculation of reliability of that construct.

Table 4 Cronbach's alpha on the final version of the just/blame culture questionnaire

	α	*n*	*items moved*	*items added*
Complete questionnaire	.706	89		
Behavior	.873	125		
reporting (R)	.700	103	R3	
learning (L)	.797	121	L5	PS2, PS5, OA6, OA8
speaking up (SU)	.799	116	SU2, SU5	
Fear of consequences	.862	128		
management (M)	.792	126		SU5, L5, F3, T3, OA4
fear (FE)	.817	125	FE3	R3, PS4, SU2, OA5,OA7
Atmosphere	.933	123		
trust (T)	.887	118	T3	OA1, OA2
openness (O)	.882	119		PS1, PS3, OA3
fairness (FA)	.803	119	FA3	F3

Education	.910	121
Blame culture	.870	101
Safety@corebusiness	.920	104

Table five shows the final descriptive measures of the just/blame culture questionnaire. The Kolmogorov-Smirnov tests were significant for the behavior scale and its subscales, the subscales trust and fairness, the blame culture scale and the safety@corebusiness scale. Therefore, it was assumed that the population distribution in this scale and these subscales was not normal. This is also in line with the skewness and kurtosis of the scales.

Table 5 Descriptive statistics of the just/blame culture questionnaire

	α	*items*	*n*	M	SD	Sk	Kurtosis	KST
Behavior	.873	14	125	5.019	.834	-.823	2.420	.106*
reporting (R)	.700	3	103	5.343	1.064	-1.126	1.587	.150***
learning (L)	.797	8	121	5.137	.851	-.977	3.208	.099*
speaking up (SU)	.799	3	116	4.690	1.294	-.489	-.059	.099*
Fear of consequences	.857	19	128	3.363	.872	.019	-.067	.066
management (M)	.758	10	126	3.454	.867	-.194	.216	.056
fear (Fe)	.817	9	125	3.256	1.065	.387	-.210	.077
Atmosphere	.933	19	123	5.507	.852	-.100	2.011	.073
trust (T)	.874	6	118	5.869	.840	-1.281	2.220	.105*
openness (O)	.890	8	119	5.222	1.001	-.847	.919	.087
fairness (Fa)	.756	5	119	5.525	.893	-1.108	2.243	.109**
Education	.910	6	121	4.407	1.396	-.385	-.489	.085
Blame culture	.870	5	101	2.319	.969	.630	-.152	.130**
Safety@corebusiness	.920	14	104	3.873	.070	-.275	.565	.124***

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

Hypothesis 1

Hypothesis 1A. The question posed in hypothesis 1A was whether the blame culture constructs of the questionnaire are constructually valid when the questionnaire is used in hospitals. To test this hypothesis, the separate constructs of the questionnaire, i.e. behavior,

perception, feelings, education, blame culture, and safety@corebusiness, were tested with a confirmatory factor analysis in the statistical program R. This way, it could be confirmed that what was intended to be measured by this construct, was indeed the latent variable behind this construct. This would mean that the construct was constructually valid. Then, a factor score per construct was calculated. With these factor scores, a confirmatory factor analysis could be done to test the construct validity of the complete questionnaire.

First, a confirmatory factor analysis was done on the scales of the original just/blame culture questionnaire. Afterwards, a confirmatory factor analysis was done on the adjusted just/blame culture questionnaire, to ensure that it was possible to compare the fit of the model to the data on the original questionnaire and the adjusted questionnaire. Table six shows the results of the confirmatory factor analyses done on the separate constructs of the just/blame culture questionnaire before it was adjusted. Table seven shows the results of the confirmatory factor analysis after the adjustment of the questionnaire.

Deletion based on maximum likelihood was used to ensure the highest possible amount of usable data. The group of participants needed to be at least a hundred to be able to do a factor analysis (Williams et al., 2010). As can be seen in table six and seven, the number of participants differed for the separate constructs.

Table six shows that the constructs behavior, perception, feelings, education, safety@corebusiness do not have a sufficient fit on the data on any of the fit indices. The CFI was below .95 in all cases, the NFI and NNFI below .90, and RMSEA above .10. Blame culture did have a sufficient fit according to the NFI, but not according to the CFI, NNFI and RMSEA. Other aspects was sufficient according to the CFI, NNFI, and the RMSEA, but not according to the NFI.

Another confirmatory factor analysis was done on the adjusted constructs of the questionnaire. Table seven shows that the transformed version of the questionnaire has a better, albeit still not sufficient fit to the data, Behavior still does not have a sufficient fit, but

the scores on the CFI, NFI and NNFI are slightly higher, which means the data was closer to having a sufficient fit. The RMSEA was slightly too high for a sufficient fit. Fear of consequences did not have a sufficient fit according to the CFI, NFI and NNFI, but did have a sufficient fit according to the RMSEA. Education, safety@corebusiness and blame culture were not adjusted, thus the fit of the model was the same as in table six.

Table 6 Confirmatory factor analysis fit indices Just/Blame culture questionnaire

	n	CFI	NFI	NNFI	RMSEA
Behavior	119	.692	.585	.640	.112***
Perception	119	.699	.622	.649	.135***
Feelings	118	.753	.677	.712	.131***
Education	121	.900	.884	.833	.204***
Safety@corebusiness	104	.725	.673	.675	.176***
Blame culture	101	.940	.923	.880	.174***
Other aspects	106	.955	.899	.937	.081

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

Table 7 Confirmatory factor analysis adjusted Just/Blame culture questionnaire

	n	CFI	NFI	NNFI	RMSEA
Behavior	125	.732	.627	.683	.107***
Fear of consequences	128	.724	.595	.689	.095***
Atmosphere	123	.783	.709	.756	.127***
Education	121	.900	.884	.833	.204***
Safety@corebusiness	104	.725	.673	.675	.176***
Blame culture	101	.940	.923	.880	.174***
Just/blame model	121	.877	.833	.795	.130*

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

The factor scores of the adjusted constructs were calculated. With these factor scores, a new confirmatory factor analysis was done to test whether the latent variable behind the separate constructs was indeed just/blame culture. Exclusion based on maximum likelihood was used again. The fit indices indicate that the model does not have a good fit to the data, as

can be seen in table seven. This means that the model as seen in figure three does not fit the data. This did not mean that just/blame culture is not the latent variable behind the constructs of the questionnaire. The proposed model was close to having a sufficient fit, which is above .95, .90 and below .10 on respectively the CFI, NFI, NNFI and the RMSEA. This means that the proposed model did approach just/blame culture, but it did not represent just/blame culture completely. Figure four shows the current, incomplete model of just/blame culture.

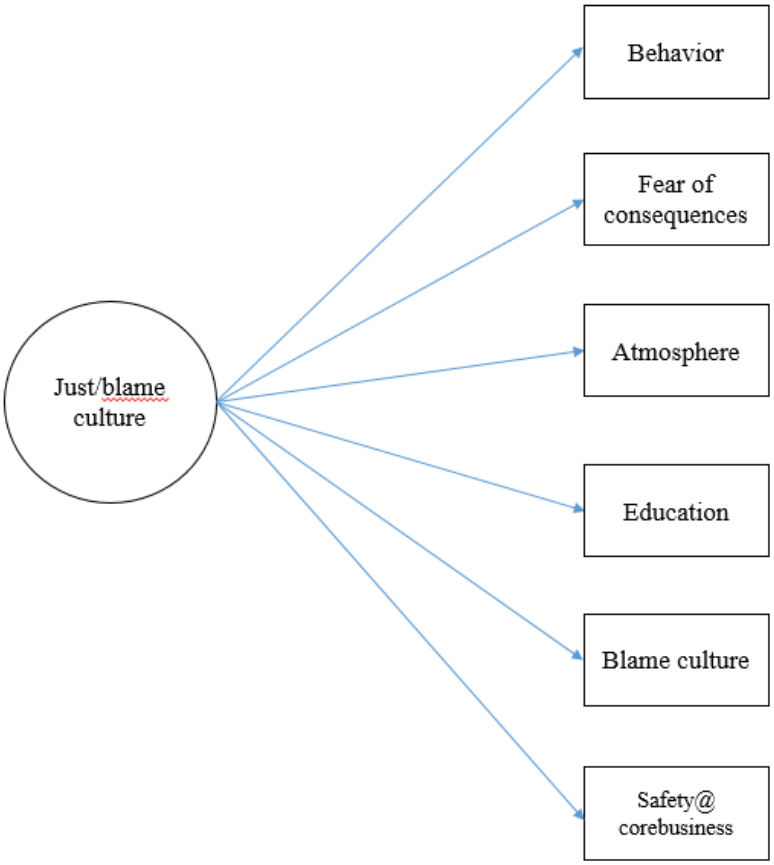

Figure 5. Just/blame culture model

Hypothesis 1B. The leadership questionnaire is a constructually valid predictor of leadership style when used in hospitals. To test this hypothesis, the constructs of transactional and transformational leadership of the questionnaire was tested with a confirmatory factor analysis. This way, it can be confirmed that the questions per construct all fit to the said construct and that the latent variable behind the questions is indeed transformational or transactional leadership. As in the analysis of hypothesis 1A, exclusion of participants based on maximum likelihood was done. This resulted in a hundred

participants that were included in the analysis. The fit indices of the confirmatory factor analysis show that the proposed model does not have a sufficient fit to the data. The CFI, NFI, NNFI and RMSEA respectively had .483, .389, .434, and .135. None of these fit indices suggest a good fit to the data. This means that the proposed model as can be seen in figure four does not fit the data.

Hypothesis 2

Hypothesis 2A. The question posed in hypothesis 2A was whether there is a relation between the score on the leadership questionnaire and the just/blame culture questionnaire, when the score was measured in hospitals. To answer this question, a simple linear regression was used. A new variable for the total mean score on the just/blame culture questionnaire was calculated. This variable consisted of the mean scores on the subscales management, fear, reporting, learning, speaking up, openness, fairness, trust, and the scales blame and safety@corebusiness. A total score could give misleading results, as some subscales consisted of more questions than other subscales, which would give some subscales more weight compared to the other subscales. Therefore, a total mean score was calculated. After the calculation of the new variable, a simple linear regression could be done. The total mean score on the just/blame culture questionnaire is the dependent variable and the mean score on the MLQ-24 is the independent variable.

First, the linearity, normality, multicollinearity, and homoscedasticity assumptions of simple linear regression were checked. The assumptions were not violated, so the simple linear regression could be done. Participants were excluded pairwise. Because of the deletion, data of 89 of the participants could be used for the simple regression analysis. The ANOVA of the regression was significant ($F(df = 1, 87) = 6.976$, $p = .010$). This means that the score on the leadership style questionnaire is a significant, positive predictor of the score on the just/blame culture questionnaire. The R^2 was .074, which means that 7.4% of the

variance in the score on the just/blame culture questionnaire, could be predicted from the score on the leadership style questionnaire.

Hypothesis 2B. Hypothesis 2B focused on the relationship between the score on the just/blame culture questionnaire and the score on items about transactional leadership style. First, the linearity, normality, multicollinearity, and homoscedasticity assumptions of simple linear regression were checked. The assumptions were not violated, so a simple linear regression could be done. Participants were excluded on a pairwise basis, as a result, data of 89 participants was included. The ANOVA was not significant ($F(df = 1, 87) = 2.806$, $p = .098$). This meant that the score on transactional leadership is not a significant predictor of the score on the just/blame culture questionnaire. R^2 was .031, which means that 3.1% of the variance in the score on the just/blame culture questionnaire, can be predicted from the score on scale for transactional leadership style.

Hypothesis 2C. The question posed in hypothesis 2C was whether this population shows a relationship between the score on the just/blame culture questionnaire and the score on items on transformational leadership style. The score on the just/blame culture questionnaire was used as the dependent variable and leadership style is the independent variable. Before a simple linear regression could be done, the assumptions were checked. The assumptions of homoscedasticity, linearity and multicollinearity were not violated. The Kolmogorov-Smirnov test was significant, which means the data was not normally distributed, so the assumption of normality was violated. However, the normal P-P plot shows no alarming deviations from the normal distribution (Appendix B, figure B2). Thus, even though the assumption of normality was violated, a simple linear regression could be done.

Participants were excluded from the regression analysis on a pairwise basis. The data of 89 participants could be used. The ANOVA was significant ($F(df = 1, 87) = 10.115$, $p = .002$). This meant that the score on transformational leadership was a significant, positive

predictor of the score on the just/blame culture questionnaire. R^2 was .104, which meant that 10.4% of the variance in the dependent variable, the score on the just/blame culture questionnaire, could be predicted from the score on scale for transformational leadership style.

Hypothesis 2D. Hypothesis 2D states that there is a difference between the scores on the separate constructs on the just/blame culture questionnaire in people with a transformational leader and people with a transactional leader. To test this hypothesis, a one way ANOVA was done. First, the assumptions of the ANOVA were checked. Levene's test of homogeneity of variances was not significant in any of the constructs, except behavior and its sub-construct learning. This means that the variances were not significantly different in the group with a transformational leader and in the group with a transactional leader. The variances in the behavior construct and the learning sub-construct were significantly different between the two groups, so the Welch F-value should be interpreted instead of the regular F-value for this construct and sub-construct. The normality of the variances was also checked. The P-P plots of the variances showed no systematic deviation from normality (see appendix B, figure B2). After checking the assumptions, an ANOVA was conducted. The participants were excluded analysis by analysis. The results of this ANOVA can be seen in table eight.

Table 8 ANOVA score just/blame culture transformational/transactional leadership

	n_{TF}	n_{TA}	F	*df*	*p*
Complete question.	67	18	3.662	1, 83	.059
Behavior	76	20	1.858	1, 22.913	.186
Learning	75	20	2.892	1, 22.795	.103
Reporting	69	18	.116	1, 84	.734
Speaking up	76	20	2.595	1, 94	.111
Fear of consequences	76	20	3.662	1, 94	.060
Management	76	20	3.714	1, 94	.057
Fear	76	20	2.481	1, 94	.119
Atmosphere	76	20	9.289	1, 94	.003

Openness	76	20	6.410	1, 94	.013
Fairness	76	20	6.618	1, 94	.012
Trust	76	20	9.957	1, 94	.002
Education	75	20	.001	1, 93	.980
Safety@corebusiness	76	20	18.817	1, 94	.001
Blame culture	72	19	1.180	1, 89	.280

There was no significant difference between the transactional and the transformational groups on the complete questionnaire, the behavior and fear of consequences constructs and their sub-constructs, the education construct and the blame construct. The score on atmosphere construct and its sub-constructs, and the safety@corebusiness differed significantly between the transactional and the transformational group. The transformational group had a higher mean on the construct atmosphere (M_{TF} = 5.707, SD_{TF} = .695 and M_{TA} = 5.129, SD_{TA} = .951) and the sub-constructs trust (M_{TF} = 6.076, SD_{TF} = .646 and M_{TA} = 5.496, SD_{TA} = 1.001), openness (M_{TF} = 5.432, SD_{TF} = .871 and M_{TA} =4.843, SD_{TA} = 1.111) and fairness (M_{TF} = 5.688, SD_{TF} = .792 and M_{TA} = 5.148, SD_{TA} = .989). The transformational group had a higher mean on the safety@corebusiness scale (M_{TF} = 4.001, SD_{TF} = .656 and M_{TA} = 3.446, SD_{TA} = .715).

Discussion

This study tested the construct validity and reliability of the recently developed just/blame culture questionnaire and the MLQ-24 in healthcare institutions. It also examined the relationship between the existence of just/blame culture and leadership style.

Construct validity of the just/blame culture questionnaire. The first hypothesis (1A) stated that the just/blame culture questionnaire was constructually valid, when it was used in healthcare institutions. The results did not support this hypothesis. After transformation of the questionnaire, the questionnaire came closer to being constructually valid, but the hypothesis could still not be supported. This could be explained by several factors. First, this questionnaire was not tested on validity before and is still in its testing phase. Thus, it needs to be adjusted and tested again. Second, the number of participants was considered too low to conduct a confirmatory factor analysis on the entire questionnaire. The questionnaire had to be tested per construct and the complete questionnaire was tested based on factor scores per construct. Third, it is possible that the proposed model of just/blame culture (figure 2) does not represent just/blame culture completely. The reliability of the complete questionnaire was considered good, which means that the questionnaire was internally consistent. This shows that complete questionnaire does seem to measure the same concept, but it did not capture the exact components of what just/blame culture is. The questionnaire was based on the most recent literature on just/blame culture. This leads to the idea that the current research available now does not completely grasp what just/blame culture is. It is clear, however, that just/blame culture consists of different factors and that behavior, fear of consequences, atmosphere, and education do play a role in the existence of a just/blame culture. There might be other factors that were not mentioned in current research that also play a role in just/blame culture. The interaction between team members could be one of those other factors. Instead of focusing solely on the influence a manager can have on its

team, the influence team members can have on each other also needs to be taken into account.

Construct validity of the MLQ-24. Hypothesis 1B stated that the MLQ-24 was constructually valid when it was used in a healthcare institution. This hypothesis was not supported by the results. This was unexpected, because Tepper and Percy (1994) stated that this questionnaire could be used to measure transformational and transactional leadership. Also, the complete questionnaire and the constructs for transactional and transformational leadership were reliable. This means that the questionnaire and the constructs were internally consistent, but the factor scores do not support the proposed model on leadership (figure 4). Research by Judge and Piccolo (2004) provides a possible explanation for this finding. They found that transactional and transformational leadership show a high level of correlation, especially between contingent reward and transformational leadership.

Leadership style and just/blame culture. The second hypothesis examined the relationship between the existence of a just/blame culture and the style of leadership in a healthcare institution. Merrill (2015) stated that the style of leadership influences patient safety and can lead to a culture of blame. Khatri et al. (2009) theorizes that management also influences blame culture. However, previous studies have not found scientific evidence of a relation between transformational and transactional leadership styles and blame culture. Hypothesis 2A stated that a relationship between the score on the leadership questionnaire and the just/blame culture questionnaire was expected. The results show that there is indeed a relation, leadership style is a positive predictor for the score on the just/blame culture questionnaire. This is in accordance with previous literature on just/blame culture (Henagan & Gowen, 2009; Henriksen & Dayton, 2006; Khatri et al., 2009; Merril, 2015). Leadership style predicted 7.4% of the variance in the score on the just/blame culture questionnaire. This points to the fact that leadership style is a predictor of just/blame culture, but it plays a small

role. As stated before, it is probable that there are other factors that influence just/blame culture that have not been taken into account yet.

Factors that have not been taken into account are the behavior of the team, the interaction between the leader and the team, and the interaction between team members. The leader has an influence on the culture within a team, but the members of the team could also play an important role in influencing their own team culture.

Transactional leadership and just/blame culture. Hypothesis 2B stated that the score on the transactional leadership construct of the MLQ-24 is related to the score on the just/blame culture questionnaire. The results do not support this hypothesis. The results show that the transactional leadership construct is not a significant predictor of just/blame culture in a healthcare institution. This is unexpected, as the results of hypothesis 2A show that there is a relation between the score on the just/blame culture questionnaire and leadership style. This could be, because there is no relation between just/blame culture and transactional leadership. In contrast to this, a significant relation between transformational leadership and just/blame culture was found.

Transformational leadership and just/blame culture. Hypothesis 2C stated that the score on the transformational leadership construct of the MLQ-24 is related to the score on the just/blame culture questionnaire. The results support this hypothesis. The score on the transformational leadership construct is a significant predictor of the score on the just/blame culture questionnaire. Transformational leadership predicted 10.4% of the variance in the score on the just/blame questionnaire. Thus, transformational leadership is a factor that influences just/blame culture, but it is not the only factor of importance.

It was surprising that the score on the transformational leadership construct had a significant relation with the score on the just/blame culture questionnaire, as the score on the transactional leadership construct did not. This suggest that there is a relation between specific characteristics of transformational leadership and just/blame culture. Judge and

Piccolo (2004) state that transactional and transformational leadership show a high level of correlation, especially between contingent reward and transformational leadership. They hypothesize that leaders can have traits of both transactional and transformational leadership. It could be possible that some specific traits of transformational leadership are related to just/blame culture, and that the traits measured in the transactional construct are not related to just/blame culture. It is not yet clear which traits of transformational leadership are related to just/blame culture.

Leadership style and experience of segments of just/blame culture. Hypothesis 2D stated that people with a transactional leader and people with a transformational leader have a significantly different score on the separate constructs of the just/blame culture questionnaire. This was partly confirmed by the results. The score of the transactional and transformational group did not differ significantly on behavior and its sub-constructs learning, reporting and speaking up. The non-significant difference between the two groups on learning was supported by the research of Vera and Crossan (2004). They state that transformational leaders and transactional leaders both support organizational learning, albeit in a different way. Transformational leaders promote challenging current practices and promote change, whereas transactional leaders promote learning that reinforces the current process. The non-significant result on reporting and speaking up were unexpected in relation to the significant result on the Atmosphere construct, which will be discussed later.

The scores on the fear of consequences construct and its sub-constructs did not differ significantly for the two groups. Transactional and transformational leaders differ in their style of rewarding employees. A transactional leader motivates the employees with the rewards or penalties he or she can give. He or she is also clear about his or her expectations and takes corrective action when it is necessary (Bass, 1990). This does not mean that a transactional leader punishes unfairly compared to a transformational leader. It could be hypothesized that fear depends on the nature of the consequences. A transactional leader

might react differently than a transformational leader, but that does not mean that of the reactions must be feared.

The mean score on the atmosphere construct and its sub-constructs, openness, fairness and trust, was significantly higher for the transformational group than the transactional group. Edmondson (2004) states that an open, blame-free environment is influenced by the leader of a team. The results in this research suggest that a transformational leader promotes this open, blame-free environment. It was expected by Edmondson (2004) that openness promotes reporting and discussing of adverse events, so one would expect a difference in reporting and speaking up between the group who experienced more transformational and the group who experienced more transactional leadership. Surprisingly, this research did not find such a difference. The reporting and speaking up scales did not measure the objective amount of reports on adverse events in a department, it measured the ideas one had about reporting and speaking up. The ideas one has on reporting and speaking up may not be influenced by his or her leader, but the objective amount of reports could be.

The score on the education construct did not differ significantly between the two groups. This was not unexpected, because the education construct consists of questions on someone's education about the reporting of errors, before he or she started working in his or her current position. Thus, the education construct could not be influenced by the leadership style of one's current leader.

The scores on the blame culture construct did not differ significantly. This was unexpected, because previous research suggests a relation between leadership and a blame culture in general. This construct was meant to measure blame culture in general. Previous research states that leadership is related to a culture of blame (Henagan & Gowen, 2009; Henriksen & Dayton, 2006; Khatri et al., 2009; Merril, 2015). It is possible that leadership style did not have a relation between blame culture in general. Another explanation is that

this construct might not be useable to measure blame culture in general. The items in this construct question who gets blamed when a calamity occurs, but blame culture is a much broader concept than this.

The scores on the safety@corebusiness construct differed significantly between the transformational and the transactional group. The group with a transformational leader had a higher average score than the transactional group. Clarke (2013) mentions that transformational leadership is characterized by safety participation, while transactional leadership is characterized by safety compliance. The active participation in safety activities is in line with the safety@corebusiness scale 'Priority for Safety'.

As stated earlier, the closeness of the scores on the transactional and transformational constructs suggest that people experience characteristics of both transformational and transactional leadership. It is clear that people who experienced more transformational leadership scored higher on openness, fairness, and trust. However, it is unclear which specific characteristics of leadership style have a positive influence on openness, fairness and trust.

Previous research states that leadership style is related to a blame or just culture (Henagan & Gowen, 2009; Henriksen & Dayton, 2006; Khatri et al., 2009; Merril, 2015) and patient safety (Clarke, 2013; Frankel et al., 2006; Squires et al., 2010). This research adds to the pre-existing literature on leadership and just/blame culture that there is indeed a relation between leadership styles and just/blame culture, as leadership style is related to the constructs openness, fairness and trust components of a just/blame culture.

Limitations and recommendations for future research

In this study, a self-report questionnaire was used. Therefore, it is impossible to control for socially desirable responses. Also, some respondents filled out only part of the questionnaire. This could be due to the length of the questionnaire, as it took approximately twenty minutes to complete the questionnaire.

The just/blame culture questionnaire could not be considered constructually valid, based on the confirmatory factor analysis. This study suggests that the current model is incomplete and that there are other constructs of just/blame culture that need to be taken into account. Future research should examine the possibility that there could be other factors that influence just/blame culture, e.g. the behavior of the team instead of just the behavior of the leader. The transformed version of the questionnaire needs further adjustment based on the analysis in this study and recent developments in just and blame culture research. After transformation of the questionnaire, it should be tested again in a healthcare institution. The MLQ-24 could not be considered constructually valid either. It is recommended to analyze the MLQ-24 in more depth and to re-examine the model of transformational and transactional leadership.

Also, there was no standard cutoff score for the MLQ-24. It was decided to scale participants in the transformational group or transactional group based on if they had the highest score on the transformational or transactional scale. The differences between the scores on the transformational and transactional items were small in several cases. This means that participants experienced characteristics of transformational and transactional leadership. This is in line with the high correlation between transformational and transactional leadership scales Judge and Piccolo (2004) found.

A larger and more heterogeneous test sample is recommended for future research. This sample was too small to for some of the used analyses, and the homogeneity of the sample makes it hard to generalize the results to a population of healthcare employees. Participants in this study were all employed at a healthcare institution or an intern at a healthcare institution. Almost 45% of the participants was an intern. This can be explained by the way the participants were recruited. Participants were recruited through social media and in the personal network of the researchers. The social network of the researchers mainly consisted of people who were also students at Leiden University. The homogeneity of the

sample makes the results less generalizable for all kinds of healthcare workers. A more heterogeneous group would give results that are more generalizable across different types of healthcare workers. It is recommended for future research that different types of healthcare workers are recruited.

The group who experienced more transactional leadership was a lot smaller than the group who experienced more transformational leadership. This decreased the statistical power of the research on transactional leadership and the differences between transformational and transactional leadership. A larger test sample would have solved this issue. Statistical power above .80 would have been desirable, but the transactional group and the transformational group would both need at least 86 participants.

This study was the first to examine the relation between just/blame culture and leadership style with a specific just/blame culture questionnaire. The questionnaire was still in the test phase in this study. This does not mean that the results are uninterpretable, but they need to be interpreted with caution. Also, it is yet unclear which specific characteristics of transformational leadership have an effect on openness, fairness, and trust. More research is needed to study this relationship and to determine the exact pathway between leadership style and just/blame culture.

Based on this study, conclusions could not be drawn about the relationship between the culture in a hospital, actual amount of reporting of adverse events and patient safety and mortality. Future studies could measure just/blame culture and the amount of reports with longitudinal research to determine whether just/blame culture actually predicts reporting of adverse events and patient safety.

Conclusion

The culture in a hospital can influence reporting of adverse events, which enables organizational learning, and thus influences patient safety. The analysis of the just/blame culture model showed that the current model is incomplete. The current does seem to include certain constructs of a just/blame culture, but it does not seem to grasp just/blame culture completely. The just/blame culture model, on which the questionnaire was based, needs to be adjusted. The questionnaire also needs to be adjusted accordingly to ensure its validity and reliability. It can be an important tool to assess the existence of components of just/blame culture, which could play a role in increasing patient safety.

Leadership style has a relationship with just/blame culture, and therefore with patient safety. Experiencing more transformational or transactional leadership does not seem to influence thoughts of healthcare employees about reporting mistakes, but people who experience more transactional leadership do feel more openness, fairness and trust. Through this pathway, leadership style is related to the existence of a segment of just/blame culture, which can be of influence on reporting of mistakes, organizational learning, and thus patient safety. More research is necessary to determine the exact relationship between leadership style and openness, fairness, and trust, and the reporting and learning from incidents. When this relationship is clearer, steps can be taken to promote certain leadership behavior to increase patient safety.

It can be concluded that just/blame culture plays an important role in patient safety, but that is it not clear what just/blame culture exactly is. This thesis provided evidence that just/blame culture might go beyond the scope of the current research. More research in the field of just/blame culture in health care is necessary to broaden the definition of just/blame culture and to discover what can be done to create the best possible hospital culture. This can contribute to patient safety and the decrease of preventable adverse events, which will save lives in the future.

References

Amitay, M., Popper, M., & Lipshitz, R. (2005). Leadership styles and organizational learning in community clinics. *The Learning Organization*, *12*(1), 57-70.

Baines, R., Langelaan, M., de Bruijne, M., Spreeuwenberg, P., & Wagner, C. (2015). How effective are patient safety initiatives? A retrospective patient record review study of changes to patient safety over time. *BMJ Quality & Safety*, *24*(9), 561-571.

Bass, B. M., & Avolio, B. J. (1990). *Transformational leadership development: Manual for the multifactor leadership questionnaire*. Consulting Psychologists Press.

Bass, B. M. (1991). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, *18*(3), 19-31.

Beyea, S. C. (2004). Creating a just safety culture. *AORN Journal*, *79*(2), 412-414.

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford Publications.

Capuano, T., Bokovoy, J., Hitchings, K., & Houser, J. (2005). Use of a validated model to evaluate the impact of the work environment on outcomes at a magnet hospital. *Health Care Management Review*, *30*(3), 229-236.

Carroll, J. S., & Edmondson, A. C. (2002). Leading organizational learning in health care. *Quality and Safety in Health Care*, *11*(1), 51-56.

Drupsteen, L., Groeneweg, J., & Zwetsloot, G. I. (2013). Critical steps in learning from incidents: using learning potential in the process from reporting an incident to accident prevention. *International Journal of Occupational Safety and Ergonomics*, *19*(1), 63-77.

Edmondson, A. C. (2004). Learning from failure in health care: frequent opportunities, pervasive barriers. *Quality and Safety in Health Care*, *13*(suppl 2), ii3-ii9.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics.* London: SAGE Publications Ltd.

Frankel, A. S., Leonard, M. W., & Denham, C. R. (2006). Fair and just culture, team behavior, and leadership engagement: The tools to achieve high reliability. *Health Services Research*, *41*(4p2), 1690-1709.

Gluck, P. A. (2010). Physician Leadership: Essential in Creating a Culture of Safety. *Clinical Obstetrics and Gynecology*, *53*(3), 473-481.

Gorini, A., Miglioretti, M., & Pravettoni, G. (2012). A new perspective on blame culture: an experimental study. *Journal of Evaluation in Clinical Practice*, *18*(3), 671-675.

Henriksen, K., & Dayton, E. (2006). Organizational silence and hidden threats to patient safety. *Health Services Research*, *41*(4p2), 1539-1554.

Houser, J. (2003). A model for evaluating the context of nursing care delivery. *Journal of Nursing Administration*, *33*(1), 39-47.

Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: a meta-analytic test of their relative validity. *Journal of Applied Psychology*, *89*(5), 755-768.

Khatri, N., Brown, G. D., & Hicks, L. L. (2009). From a blame culture to a just culture in health care. *Health Care Management Review*, *34*(4), 312-322.

Kirk, S., Parker, D., Claridge, T., Esmail, A., & Marshall, M. (2007). Patient safety culture in primary care: developing a theoretical framework for practical use. *Quality and Safety in Health Care*, *16*(4), 313-320.

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (Eds.). (2000). *To err is human: building a Safer Health System* (Vol. 6). National Academies Press.

LeBrasseur, R., Whissell, R., & Ojha, A. (2002). Organizational learning, transformational leadership and implementation of continuous quality improvement in Canadian hospitals. *Australian Journal of Management*, *27*(2), 141-162.

McFadden, K. L., Henagan, S. C., & Gowen, C. R. (2009). The patient safety chain: Transformational leadership's effect on patient safety culture, initiatives, and outcomes. *Journal of Operations Management*, *27*(5), 390-404.

Merrill, K. C. (2015). Leadership Style and Patient Safety: Implications for Nurse Managers. *Journal of Nursing Administration*, *45*(6), 319-324.

Ruchlin, H. S., Dubbs, N. L., Callahan, M. A., & Fosina, M. J. (2004). The role of leadership in instilling a culture of safety: lessons from the literature. *Journal of Healthcare Management*, *49*(1), 47.

Sammer, C. E., Lykens, K., Singh, K. P., Mains, D. A., & Lackan, N. A. (2010). What is patient safety culture? A review of the literature. *Journal of Nursing Scholarship*, *42*(2), 156-165.

Squires, M. A. E., Tourangeau, A. N. N., Spence Laschinger, H. K., & Doran, D. (2010). The link between leadership and safety outcomes in hospitals. *Journal of Nursing Management*, *18*(8), 914-925.

Stein, J. E., & Heiss, K. (2015). The Swiss cheese model of adverse event occurrence - Closing the holes. *Seminars in Pediatric Surgery*, *24* (6), 278-282.

von Thaden, T., Hoppes, M., Li, Y., Johnson, N., & Schriver, A. (2006). The perception of just culture across disciplines in healthcare. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *50*(10), 964-968.

Vera, D., & Crossan, M. (2004). Strategic leadership and organizational learning. *Academy of Management Review*, *29*(2), 222-240.

Wagner, C., Smits, M., Wagtendonk, I. V., Zwaan, L., Lubberding, S., Merten, H., & Timmermans, D. R. M. (2008). *Oorzaken van incidenten en onbedoelde schade in ziekenhuizen: een systematische analyse met PRISMA, op afdelingen Spoedeisende Hulp (SEH), chirurgie en interne geneeskunde.* Retrieved from Nederlands Instituut voor Onderzoek in de Gezondheidszorg website: http://www.nivel.nl/sites/default/files/bestanden/Rapport-Oorzaken-incidenten-en-onbedoelde-schade-ziekenhuizen-2008.pdf

Waring, J. J. (2005). Beyond blame: cultural barriers to medical incident reporting. *Social Science & Medicine*, *60*(9), 1927-1935.

Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five-step guide for novices. *Australasian Journal of Paramedicine*, *8*(3), 1-13.

Wong, C. A., Cummings, G. G., & Ducharme, L. (2013). The relationship between nursing leadership and patient outcomes: a systematic review update. *Journal of Nursing Management*, *21*(5), 709-724.

Zegers, M., De Bruijne, M. C., Wagner, C., Hoonhout, L. H. F., Waaijman, R., Smits, M. ... & Groenewegen, P. P. (2009). Adverse events and potentially preventable deaths in Dutch hospitals: results of a retrospective patient record review study. *Quality and Safety in Health care*, *18*(4), 297-302.

Appendix A. Just/blame culture questionnaire and MLQ-24

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.

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?
Ja
Nee

If Nee Is Selected

Weet u zeker dat u niet wilt deelnemen?
- ❍ Ja (uw deelname wordt beëindigd) (1)
- ❍ Nee (doorgaan) (2)

If Ja (uw deelname wordt beëin... Is Selected, Then Skip To End of Survey

If Nee (doorgaan) Is Selected , Then back to start

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.

Geslacht
- ❍ Vrouw (1)
- ❍ Man (2)

Leeftijd …

Wat is uw functie?
- ❍ arts
- ❍ verpleegkundige
- ❍ verzorgende
- ❍ co-assistent
- ❍ arts-assistent
- ❍ physician assistant
- ❍ overig

If co-assistent is selected

Wat is uw huidige of laatst gelopen co-schap? …

Hoe lang loop je al co-schappen? …

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?
- ❍ geneeskunde
- ❍ HBO verpleegkunde
- ❍ MBO verpleegkunde
- ❍ MBO verzorging
- ❍ overige opleiding (define…)

Geeft u leiding?
- ❍ Ja (1)
- ❍ 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 (+++)
- ❍ - - - (1)
- ❍ - - (2)
- ❍ - (3)
- ❍ 0 (4)
- ❍ + (5)
- ❍ ++ (6)
- ❍ +++ (7)
- ❍ 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)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Mijn direct leidinggevende stimuleert me om incidenten en/of calamiteiten te melden. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Angst voor de eventuele negatieve gevolgen weerhouden mij ervan om incidenten en/of calamiteiten te melden. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Incidenten en/of calamiteiten die zich binnen mijn team/op mijn afdeling voordoen, worden door anderen gemeld. (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Incidenten en/of calamiteiten die zich binnen mijn team/op mijn afdeling voordoen, worden door diegene zelf gemeld. (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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)
In mijn team/op mijn afdeling zijn we actief bezig om (sociale) veiligheid te vergroten. (1)	❍	❍	❍	❍	❍	❍	❍	❍	❍
In mijn team/op mijn afdeling hebben eerder gemaakte incidenten en/of calamiteiten tot positieve veranderingen geleid. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Onze procedures zorgen ervoor dat er geen fouten gemaakt worden en/of geen incidenten voorkomen. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
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)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Dezelfde fouten worden steeds opnieuw gemaakt, omdat er hier niets verandert. (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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

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 (+ + +)

	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)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling/in mijn team is het moeilijk om een beslissing te nemen zonder toestemming van een leidinggevende. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling/in mijn team zijn er strikte procedures en richtlijnen die bepalen hoe er gewerkt dient te worden. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling zijn er flinke statusverschillen tussen verschillende functiegroepen. (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Tijdens mijn werk word ik door mijn leidinggevende wel erg in de gaten gehouden. (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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

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

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)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling/in mijn team worden nieuwe ideeën gewaardeerd. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling/in mijn team wordt het hebben van meningsverschillen toegejuicht. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Als je een fout maakt op mijn afdeling/in mijn team, wordt die vaak tegen je gebruikt. (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling/in mijn team geven we elkaar tips om de (sociale) veiligheid te vergroten. (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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 vertrouwen we elkaar. (1)	❑	❑	❑	❑	❑	❑	❑	❑	❑
Ik vertrouw erop dat mijn leidinggevende de juiste dingen doet. (2)	❑	❑	❑	❑	❑	❑	❑	❑	❑
Het management houdt zich niet aan de eigen regels. (3)	❑	❑	❑	❑	❑	❑	❑	❑	❑
Op mijn afdeling/in mijn team heerst een sfeer waarin we met elkaar samenwerken en elkaar ondersteunen. (4)	❑	❑	❑	❑	❑	❑	❑	❑	❑
Ik kan met zekerheid zeggen dat de mensen op mijn afdeling/in mijn team hun best doen. (5)	❑	❑	❑	❑	❑	❑	❑	❑	❑

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)
Ik ben bang dat een fout mijn reputatie schaadt. (1)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Ik ben bang voor eventuele sancties als ik een fout gemaakt heb. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Ik vertrouw erop dat ik rechtvaardig word behandeld als ik een fout toegeef. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling/in mijn team is het beter om fouten maar niet toe te geven. (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Ik ben bang dat ik de schuld krijg, ook al is het niet (alleen) mijn fout. (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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)	❍	❍	❍	❍	❍	❍	❍	❍	❍
… waarom ik incidenten en/of calamiteiten zou rapporteren. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
… (sociale) veiligheid in de zorg. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
…het belang van leren van incidenten en/of calamiteiten. (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍
… 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)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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

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 (+ + +)

	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)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling ondersteunen we elkaar. (2)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling wordt goed gecommuniceerd. (3)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling is een sterk hiërarchische structuur. (4)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling wordt verwacht dat je altijd perfect functioneert. (5)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling wordt bij de analyse van incidenten en/of calamiteiten verder gekeken dan de rol van de direct betrokkene. (6)	❍	❍	❍	❍	❍	❍	❍	❍	❍
Op mijn afdeling wordt er bij incidenten en/of calamiteiten vooral gekeken of de regels zijn overtreden. (7)	❍	❍	❍	❍	❍	❍	❍	❍	❍
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)	❍	❍	❍	❍	❍	❍	❍	❍	❍

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.

	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)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden geven veiligheid een hoge prioriteit (2)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden nemen de veiligheidsregels serieus (3)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden hebben een geloofwaardige veiligheidsboodschap (4)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden zijn consistent (5)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden komen beloftes na (6)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden geven het goede voorbeeld (7)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden inspireren medewerkers om zich veilig te gedragen (8)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden doen ook zelf wat zij van anderen vragen (9)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden begrijpen goed wat er op de afdeling gebeurt (10)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden hebben inzicht in de manier waarop er gewerkt wordt (11)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden zijn op de hoogte van problemen op de afdeling (12)	❍	❍	❍	❍	❍	❍	❍

Mijn leidinggevenden begrijpen wat op de afdeling belangrijk is (13)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden vinden integriteit belangrijk. (14)	❍	❍	❍	❍	❍	❍	❍
	❍	❍	❍	❍	❍	❍	❍

Safety@core business *(tussenkoppen worden niet weergegeven in definitieve vragenlijst)*

Tot slot enkele stellingen over uw direct leidinggevende.

	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)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden geven veiligheid een hoge prioriteit (2)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden nemen de veiligheidsregels serieus (3)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden hebben een geloofwaardige veiligheidsboodschap (4)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden zijn consistent (5)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden komen beloftes na (6)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden geven het goede voorbeeld (7)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden inspireren medewerkers om zich veilig te gedragen (8)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden doen ook zelf wat zij van anderen vragen (9)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden begrijpen goed wat er op de afdeling gebeurt (10)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden hebben inzicht in de manier waarop er gewerkt wordt (11)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden zijn op de hoogte van problemen op de afdeling (12)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden begrijpen wat op de afdeling belangrijk is (13)	❍	❍	❍	❍	❍	❍	❍
Mijn leidinggevenden vinden integriteit belangrijk. (14)	❍	❍	❍	❍	❍	❍	❍

Multifactoriële leiderschapsquestionnaire *(tussenkoppen worden niet weergegeven 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)	❍	❍	❍	❍	❍	❍	❍
Hij/zij neemt de tijd om te ontdekken wat ik nodig heb. (2)	❍	❍	❍	❍	❍	❍	❍
Ik kan krijgen wat ik wil, als ik werk lever zoals dat is afgesproken. (3)	❍	❍	❍	❍	❍	❍	❍
Ik vertrouw hem/haar in het oplossen van obstakels. (4)	❍	❍	❍	❍	❍	❍	❍
Hij/zij besteedt aandacht aan de fouten die ik heb gemaakt. (5)	❍	❍	❍	❍	❍	❍	❍
Hij/zij verandert bedreigende situaties in mogelijkheden. (6)	❍	❍	❍	❍	❍	❍	❍
Hij/zij zorgt ervoor dat ik nadenk over zaken die ik altijd aan heb genomen. (7)	❍	❍	❍	❍	❍	❍	❍
Het werk wat ik doe voor hem/haar, bepaalt wat ik	❍	❍	❍	❍	❍	❍	❍

ervoor terugkrijg. (8)							
Hij/zij onderneemt pas actie als er iets fout gaat. (9)	❍	❍	❍	❍	❍	❍	❍
Hij/zij beveelt ons aan voor promotie en/of bonussen, wanneer ik dat verdiend heb. (10)	❍	❍	❍	❍	❍	❍	❍
Hij/zij werkt één-op-één samen met mij. (11)	❍	❍	❍	❍	❍	❍	❍
Hij/zij coacht mij. (12)	❍	❍	❍	❍	❍	❍	❍
Hij/zij neemt de eerste stap als er een risico is voor ons beiden. (13)	❍	❍	❍	❍	❍	❍	❍
Hij/zij vertelt me wat ik moet doen om beloond te worden. (14)	❍	❍	❍	❍	❍	❍	❍
Hij/zij wekt nieuwsgierigheid bij me op over nieuwe manieren van werken. (15)	❍	❍	❍	❍	❍	❍	❍
Hij/zij beloont me als ik goed werk aflever. (16)	❍	❍	❍	❍	❍	❍	❍
Hij/zij zorgt dat ik minder kritisch kijk naar creatieve ideeën. (17)	❍	❍	❍	❍	❍	❍	❍
Hij/zij handhaaft de regels als taken niet gedaan worden. (18)	❍	❍	❍	❍	❍	❍	❍
Hij/zij geeft mij redenen om te geloven in wat ik kan. (19)	❍	❍	❍	❍	❍	❍	❍
Hij/zij houdt mijn gemaakte fouten nauwlettend in de gaten. (20)	❍	❍	❍	❍	❍	❍	❍
Hij/zij laat mij geen nederlaag accepteren. (21)	❍	❍	❍	❍	❍	❍	❍
Hij/zij laat bezorgdheid zien om fouten te voorkomen. (22)	❍	❍	❍	❍	❍	❍	❍
hij/zij zorgt ervoor dat ik krijg wat ik wil in ruil voor mijn prestaties. (23)	❍	❍	❍	❍	❍	❍	❍
Hij/zij is voor mij een symbool van succes en bekwaamheid. (24)	❍	❍	❍	❍	❍	❍	❍

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 k.m.vanwijk@umail.leidenuniv.nl, s.komen@umail.leidenuniv.nl 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.

Appendix B

Figures

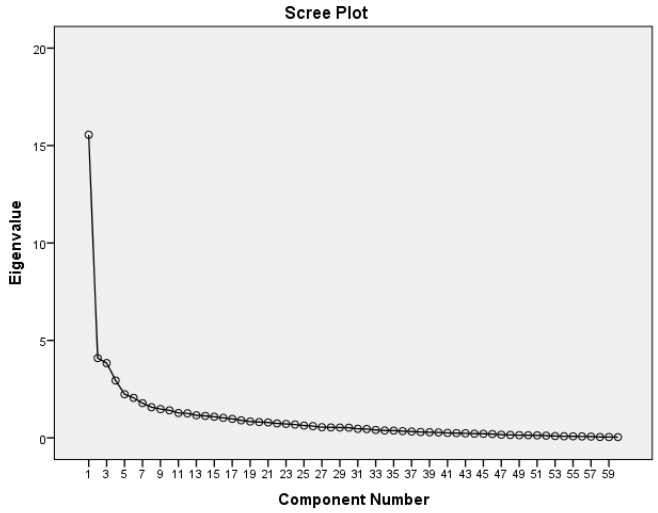

Figure B1. Scree plot of the principal component analysis of the just/blame culture questionnaire.

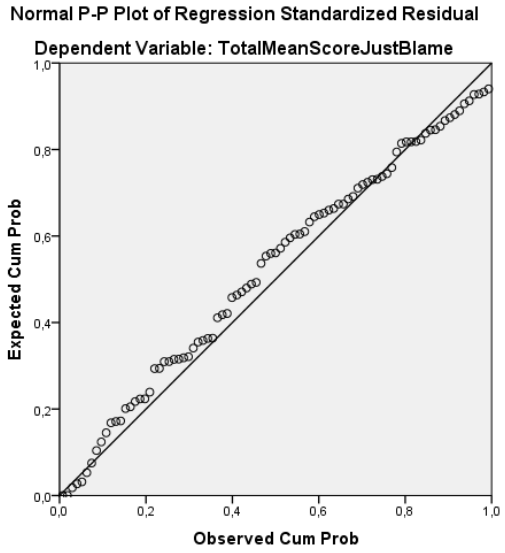

Figure B2. Normal P-P plot of the total mean score on the just/blame culture questionnaire and the transformational leadership style construct.

Appendix C

Additional information on the removal of items

Item	Item name	Change in reliability
Reporting 3	*Angst voor de eventuele gevolgen weerhouden mij ervan om incidenten en/of calamiteiten te melden.* Item implies fear and increased reliability fear, so moved to fear.	Reporting .196 → .546 Fear .471 → .549
Reporting 4	*Incidenten en/of calamiteiten die zich binnen mijn team/op mijn afdeling voordoen, worden door anderen gemeld.* Item removed.	Reporting .546 → .700
Learning 5	*Dezelfde fouten worden steeds opnieuw gemaakt, omdat hier niets verandert.* Moved to management.	Learning .374 → .684 Management .687 → .705
Speaking up 2	*Ik ben niet bereid om suggesties voor veranderingen te doen, omdat ik bang ben voor de gevolgen.* Item implies fear and increased reliability fear, so moved to fear.	Speaking up -.052 → .387 Fear .549 → .652
Speaking up 5	*Het is zonde van mijn tijd om ideeën voor verbetering te delen.* Moved to management.	Speaking up .387 → .799 Management .705 → .740
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 .465 → .792 Management .740 → .763
Trust 3	*Het management houdt zich niet aan de eigen regels.* Moved to management.	Trust .529 → .830 Management .763 → .763
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 .413 → .738 Fear .652 → .716
Fear 3	*Ik vertrouw erop dat ik rechtvaardig wordt behandeld als ik een fout toegeef.* Moved to fairness.	Fear .716 → .815 Fairness .792 → .803
Psych. Safety 1	*Op mijn afdeling/in mijn team kunnen problemen besproken worden.* Moved to openness.	Openness .864 → .877
Psych. Safety 2	*Op mijn afdeling/in mijn team worden nieuwe ideeën gewaardeerd.* Moved to learning.	Learning .684 → .713
Psych. Safety 3	*Op mijn afdeling/in mijn team wordt het hebben van meningsverschillen toegejuicht.* Moved to openness.	Openness .877 → .866
Psych. Safety 5	*Op mijn afdeling/in mijn team geven we elkaar tips om de (sociale) veiligheid te vergroten.*	Learning .713 → .757

	Moved to learning.	
Other aspects 1	*Op mijn afdeling werken we samen.* Moved to trust.	Trust .830 → .858
Other aspects 2	*Op mijn afdeling ondersteunen we elkaar.* Moved to trust.	Trust .858 → .887
Other aspects 3	*Op mijn afdeling wordt goed gecommuniceerd.* Item seems related to openness, so item moved to openness.	Openness .866 → .882
Other aspects 4	*Op mijn afdeling is een sterk hiërarchische structuur.* Item seems related to management, so item moved to management.	Management .763 → .792
Other aspects 5	*Op mijn afdeling wordt verwacht dat je altijd perfect functioneert.* Moved to fear.	Fear .815 → .799 Combined with other aspects 7 → .817
Other aspects 6	*Op mijn afdeling wordt bij de analyse van incidenten verder gekeken dan de rol van de direct betrokkene.* Moved to learning.	Learning .767 → .766
Other aspects 7	*Op mijn afdeling wordt er bij incidenten en/of calamiteiten vooral gekeken of de regels zijn overtreden.* Moved to fear.	Fear .815 → .828
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 .766 → .797