



## Leader communication approaches and patient safety: An integrated model<sup>☆</sup>

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### ABSTRACT

**Introduction:** Leader communication is known to influence a number of employee behaviors. When it comes to the relationship between leader communication and safety, the evidence is more scarce and ambiguous. The aim of the present study is to investigate whether and in what way leader communication relates to safety outcomes. The study examines two leader communication approaches: leader safety priority communication and feedback to subordinates. These approaches were assumed to affect safety outcomes via different employee behaviors. **Method:** Questionnaire data, collected from 221 employees at two hospital wards, were analyzed using structural equation modeling. **Results:** The two examined communication approaches were both positively related to safety outcomes, although leader safety priority communication was mediated by employee compliance and feedback communication by organizational citizenship behaviors. **Conclusion:** The findings suggest that leader communication plays a vital role in improving organizational and patient safety and that different communication approaches seem to positively affect different but equally essential employee safety behaviors. **Practical applications:** The results highlight the necessity for leaders to engage in one-way communication of safety values as well as in more relational feedback communication with their subordinates in order to enhance patient safety.

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### 1. Introduction

Patient safety and risks in health care have been of increasing interest for research in recent decades. A recent study by de Vries, Smorenburg, Gouma, and Boemaster (2008) showed that approximately 10% of all admitted hospital patients experienced adverse events, defined as accidental injuries caused by medical management. The results from a study of Swedish hospitals (Soop, Fryksmark, Köster, & Haglund, 2009) showed the same pattern, revealing that 12.3% of the patients admitted in Sweden had experienced adverse events, of which 70% were preventable. Among these, approximately 50% led to impairment and 3% contributed to. These findings are of major concern,

considering the potential physical and psychological effects not only for the patients but also for their close relatives and for the health care staff involved. There are also huge economical costs involved; a report from the U.S. Institute of Medicine (IOM) estimated that adverse events represent approximately 4% of the national health costs in the United States (Kohn, Corrigan, & Donaldson, 1999).

These results demonstrate the urgency of making efforts towards improving patient safety. One of the most important factors affecting the functioning and effectiveness of an organization is communication. Deficiencies in communication have been shown to be directly related to patient safety in hospitals (Donahue, Miller, Smith, Dykes, & Fitzpatrick, 2011). This is supported by a review carried out by the U.S. Joint Commission, which recognized poor communication as the root cause of approximately 70% of all serious incidents and accidents in health care (Joint Commission on Accreditation of Healthcare Organizations, 2009). The commission concluded that leaders bear a special responsibility in fostering effective communication throughout an organization. This is due to their role in communicating the organization's mission, vision, and goals, and in conveying organizational culture by communicating the priorities and values held by management.

Regarding a more general safety context, leaders could thus help improve safety by communicating safety values and priorities to their

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subordinates, leading to a stronger safety climate within the organization (Zohar, 1980). By collaborating on initiatives to improve leadership communication, unnecessary errors could be prevented and patient safety promoted (Joint Commission on Accreditation of Healthcare Organizations, 2009). However, despite an increasing emphasis on the importance of leader–subordinate safety-related communication in the practitioner-targeted literature, especially for behavior-based safety programs (e.g., DePasquale & Geller, 1999; Hidley, 1998), empirical studies focusing on the effects of the communication between leaders and subordinates on safety are still rare (Michael, Guo, Wiedenbeck, & Ray, 2006). Furthermore, existing research investigating the link between leader communication and safety is somewhat ambiguous and shows mixed results. Even though several studies have found evidence in support of a positive relationship between leader communication and safety (e.g., Hofmann & Morgeson, 1999; Hofmann, Morgeson, & Gerras, 2003; Parker, Axtell, & Turner, 2001), others have failed to demonstrate such a connection. For example, in a study by Vredenburg (2002), no support was found for communication and feedback having an effect on reducing injury rates. The results of a similar study (Michael et al., 2006) also showed that safety-related communication between supervisors and subordinates had little direct effect on the subordinates' safety-related events.

The inconsistent results regarding the effect of leaders' communication on safety suggest that the relationship could be more complex. Leader communication seems to be one of a multitude of relevant elements, alongside mediating variables that affect safety outcomes. A generally accepted view is that leader behaviors often have a direct impact on the behaviors of the subordinates. When it comes to employee behaviors in a safety context, the concepts of safety behavior or safety performance are frequently used. Neal, Griffin, and Hart (2000) proposed a model of employee safety performance which differentiates between two dimensions of safety behavior: compliance and participation. Safety compliance refers to work activities that the individual needs to perform in order to carry out the work in a safe manner. It involves adhering to safety rules and regulations at the workplace, such as wearing personal protective equipment. Safety participation, on the other hand, refers to activities that do not directly affect the individual's personal safety but contribute to strengthening general safety in the organization. It includes behaviors such as helping coworkers with safety-related issues, calling attention to risk situations, and demonstrating initiative to improve safety. Safety participation is closely associated with concepts such as contextual performance (Borman & Motowidlo, 1993) and organizational citizenship behavior (Organ, 1997). Based on previous research that found that employee behaviors mediate the relationships between leadership and various organizational outcomes (e.g., Boerner, Eisenbeiss, & Griesser, 2007), it would be reasonable to assume that employee safety behaviors such as compliance and participation would have a mediating role in the relationship between leader communication and safety outcomes.

The aim of the present study is therefore to investigate how different leader communication approaches can influence safety behaviors and safety outcomes at the workplace. More specifically, the question is whether leader communication in the form of the expression of safety values (safety priority communication) and feedback to their subordinates relates to employee behaviors and patient safety outcomes and, if so, in what ways are they related. We hypothesize that employee safety behaviors act as mediators between leader communication behaviors and safety outcomes. Building on the safety performance model of Neal et al. (2000) and other related theories, two of the employee behaviors investigated in the present study correspond to the two dimensions of compliance and safety participation. However, instead of safety participation, the concept of organizational citizenship behavior (OCB) has been used in the study. As has been mentioned above, safety participation and OCB are closely related concepts, with the exception that safety participation involves more safety-specific behaviors. In addition, the willingness to report incidents and errors is examined as a third mediating behavior between leader communication and safety. Despite the vital role of reporting as a tool in efforts to achieve workplace safety, underreporting has been shown to be a prevalent phenomenon (Barach & Small, 2000; Probst, Brubaker, & Barsotti, 2008).

Based on these and other theories regarding leadership, communication, safety behaviors, and safety outcomes, an integrated model of the relationship between leadership communication and patient safety is proposed (Fig. 1). In the following sections, the paths through which leader communication may affect safety behaviors and outcomes are considered and the corresponding hypotheses are described.

## 2. Leader communication

### 2.1. Safety priority communication

There is considerable evidence in the safety literature that leaders' commitment to safety and the degree to which employees perceive that leaders in the organization prioritize safety have strong links to the safety behaviors and injury rates of its employees (Bosak, Coetsee, & Cullinane, 2013; Cohen, 1977; Hofmann, Jacobs, & Landy, 1995; O'Toole, 2002; Zohar, 1980). Similarly, research regarding patient safety has shown that the presence of a leadership committed to safety is related to increased error reporting (Barnsteiner, 2011). These findings could also be related to and supported by safety climate research. Employees' perceptions of management's attitudes towards safety are considered a key component in the safety climate concept (Zohar, 1980). Considering that there is widespread agreement that safety climate is an effective predictor of injury-related criteria (Alper & Karsh, 2009; Barling, Loughlin, & Kelloway, 2002; Christian, Bradley, Wallace, & Burke, 2009; Clarke, 2006; Griffin & Neal, 2000; Hofmann et al., 2003; Zohar, 2000), this evidence would support a link between perceived management safety priority communication and safety outcomes. When leaders' communication on safety issues is given high

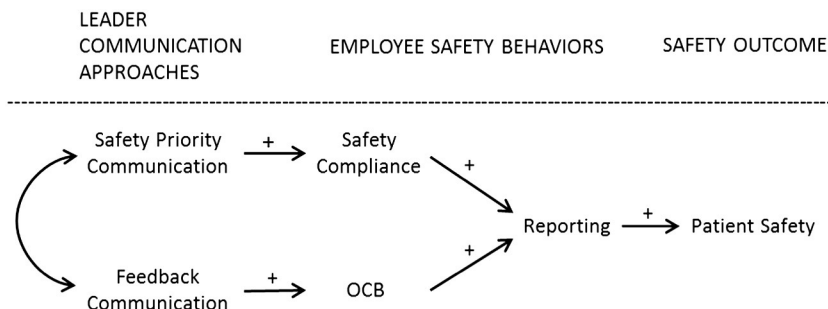


Fig. 1. Illustration of the concepts, the levels at which they operate, and their relationships in the hypothesized model.

and visible priority, it signals what is valued within the organization and what kind of role behavior is expected, supported, and rewarded (Dahl & Olsen, 2014; Zohar, 2010). In line with these findings, Zohar (2002) showed that safety priority communicated by higher superiors moderated the relationship between leadership style and injury rates in organizational subunits.

Leader safety priority communication is also closely related to the concept of safety knowledge. A leader who frequently communicates the importance of safety and who provides information about safe practices and procedures would likely be contributing to a higher level of safety knowledge among his or her subordinates. According to Hofmann and Morgeson (1999), employees' safety performance should improve when they have a clear understanding of safe operating procedures and the consequences of unsafe behaviors (safety knowledge) and when their behaviors are supported by their leader (safety priority). Griffin and Neal (2000) found that safety knowledge was more strongly related to safety compliance than to safety participation (cf. OCB). Based on these theories and findings, the association between leader safety priority communication and safety compliance would be expected to be strong, while a link between leader safety priority communication and OCB might be less certain.

Another reason for the apparent effects of leader safety priority communication on safety behaviors is its normative influence. According to Kaplan and Miller (1987), a supervisor's behavior is assumed to be normative, in that it is used by the employees to infer acceptable behaviors. In line with this, Westaby and Lowe (2005) found that supervisors have a normative influence on employee safety habits when the employees perceive that their supervisor is clearly conveying that employee risk taking at work is unacceptable. However, the safety attitudes expressed by a supervisor could be assumed to affect safety mainly in regard to complying to rules and regulations and not have as much of an effect on increasing the awareness or feeling of citizenship. Previous research in support of this reasoning has established that normative influence is a particularly powerful determinant of behavioral compliance (Moscovici, 1985). Normative influence could therefore provide another reason for assuming a link between safety priority communication and safety compliance.

**Hypothesis 1.** Leader safety priority communication is positively related to subordinate safety compliance.

## 2.2. Feedback communication

Previous research has shown that feedback from a leader to his or her employees is an important factor for an organization when it comes to influencing the safety behaviors of its employees (Cohen & Cleveland, 1983; Flin & Yule, 2004; Katsva & Condrey, 2005). The results from a study by Mattila, Hyttinen, and Rantanen (1994) emphasize the importance of communication between supervisors and their workers for achieving a higher level of safety on construction sites. Supervisors who initiated discussions and gave more frequent feedback to their employees about the consequences of their performance scored higher on a safety index. Providing verbal feedback on their employees' performance in regard to capturing errors, speaking up, and reporting near misses could therefore be a vital task for leaders (Flin & Yule, 2004). Apart from being an effective and important reinforcer of behaviors, leaders' feedback communication to their employees has also been found to be positively related to perceptions of safety and organizational commitment among employees (Kivimäki, Kalimo, & Salminen, 1995).

The leadership styles most commonly associated with positive safety outcomes are those that involve constructive communication and a feedback exchange between leader and subordinate. For example, transformational leadership (Bass, 1985) has been found to be positively related to safety behaviors (Barling et al., 2002; Clarke & Ward, 2006; Mullen & Kelloway, 2009; Zohar, 2004). When it comes to patient safety

in particular, there is also evidence to support a positive relationship between transformational nurse leadership and patient safety (Wong & Cummings, 2007). One important dimension of transformational leadership is that employees are given individualized consideration, which mainly consists of behaviors such as providing performance feedback and responding promptly to concerns (Mullen & Kelloway, 2009). The underlying assumption behind transformational leadership is that when individuals are given individualized concern, support, and feedback from their supervisor, it results in increased motivation to not only put more effort into task-related activities but to also engage in OCB (Humphrey, 2012; Martin, Liao, & Campbell, 2013). Organ (1997) defines OCB as behaviors that contribute to the maintenance and enhancement of the organization but which are less likely to be considered enforceable job requirements and also less likely than task performance to be perceived as potentially leading to direct and unconditional systemic rewards.

The kind of organizational citizenship behaviors that individuals choose to engage in within an organization are often consistent with the type of behavior valued in their work environment. In high risk environments where there is an emphasis on safe work practices, it is plausible that any citizenship behaviors would be oriented towards safety. When examining citizenship behaviors that are focused on safety issues, the concept of safety citizenship is often used (Hofmann et al., 2003). Safety citizenship includes behaviors such as calling attention to risky situations and near-misses, contributing to (informal) safety discussions, taking initiatives to improve safety, and reminding and informing co-workers of the importance of safe behaviors (cf. safety participation) (Hofmann et al., 2003; Martínez-Córcoles, Schöbel, Gracia, Tomás, & Peiró, 2012; Parker, Turner, & Griffin, 2003). In line with research regarding general OCB, a clear link has been found between certain relational leadership behaviors, such as interacting with employees and providing them with feedback, and safety citizenship behaviors (Martínez-Córcoles et al., 2012; Michael et al., 2006). A study by Inness, Turner, Barling, and Stride (2010) investigating the effects of transformational leadership on safety performance showed similar results (i.e., that transformational leadership motivated safety participation). Interestingly, however, the study failed to find any such relationship between transformational leadership and compliance behaviors. These findings support the assumption that leadership characterized by interaction and feedback with the employees mainly results in motivating safety participation/OCB, while there is less support for such a relationship between relational feedback leadership and employee compliance.

**Hypothesis 2.** Leaders' feedback communication is positively related to subordinates' organizational citizenship behaviors.

## 3. The mediating role of employee safety behaviors

### 3.1. Safety performance

#### 3.1.1. Safety compliance behaviors

Safety compliance refers to behaviors that employees are expected to engage in in order to maintain an acceptable level of safety at the workplace. The concept concerns the extent to which employees adhere to rules, policies, regulations, and procedures regarding safety (Neal et al., 2000). Non-compliance could thus include behaviors such as neglecting the use of personal protective equipment, engaging in prohibited activities, or performing duties in ways that endanger safety (Rundmo & Hale, 2003). The significance of safety-compliant (or non-compliant) behavior for safety has been recognized by a large number of researchers (Dahl & Olsen, 2014). Previous research has found low levels of safety compliance to be related to larger numbers of workplace accidents and injuries (e.g., Fleming, 1999; Mearns, Flin, Fleming, & Gordon, 1997; Neal & Griffin, 2006; Probst, 2004).

Most high-risk organizations have formal policies that instruct employees to report all safety incidents. This is especially true for health care organizations, where the reporting of errors and incidents is considered a vital tool in the efforts to achieve increased patient safety (Barach & Small, 2000). Through the reporting of even seemingly insignificant incidents, problems are exposed and addressed before they become a danger, which also gives organizations opportunities to increase their knowledge on and improve safe work practices (Barnsteiner, 2011). Nevertheless, there is considerable evidence that underreporting is a prevalent phenomenon (Probst & Estrada, 2010; Research and Evaluation Branch, 1992). Probst et al. (2008) found that employees failed to report 78% of all experienced accidents to their supervisors. It is reasonable to believe that individuals who display non-compliant behaviors to a larger extent would be apt to neglect the reporting of incidents and accidents. However, problems with underreporting have also been shown to be influenced by organizational factors such as the safety communication of leaders. When management and supervisors fail to communicate the importance of safety, employees may assume that their organization is not interested in hearing or knowing about injuries or accidents. When this is the case, there is a considerable risk for underreporting among employees (Clarke, 1998). In support of this reasoning, a study by Probst and Estrada (2010) showed that when employees perceive that their supervisors enforce and emphasize the importance of safety policies, they were significantly more likely to report accidents. In the present study, safety compliance is hypothesized to be directly related to the reporting of incidents and accidents. In addition, considering the apparent relationship between leader safety priority communication and reporting, we assume that safety compliance mediates this relationship.

**Hypothesis 3a.** Safety compliance is positively related to the reporting of incidents.

**Hypothesis 3b.** Safety compliance mediates the effect of safety priority communication on incident reporting.

### 3.1.2. Organizational citizenship behaviors

Even though compliance with safety rules is of great importance in high-risk organizations, motivating employees to participate in safety systems and initiatives is a major concern (Didla, Mearns, & Flin, 2009). Michael et al. (2006) found not only that there was a relationship between a relational leadership style and safety citizenship behaviors but also that these behaviors appeared to result in less workplace injuries and accidents. Similarly, Simard and Marchand (1997) found that the propensity of work groups to take safety initiatives (cf. safety citizenship behaviors) was the major predictive variable of organizational effectiveness and the ability to reduce work accident rates. When employees feel encouraged to voluntarily participate and give voice to their views and opinions, it provides the organization with valuable information that is vital for identifying and detecting danger signals and dysfunctions in system behaviors that are not anticipated by the system design (Martínez-Córcoles et al., 2012). Considering that the key behaviors that comprise the concept of safety citizenship behavior involve giving voice to safety concerns, speaking up about incidents and accidents, and detecting errors or malfunctions that could potentially result in future accidents (Hofmann et al., 2003), it is reasonable to assume that employees who are more engaged in citizenship behaviors will report incidents to a greater extent. Given the apparent effect of leader feedback on both OCB and organizational safety outcomes, it is also argued that OCB will work as a mediator in this context.

**Hypothesis 4a.** Organizational citizenship behavior is positively related to the tendency to report incidents.

**Hypothesis 4b.** Organizational citizenship behavior mediates the effect of feedback on the tendency to report incidents.

### 3.2. Reporting of incidents

As previously described, the reporting of any error, near miss, incident or potential for error is vital for the maintenance of safety in organizations. With the recent awareness of underreporting as a problem, a cultural shift in organizations is called for, where management and leaders foster a more open culture in which safety incident reporting is a priority and an activity that employees are inclined to engage in (Kaufman & McCaughan, 2013; Milligan & Dennis, 2005). A study by Hutchinson et al. (2009) found support for this argument by demonstrating a positive association between reporting rates and safety culture. The degree to which employees report incidents, as a measure of safety behavior, has also been shown to be related to safety outcomes such as patient safety. For example, there is evidence that employee willingness to report incidents is a significant mediating factor of the relationship between the professional health care specialty of staff members and patient safety (Smits et al., 2012). Thus, we propose that the reporting of accidents and incidents is related to patient safety. Based on previously mentioned arguments regarding the presumed links between the two other employee safety behaviors in the study (compliance and OCB) and reporting, we also assume that reporting plays a mediating role in the relationship between these two employee behaviors and patient safety.

**Hypothesis 5a.** The tendency to report incidents is positively related to patient safety.

**Hypothesis 5b.** The tendency to report incidents mediates the relationship between compliance and patient safety and between organizational citizenship behavior and patient safety.

## 4. Method

### 4.1. Sample

This study is based on cross-sectional data gathered in 2012. The participants in the study were employees at two hospital wards in the Stockholm area of Sweden. The wards specialized in anesthetics and surgery, although other types of procedures were also performed. The entire staffs of both wards (260 employees) were sent an internet link to an electronically based questionnaire, and a total of 221 questionnaires were filled out, for a response rate of 85%. The respondents reported an average tenure of 14 years ( $Sd = 11$ ) and 46% of the respondents were women. When it came to the professions of the respondents, 15% were medical doctors, 71% were nurses, 10% were administrative personnel, and 4% were categorized as other personnel.

### 4.2. Measures

Unless otherwise stated, all the measures used in the study were assessed on a 5-point Likert scale, ranging from totally disagree to totally agree. A variable index was created by computing the means for each of the scale items.

#### 4.2.1. Leader communication approaches

To measure leader communication, the respondents were asked to assess the perceived behavior of their direct leader, regardless of organizational level. Leader safety priority communication was assessed using three items based on Neal et al.'s (2000) safety climate scale (the dimensions of management's safety values and communication) and Zohar's assigned safety priority scale (2002). One example item is "My supervisor clearly communicates the importance of patient safety."

Internal consistency reliability was 0.94. Perceived feedback from the supervisor was assessed with three items (e.g., “My supervisor usually lets me know how satisfying my performance is.”), based on Hackman and Oldham’s feedback scale (1975). The scale showed a satisfactory internal consistency of .96.

4.2.2. Employee safety behaviors

In order to assess safety compliance, three items based on Neal et al.’s (2000) safety performance scale (e.g., “I have to break safety rules or regulations to cope with certain tasks.”) were used, with an internal consistency reliability score of 0.74. Organizational citizenship behavior was measured with three items (e.g., “I provide feedback and make suggestions for improvements when I discover the need for them.”) in order to capture the civic virtue dimension of organizational citizenship behavior. The items were based on the OCB scale developed by MacKenzie, Podsakoff, and Fetter (1993) and on the safety participation dimension of the safety performance scale by Neal et al. (2000), with an internal consistency reliability score of 0.67. Incident reporting was measured with three items capturing employees’ reporting behavior regarding mistakes and incidents that could potentially be harmful or cause injuries for the patients. The items (e.g., “In my work group we always report incidents that could have harmed the patient regardless of the nature of the incident.”) were adapted from Evans et al.’s (2006) scale on reporting behaviors, and the internal consistency among the items was 0.89.

4.2.3. Patient safety

Patient safety was assessed with three items based on a shortened version of Rundmo and Hale’s (2003) scale regarding safe work practices. The items measured the number of times that the individuals had personally acted in a manner that was unsafe for the patients, witnessed someone else acting in an unsafe manner, and heard about someone acting in an unsafe manner. The response scale for the three items was 5 = Never, 4 = 1–2 times, 3 = 3–5 times, 2 = 6–9 times, and 1 = 10 or more times. The three items were subsequently collapsed into one measure of patient safety, with an internal consistency of .91.

4.2.4. Demographical data

Gender was measured by a single item (1 = female, 2 = male), and tenure was measured in terms of the number of years employed at the hospital ward.

4.3. Analysis

The stated hypotheses were tested through structural equation modeling using AMOS software. The maximum likelihood (ML) method was used to estimate the model parameters. To test the model, we ran a full model with all manifest indicators specified to load on their respective latent constructs. In addition, tenure and gender were included as control variables in the model. Descriptive statistics for all study variables are displayed in Table 1. To estimate the goodness of fit of the model, we relied on the root mean square error of approximation

(RMSEA), the closeness of fit (PCLOSE), and the comparative fit index (CFI). Recommended interpretations of these indexes are RMSEA < .08 = acceptable model, and < .05 = good model fit (Browne & Cudeck, 1993); PCLOSE > .50 = good model fit (Jöreskog & Sörbom, 1996); CFI > .90 = acceptable model fit, and > .95 = excellent model fit (Hu & Bentler, 1999).

5. Results

The structural equation analysis performed to test the proposed hypotheses revealed an excellent fit of the model to data ( $\chi^2 [161] = 233.9$ ;  $p < .05$ ; RMSEA = .045; PCLOSE = .72; CFI = .98). All the estimated parameters were statistically significant ( $p < .05$ ) and showed the expected sign. Given this, it can be concluded that all of the hypothesized relationships as well as the proposed model were supported.

In Fig. 2, the resulting structural model is illustrated. It should be noted that for the sake of clarity, the measurement model is omitted from the figure. However, all indicator factor loadings were significant and had loadings above .40 on the expected latent factors. Also for the sake of clarity, the demographic control variables of gender and tenure have been removed from the illustration.

The results supported the relationships in the proposed model, as leader safety priority communication was found to be positively associated with subordinate safety compliance (H1) and feedback from leaders to subordinates was associated with higher levels of organizational citizenship behaviors (H2). Further, safety compliance was found to be positively related to the reporting of incidents (H3a), and safety compliance did mediate the relationship between safety priority communication and incident reporting (H3b). The results also reveal that organizational citizenship behaviors was positively related to the reporting of incidents (H4a), and that organizational citizenship behavior mediated the relationship between feedback and incident reporting (H4b).

Both types of leader communication approaches (i.e., safety priority communication and feedback), appeared to be significantly related to reporting behavior. However, these relationships both became insignificant as soon as the mediating factors of compliance and OCB were introduced in the model, further indicating that the examined employee behaviors act as mediators in the model.

Finally, the results also showed that incident reporting was positively related to patient safety (H5a) and that reporting behaviors mediated the relationship between safety compliance and patient safety as well as the relationship between organizational citizenship behavior and patient safety (H5b).

Regarding the demographics, the results reveal that gender was positively related to leader safety priority communication, indicating that males to a higher extent perceive that their leaders communicate the importance of safety as compared to female employees. No relationship was found between gender and feedback. However, there was a positive relationship between tenure and feedback, as those who worked longer in the organization also reported a slightly higher level

**Table 1**  
Correlations, means, standard deviations, and internal consistency reliability (Cronbach alpha) for all study variables.

Variable	1	2	3	4	5	6	7	8	M	Sd	Alpha
1. Gender (1 = female)	–								1.55	.50	–
2. Tenure (years)	.09	–							13.7	11.3	–
3. Safety priority communication	.20	.13	–						3.35	1.18	.94
4. Feedback communication	–.00	.18	.63	–					3.02	1.28	.96
5. Safety compliance	.17	.18	.74	.46	–				3.26	.94	.74
6. Organizational citizenship	–.13	.01	.18	.30	.21	–			3.91	.64	.67
7. Incident reporting	.24	.13	.55	.41	.67	.25	–		2.88	.92	.89
8. Patient safety	–.04	.05	.16	.15	.32	.13	.28	–	3.20	1.35	.91

n = 221,  $r > .15 = p < .05$ .

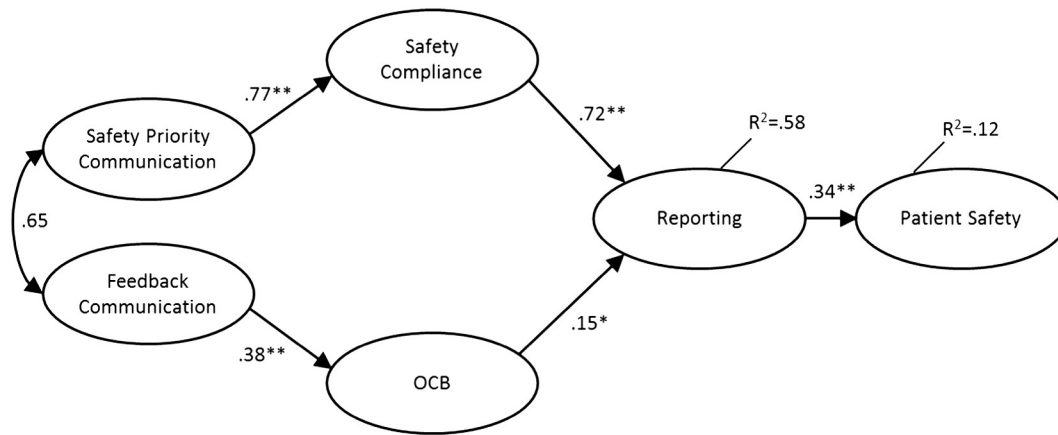


Fig. 2. The tested structural model. \* $p < .05$ , \*\* $p < .001$ .

of feedback compared to those with lower tenure. No significant relationship was found between tenure and safety priority communication.

The standardized regression coefficients are displayed in Fig. 2 (only significant coefficients are displayed). In total, safety compliance and organizational citizenship behavior accounted for 58% of the variance in incident reporting, and incident reporting accounted for 12% of the variance in patient safety.

## 6. Discussion

Many recent studies and reports have confirmed that accidents and adverse events at the workplace is a serious problem (e.g., de Vries et al., 2008; Kohn et al., 1999; Soop et al., 2009). This is particularly evident within health care, where patient safety has become a field of increasing focus and attention. There is a widely held view that more focus needs to be placed on improving the quality of health care by reducing unnecessary patient harm. However, patient safety is a complicated matter that involves taking a number of different factors into consideration (Kaufman & McCaughan, 2013). Both the role of the leader and the importance of communication are factors that have been recognized as essential for reducing accidents and creating a safer workplace (Flin & Yule, 2004; Hofmann & Morgeson, 1999; Simard & Marchand, 1997). Still, little research has addressed the process by which leader communication strategies could affect safety.

The main aim of the present study was to test a model of the process through which leaders' communication influences employees' safety behaviors. The proposed model was based on an integration of theories about leadership communication and theories regarding safety behaviors and safety outcomes. The two investigated leader communication approaches of safety priority communication and feedback communication were assumed to affect incident reporting and patient safety, although these relationships were hypothesized to be affected by different mediators, that is, via safety compliance for the former approach and via organizational citizenship behaviors for the latter. These hypotheses were confirmed as the findings supported the proposed model. Both types of leadership communication, safety priority communication and feedback, seem to significantly influence reporting, which in turn is related to patient safety. In addition, the results from the model testing also support the assumption that different mediators influenced the relationships between the two communication approaches and safety outcomes.

### 6.1. Theoretical implications

The results from the present study indicating that leader safety priority communication is related to compliance but not to OCB and that feedback communication with the subordinates is related to OCB

but not to compliance support previous research on leadership. In a study by Inness et al. (2010), no relationship was found between transformational leadership and safety compliance. Instead, it was suggested that compliance might be affected to a higher degree by transactional leadership. Considering that feedback is an important element in transformational leadership and that the top-down communication of desirable values and behaviors (which are often also followed by a reward/punishment) could be considered to be more closely associated with transactional leadership, these results are in line with the findings in the present study. In addition, a study by Griffin and Hu (2013) investigating leader safety behaviors and their impact on employees' safety performance found that monitoring-based leader behaviors (cf. transactional leadership) were positively related to compliance and that safety-inspiring leader behaviors (cf. relational or transformational leadership) were positively related to safety participation, while no significant relationships were found between such leader behaviors and safety participation or between safety-inspiring leader behaviors and compliance. Griffin and Neal (2000) even found that compliance motivation, a concept related to safety compliance, showed a negative relationship with safety participation. This suggests that there could be a risk that leader behaviors intended to promote safety compliance might result in a decrease in safety participation, which in most cases would be an undesirable effect. Given that safety compliance behaviors and OCB were found to be influenced by different leader communication approaches, the results also provide evidence in support of theories that oppose the traditional view of safety performance being a unidimensional construct (e.g., Burke, Sarpy, Tesluk, & Smith-Crowe, 2002). Recently, it has become a more accepted view that job performance (Rotundo & Sackett, 2002) and safety performance in particular (Neal & Griffin, 2006) are constituted by two or more dimensions.

There are several plausible explanations for why the results from the present study indicate a strong relationship between leader communication and safety outcomes while other earlier studies have failed to find support for such a relationship. Many previous studies investigating communication and safety have focused only on a few variables or on direct relationships (e.g., Michael et al., 2006; Vredenburg, 2002) and not taken into account the complexity of the multiple relationships involved in the process. Given the widespread agreement that organizational safety is a complicated matter that requires a system approach to identify the often complex causes of unsafe situations (Kaufman & McCaughan, 2013), not sufficiently taking into account mediating or moderating relationships or the multidimensionality of the measured constructs might have contributed to some of the ambiguities in earlier research findings (Michael et al., 2006). By distinguishing between different leader-to-subordinate communication approaches and between dimensions of safety performance, a clearer pattern of the relationships between communication and safety may emerge. The

fact that the two communication strategies seem to affect different safety behaviors and that these in turn result in improved patient safety through the mediating variable of reporting behaviors, supports the assumption that a more complex system perspective on the role that communication plays in regard to safety in organizations is needed.

Another possible reason for the previous ambiguities could relate to differences in the operationalization of the measured constructs. In the present study, safety priority communication is defined as more or less of a one-way leader-to-subordinate communication of safety issues, concerning the importance of rules, regulations, and other aspects regarding safety. This is an important distinction since many of the previous studies regarding safety communication have been using scales focusing on two-way communication between supervisor and subordinate, typically measuring the general degree of openness in the communication climate at the workplace (e.g., Hofmann & Morgeson, 1999; Michael et al., 2006; Vredenburg, 2002). This reasoning is supported by Michael et al. (2006) who claim that one reason why leader safety priority communication results in compliance and not in proactive behaviors is that even though leaders communicate the importance of safety, the one-way character of the communication could result in employees seeing this as simply “lip service” and consequently result only in obedience without any assimilation of safety values or intrinsically motivated safety behaviors. This reaction is particularly likely if management displays a low level of actual commitment to safety.

## 6.2. Limitations and future research

The cross-sectional design of this study is an apparent limitation, since it fails to capture dynamic processes over time and makes it difficult to draw any causal inferences from the results. A replication of this study, but including longitudinal assessment at different time points, could provide further validation of the relationships included in the proposed model.

The fact that only self-reported data have been used could also be considered a limitation to the study, because of the risk for response bias due to social desirability as well as mono-method bias. Either of these biases could have influenced the results in a certain direction. To try to avoid any issues with social desirability, the respondents were carefully informed of the anonymous and confidential nature of the survey and that it was being carried out by external researchers who were not involving the organization in the handling of results. Regarding self-report bias, a possible option for avoiding its effects would have been to use more objective safety outcome measures, such as accident data from a register. Registers of accident and injury frequencies have previously been commonly used as an outcome measure of safety at the workplace (Shannon, Mayr, & Haines, 1997). However, according to Cooper and Phillips (1994), the use of the number of accidents, incidents or injuries as criterion data to measure safety is problematic, due to its lack of sensitivity, dubious accuracy, and retrospective character. The problem with accuracy lies in the low base rate and skewed distribution characterizing this kind of data, given that the number of organizational incidents and accidents that actually occur are often few (Christian et al., 2009). There are also arguments that accident data frequently fail to take risk exposure into account (Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2005; Glendon & Litherland, 2001) and that the predictive effects of psychological antecedents on the number of safety events tends to be weak (Zohar, 2000). In addition, there is no commonly accepted view as to how injury rates should be defined. As a result, a vast number of different definitions of the concept (lost-time from work, worker compensation claims, etc.) have emerged, which has hampered the comparability of research results within the area. Hence, accident and injury data are often considered unreliable and unstable as criterion measures for safety (DeJoy, Schaffer, Wilson, Vandenberg, & Butts, 2004; Hopkins, 1995). Despite many organizations being primarily interested in an actual reduction

of the incidence of injuries and the associated costs, it is increasingly common for studies to focus on the improvement of employee safety performance as an alternative outcome measure of safety (Griffin & Hu, 2013). Griffin and Neal (2000) conceptualized safety performance as individual work behaviors related to organizational safety. Safety performance is often preferred by researchers because of its more proximal relation to psychological factors than accidents. Due to its more normal base rate and distribution, performance behaviors can also be predicted with greater accuracy (Christian et al., 2009). The rationale is that a reduction in accidents and injuries will automatically follow from an increase in safe behaviors (Ray, Purswell, & Bowen, 1993). Even though employee self-reports on performance in many cases are also retrospective, this kind of data has come to be considered more valid and useful for measuring safety than register data of accidents. Anonymous self-reports on safety behaviors have thus become increasingly accepted as one of the most reliable data collection methods available for measuring safety outcome. An alternative method of measuring safety behaviors would be a direct sampling of employee performance through observations. This method has previously been used in behavioral studies conducted in work settings (Komaki, Collins, & Thoene, 1980). According to Komaki (1986), performance sampling based on information from observers (researchers or leaders) actually observing employees at work produces more accurate performance information than other methods, such as self-reports. Behavioral observations could therefore be a beneficial method in future studies examining leader communication and safety. However, even observational data has its disadvantages, such as being relatively costly and time consuming. In addition, observational methods used in behavioral-based safety programs have been criticized for not taking into consideration the effect of the observation itself. One such example is the classic Hawthorne effect (Landsberger, 1958), whereby the performance of the employee is improved due to awareness of being observed (see also e.g. Kines et al., 2010). In conclusion, none of the available measures of safety could be considered perfectly valid and reliable on its own account. However, to further improve the reliability of the results, future research could benefit from the use of multiple sources of outcome data to avoid problems associated with social desirability, mono-method bias, and response bias. In addition, to minimize the distributional problems that follow from studying infrequently occurring events, it would be recommended to also include measures of minor or near accidents (Barling et al., 2002).

Another limitation related to mono-method bias relates to the fact that employees were asked to base their responses on their immediate leader's communication behavior, but the leaders were not asked about the safety behaviors of their subordinates. Including the former approach would have added to the reliability of the study, but this option was not feasible due to the guaranteed anonymity of the respondents.

In the present study, the communication of the respondents' immediate leaders has been examined, regardless of their level in the organization. This has provided an indication of the communication behavior of the leaders in general in the organization, but it does not allow any conclusions to be made regarding whether the different communication approaches could affect safety behaviors in different ways or to varying extents at different hierarchical levels in the organization. This could be another approach for future research to explore.

## 6.3. Practical applications

The results point to the importance of leader safety priority communication within organizations. In most high risk organizations there is already an awareness of and strong support for the importance of leaders' prioritization of safety. However, a survey of 70 European chemical and petrochemical companies showed that only 23% of the employees reported that top management gave safety first priority among their other business interests (Keller & Huwaisheh, 1993). This

indicates that there is a gap between the organization's awareness of the usefulness of this kind of leader communication and the leaders' actual communication behavior in practice. Given that leader safety priority communication is a factor that strongly contributes to safety compliance behavior, more focus should be put on this type of communication. Achieving a high level of safety compliance behaviors among employees should be of great interest for high-risk organizations. One example of this problem is in a study of mineworkers by Laurence (2005), where almost one-third of the workers indicated that they did not always follow the mine's rules and regulations and about one-quarter of them believed or were unsure that it was necessary to break the rules to get the job done. The present results also highlight that besides one-way leader communication of safety values, leader communication in the form of direct feedback to employees should be considered equally important. This conclusion is based on the study's finding of a strong relationship between leader feedback and subordinate organizational citizenship behavior. Feedback provided by the leader could thus be considered a key strategy for encouraging employees to act voluntarily and proactively to address safety issues in the organization. According to Zohar (2008), proactive safety participation should complement safety compliance, since not even in highly standardized and routinized work situations can rules and procedures cover all possible risks. The positive effect of feedback on performance is well-established (Hackman & Oldham, 1975), but the impact of feedback on OCB and safety has not been given the same attention. Feedback to employees on safety performance can be communicated in a number of ways. Apart from through direct and individual conversations, feedback could also be given, for example, through reviews and discussions of behavioral data in safety meetings (Roughton, 1993). In order for the supervisor's feedback to effectively influence safety practices, however, Vredenburg (2002) claims that it must be provided to the employees who are capable of using it and at a point in the process where their behaviors can effectively influence outcomes.

In the present study, employee reporting of incidents or accidents was used as a measure of behavioral safety. As mentioned earlier, the importance of reporting incidents has become increasingly acknowledged (Evans et al., 2006). The argument is that openness about errors and incidents is essential for an organization, so that any problems can be exposed and addressed before they endanger others (Barnsteiner, 2011). The results indicate that both safety compliance behaviors and proactive behaviors are related to the reporting of incidents, which further emphasizes that both leader communication strategies are important for achieving workplace safety. The mediating role of incident reporting between safety behaviors and patient safety also implies that employee safety compliance and OCB affect patient safety via reporting behaviors. Regarding practical applications, the finding of a strong relationship between reporting behaviors and patient safety suggests that organizations should put a focus on fostering a safety climate that strongly encourages employees to report even minor incidents in order to improve safety.

#### 6.4. Conclusions

The present study, based on an integrated model including safety compliance and OCB as mediating variables, contributes to our understanding of the role of leader communication for improving reporting behavior and, in turn, patient safety. The results of the study indicate that leader safety priority communication and feedback seem to be two equally important leader communication approaches when it comes to safety in that they affect different employee safety behaviors. Considering that the two investigated employee behaviors of safety compliance and OCB are regarded as two distinct yet complementary dimensions of safety performance, it is essential that organizations make an effort to improve both of these behaviors in order to enhance workplace safety. In sum, the findings from the present study highlight the importance of taking different leader communication approaches

into account in order to increase workplace safety, which could have practical implications for both managers and policymakers when planning safety improvement initiatives in organizations.

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