Promoting safety in organizations

The role of leadership and managerial practices

Malin Mattson
“Good management is the art of making problems so interesting and their solutions so constructive that everyone wants to get to work and deal with them.”

~ Paul Hawken
Abstract

Workplace accidents and injuries are a growing problem for organizations in Sweden as well as in many other countries. As a consequence, improving workplace safety has become an area of increasing concern for employers and politicians as well as researchers. The aim of this thesis was to contribute to an increased understanding of how leadership and management practices can influence safety in organizations. In Study I, three leadership styles were investigated to determine their relative importance for different safety outcomes. A leadership style specifically emphasizing safety was found to contribute the most to employee safety behaviors; transformational leadership was found to be positive for safety behaviors only when it also involved a safety focus; and a transactional leadership style (management-by-exception active) was shown to be slightly negatively related to workplace safety. Study II examined the role of leader communication approaches for patient safety and the mechanisms involved in this relationship. Support was found for a model showing that one-way communication of safety values and leader feedback communication were both related to increased patient safety through the mediation of different employee safety behaviors (safety compliance and organizational citizen behaviors). Study III explored whether and in what ways the use of staff bonus systems may compromise safety in high-risk organizations. The three investigated systems were all found to provide limited incentives for any behavioral change. However, the results indicate that design characteristics such as clearly defined and communicated bonus goals, which are perceived as closely linked to performance and which aim at improved safety, are imperative for the influence that bonus programs have on safety. Group-directed goals also appeared to be more advantageous than corporate- or individual-level goals. The thesis highlights the importance of actively emphasizing and communicating safety-related issues, both through leadership and in managerial practices, for the achievement of enhanced workplace safety.

Keywords: Transformational leadership, transactional leadership, safety-specific leadership, workplace safety, injuries, accidents, safety compliance, safety initiative, organizational citizenship behavior, leader communication, incident reporting, patient safety, management practices, incentive program
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Stockholm, April 2015
List of Studies


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# Contents

Introduction ........................................................................................................... 1  
  General aim of the thesis ...................................................................................... 7

Safety in organizations ............................................................................................ 10  
  A brief history of safety research ........................................................................ 11  
  Measuring safety .................................................................................................. 13  
  Concluding remarks ............................................................................................... 16

The management of occupational safety ............................................................... 18  
  Safety as a managerial concern ........................................................................... 18  
    Safety Management – a part of Human Resource Management ....................... 19  
  Approaches to safety management ....................................................................... 20  
    The best practice approach ............................................................................. 20  
    The systems approach ...................................................................................... 21  
    The cultural approach ..................................................................................... 23  
    Conflicting or complementing approaches? .................................................... 24  
  Concluding remarks ............................................................................................... 25

The role of leadership in safety management ......................................................... 27  
  Brief background to leadership research ............................................................. 27  
  The role of leadership for safety ......................................................................... 28  
  General leadership styles ..................................................................................... 29  
    The full range leadership theory ..................................................................... 30  
    Safety-specific leadership style ....................................................................... 33  
  Concluding remarks ............................................................................................... 34

Communicating for safety ..................................................................................... 35  
  The role of communication within organizations .............................................. 35  
  Leader safety communication .............................................................................. 37  
    Downward communication .............................................................................. 37  
    Upward communication ................................................................................... 39  
  Concluding remarks ............................................................................................... 40

Rewards and incentives in a safety context ........................................................... 41  
  What motivates people to perform? ..................................................................... 41  
    The economic model of behaviors .................................................................. 42  
    Psychologically based models of behavior ..................................................... 42
Background and types of incentive programs............................................ 43
Evidence of the effects of incentives on performance.............................. 44
Impact of incentive programs on safety .................................................. 45
  Design of incentive programs in relation to safety .................................. 46
  Potential safety problems with incentive programs ............................... 46
Concluding Remarks .............................................................................. 48

Summary of Studies .................................................................................. 50
Study I ......................................................................................................... 50
  Background and Aim ................................................................................ 50
  Method ....................................................................................................... 52
  Main Findings .......................................................................................... 52
  Conclusions ............................................................................................. 55
Study II ....................................................................................................... 55
  Background and Aim ................................................................................ 55
  Method ....................................................................................................... 55
  Main Findings .......................................................................................... 56
  Conclusions ............................................................................................. 56
Study III ....................................................................................................... 59
  Background and Aim ................................................................................ 59
  Method ....................................................................................................... 59
  Main Findings .......................................................................................... 62
  Conclusions ............................................................................................. 63

Discussion .................................................................................................. 64
  Safety-specific leadership as a predictor of safety ..................................... 64
  The role of leader communication ......................................................... 67
  Managing safety through rewards ........................................................... 69
  Methodological considerations ............................................................... 73
  Implications of the results and suggested future research ....................... 77
    Theoretical implications ......................................................................... 77
    Practical implications ............................................................................. 79
  Concluding remarks ............................................................................... 81

Sammanfattning på svenska ......................................................................... 82

References .................................................................................................. 83
Introduction

Work environment problems and their consequences in terms of the ill health of employees have long been of interest to researchers. Considerable research has shown that poor physical and psychosocial working conditions can lead to a deterioration of individual health and wellbeing (Clarke & Cooper, 2004). Most of these studies concern work environment issues in relation to concepts such as stress-induced illness. An area within work environment research that has received less attention, however, concerns the effects that workplace conditions have on employee safety. According to statistics on Swedish workplaces (The Swedish Work Environment Authority, 2014a), injuries and accidents had been steadily decreasing over the last century but seemed to reach a plateau in the 1990’s. As recently as 2010, however, they started increasing again, indicating that workplace safety is an issue that should be focused on and prioritized. The growing problem of workplace hazards is also evident from international statistics, showing that about two million people die every year from work-related accidents and diseases around the world. Even when focusing only on workplace accidents, as many as 270 million fatal and non-fatal accidents are estimated to occur each year (International Labour Organization, 2014).

The immense suffering caused by such accidents and illnesses among the affected employees and their relatives is of course incalculable. Even just in economic terms, the losses are considerable. The costs associated with, for example, early retirements, health care expenses, loss of skilled staff, absenteeism, and high insurance premiums as a consequence of work-related accidents and diseases are considerable. Work-related injury alone is estimated to cost the equivalent of 4 percent of the world Gross Domestic Production (GDP). In some countries the cost of such injuries even reaches as much as 10 percent of their GDP (International Social Security Administration, 2014). According to the International Labour Organization, the direct or indirect cost of occupational illness and accidents at work is estimated at US$2.8 trillion worldwide. Although both society and organizations are beginning to be more aware of the urgency of finding ways to prevent work-related accidents and injuries, research regarding workplace safety is still relatively scarce.

One plausible reason for the increase in workplace accidents in recent years is the hard-pressed competitive situation experienced by many organizations, which has led to increasingly higher demands for fast and
flexible solutions. Considering that many countries, including Sweden, have strict work environment laws regulating the responsibilities of the employer to provide a safe work environment for its employees (The European Commission, 2009; The Swedish Work Environment Authority, 2014b), organizations are often exposed to a tension between the demand for production, efficiency, and competitiveness and the need to adhere to health and safety regulations. Even though most organizations do their best to live up to the required work environment standards, there is still a risk that organizations may be tempted to prioritize production at the cost of safety in order to be competitive and keep up with the production pressure. The changes in modern work life towards more boundaryless organizations and workplaces have also resulted in matters concerning the responsibility of workplace health and safety becoming more complex. For example, the more common occurrence of hiring contractors, outsourcing, and relocating production to other countries often makes it difficult to determine who is actually responsible for the wellbeing of the employees within an organization.

Despite the significant human and economic costs resulting from workplace accidents, research agrees that many of these accidents are preventable through the implementation of sound prevention, reporting, and inspection practices (International Labour Organization, 2014). The responsibility of the employer to provide a safe workplace is also something the workers themselves are becoming increasingly aware of as the workforce becomes more educated. Due to a more widespread and faster exchange of information regarding hazards and risky environments, the workers of today are more safety and environmentally conscious. As a consequence, workers, as well as the public in general, are more willing to express disapproval of organizations that are irresponsible when it comes to safety and that are perceived to behave carelessly regarding the wellbeing of its employees (Cullen, Hartman, & Jonson, 2009; Turner, 1991).

Safety is a very wide concept that refers to the avoidance of any kind of accident leading to harm or injury to human beings (Piètre-Cambacédès & Bouissou, 2013). The concept of safety is also broad in the sense that it can range from regarding accidents or incidents that cause only minor physical injuries, such as a bruise or a small cut, to major injuries that require intense hospital care or that may result in death. In addition, given the focus on avoiding harm, safety also includes efforts aimed at understanding the causes of accidents and at preventing new ones from occurring. Work on safety is therefore also often concerned with improving the safety-related behaviors of the employees (Smith, Karsh, Carayon, & Conway, 2003). Examples of such behaviors include complying with safety rules and regulations, taking initiatives to contribute to the enhancement of safety at the workplace, and reporting all accidents and injuries that are experienced or found out about. This last behavior has been increasingly focused on in safety contexts, as
findings show that a large number of accidents and injuries in organizations go by unreported (Probst, Brubaker, & Barsotti, 2008). The problem of underreporting can have a negative impact on the safety of an organization in that it represents missed opportunities to improve safety by learning from mistakes.

Due to the potentially severe consequences of an accident, safety not only concerns those individuals exposed to harm and injuries, but also negatively impacts their close relatives as well as the organization and society (Dembe, 2001). From the perspective of the organization, workplace accidents are often accompanied by several negative consequences. Apart from the economic costs associated with high accident rates, the occurrence of major work-related injuries might also have a severe impact on the internal and external legitimacy and reputation of the organization and its activities and services/products (Health and Safety Executive, 1997).

When considering the impact of accidents, it is also worth noting that the issue of workplace safety is not only relevant for a limited number of organizations which are commonly categorized as belonging to a pronounced high-risk sector, such as aviation, oil drilling, construction, and nuclear and chemical production, but should be considered vital even for organizations that operate in a variety of other sectors, such as transport (including tourism), manufacturing, and health care. The common goal for all of these organizations is typically to achieve the highest possible level of safety. However, depending on the nature of the organizational activities in the specific sector, the kind of safety being primarily focused on may vary. Most organizations’ major concern is the safety of its employees, as is the case, for example, at construction sites, where safety concerns the avoidance of serious physical injuries in the construction process. Other sectors, however, have more dualistic concerns when it comes to safety improvements. Aviation and health care are two examples of sectors where the nature of the organizational activities makes it essential to consider not only the safety of the individuals working for the organization but also other groups involved in these activities (i.e., the safety of passengers in aviation and the safety of patients in health care). In some sectors, where a potential accident would also have severe consequences for the community and environment, dualistic concerns regarding safety extend beyond the organization and those involved in its activities. Organizations with this wider societal perspective on safety include nuclear power plants and chemical companies. A major accident in these kinds of organizations, potentially involving the spreading of toxic chemicals or radioactive waste, will most likely have a catastrophic impact on the surrounding environment. Even though the initial negative effects of such an event would be on the environment, human beings would still be considered the main object of organizational safety efforts, given that they are ultimately affected by the environmental problems caused by the accident (see eg., Meshkati, 1991).
Considering the comprehensive workplace safety problems still facing today’s organizations, the need for further research in this area is urgent. While early safety research focused primarily on errors and the personnel involved in a flawed process, there has been a shift in emphasis from individual-level explanations of incidents and accidents to organizational-level explanations in recent years (Neal & Griffin, 2000). This is due to an increased understanding of the complexity of accident causation, realizing that the cause of an accident cannot merely be attributable to a specific act committed by a single individual, but is rather the result of an interaction of many different circumstances within the organization. The processes leading up to accidents and the underlying structural and systemic factors in the organization as a whole have thus become more central. Areas such as organizational culture have received increasing attention from both researchers and practitioners. The extent to which safety-related issues are emphasized within an organization’s culture is considered to affect the employees’ attitudes towards safety, whether they perceive it to be a prioritized matter, and, accordingly, their safety-related behaviors at the workplace. Although enhancements of an organization’s safety culture can have a great impact on the safety consciousness and safety behaviors of the employees, there are other factors that can contribute to the achievement of improved safety. Apart from societal, political, and legislative factors relating to the context in which the organization operates, a multitude of causes of unsafe behaviors and accidents can often lie within the organization. These causes can be related to the personal characteristics of the employees, the work-site, and interpersonal relations, as well as to the structure and functioning of the organization (Thomás, Meliá, & Oliver, 1999).

Considering the importance of these organizational factors for safety, the role of good management practices becomes evident. It is often argued that safety management should be considered as part of a strategic, human resource management (HRM) perspective (Glendon, Clarke, & McKenna, 2006). This implies that safety management concerns safety in relation to work practices regarding staffing, hiring, training, communication and information sharing, reward systems, coordination, and decision making. In order to achieve a safe workplace, it is therefore important that the management in an organization considers and emphasizes safety in all of these areas. Previous research has found management practices regarding staffing (Leigh, 1986; Rebitzer, 1995), decision making and autonomy (Parker Axtell, & Turner, 2001), and training (Cole & Brown, 1996) to be related to organizational safety. Still, there are several areas within safety management that have not been given sufficient attention in research. One such aspect is the role of individual managers and supervisors within an organization (Hofmann & Morgeson, 1999; Clarke, 2013). Supervisors and managers on middle or lower levels often constitute a link between
managerial decisions and the employees in the organization, and can consequently be considered to have a crucial role in the communication and implementation of managerial safety practices. In other words, the performance of leaders at all levels in an organization can be considered vital for the execution and functioning of most managerial practices.

The importance of leadership for the performance of subordinates has long been established. For instance, leadership has been shown to influence a number of attitudes and behaviors of subordinates, such as commitment, loyalty, satisfaction, motivation, and performance, affecting the individual level as well as the team and organization levels (e.g., Judge & Piccolo, 2004; Wang, Oh, Courtright, & Colbert, 2011). There is also substantial evidence that leadership is a significant factor in the achievement and maintenance of safety in organizations. For instance, research indicates that supportive leadership is associated with increased employee safety behaviors and fewer adverse events, accidents, and injuries at the workplace (Nahrgang, Morgesson, & Hofmann, 2011). Leaders also have an important role when it comes to the issue of perceived balance and/or competitiveness between safety and production within an organization (Flin & Yule, 2004). In organizations where production pressure is high and the emphasis on safety and safe work procedures is low, there is a considerable risk that employees will act in ways that compromise the safety of themselves as well as others. Previous research indicates that when leaders are perceived to be committed to safety, express positive safety attitudes, and act as a role model for safety behaviors, it has a positive impact on the safety climate in the organization (Flin, 2003; Törner, 2011). Thus, the extent and the means by which leaders communicate the importance of safety values should be a vital aspect in achieving a safe workplace (Zohar & Luria, 2003). However, despite the apparent significance of leadership for safety, much of the research regarding the role of leaders has been within the context of safety climate studies, where leadership is often only referred to indirectly as one of the aspects that constitutes the safety climate construct (e.g., employee perceptions of leaders’ commitment to safety) or possibly as an antecedent of safety climate (Hofmann & Morgeson, 2004; Zohar, 2010). Accordingly, the proportion of safety research focusing directly on leadership in relation to safety outcomes per se has long been surprisingly small (Hofmann & Morgeson, 2004). In particular, the important relationship between leader communication approaches and safety is an area that has been fairly neglected within occupational safety research until recently.

In addition, in the leadership safety research that has been conducted, there is some disagreement over the means by which a leader is most likely to be successful in achieving safety. Even though there is a fair amount of agreement on the appropriateness of some leadership styles for safety (e.g., Inness, Barling, Turner, & Stride, 2010), there is still not complete consensus among safety researchers on other leadership styles or on specific
leadership behaviors comprising those styles (see e.g., Clarke, 2013; Zohar, 2002a). The debate often concerns whether traditional behavioral leadership approaches (e.g., transactional leadership; Bass & Avolio, 1994) based on operant conditioning, such as incentives, punishments, monitoring, and negotiations, are the most effective ways to increase safety behaviors among employees, or whether alternative approaches are more suitable for achieving safety. The alternatives often include more interactive leadership elements such as employee participation, communication, and goal setting. Sometimes an inspirational or charismatic type of leadership — such as transformational leadership (Bass & Avolio, 1994), where the manager functions as a role model for the safety values of the organization — is suggested to be the most effective way for a leader to affect workplace safety. Another view is that safety-specific leadership, in which the leader is continuously emphasizing safety in all aspects of the work, is the most successful approach to leadership when it comes to enhancing safety (Tomás et al., 1999). Many of the studies on leadership, however, only examine one specific leadership style in relation to safety (e.g., Hofmann, Morgeson, & Gerras, 2003; Inness et al., 2010). The need for more comparative research regarding the appropriateness of different leadership styles for safety is therefore pressing.

Apart from leadership, there are also other managerial aspects that can be of great importance for the enhancement of workplace safety. Programs that provide employees with rewards for successful performance is one example. Whether performance-contingent monetary rewards in organizations are beneficial or pose a risk to safety (especially in high-risk organizations) is an issue of debate in the occupational safety literature and research. According to a traditional behavioristic perspective (often held by, e.g., economists), all behaviors that are followed by a reward will be reinforced (Domjan, 2010; Skinner, 1953). This view implies that behaviors for which an individual receives extra compensation, for example, through a bonus system, would be engaged in to a greater extent in the future. Even though there is some support for bonus systems enhancing performance, both when it comes to production (Condly, Clark, & Stolovitch, 2003) and safety (LaMere, Dickinson, Henry, Henry, & Poling, 1996), some claim that since occupational safety is a complex issue, a reward system based on simple contingency principles could potentially pose a threat to safety if not certain aspects are taken under consideration (Daniels & Marlow, 2005). Given the many interacting factors involved in achieving a safe workplace and the multitude of different and potentially conflicting goals (e.g., production vs. safety) within an organization, a systems approach taking a number of different organizational, social, and motivational aspects into account should therefore be necessary in the design of an efficient and safe bonus program (Dwyer & Raftery, 1991). For example, incentive systems rewarding productive behaviors can, if poorly designed, be hazardous given that the
pressure for production can encourage unsafe work practices such as working too fast and too long hours, cutting corners (e.g., neglecting protective equipment), and accepting hazardous tasks (Kaminski, 2001). Worth noting is that it is not only the reward itself that encourages employees to behave unsafely in these cases, but also the fact that productivity incentive systems are often perceived as a signal from the management that production should be prioritized over safety. The kind of behaviors rewarded in bonus systems can consequently also affect the perception of safety-related issues (i.e., the safety climate) among employees. The view that more systemic considerations should be emphasized in the design of reward and bonus systems is supported by research showing that such systems can lack in efficiency or, in some cases, be negative for safety within organizations. The complexity involved in the design of bonus and other incentive programs may be the reason for the somewhat ambiguous findings regarding their value for improving workplace safety (Sinclair & Tetrick, 2004).

Although there is evidence for management practices having an important role in improving workplace safety (Hofmann, Jacobs, & Landy, 1995; Vredenburgh, 2002), there are reasons to believe that this relationship may not always be direct. In other words, leadership and managerial practices can in some cases have a direct effect on safety outcomes in an organization, but in most cases it is likely that the influence of managerial practices on safety is dependent on one or more intervening mechanisms. Such mediating factors can be seen as links, in this case between managerial and safety outcomes (e.g., workplace injuries), and function as conductors of the relationship between two phenomena. One such mechanism frequently assumed to mediate the relationship between leadership and safety is the safety climate in an organization (Clarke, 2013). Several other factors may also intervene in this relationship, such as the motivation and behaviors of employees. Despite the general assumption of other mechanisms being involved in the relationship between management practices and safety, relatively few studies on this relationship have taken the complexity and interaction between multiple variables into consideration, which could provide a broader or deeper understanding of the ways in which these leader behaviors and practices are related to safety outcomes. The fact that many previous studies have failed to find any direct relationships between, for example, leadership and certain safety outcomes can be due to the mechanisms involved in these relationships not being taken into account.

**General aim of the thesis**

The overall aim of the present thesis was to contribute to an increased understanding of how management practices can influence safety in
organizations. Among the numerous aspects of organizational management that can potentially be related to workplace safety, the focus of the current thesis has been on identifying the risks and benefits of specific leadership approaches and managerial practices in relation to safety. In the investigation of these relationships, potential mediating mechanisms have also been taken into consideration. The kind of managerial practices and leadership approaches considered desirable in an organization is often dependent on the basic assumptions held regarding human performance. Aspects related to leadership approaches associated with either transformational or transactional characteristics, are taken into account when investigating the relationships between leadership and managerial practices and safety in this thesis. The three studies of this thesis highlight different aspects of the overall aim in different settings.

The objective of the first study was to investigate the impact of three different leadership styles on workplace safety. The relative contributions of transformational leadership, active transactional leadership, and safety-specific leadership were all examined in relation to different safety outcomes at a processing plant, including both employee safety behaviors and injury frequency.

The objective of the second study was to investigate the role of leadership communication in relation to workplace safety. The study was performed in a health care setting and examined whether and in what ways two different leader communication approaches were related to patient safety. A model including employee safety behaviors as mediating variables was evaluated.

The objective of the third study was to gain a deeper understanding of the role of employee bonus systems for the management of safety in high-risk organizations. The potential risks or benefits associated with such a system and the organizational and psychological mechanisms involved in the process were examined from the perspective of the employees. This study used a comparative approach in that bonus systems of different designs at three separate nuclear power plants were examined in regard to safety.

Figure 1 provides a graphical overview of the model which guided the work, putting the three studies of the present thesis into a larger context. The two boxes in the middle indicate the focus of the thesis, presenting the three studied aspects of leadership and managerial practices and their possible consequences for workplace safety. As is shown in the figure, the studied safety outcomes include employee safety behaviors, which can be considered as either a measure of safety outcome or as mediating factors, injury/accident frequency among employees, and patient safety. The boxes with dotted lines indicate issues related to the studied aspects of leadership and managerial practices but which lie outside the scope of the present thesis. The box to the left describes the numerous factors that can potentially influence safety within an organization and from which the studied aspects
Examples of factors affecting occupational safety
• Organizational structure
• Culture / Climate
• Work environment
• Leadership style
• Recruitment
• Training
• Communication
• Work group composition
• Rewards/incentives
• Insufficient coordination
• Staffing
• Decision making

Studied aspects
- Leadership style
- Leader safety communication approaches
- Bonus systems

Studied outcomes
- Safety behaviors
  - Compliance
  - Initiatives/OCB
  - Reporting
- Accidents/incidents
  - Minor
  - Major
- Patient safety

Examples of consequences
- Individual level
  - Injuries
  - Diseases
  - Loss of income
  - Psychological suffering
- Organizational level
  - Absenteeism
  - Health care costs
  - High insurance premiums
  - Early retirements
  - Loss of skilled staff / training costs
- Societal level
  - Health care costs
  - Retirement costs

Figure 1. Graphical illustration showing factors influencing organizational safety and their potential consequences in a larger context. The two boxes in the middle indicate the variables focused on in the present thesis. The items in the dotted boxes represent related issues in a safety context (i.e., examples of other factors affecting workplace safety and possible consequences of accidents from a larger perspective) but which lie outside the focus of the current thesis.
Safety in organizations

Most people have a pretty good idea of what it means to be or feel safe. However, the concept of safety in scientific terms is often vaguely defined and there is still a lack of consensus regarding its meaning. Nevertheless, a common view is that safety must be understood in relation to the presence of some hazard or risk. Risk can be defined as the function of the likelihood of a negative event to occur and the degree of seriousness of that event (Antonsen, 2009). In simplified terms, the level of safety is high when the level of risk is low and the other way around. However, one important distinction between safety and risk, making it evident that they are not merely two ends of the same concept, is that safety also implies some measure aimed at improvements (Hopkins, 2005). While risk refers to something relatively static that either exists or not, safety also refers to the ability to prevent hazardous events from occurring and/or to limit the consequences when such events do occur. In this context, safety practice includes aspects of work performance as well as the physical, organizational, and technological measures that organizations take in order to protect against or reduce hazards (Antonsen, 2009).

Another conceptual differentiation that needs to be clarified is that between safety and security. Considering the great diversity in the use of the two terms and the multitude of different definitions that are offered in the scientific and normative literature, it is preferable to focus on what distinguishes the terms (Burns, McDermid, Dobson, 1992). According to Piètre-Cambacédès et al. (2013), security is associated with risks originating from malicious and intentional actions, while safety refers to risks that can have the same negative impact but that result from accidental events or actions (i.e., without malicious intent). In other words, the concepts of safety and security are both concerned with risks and the avoidance of harm, but are differentiated by whether they refer to harm caused intentionally or unintentionally. The conceptualization of safety, as addressing the avoidance of accidental harm, is useful for discussing the role of different organizational factors in achieving workplace safety and how safety in this context could be operationalized and measured. Before doing this, however, the emergence and development of safety research over the last century will be briefly described in order to provide a background to the state of present day research within occupational safety.
A brief history of safety research

From a historical perspective, occupational safety has primarily focused on the best ways for humans to adapt to machines through training, typically from the point of view of how humans should adjust to fit the machines and not the other way around. A number of incidents during World War II, however, revealed that sometimes systems were not working regardless of how well-trained the operators were. Airplane crashes occurred without any obvious mechanical failures and enemy readings were missed on the radar despite highly skilled monitors (Wickens & Holland, 2000). Psychologists were then brought in to analyze the operator–machine interface and identify potential problems as well as recommend solutions for improved safety (Macworth, 1950). This practical need resulted in a shift in interest from the design of humans to the design of machines to fit humans, which became known as ergonomics or human factors engineering. The field of human factors later evolved to apply not only to aviation and warfare, but also to a broad range of products that humans interact with in their daily lives, such as toys, telephones, cars, medical devices, and computers (Wickens & Holland, 2000). In an organizational context, much research has been carried out regarding, for example, visual fields, hearing abilities, memory capacity, multitasking, and similar cognitive aspects in relation to different work tasks.

In the mid-1980s the focus of safety research took a new turn. This was a result of the explosion at the Chernobyl nuclear power plant in 1986, which led to radioactive waste falling over most of North-Western Europe (Antonsen, 2009; Clarke & Cooper, 2004). When analyzing the Chernobyl accident, it became clear that it did not solely occur due to a technical mishap or some cognitive mistake by a single individual, but rather was a consequence of a number of different aspects in the organization, which in combination led to a situation where a large-scale accident occurred. It then became evident that it was insufficient to discuss the reasons for workplace hazards only in terms of the technological functioning or human factors (Reiman & Rollenhagen, 2014). It has been argued that this and other similar accidents occur due to the development of “latent failures,” both organizational and technical, which lead to individual unsafe acts (Reason, 1990). In line with this reasoning, the important role that systems of individuals, workgroups/teams, and organizational factors have begun to be acknowledged and regarded as fundamental for the design, construction, and monitoring of technological systems (Pidgeon & O’Leary, 2000; Rollenhagen, 2005; Vredenburgh, 2002). According to the committee that investigated the Chernobyl accident, the main reason for the accident was that the organization’s value systems were not sufficiently safety-oriented. It was concluded that the whole organization was characterized by a culture that had become blind to the hazards inherent in nuclear technology. With
this, the concepts of safety culture and safety climate were founded and have become areas of increasing interest within safety research (Antonsen, 2009; Pidgeon & O’Leary, 2000). Since Chernobyl, investigations of several other major accidents have identified weak safety cultures as the main cause of the accidents. They include the launch of the space shuttle Challenger in 1986 (Vaughan, 1996), the fire in Kings Cross subway station in London in 1987 (Leach, 1989), and in more recent years, the nuclear power plant accident in Fukushima in 2011 (Funabashi & Kitazawa, 2012).

Although there is still not complete consensus among safety researchers regarding the definitions, causes, content, and consequences of safety culture and climate, many are of the opinion that these constructs are the safety-oriented counterparts of the more overarching constructs of organizational culture and climate (e.g., Guldenmund, 2000; Seo, Torabi, Blair, & Ellis, 2004). This view implies that safety culture is considered as the relatively stable set of ideas, beliefs, norms, attitudes, and basic assumptions that the members of an organization share about risks, accidents, and ill health (Cooper, 2000; Pidgeon, 2000). These ideas and beliefs are assumed to result from both socialization and the individuals’ experiences within the organization, and influence their safety motivation and behaviors (Richter & Koch, 2004). For example, one aspect of a safety culture could be a more or less unconscious (or at least not necessarily explicitly stated) common idea that safety is prioritized within the organization. Although the concept of culture as a constructed system of shared meanings emphasizes the social aspects of the phenomenon, some researchers claim that safety culture not only includes social aspects but also technical aspects, hence defining safety culture as sociotechnical rather than purely social (Turner, 1991). Despite the concepts of safety culture and safety climate in many cases having been ambiguously defined and used interchangeably in the research literature (Guldenmund, 2000; Hale, 2000; Antonsen, 2009), safety climate is generally considered a more superficial concept than safety culture, referring to important features of an organization’s current state when it comes to safety-related issues (Glendon et al., 2006). Safety culture and safety climate are interrelated in the sense that safety climate can be seen as a manifestation of the underlying safety culture, reflecting more visible and tangible aspects of a certain culture (Mearns, Whittaker, & Flin, 2001). Accordingly, safety climate consists of the employees’ shared perceptions with regard to more explicit organizational activities such as safety policies, procedures, and practices (Zohar, 2008). For example, safety climate could consist of employees’ shared perceptions of the extent to which existing procedures and regulations treat and emphasize safety-related issues. In the same way as with safety culture, these common perceptions are affected by the interaction between individuals within the organization. Due to the basis of safety climate being more overt and visible in nature, making it easier to operationalize in measurable terms compared to the more abstract safety
culture, the concept of safety climate has been more frequently used and investigated in research (Cox & Flin, 1998; Hale, 2000; Glendon & Stanton, 2000). The considerable research that has been carried out regarding safety climate in the last decades has provided evidence that it is an important factor when it comes to affecting both safety behaviors (e.g., Neal, Griffin, & Hart, 2000) and injury frequency (e.g., Christian, Bradley, Wallace, & Burke, 2009). As has been mentioned above, however, safety culture and safety climate are indeed important for safety, but they are far from the only factors that affect the level of safety in an organization.

Measuring safety

In order to be able to study organizational safety, it is essential that an appropriate measure of the level of safety is utilized. The question of what the most reliable way of measuring safety is within an organization has received increasing attention among safety researchers. This is due to the fact that safety can be operationalized in a number of different ways which each have their own advantages and disadvantages. Considering that objective and quantifiable data is often considered to be the most valid kind of outcome data within research, many researchers have used official records of injury or accident rates as indications of the level of safety within an organization (e.g., Barling, Loughlin, & Kelloway, 2002; Michael, Guo, Wiedenbeck, Charles, & Ray, 2006; Zohar, 2004). This kind of data is also convenient for research, given that these organizational accident records are often available from organizations due to regulatory reasons. However, data based on organizations’ accident and injury records have been shown to contain considerable flaws. One problem concerns the fact that extraordinary events, such as accidents, occur relatively infrequently in organizations. The often much skewed distribution of these data due to the low number of accidents and injuries makes it difficult to detect any variance in the outcomes (Zohar, 2000). Another problem associated with this kind of register data is related to the high rates of underreporting of injuries and accidents within organizations (Probst et al., 2008). When a large number of accidents and injuries go by unreported, the validity and reliability of this kind of data as a measure of safety can be seriously questioned (Turner & Parker, 2004). Different solutions have been developed in order to come to terms with the acknowledged problems with underreporting, such as automatic logging systems on trains, confidential reporting, and legal requirements (within aviation) to report not only actual incidents but also near misses. Others have focused on reducing any tendency towards a blame culture within the organization, since a culture characterized by blame and disciplinary actions is considered to result in less reporting of incidents. However, underreporting is still a problem when it
comes to measuring safety in many situations (Clark & Cooper, 2004). The problems associated with distribution and reporting biases could be one reason for the lack of significant results when it comes to the relationship between different organizational factors and accident and injury outcomes in safety research.

It has therefore become more common to use conceptually broader and presumably more valid measures of safety in research and practice. These measures often involve ratings of employee safety-related behaviors (Griffin & Hu, 2013). Individual work behaviors related to organizational safety are usually conceptualized as safety performance. There is evidence suggesting that safety performance is a two-dimensional construct, consisting of behaviors related to safety compliance and to safety participation (Griffin & Neal, 2000). Safety compliance refers to the core activities that individuals need to perform in order to maintain workplace safety. Such activities include wearing personal protective equipment, following rules and regulations, and adhering to standard safety procedures. Safety participation, on the other hand, can be seen as a kind of contextual performance (see Borman & Motowidlo, 1993) and thus includes behaviors that do not directly affect the personal safety of the individual but which contribute to the development of a safe work environment. Examples of these behaviors are activities such as attending safety meetings, making suggestions for safety improvements, helping co-workers with safety-related issues, and voluntarily participating in safety activities (Neal & Griffin, 2006). Safety performance is an increasingly preferred measure for several reasons. To start with, safety performance is considered a more positive and motivational alternative to measures indicating negative safety outcomes such as injuries and accidents and is therefore now considered more appropriate and accepted as a basis for safety-improvement efforts (Clark & Cooper, 2004). Safety performance also has the advantage of a more normal base-rate distribution and can be predicted with greater accuracy (Christian et al., 2009). In addition, safety performance is assumed to be more closely related to psychological factors than to accidents, which can facilitate the understanding of causal relationships. Even though most studies have investigated the role of safety performance as a mediator between other organizational variables, safety performance has also become accepted as a measure of safety outcomes, based on the assumption that a reduction in injuries and accidents will automatically follow an increase in safety behaviors (Ray, Purswell, & Bowen, 1993). Many organizational factors have hence been investigated in terms of the extent to which they affect the safety behaviors of the employees.

When it comes to methods of accounting for safety performance, it has been studied through workplace observations (e.g., Komaki, Collins, & Thoene, 1980) and through supervisors’ ratings of their subordinates’ safety-related behaviors (e.g., Simard & Marchand, 1995). The most common
method for measuring safety behaviors, however, is through employee self-reports (e.g., Neal & Griffin, 2006). Despite self-reports sometimes being criticized as suffering from biases such as social desirability, this method of data collection has been shown to be a more valid measure of safety than data from organizational records. Employees are often more willing to be frank when sharing their experiences through anonymous questionnaires since there is little fear of reprisals from reporting negative incidents. The results from a study by Lusk, Ronis, and Baer (1995), for example, revealed that self-report measures of accidents and unsafe behaviors were highly correlated with independent observations of such events, whereas supervisor ratings of employee unsafe behaviors did not show the same congruence with independent observations. This implies that self-reports of safety behaviors appear to be a relatively accurate measure of safety outcomes.

Recently, self-reports have also become more accepted as a presumably more valid alternative for collecting information regarding accident and injury frequency than consulting organizational accident and injury records. By using anonymous self-reports to determine the number of accidents and injuries experienced, the problem with underreporting due to fear of reprisal is minimized. This is supported by a study by Probst and Estrada (2010) which found that employees reported three times as many experienced accidents in anonymous self-reports than were reported in the official accident and injury registers of the organization. In addition, some researchers have recommended the use of minor injury indexes (Hemingway & Smith, 1999; Zohar, 2000). These indexes are also based on self-reports, but measure the number of smaller injuries (which often fall outside the reporting obligation of the organization). Self-reporting of minor injuries is considered less prone to social desirability while also providing a more even distribution of the data due to their more frequent occurrence compared to major events. Despite the lesser impact of a small or seemingly insignificant injury compared to a severe injury, the occurrence of minor injuries are considered to be an important indicator of safety, given that they often predicate more severe yet less frequently occurring injuries within organizations (Turner & Parker, 2004).

Other ways of examining the level of safety in organizations involve using different composite outcome measures, such as the number of people receiving safety training, the number of safety audits and weekly inspections conducted, risk assessments, the number of near-misses reported, and the number of completed remedial actions within the organization. Observation and inspection of an organization’s policies, regulations, operating procedures, management systems, control systems, communication flows, and workflow systems could also be utilized as a measure of organizational safety (Cooper, 2000). In addition, occupational safety can be examined through case studies, where real accidents are analyzed in terms of the antecedents and the consequences associated with the event (e.g., Meshkati,
In other words, the patterns and antecedents leading to a particular accident are investigated post-hoc in order to draw conclusions about the factors that may be considered risky in different workplace environments.

The appropriateness and applicability of different safety outcome measures also depend on the context and the nature of the organizational activities in question. One sector which has gained increasing attention in recent years when it comes to safety research is the health care sector, due to a realization of the risks that deficient working conditions and organizational problems can pose to patient safety (see e.g., Eklöf, Törner, & Pousette, 2014). The concept of patient safety encompasses any efforts made towards avoiding and preventing adverse outcomes and injuries that arise during the process of delivering health care to patients (Vincent, 2010). The work environment, behavior, and safety of health care workers are involved in patient safety, but it is the avoidance of harm to patients due to mistakes committed by health care workers that is the main focus. Examples of worker behaviors that affect the safety of patients include errors, rule violations, and risk-taking in relation to caregiving. These behaviors could lead to adverse events, such as distributing medications incorrectly, performing faulty blood transfusions, and spreading infections (Flin & Yule, 2004). There are indications that hospital patient deaths due to preventable adverse events may exceed the eighth leading cause of death (Kohn, Corrigan, & Donaldson, 1999), which indicates the urgency of placing patient safety at the center of health care delivery alongside the safety of the employees. As with research focused on employee safety, patient safety can be measured in a number of ways, such as through hospital incident and accident records, reports or ratings provided by patients, and self-reports given by health care staff regarding either patient accident and injury frequency or their own safety behaviors.

Concluding remarks

In this chapter, the multifaceted concept of safety has been delineated, not primarily in terms of the relevance of technology but in terms of its relevance for organizational factors. Organizational factors concerning safety have been described not only in terms of structural or formal organizational aspects, but also in terms of more subtle or informal aspects such as safety behaviors and safety cultures and climates. The challenge involved in carrying out research on safety matters due to the variety of safety aspects involved in organizational activities was discussed, e.g., regarding defining and measuring valid and reliable safety criteria. Accordingly, common criteria for safety used in research, the most reliable ways to measure them, and implications associated with each of them have
been addressed. Having a valid and reliable criterion for safety is vital not only for research purposes but most of all for the successful management of safety matters in organizations.
The management of occupational safety

As we have seen, the enhancement of safety in organizations is an area of increasing concern. A large proportion of previous safety research has been aimed at identifying the main causes of unsafe acts and accidents within organizations. Although early safety research typically emphasized the role of technical failures and human errors, a few early empirical studies proposed that factors related to organizational and managerial matters were associated with workplace safety (e.g., Cohen, Smith, & Cohen, 1975; Keenan, Kerr, & Sherman, 1951). Among the factors identified in these studies, the most important for enhancing safety in organizations were top management being personally involved on a routine basis, safety being integral and given high priority in meetings, safety officers holding a high status, and safety training being emphasized as well as having open communication links between workers and managers, environmental control and good housekeeping, and a stable workforce (indicating good industrial relations and personnel procedures). Given that all of these factors are in one way or another related to management practices, this early research provided evidence that proper management is particularly important for the achievement and maintenance of workplace safety. The vital role of management practices for the avoidance of occupational accidents has also been suggested in later research (e.g., Reason, 1993; Shannon, Mayr, & Haines, 1997), resulting in an increased interest in matters relating to the management of organizational safety in recent years. Nevertheless, there is still much research left to be carried out in order to gain a more comprehensive understanding of the ways in which these managerial factors influence safety, their relative importance, their interrelationships, and how they can be enhanced. In the following sections, approaches to management and different managerial practices will be addressed in relation to safety.

Safety as a managerial concern

Safety management relates to the actual practices, roles, and functions associated with remaining safe within an organization (Kirwan, 1998). Although the primary unit of focus in the managerial field is the organization, teams and the broader system constituting the organization is also often included in the scope of analysis (Glendon et al., 2006). However,
in contrast to most accident investigations, which focus primarily on errors committed by individuals or on technical malfunctions, the managerial perspective mainly looks at the causes of safety issues in terms of the work conditions in the organizational context. According to Pidgeon and O’Leary (2000), regardless of how well technical factors are functioning and how positive peoples’ attitudes towards safety are in an organization, simple organizational principles or processes can still result in catastrophes. Organizational conditions could affect safety directly through the decision making of individual employees (e.g., attributional errors) or indirectly through psychosocial mechanisms (e.g., groupthink) (Etienne, 2008). How the management of safety should be organized in order to provide the best possible conditions for the achievement of workplace safety is an issue gaining increasing attention both within practice and research.

Safety Management – a part of Human Resource Management

It is often claimed that the management of safety should be treated with the same effectiveness and commitment as are other functions within an organization (Glendon et al., 2006). This argument is based on the assumption that the issue of safety is related to potential threats to the wellbeing or lives of human beings as well as to productivity and profitability. Focusing on workplace safety is not only important for the sake of avoiding injuries to individual employees, as its potential positive impact on the wellbeing of employees is also a prerequisite for a vital and prosperous organization. Due to the centrality of safety for organizational functioning, it is important to consider safety-related issues as part of the larger context of the general practices and activities in the organization. In many organizations, safety management practices are driven by regulatory and legislative compliance and are handled separately from the ordinary activities instead of being integrated with the wider management practices of the organization. In order to achieve successful safety management, a more long-term and strategic approach that recognizes the connections between safety and other aspects of business performance is considered vital (Glendon et al., 2006). Therefore, it is often recommended that safety management should be considered from a strategic, human resource management (HRM) perspective.

HRM covers a range of policies of strategic significance in an organization. These concern areas such as personnel management, organizational behaviors, and industrial relations. In essence, HRM can be regarded as a systematic, integrated, and business-orientated approach to managing people within organizations in order to achieve strategic objectives (Guest, 1987). Several studies have investigated these managerial areas in relation to safety and have provided support for their importance. For example, research concerning staffing has found overtime work (Leigh,
1986), temporary employment (Rebitzer, 1995), and perceived job insecurity (Probst & Brubaker, 2001) to be positively related to a considerable increase in the occurrence of accidents. In addition, evidence points to the importance of integrating a safety perspective throughout the whole recruitment process (Tetrick, Perrewe, & Griffin, 2010).

Effective communication by management, which is often considered a vital part of HRM practices, has also been identified as an important factor for the achievement and maintenance of safety within organizations. In a study by Mearns, Whittaker, and Flin (2003), the way that management communicates about safety issues within the organization was shown to be one of the management practices most strongly related to safety. They found that the use of pervasive channels of formal and informal communication as well as regular communication between management, supervisors, and the workforce were associated with lower accident rates. These findings provide additional support for the benefits of integrating safety management practices into the more general HRM system of the organization.

Another major area within HRM concerns the role of rewards for employee performance. Different kinds of reward systems are often used by organizations as a tool for managers to attract and retain employees as well as to encourage specific performance behaviors. In order for reward systems to be effective, they need to clearly indicate the type of behavior or performance that is desired and will be rewarded by the organization (Fombrun, Tichy, & Devanna, 1984). It is often assumed that safe behaviors should be reinforced by making compensation contingent on safe performance. Thus, it is argued that by integrating incentives for safe performance in the general reward system of the organization, safe work behaviors will be encouraged and prioritized (Sinclair & Tetrick, 2004).

Approaches to safety management

In the occupational safety literature, three different approaches to safety management can be identified. The first approach is based upon best practices, the second approach advocates a systems approach, and the third approach focuses on cultural aspects. These approaches should not be considered mutually exclusive and may be used to guide the choice of focus and aims in safety research and practice.

The best practice approach

The best practice approach focuses mainly on auditing practices developed within processing industries for the detection of organizational aspects that could potentially pose a threat to safe functioning. According to this approach, safety auditing involves the evaluation of such management
practices as planning, implementing, organizing, and controlling. The accountability of safety-related events is also an issue of concern in these audits (Wright, 1994). Since the best practice approach is primarily based on expert opinion and practical experience within organizations, it could be considered more of a set of practices than a general safety management approach (Glendon et al., 2006).

Some also claim that basing an organization’s safety management on a best practice approach is limited, since it mainly focuses on developing accident prevention plans that are based on investigations of previous accidents and their likely causes. These investigations often are superficial and miss the root causes of the accidents (Howell, Ballard, Abdelhamid, & Mitropoulos, 2002). Implementing the best practice approach involves setting up rules in order to try to meet a set of safety standards, which is considered by some to be insufficient for dealing with unexpected system abnormalities (Hale & Borys, 2013). According to Rasmussen (1997), completely standardizing procedures and enforcing work rules is impossible when facing the complexities and dynamics of modern workplaces, where discretionary decision making to a large degree is replacing routine tasks. It is not possible to establish rules for how to behave in every possible circumstance or in unpredictable and less-structured situations. Instead, he suggests that managerial practices should aim at helping employees develop and apply their judgment rather than simply following rules. This argument is also supported by Grote, Weichbrodt, Günter, Zala-Mezö, and Künzle (2009), who claims that a complex and diverse environment requires a balance between standardization and flexibility, and that one way to accomplish this is through the adaptation of more specific process rules that will be functional even under exceptional circumstances. These criticisms of the best practice approach to safety management could be interpreted as limitations due to not taking sufficient account of the broader and more complex context.

The systems approach

With the many different organizational aspects that may affect safety, safety management has been recognized as a complex matter that requires a systems approach (Etienne, 2008; Kaufman & McCaughan, 2013; Thomás et al., 1999). Systems thinking involves recognizing that all components of an organization are interconnected and that changes to one aspect of a system are likely to produce organization-wide consequences (Sterman, 2000). In advocating such a systems approach, Perezgonzalez (2005) claims that focusing on one object of study at a time, which typically characterizes safety research (as with the technological perspective, human factor perspective, and human in organization perspective, etc.), is insufficient and inappropriate. Instead of dismissing one area of study as incompatible with
another, as has been done previously in this field, he advocates a more systemic and multidimensional approach where all of the accumulated knowledge is integrated into complex models that incorporate different perspectives. Perezgonzalez (2005) further argues that a systems approach is not only needed within theoretical research but is needed even more within the practical realm, in that there is often a mismatch between research findings (which are many times systemic) and subsequent recommendations and implementations (which tend to be individual and one-dimensional). This can be illustrated by the fact that although previous major accident investigations (e.g., Chernobyl, Kings Cross, Costa Concordia) each identified the same types of contributory factors, such as system failures, organizational failures, design or management failures, communication failures, and poor safety culture (Corrigan, 2002; Schröder-Hinrichs et al., 2012), their recommendations still tended to be reduced to suggesting future improvements to a combination of administrative procedures and individual attitudes to safety (e.g., Pidgeon & O’Leary, 1994).

Given that unsafe situations often arise as a consequence of the interaction of several workplace factors, a major task for safety management, according to a systems perspective, is to coordinate both functional and human safety management practices in such a way that conflicting demands could be avoided or at least prevented from causing harm. One such conflict that is common is between the demands for productivity and for safety. Employees in work situations characterized by high pressure related to, for example, tight time scheduling or quantitative performance demands have to make decisions about which tasks and behaviors to prioritize. In organizations where a great emphasis is placed on production, employees may get the impression that safety is subordinate to the demands of production (Janssens, Brett, & Smith, 1995). Unsafe behaviors may even be perceived to be rewarding in situations where such behavior enables work tasks to be performed more quickly (Slappendal, Laird, Kawachi, Marshall, & Cryer, 1993). Refraining from the use of personal protective equipment which is perceived as bulky or inconvenient for performing tasks more efficiently is one such example. This is supported by research showing that employees often view the organizational demands of safety and production as being at odds with each other (Fahlbruch & Wilpert, 1999; Janssens et al., 1995).

The perception of safety and production as two incompatible and competing aspects could have severe consequences for safety within organizations in several ways. For example, Probst (2002) found that employees who were threatened with layoffs chose to focus more on production at the expense of safety. In another study, Probst and Graso (2013) also found that employees who experienced high levels of production pressure had more negative attitudes towards reporting accidents and incidents to the organization and had more accidents overall. Thus, in
organizations where production pressure is high and the emphasis on safety and safe work procedures is low, the risk is substantial that employees will act in ways that compromise the safety of themselves and others.

Despite the often held perception of safety and production being competing functions in organizations, evidence suggests that in successful organizations, safety and productivity are not considered to be separate functions but rather to be complementary and supportive of each other (Warrack & Sinha, 1999). In their study, Warrack and Sinha found that productivity and quality were driven by similar goals as safety and health activities in organizations, both contributing to the achievement of business objectives. The rationale for this is that safety management practices minimize the risk and severity of non-planned events or incidents that can not only cause harm to workers but also lead to an unwanted variability in product quality (Krause, 1994). These findings suggest that organizations have much to gain by taking a systems perspective.

The cultural approach

In terms of general theory, the cultural approach to managing safety represents an institutional perspective on organizations (Selznick, 1957), emphasizing the informal (alongside the formal) side of organizational functioning. Thus, safety culture management is concerned with the norms, beliefs, and attitudes surrounding hazards and risks as well as with the practices for handling hazards and risks (Pidgeon, 1991). Provided that key aspects of safety culture and climate are considered to consist of issues related to managerial policies, such as safety training, management attitudes toward safety, the effect of safety practices on promotions, the presence and status of safety officers or committee, foremen’s behavior, and the priority given to safety by management (Thomas et al., 1999), it appears evident that the cultural element of management practices should be vital for the achievement of workplace safety. Following the realization that poor safety culture was the main factor contributing to the Chernobyl accident, the development of “appropriate” safety cultures became an important area for safety management within organizations (Broadbent, 1989).

One of the most important factors distinguishing a good safety culture from a poor one is whether safety is perceived to be prioritized by all employees and is also presented as being prioritized by management and, especially, top management. Another essential factor for the achievement of a good safety culture is having openness in communications about failures and a “creative mistrust” in the risk control system (Hale, 2000). This view implies that management should aim at achieving a culture that is characterized by openness to learning experiences and to the imagination and sharing of potential new dangers, which results in a reflexivity about the working of the whole risk control system. In order to achieve such a
responsible learning culture, the way in which the reporting of failures, accidents, and incidents is handled is of vital importance. A so-called blame culture, where the purpose of collecting incident and accident data is to assign blame and take disciplinary action (Webb, Redman, Wilkinson, & Sanson-Fisher, 1989), is considered to have a considerable negative impact on safety, as it carries with it problems with underreporting. Instead, the objective of safety management should be to create a no-blame culture, characterized by mutual trust between managers and employees, and where the reporting of incidents and accidents is encouraged as a means of improving safety without looking to assign blame (Turner, 1991). According to Pidgeon and O’Leary (2000), the success of a safety culture strongly depends on the degree of trust that those who report errors and near misses have in those who analyze and act on the reports. When managing safety culture, it is therefore important to restrict the blaming to obvious cases of unusual thoughtlessness or recklessness, so that the blaming does not end up limiting the reporting of incidents and accidents and, in turn, the opportunities to learn from it (Hale, 2000).

Conflicting or complementing approaches?

Despite some researchers and practitioners advocating the benefits of one or another of the three approaches to safety management, they should not necessarily be seen as conflicting. Although each of the three approaches stresses a different aspect of safety management, i.e., continuous organizational learning and improvement of routines (best practice approach), a broad and holistic view of safety (systemic approach), and cultures and attitudes (cultural approach), they all aim to achieve workplace safety. All three approaches also emphasize the same managerial aspects: the importance of management commitment, setting clear safety objectives, and communicating required information adequately (Glendon et al., 2006; Waring, 1996). In addition, it might be that in order to achieve a safe work environment, the positive aspects from all three approaches should be considered as complementary and used in an integrated safety management approach. The differences in focus among the three approaches could therefore contribute to a more multifaceted comprehension of the complexities of safety management. In support of such an integrated safety management approach, Waring (1991) argues that the conditions necessary for effective safety management are both functional (involving management control and monitoring executive and communications subsystems) and human (involving leadership and political and safety culture subsystems) in nature.

The three approaches could, however, be considered to vary in the breadth of the organizational aspects that they comprise. While the best practice approach could be regarded as rather limited in its focus (i.e., on
audits and improvements of safety rules and practices), the cultural approach could be seen as considerably broader, in that it considers the functioning and interaction of more complex human phenomena such as beliefs, perceptions, values, practices, and attitudes in relation to safety. In a sense, the cultural approach is not always easy to separate from a systems approach, given that it also emphasizes considering a variety of safety-related factors, including the interaction and potential conflicts between goals within the organization. Still, the systems approach takes an even broader perspective on safety than the other two approaches by aiming to take into account as many of the interacting aspects of an organization as possible in its holistic view on workplace safety. In fact, a systems approach could be considered to be superior to the other two in the sense that the all-embracing nature of the systems approach would imply that both improvements to safety practices (as in the best practice approach) and the consideration of cultural factors within organizations should be included in this approach.

Important to keep in mind, however, is that implementing an integrated safety management approach that accounts for all of the many factors that could affect safety in an organization is a challenging if not impossible task. Thus, these approaches to safety management should be considered as reflecting different basic assumptions regarding the functioning of organizations, and which could provide a basis for orientation and focus when it comes to promoting workplace safety.

Concluding remarks

In the present chapter, safety management in organizations has been presented as vital for the achievement and maintenance of workplace safety. The concept of safety management is commonly used to refer to practices, roles, and functions associated with the safe functioning of organizations. The principles and implications of safety management have been examined and explained in relation to other areas in safety research. Further, the importance of considering safety management as an essential part of a broader and strategic human resource management perspective has been stressed. Several different approaches to safety management have also been presented, namely the best practice, systemic, and cultural approaches to safety management. It is suggested that the different focuses of the three approaches should be considered complementary rather than conflicting. Regardless of approach, it can be concluded that general safety management decisions made and acted upon by top management concerning policies and practices will most likely have an impact on the functioning of an organization. How successfully such policies and practices are implemented and integrated as well as accepted by the employees in their daily activities,
however, is to a large extent dependent on the actions of the middle managers and supervisors in respect to these matters. Thus, the role of leadership styles and leader communication for workplace safety will be elaborated on in the following chapters.
The role of leadership in safety management

In the overall managing of organizations, several activities and resources are used in order to achieve the goals of the organization. Leadership is one such parameter that can be assumed to play an important role for the functioning and success of an organization. This is mainly due to the influence of leaders on subordinates’ attitudes and behaviors. The role of leadership for employee behaviors is also evident when it comes specifically to safety. Inquiries into several major disasters, such as the sinking of the Herald of Free Enterprise in 1987 (Department of Transport, 1987) and the disastrous gas leak in a pesticide plant in Bhopal in India in 1984 (Meshkati, 1991), determined that leadership failures were main contributors to the accidents.

This chapter is concerned with leadership and how it can relate to workplace safety. Central to this is how managers and supervisors can deal with organizational matters so as to avoid risks from arising while providing the best possible conditions for the achievement of a safe work environment. Before turning to the relationship between leadership and workplace safety, however, a short background to the development and directions of general leadership research will be given.

Brief background to leadership research

Leadership and its role for employees and organizations is an issue that has stirred considerable research and scrutiny for centuries. The great interest in questions regarding leadership has led to a multitude of theories trying to establish what constitutes a successful leader (Barling, 2014).

As is the case with many other concepts within organizational research, the definitions of leadership are many, inconsistent, and complex (Martínez-Córcoles, Gracia, Tomás, & Peiró, 2011). In his classic Handbook of Leadership (1974, p. 259), Stogdill claimed that “[T]here are] almost as many definitions of leadership as there are persons who have attempted to define the concept.” Since this statement, the meaning of leadership has not become any clearer or more consistent but has been further diversified by additional definitions as new leadership theories have come forth. One reason for this lack of a clear-cut definition might be that the beliefs about the nature of leadership have changed over time. During the first decades of the 20th century the definitions of leadership were dominated by concepts related to
control and the centralization of power (Barling, 2014). In the 1930s the great man theory emerged, emphasizing certain personality characteristics that needed to be possessed by an individual in order to be a good leader (Peterson & Hunt, 1997). This focus on leadership traits was followed by leadership definitions characterized by an approach emphasizing the role of groups and the relationships between leaders and subordinates in the 1950s. In the decades that followed, there was a shift towards leadership definitions that stressed the importance of goal-setting and of taking the wider context and potentially conflicting goals into account for the role of a leader (Barling, 2014). Although leadership theories in recent decades have come to focus more on the role of leader behaviors and on situational adaptability (Haslam, Reicher, & Platow, 2011), elements from earlier leadership theories are still to some extent present in present day leadership definitions. This accumulation of directions and perspectives within research in combination with recognition of the complex and systemic aspects of leadership could be seen as one explanation for the multitude of ambiguous, complex, and divers definitions of leadership still remaining.

Despite the difficulties in finding a simple and consensual definition of leadership, some claim that the element that these definitions all have in common is recognizing that leaders are able to encourage others to perform activities that they would not be able to carry to completion without this encouragement, which is a method of enabling others in order to get things done (Martínez-Córcoles et al., 2011; Stogdill, 1974). Another commonly accepted view of leadership is that it comprises two functions: a task function and a maintenance function. The task function involves aspects such as making decisions, adapting to changes, getting the job done, and achieving goals, while the maintenance function aims at developing a positive climate and maintaining cohesion (Northouse, 2004). This dual function of leadership was supported in a comprehensive literature review by Künzle, Kolbe, and Grote (2010), where characteristics of effective leadership in critical care teams were examined. In this thesis context of the present chapter, leadership is used as a term encompassing the ways in which a leader at any level within an organization affects the performance of one or more persons.

The role of leadership for safety

The essential role of leaders in ensuring the effectiveness of work accident prevention within organizations was acknowledged early on in the 20th century. Heinrich (1931) was one of the first occupational researchers to claim that supervisors, which generally refers to managers at the lower levels of organizations, are key persons when it comes to accident prevention, as they are the only ones who are in a position to detect and handle, on a day-
to-day basis, potential hazardous conditions and dangerous actions or situations likely to result in work accidents. However, it was not until the beginning of the 1990s that organizational psychologists started conducting empirical research on the influence of managers’ and supervisors’ leadership behaviors on safety outcomes (Flin & Yule, 2004). Since then, several studies have provided evidence that leadership plays a vital role in promoting workplace safety in a number of different sectors, such as the nuclear energy production industry (e.g., Martínez-Córcoles et al., 2011), manufacturing (e.g., Michael et al., 2006), transport (e.g., Hofmann et al., 2003), restaurant and fast food industry (e.g., Barling et al., 2002), and health care industry (e.g., Agnew, Flin, & Mearns, 2013; Mullen & Kelloway, 2009). A meta-analysis by Nahrgang, Morgeson, and Hofmann (2007) provided evidence for leadership being related to safety climate and safety behaviors as well as to the occurrence of injuries and accidents.

Although there has been some research on the role of leadership for occupational safety and theoretical advancement regarding the concept of safety leadership, it is still relatively scarce compared to the research on general leadership (Clarke, 2013). In addition, even though there is support for leadership being important for workplace safety, the ways managers should behave in order to enhance the safety performance of their subordinates are still relatively unclear (Martínez-Córcoles et al., 2011). Nevertheless, some interesting conclusions have been reached regarding leadership behaviors within high risk organizations. The focus in these studies has been on the actions of leaders that influence safety performance and how they relate to different leadership styles (Hofmann & Morgeson, 2004). In most cases, the studies investigated the relationships between leadership styles, as derived from general leadership research, and safety outcomes (e.g., Clarke & Ward, 2006; Hofmann & Morgeson, 1999).

**General leadership styles**

Since the 1970s, numerous theories about the composition and effectiveness of different leadership styles have emerged. They have focused on different aspects of leadership behaviors in order to determine which category of leadership behaviors leads to which outcome and, in particular, which behaviors are most effective. The very first theories on leadership style and workplace safety emphasized the importance of the relational aspects of leadership (e.g., Dunbar, 1975). A recent example of this is the theory of leader–member exchange (LMX), which holds that the best conditions for achieving optimized performance are when subordinates and leaders are engaged in a high-quality social exchange process (Graen & Uhl-Bien, 1995). According to Michael et al. (2006), employees who have high-quality exchange relations with their supervisors should be more likely to
reciprocate by expanding their roles to display greater engagement in safety practices, known as safety citizenship behaviors, which in turn would lead to fewer injuries and accidents at the workplace. The concept of safety citizenship is similar to that of organizational citizenship, except that the behaviors are focused on safety behaviors, such as improving the safety performance of other team members and the organization as a whole (Hofmann et al., 2003).

Apart from theories of leadership styles that rely specifically or exclusively on relational aspects of leadership, several other leadership theories have also been identified and examined. Some examples are cognitive resource theory, situational leadership theory, path-goal leadership, implicit leadership, authentic leadership, and romance theory of leadership (Judge & Bono, 2000). However, by far the most researched theory of leadership style during the last decades is transformational leadership. The popularity of this style in both research and practice was revealed in an analysis showing the ten most commonly investigated leadership styles between 1970 and 2012, according to which transformational leadership started gaining increasing attention in the 1990s and became the most frequently researched leadership style theory (Barling, 2014). The model comprising transformational leadership will be further described in the next section along with the evidence for its relationship with safety outcomes. This description will be followed by a review of the more safety-oriented leadership styles that are emerging in the safety literature.

The full range leadership theory

The full range leadership theory was proposed by Bass in 1985. Bass argued that existing theories of leadership primarily focused on the power relationship between leader and subordinate and on the ways in which leaders rewarded and sanctioned employee behavior. This type of transactional leadership was limited to only basic leader–subordinate exchanges where the employees perform according to the directives of the leader as long as they receive compensation for their efforts. What Bass suggested was that an increased focus should be put on how leaders could influence their subordinates to transcend self-interest for the greater good of the organization and also achieve optimal levels of performance by their intrinsic motivation to contribute to a greater purpose. This leadership style was referred to as transformational (Antonakis, Avolio, & Sivasubramaniam, 2003).

What mainly differentiated Bass’s theory from other leadership theories at the time (e.g., Burns, 1978) was that transformational leadership and transactional leadership were not conceived of as being at the opposite ends of a single continuum but as separate concepts. He also argued that successful leaders engage in a variety of different behaviors that demonstrate
both transformational and transactional leadership. These two types of leadership as well as laissez-faire leadership (absent or non-leadership) comprise the range of leadership typologies within full range leadership theory (Judge & Piccolo, 2004). The by far most widely used method of measuring these leadership styles has been a survey instrument called Multifactor Leadership Questionnaire (MLQ) (Lowe, Kroeck, & Sivasubramaniam, 1996; Yukl, 1999; Westerlaken & Woods, 2013).

Although the theory and concept of transformational leadership has been revised a number of times, there now seems to be a consensus that it involves four key components, namely idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Judge & Piccolo, 2004). Idealized influence refers to behaviors that reflect a high degree of charisma as well as high moral and ethical standards (Antonakis et al., 2003). Leaders who exert this typically behave in ways that are beneficial for the organization and its members and avoid acting solely out of self-interest. Their behaviors are often characterized by integrity, humility, and respect for others, and they are often admired, respected, identified with, and perceived as strong leaders and role models by their subordinates (Bass, Avolio, Jung, & Berson, 2003). Inspirational motivation includes leadership behaviors that help employees perform beyond expectations (both the expectations they have of themselves and those that others have of them) by inspiring goal fulfillment, providing meaning, optimism, and enthusiasm, and articulating a vision that is appealing and inspiring to others. These leaders inspire their subordinates by setting high but realistic goals and by showing that they have faith in their subordinates’ abilities and integrity. In turn, their subordinates often acquire a deep sense of self-efficacy and resilience, which helps them persist in their efforts even when encountering obstacles to high levels of performance (Bass, 1985; Barling, 2014). Individualized consideration applies to leader behaviors that provide emotional and instrumental support to subordinates. The leader typically pays attention to the needs and concerns of the employees and clearly expresses an interest in their personal and professional development. This aspect of transformational leadership is closely related to social theories of leadership, such as LMX (Clarke, 2013). Intellectual stimulation includes behaviors where the leader challenges the assumptions of the subordinates and encourages them to be creative and innovative. This leadership aspect is enacted through cognitive rather than affective processes, in that subordinates are encouraged to think for themselves and to develop new ways of solving problems (Bass, 1985; Clarke, 2013).

Transformational leadership has been linked to safety outcomes in a number of ways. It has been argued that all four dimensions of transformational leadership are relevant when it comes to enhancing workplace safety (Barling et al., 2002). Leaders who act as role models by always behaving according to safety standards and by prioritizing safety
before profit are exercising idealized influence. Inspirational motivation can be achieved by encouraging employees to perform beyond expectations and to contribute to the collective good by achieving levels of safety that would normally be considered unattainable. By stimulating employees intellectually the leader can challenge employees to find innovative solutions to safety-related problems. Individualized consideration is often the aspect of transformational leadership that is held to be most closely related to workplace safety since it involves leader behaviors such as showing concern for the wellbeing and physical safety of the employees. This line of reasoning about the relationship between general transformational leadership and safety has found support in several studies. For instance, there is evidence that transformational leadership is related to a decrease in injury rates (Zohar, 2002a) and to an increase in safety behaviors (Conchie, Taylor, & Donald, 2012; Clarke & Ward, 2006; Inness et al., 2010).

The second leadership style within the full range leadership theory is transactional leadership, as mentioned above. Even though transformational leadership is often considered the most effective leadership style, some researchers claim that transactional behaviors are a necessary complement to transformational behaviors in some situations (Bass, 1999; Howell & Avolio, 1993). Transactional leadership is comprised of three different leadership orientations. The first one is contingent reward, which includes leader behaviors associated with setting appropriate goals, providing performance-based feedback, and ensuring that certain behaviors of the subordinates are associated with rewards, or in some cases, punishments. The second aspect of transactional leadership is management-by-exception. Management-by-exception is often considered a negative kind of leadership, in that it mainly concerns the mistakes and failures of the employees and corrective actions. Management-by-exception can be either active or passive. The active form is considered slightly more positive since it involves taking corrective action prior to the occurrence of serious problems such as safety incidents, while the passive form involves corrective actions that are taken after the mistakes have occurred. Research regarding the influence of transactional leadership on safety is somewhat ambiguous. While some studies have found transactional leadership to be associated with higher accident rates (Yule, 2002), others have found that it could be beneficial for safety in some contexts (Clarke, 2013).

A final component of the full range leadership theory is laissez-fair leadership, which is sometimes considered a part of transactional leadership and sometimes as a separate leadership style. Leaders displaying this kind of leadership are generally disengaged and psychologically absent. This leadership style is often regarded as the least desirable leadership style for a number of performance outcomes. In line with this, passive leadership was shown to have a negative impact on employees’ perceptions of the safety
climate, which in turn was related to an increase in injuries (Kelloway, Mullen, & Francis, 2006).

Safety-specific leadership style

Some researchers claim that studies investigating the relationship between leadership and safety should be using global constructs derived from the general leadership literature (Hofmann & Morgeson, 1999; Williams, Turner, & Parker, 2000), while others advocate applying safety-specific leadership constructs when studying safety (Barling et al., 2002; Mullen, Kelloway, & Teed, 2011). Examples of generalized leadership styles include transformational leadership and LMX leadership, which do not specifically focus on safety but which are assumed to contribute to safety through the indirect influence of general leadership behaviors. The argument for using these leadership concepts in a safety context is that several leadership behaviors perceived as positive by the employee (e.g., individual consideration) will result in an increased willingness to satisfy the requests of the leader, to perform according to high standards, and contribute to organizational improvements, and that these positive employee behaviors will accordingly also include efforts aimed at safety maintenance and improvement (e.g. Inness et al., 2010; Michel et al., 2006).

Researchers suggesting the use of a safety-specific concept of leadership, on the other hand, argue that in order for employees to direct their efforts at issues associated with safety, it is vital that the leader specifically emphasizes the importance of safety. It is essential that the leader is a role model for safety behaviors and is able to express clearly that safety should be the priority. Some of the researchers who propose a safety-specific concept have combined this focus with leadership styles from the general leadership literature, thus resulting in, for example, a safety-specific transformational leadership style (e.g., Barling et al., 2002). These leadership constructs comprise the same behavioral components as the corresponding global leadership construct, but specifically pertain to inspiring and promoting positive safety-related attitudes and behaviors among the employees. An example of this is intellectual stimulation, a transformational aspect, which in a safety-specific version would include leader behaviors aimed at encouraging employees to come up with new and innovative solutions for safety improvements or to critically view processes in order to detect new and unexpected hazards. Similar to with generalized transformational leadership, safety-specific transformational leadership differs from safety-specific transactional leadership in that rather than concerning control-based safety practices aimed at reinforcing compliance, it concerns how the leader acts as an inspiration and communicates a vision for a safe workplace (Barling & Hutchinson, 2000). The safety-specific transformational leadership style is therefore assumed to lead to increased
motivation for safety-related efforts by instilling employees with a belief in the value of safe work practices, rather than just relying on punishment avoidance as a motivator for complying with regulations and policies (Mullen et al., 2011).

The arguments pointing to the benefits of safety-specific leadership compared to general leadership for workplace safety are also supported by significant empirical evidence showing that the subordinates of leaders who actively promote safety experience have better safety records than those of leaders who are negative or neutral towards safety issues (e.g., Barling et al., 2002; Zohar, 1980). Despite the apparent advantages of utilizing a leadership style that specifically focuses on safety, there is a lack of research on the effects of safety-specific leadership that are not associated with some general leadership style (e.g., transformational leadership). Not until the safety-oriented aspects of a leadership are separated from behaviors associated with more general leadership styles will it be possible to determine any potential advantages with safety-oriented leadership per se.

Concluding remarks

This chapter has highlighted the essential role of leadership in the achievement and maintenance of workplace safety. A brief review of the development of leadership research has been presented, both regarding general leadership and leadership from a safety perspective. Following this, the most frequently assessed leadership styles in research investigating the relationship between leadership and safety were described. It has been suggested that leader behaviors which are oriented towards communicating a vision of a safe workplace, which involve expressing concern for the well-being and safety of individual employees, and which emphasize that safety is a priority are vital for achieving workplace safety. Considering that all these leader behaviors encompass some element of leader–subordinate communication, the way in which leaders chose to communicate their vision, concern, and priority should be crucial for safety. A further examination of leader communication in regard to safety will thus be the focus of the next chapter.
Communicating for safety

As has been discussed, in the relationship between leadership and managerial practices and safety, communication has been shown to play a key role in a number of contexts. For example, leaders’ communicating a clear vision of what a safe workplace entails and clearly expressing that safety is prioritized are essential in establishing a safety climate. Communication failures have also been identified as a contributory factor in inquiries of several major disasters (Reason, 1990; Turner, 1978). Underlying many organizational accidents are situations characterized by different types of informational shortcomings and communication failures (Turner, 1992). Likewise, the prominent role of communication has been acknowledged within the health care-related area of patient safety. There is evidence that communication breakdowns are the root cause of as much as 70% of adverse events experienced by patients within health care (Joint Commission, 2009). In relation to these findings, it has been argued that communication that is accurate, complete, timely, and easy to grasp by the recipients should be aimed for, since it has been concluded to result in fewer employee errors and improved patient safety (Donahue, Miller, Smith, Dykes, & Fitzpatrick, 2011). Since few would disagree on the value of these communication characteristics, the main challenge lies in actually achieving communication of this quality in organizations. In addition, although these aspects of communication are surely important, it is reasonable to assume that the issue of communication in relation to workplace safety is presumably more multifaceted and complex, being affected also by other factors such as the cultural and relational elements of communication.

Communication is a matter that is important and relevant at and between all hierarchical levels in an organization. The main focus of this chapter, however, is on leaders’ communication with their employees, and how it could affect workplace safety.

The role of communication within organizations

Communication is often defined as a process whereby information is transferred or exchanged between a sender and a receiver, and where the receiver perceives some kind of meaning in the message (Katz & Kahn, 1978). The meaning of the message interpreted by the receiver, however,
may not be the meaning that was intended by the sender, since effective communication requires more than just the transfer of information (Kaufmann & Kaufmann, 2010). Communication has come to be considered an essential parameter in the development, functioning, maintenance, and change processes of organizations (Müller & Kieser, 2003). Successful organizations are often held to be characterized by effective communication, i.e., communication which is consistent, forthright, relevant, and timely (Vredenburgh, 2002). This is especially true in modern organizations that have fast-changing technology, complex work routines, a large amount of flexibility, and a diverse staff. In these kinds of organizations, the clarity and quality of the communication of information is often especially vital (Allvin, Aronsson, Hagström, Johansson, & Lundberg, 2006; Dencker, Mårtensson, Fasth, & Stahre, 2011; Jacobsen, & Thorsvik, 2002). Thus, it becomes apparent that communication is a vital part in the managing of organizations.

It is generally assumed by both researchers and practitioners that having communicative competence, i.e., the ability to properly understand and transmit information, is essential for the effectiveness of leaders, regardless of type of organization of hierarchical level (e.g., Penley, Alexander, Jernigan, & Hernwood, 1991; Riggio, Riggio, Salinas, & Cole, 2003; de Vries, Bakker-Pieper, & Oostenveld, 2010). Some even suggest that the ability to develop and communicate a vision that gives meaning to the work of others is vital in the role as a leader (Handy, 1993). This claim is reasonable, as many of the managerial roles (see Mintzberg, 1973) involve an element of communication, such as being a spokesperson, a liaison, a negotiator, and a disseminator of information. Communication is also involved in the more relational aspects associated with leadership. These aspects include behaviors such as clarifying the role of subordinates, providing feedback on performance, and showing concern for subordinates (Avolio & Bass, 2004; Riggio et al., 2003; Schuler, 1979).

The communication of leaders within an organization can also be seen from a power perspective, considering that information is one of the most important organizational resources (Pfeffer, 1998). Receiving shared information can be vital when it allows employees to gain a better understanding of the operations, the goals, and the functioning of the organization. Another potential benefit is that leaders who share information with subordinates send a signal to them that they are trusted (Zacharatos & Barling, 2004). Despite the common assumption that communication is vital for the performance of leaders and organizational functioning, it has received surprisingly little attention in research within occupational psychology compared to other workplace matters.
Leader safety communication

Within general leader communication research, empirical studies are especially needed on the impact of leader communication on safety in organizations (Michael et al., 2006). Until recently, much of the previous research regarding communication and safety mainly focused on the relationship between cognitive elements of communication and error rates, examining, for example, communication content or linguistic elements of the language used between employees in complex work environments (e.g., cockpit crews; Orlady & Orlady, 1999; Sexton & Helmreich, 2000). Most of these studies also examined communication from team and inter-employee (among employees on the same or similar hierarchical level) perspectives (Helmreich, 2000). However, research regarding the role of leader communication for safety has been given slightly more consideration in recent years, which has resulted in some interesting but often rather general findings. For example, a study by Mearns et al. (2003) found leaders’ communication of safety issues to be one of the most important management practices for workplace safety. Utilizing extensive channels of formal and informal communication between management, supervisors, and the workforce was shown to be related to fewer occupational accidents. In a longitudinal study of 161 manufacturing employees, support was also found for a positive relationship between leader–subordinate communication quality and safe working (Parker et al., 2001).

There are different types of leader–subordinate communication approaches. The approaches can differ with regard to the direction of the communication flow within the organizational structure. Thus, the communication between leader and employee can be considered to be either directed downwards or upwards (Katz & Kahn, 1978). Although the focus of the present chapter is on leader communication and therefore mainly concerns a top–down approach to communication, upward communication can be seen as relevant in this context as well, considering that responses and information sharing from the part of the employees also affects the communication of leaders.

Downward communication

Downward communication, or top-down communication, is a downward flow of information that follows the authority pattern of hierarchical positions (Katz & Kahn, 1978). This leader communication approach can be assumed to be important for workplace safety in a number of ways. Firstly, an effective information system is crucial for the adequate dissemination of top-down communication regarding such safety-related issues as safety instructions, policies, and procedures (Katz-Navon, Naveh, & Stern, 2005).
Employee knowledge about these safety-related issues is assumed to be important, since the understanding of how to perform work safely is essential in order to comply with safety procedures (Neal et al., 2000). This is supported by a meta-analysis which shows that employee safety knowledge is closely related to safety behaviors (compliance and participation) (Christian et al., 2009). Consequently, a leader who sends clear messages about the importance of safety and about how to behave in order to maintain safety at the workplace could be assumed to contribute to enhanced safety behaviors among his or her employees.

An effective downward flow of information about potential hazardous situations and dangers and about previous incidents is also essential in an organization since it allows employees to learn how to best avoid accidents without having to experience them first hand (Zacharatos & Barling, 2004). This sharing of information is particularly critical for learning and for preventing accidents in work environments, where even small mistakes can be associated with very high human and financial costs (Weick, 1987).

Another vital function of a downward information flow is that it enables management and leaders to communicate that safety within the organization is important and a priority. In a recent study based on employee ratings, management’s commitment to safety and the expression of management’s prioritization of safety (two dimensions of safety climate) were found to be negatively related to risk behaviors (Bosak, Coetsee, & Cullinane, 2013). This finding is in line with considerable previous research indicating that actively promoting and communicating the importance of safety, on the part of the leader, is associated with a number of positive safety outcomes (e.g., Hofmann et al., 1995; O’Tool, 2002; Zohar, 1980). In cases where a manager or supervisor barely mentions safety, safety will most likely be perceived as unimportant by the employees and will consequently not be paid attention to in their work (Hofmann & Stetzer, 1996; Kelloway et al., 2006).

Apart from providing the employees with necessary information about how to perform work in the safest possible manner and emphasizing the value of safety, downward sharing of information also has the important function of contributing to employees feeling that they are an important part of the organization (Zacharatos & Barling, 2004). This should not be disregarded, since not feeling like an important, accepted or integrated part of a larger organizational context could have negative consequences for such employees’ safety performance (see, e.g., Kochan, Smith, Wells, & Rebitzer, 1994).

Given that downward communication is often one-directional, it does not necessarily involve any form of feedback from the recipient to the sender. Without any feedback to affirm that the intended meaning of the message has been captured correctly, the one-way nature of this communication thus implies that the sender of the message possesses very little knowledge of
how the recipient is interpreting and utilizing the information (Adler, 1995). However, downward communication can also involve bidirectional elements to a greater or lesser extent. Bidirectional communication can be seen as a more interactive exchange of information between a leader and a subordinate, characterized by dialogue instead of just a one-way transfer of information.

Feedback from a superior to a subordinate is one type of communication that could be considered bidirectional. Even though this type of feedback can be one-directional (e.g., when information is provided without an opportunity for the employee to respond), it is usually bidirectional in nature. Feedback communication from a leader to his or her employees has been found to have several positive consequences for safety. For example, the results from a study by Mattila, Hyttinen, and Rantanen (1994) regarding safety on construction sites showed that supervisors who interacted with and gave more frequent feedback to subordinates had a better safety record. In a patient safety context, research has shown that the provision of feedback is an important leadership function for enhancing performance in critical health care teams (Künzle et al., 2010). These findings support previous research indicating that reliable and clear feedback about the consequences of performance improves desirable behavior at the workplace (Komaki, 1986; Saari, 1992)

Upward communication

Upward, or bottom–up, communication refers to the flow of information that goes from subordinates to a leader or higher superior in the organization (Katz & Kahn, 1978). This kind of communication is mainly considered a means of providing feedback information to superiors regarding, for example, status reports, improvement suggestions, and work-related problems (Kaufmann & Kaufmann, 2010). Upward communication is essential in a safety context, since it usually concerns information that managers need in order to make important decisions about improving workplace safety. In line with this, several studies have shown that employee willingness to raise safety concerns and to freely discuss safety issues with their supervisors are key aspects in the concept of safety citizenship behavior which are also critical for a safe work environment (cf. safety participation; Griffin & Neal, 2000) (Hofmann et al., 2003; Kath, Marks, & Ranney, 2010).

This upward information flow can be seen as being closely associated with the downward flow, since the information received by leaders from their subordinates is often crucial for the further spreading of the information to relevant others in the organization (i.e., even downwards). The willingness to engage in upward communication is also something that affects and is affected by the general openness of the communication climate
within the workgroup or organization. It is important to keep in mind, however, that upward communication is not simply the opposite of downward communication, since differences in status and power result in communication from subordinate to superior being less common (Luthans & Larsen, 1986).

Concluding remarks
The importance of having quality and effective communication in organizations has been emphasized in the present chapter. The communication between leaders and their subordinates was presented as having a particularly vital role in the achievement and maintenance of workplace safety. Different approaches to leader–subordinate communication, with respect to directionality and the degree of mutual interaction in the flow of information, have also been described, and several ways in which they can be assumed to affect safety have been suggested. Although there has been an increase in research on leader communication in recent years, more research into the influence of different leadership communication approaches on safety outcomes is needed in order to gain a more thorough understanding of the mechanisms involved in the relationship.
Rewards and incentives in a safety context

In emphasizing the importance of communication, it becomes apparent that information sharing can be conducted by management in a number of different ways and can have many functions within an organization. As has been noted, one such function is to provide employees with information about what is expected from them and what is valued in the organization. Another function of communication is to provide feedback to employees regarding their performance. For the purpose of communicating important organizational values and information regarding performance status, contingent rewards and incentives of different kinds have become increasingly common (Sinclair & Tetrick, 2004). Contingent compensation is often considered to be a tool that management can utilize to unambiguously indicate which behaviors are most valued by the organization and to encourage employees to make efforts to achieve certain goals (Zacharatos & Barling, 2004). The rewarding of employees for desirable performance has long been established as one of the main functions of human resource management (HRM) who typically utilize bonus or incentive system/programs that apply to all or part of the staff. These kinds of systems can vary greatly between organizations in their aim and design, which could potentially lead to substantial differences in their effectiveness when it comes to affecting employee performance. Considering that goal-setting and feedback is also important for the enhancement of workplace safety, the managing of rewards related to performance appraisals and to motivation for safe performance should be a highly relevant matter (Sinclair & Tetrick, 2004).

Thus, the present chapter focuses on the role of rewards and incentives in safety management. To provide a background to the use of rewards and incentives in a safety context, some general theories and perspectives regarding incentives and rewards will first be presented.

What motivates people to perform?

The question of what motivates people to invest effort into a task and to continue striving for a goal with sustained strength and intensity in spite of setbacks has been of interest to researchers for more than a century. This has resulted in an array of different theories on motivation, which differ in their
focus and, especially, in what they causally attribute human motivational behaviors to. Differences in content and design among reward and incentive systems in organizations can to some extent be seen as a result of these differences in theoretical perspectives. The two main perspectives behind the most common theories on motivation are the economic model of behaviors and the psychologically based models of behavior.

The economic model of behaviors
Most of the literature on rewards and incentives is rooted in the presumptions of the economic model of behavior (Pfeffer, 1997; Domjan, 2010). In this view, human behavior is considered to be prospective and based on intentional rationality (Pfeffer, 1997). The economic model is consistent with operant conditioning principles (Skinner, 1953), which emphasize the link between behaviors and their perceived consequences. According to this reasoning, all behaviors which are followed by a reward of some kind will be sustained or even performed with greater intensity in the future. This implies that incentives of different kinds (especially externally controlled and administered incentives) are important in order for the individual to be motivated to perform. The economic model assumes that the greater the compensation is that employees receive (monetarily or by other benefits), the better the better the organization’s overall performance will be. This rests on the presumptions that the rewards will not only serve to attract potential applicants and contribute to retaining valuable employees but also help increase the motivation to perform (Pfeffer, 1997).

Psychologically based models of behavior
The psychological view on human behavior and motivation is somewhat different from that of the economist. The psychological view deemphasizes the role of incentives and rewards (at least monetary) in motivation. In cases where incentives and rewards have an impact on performance, it is other aspects related to these rewards that are assumed to have a motivating function. For example, according to goal-setting theory (Locke & Latham, 2002), by setting goals for employees that are specific and demanding, but realistic, such goals can of themselves have a powerful effect on employee performance. Accordingly, the main function of reward programs in relation to employee behavior is to establish explicit and clear performance objectives. Other psychological theories focus on the role of information and feedback in relation to rewards. Hackman and Oldham’s (1980) job characteristic model, for example, assumes that having knowledge about the evaluation results of one’s job performance in itself has an effect on one’s behaviors and is an important element in determining how motivated one is towards the job.
These two psychological theories can both be held to favor the use of rewards and incentives for improved performance in organizations. However, there are also theories implying that rewards and incentives might undermine intrinsic motivation, commonly considered to be the most powerful form of motivation. These theories presume human behavior to be more retrospectively rational, suggesting that individuals and organizations will take actions to make sense of or to appear to be consistent with previous behaviors or choices (Staw, 1980). Examples of such theories are cognitive dissonance (Festinger, 1957), self-perception theory (Bem, 1972), and self-determination theory (Ryan & Deci, 2000). The rationale is that when there are no obvious extrinsic reasons, such as a reward, for engaging in a certain behavior, individuals will come to believe that they perform an activity simply because they like it (i.e., intrinsic motivation will increase). Conversely, when individuals are offered a reward for doing something, they will consider the activity less interesting and attractive (i.e., the motivation decreases or becomes extrinsic). External rewards are therefore assumed to potentially undermine individuals’ intrinsic interest in, enjoyment of, and motivation for a task (e.g., Deci, 1975; Enzle & Anderson, 1993).

Background and types of incentive programs

The interest in rewards and incentives in organizations has varied over time (Pfeffer, 1997). Although trends regarding the use of reward practices tend to vary across culture and country, a review of the 1000 largest companies in the U.S. indicated that the use of contingent compensation plans started to increase noticeably during the 1980s and 1990s (Ledford, Lawler, & Mohrman, 1995). Since then, contingent compensation plans have been of interest along with the emergence of a number of new forms of contingent incentive programs in organizations (Sinclair & Tetrick, 2004).

Consequently, there is a vast array of contingent compensation plans or incentive programs used by organizations. They can differ according to a number of design aspects. To begin with, the objective of the program can shape its content and design. The objectives may concern legal, financial, fairness, safety, or productivity matters (Bartol & Durham, 2000). However, these programs can vary in the degree to which they focus on each of these aspects and in the kind of behavior they encourage (e.g., effective contribution, productivity, attendance, loyalty, innovation, conformity or reporting) (Glendon et al., 2006).

Incentive programs can also differ with regard to the kind and proportion of pay that is contingent. A system making use of bonuses usually involves the employees having a guaranteed weekly or monthly wage that is potentially augmented with bonus pay based on their output or productivity during the same period. Merit pay is similar to bonus systems but the bonus
is instead based on merit ratings determined by supervisors or other managers. It may be preferred in professions where it is not possible to measure work in terms of completed units. A profit-sharing system, on the other hand, often involves a guaranteed weekly or monthly wage that is augmented with an annual or twice-yearly bonus based on the organization’s profits. In addition to these relatively common systems of contingent pay, there are also programs that offer alternative and non-monetary rewards, such as insurances or household services (Furnham, 2008).

Lastly, incentive programs can vary when it comes to who is eligible for the rewards in the organization (e.g., top managers, all managers or all employees) and with regard to which level the performance appraisals are based (individual level, group level, organizational level or even corporate level) (Pfeffer, 1997).

Evidence of the effects of incentives on performance

Although there are numerous theories regarding the functioning and effectiveness of incentive programs, field-based empirical research on the topic is still relatively rare. This has been argued to be due to the strong ideologies surrounding approaches to performance incentives and pay in general, since practices are often based on beliefs and basic assumptions about human behaviors rather than on research evidence (Pfeffer, 1997).

In addition, the results from studies investigating the impact of incentives on performance tend to be empirically ambiguous. Some research implies that incentive programs contribute to a gain in performance (e.g., Condly et al., 2003), while other research indicates that incentives have little or no effect (e.g., Pearce, Stevenson, & Perry, 1985; Marsden & Richardson, 1994). There are also studies providing support for the notion that intrinsic motivation is undermined by rewards (Deci, 1975; Amabile, Hennessey, & Grossman, 1986), while other research evidence opposes these results and suggests that rewards do not generally decrease intrinsic motivation (Cameron & Pierce, 1994). These ambiguities along with research showing pay to be only slightly related to performance have posed a challenge for proponents of the economic model (Baker, Jensen, & Murphy, 1988).

The mixed research results and the lack of hard evidence for the efficacy of incentive programs have been assumed to be due to methodological problems stemming from a failure to adequately control for other potential causes for the results. According to Pfeffer (1997), one such problem is associated with the difficulties of distinguishing between effects on performance due to incentives and those due to the knowledge employees receive from the information provided along with the incentive program documentation. Incentive programs are frequently accompanied by information about the productivity and performance of employees, often
compared to other employees, groups or some standards. Receiving such information results in a clearer understanding of what is valued in the organization and, more specifically, what objectives should receive their attention and efforts (which is motivating of itself according to goal-setting theory) as well as knowledge about the own performance in the form of feedback (which is a motivational factor according to the job characteristic model). Given that this kind of information is often not known to individuals prior to the introduction of the incentive system, it is difficult to determine whether any effects on performance are due to the reward or to the information. This distinction has long been rather neglected in research on incentives (Pfeffer, 1997).

Another methodological issue related to the evaluation of incentive programs concerns the great variety in design and composition of these systems which make the results of empirical studies difficult to compare. For example, some findings indicate that the performance of managers was affected by bonus but not by merit pay (Kahn & Sherer, 1990), which implies that these two kinds of incentives should be differentiated in empirical studies. When it comes to merit pay systems, a lot of criticism has been directed specifically towards such practices, since it is argued that this pay system often rewards or punishes employees for things over which they have little or no control (Gabor, 1990; Marsden & Richardson, 1994). As a consequence, merit pay practices might result in employees feeling discouraged and dissatisfied, which could in turn create internal organizational conflicts (Pfeffer, 1997).

Impact of incentive programs on safety

As we have seen, it is possible to hold different views regarding the value and effectiveness of an incentive program, depending on the theoretical perspective. The same goes for opinions concerning the impact of incentive programs on safety. Whether incentive programs are considered necessary or even vital for organizational safety or if they are assumed to be ineffective or even hazardous in high-risk organizations is a question of debate (Daniels & Marlow, 2005). This ambiguity is due to the lack of empirical research regarding safety incentives (Sinclair & Tetrick, 2004) and to the topic being affected by the same methodological problems as research on rewards in general.

Most practitioners, commentators, and researchers are somewhat in agreement that incentives can have a positive impact on workplace safety or at least agree that they do not necessarily have a detrimental effect on safety (e.g., Austin, Kessler, Riccobono, & Bailey, 1996; LaMere et al., 1996; Tompkins, 1994). However, it is also acknowledged that the manner in which incentives are presented and implemented as well as the methods of
performance measurement may potentially affect the effectiveness of the program and the likelihood of adverse consequences, such as underreporting and conflicts (Daniels & Marlow, 2005).

Design of incentive programs in relation to safety
The matter of rewards and incentives can be related to safety either indirectly through general organizational pay systems, such as bonus systems based on production output, or through incentive systems especially developed for and focusing on safety. Even though an incentive program may have a more general organizational aim, such as rewarding performance to enhance profit and production, it can be relevant from a safety perspective as well, since it could indirectly affect safety in a number of ways. In most high-risk organizations today, however, safety is included as one of the objectives in the incentive program even if it does not mainly focus on safety.

Pay practices especially aimed at enhancing workplace safety, so-called safety incentive programs, can be designed in a number of ways. Just as with general incentive programs, they can be based on the obtainment of a bonus, merit pay, profit sharing or some other kind of distributional principle. They can also vary as to whether they include all or some portion of the staff. The rationale in all these programs is to reinforce safe behaviors by making compensation contingent on safe performance (Glendon et al., 2006). However, what is meant by safe performance, how it can be achieved, and what behaviors are to be rewarded are aspects that can differ between organizations and which may considerably impact the improvement of workplace safety.

Many safety incentive programs are designed to offer rewards based on safety outcomes, such as reductions in the number workplace accidents and incidents. This type of program is often used in industrial settings with the aim of improving safety records and avoiding the high costs associated with safety-related incidents (Daniels & Marlow, 2005). It is becoming more common, however, for organizations to use incentive programs that aim to improve safety by rewarding behaviors assumed to contribute to increased workplace safety instead of safety outcomes. In the next section, potential problems associated with the focus and design of incentive programs in relation to safety will be discussed.

Potential safety problems with incentive programs
Considering the high level of complexity that characterizes many incentive programs in organizations, it is not entirely unexpected that research regarding their consequences for safety has produced ambiguous results (Sinclair & Tetrick, 2004). In the design of an effective incentive program, a
A multitude of aspects need to be taken into account. The behavior of an employee is assumed to be affected by a number of interacting factors within the organization, such as compensation policies, team norms, organizational climate, and management practices (Sinclair & Tetrick, 2004). Thus, it would be inappropriate and insufficient to implement a program that rewards the achievement of certain objectives without considering how it might impact the greater context of the organization.

General incentive programs that mainly reward productive behaviors could potentially produce goal conflict when performance becomes an issue of safety versus production. Evidence has shown that incentive programs of this kind can be hazardous, as the pressure for production can encourage unsafe work practices (Kaminski, 2001). Examples of such unsafe practices are working too fast and too many hours, cutting corners (e.g., neglecting protective equipment), and accepting hazardous tasks. It has been found that receiving non-monetary and more symbolic rewards for working overtime and for speediness at work are associated with increased accident rates (Dwyer & Raftery, 1991). Research also shows that it is not only the reward itself that influences employees to behave unsafely, but also the fact that productivity reward systems are often perceived as a signal from the management telling employees that production should be prioritized over safety (Zohar, 2002b).

However, goal conflicts between production and safety is not only an issue in production-based programs but can also arise in safety incentive programs. It is not uncommon for the aims targeted at improving safety in one way or another to be perceived as conflicting with other goals within the organization, such as those related to profit or productivity (Kenny, 1995). This unfortunate situation is most certainly not an intentional effect, but rather the result of a failure on the part of management to take a holistic view of the goals involved and affected by the compensation system.

Not taking a holistic view when instituting a safety incentive program may also be problematic with regard to the kinds of safety performance that are targeted and rewarded. Although programs based on organizational outcomes (e.g., number of injuries, financial costs) are popular due to the ease and low cost with which they are administered as well as their effects on superficially improving injury statistics, this kind of design has received plenty of criticism in safety research (Kerr, 1995; Bartol & Durham, 2000; Kaminski, 2001). Instead of rewarding the desired outcome (e.g., lower injury rates), it is recommended that the desired behavior is rewarded (e.g., raising safety concerns). Otherwise, there is a risk that employees will hesitate to report accidents and injuries to their supervisors due to fear of losing the reward, a reward which is highly undesirable from a learning and improvement perspective (Pransky, Snyder, Dembe, & Himmelstein, 1999; Probst & Estrada, 2010). Underreporting can also have negative consequences over the long term, as untreated minor injuries can become
serious, eventually leading to even higher costs for both the individual and the employer (Gallagher & Myers, 1996).

In addition, in incentive programs that reward safety outcomes instead of behaviors, the message communicated by the program can itself have a negative impact on actual safety. It has been argued that employees are motivated to contribute to the organization to the degree to which their interests are in line with those of the organization (Zacharatos & Barling, 2004). Consequently, a program where compensation is dependent on safe behaviors and a safe work environment rather than on the number of accident reports signals that the management is interested in the wellbeing of the employees and not just in showing lower numbers on the accident record.

Another issue regarding the design of incentive programs concerns who is rewarded. Most research on the impact of incentives on performance has examined individual or organizational level outcomes (e.g., Jones & Kato, 1993). Although there has not been much study of the effects of group or organizational incentives on individual behavior and attitudes (Pfeffer, 1997), some argue for the advantages of group-based incentives. It has been claimed that individual-based rewards can result in an unfavorable degree of competition, while group-based rewards facilitate a greater sense of cooperation that results in behaviors such as sharing information, training new colleagues, and helping co-workers to solve problems and conflicts. With an individual-based reward system, there is often less motivation to cooperate when facing tasks that demand teamwork (Lazear, 1989). However, despite indications of the advantages with group-based rewards, there is some research on safety incentive programs which suggests that informal competition can arise even across different work teams (Komaki, Barwick, & Scott, 1978). Although informal competition can in some cases be beneficial, it has been argued that, for example, in scenarios where one work group’s benefit is another one’s loss, in terms of income or other rewards, the use of an incentive system can create tension by creating an us-versus-them mentality. Such a mentality is suggested to result in a less open climate, less joint problem solving, and reduced organizational commitment (Lawler & Jenkins, 1992). However, the extent to which these arguments in favor of group-based rewards can be generalized to apply to safety incentive programs is somewhat unclear, given the lack of research within this area.

**Concluding Remarks**

The present chapter has discussed the issue of rewards and incentives in the management of safety. Different theories regarding what drives human behavior have been put forth and discussed in relation to various incentive programs and their impact on performance and, in particular, safety. The importance of taking a holistic view in the design of incentive programs in
order to avoid conflicts related to interrelated goals has been highlighted. Considering the complex organizational context in which incentive programs are introduced, it could be concluded that a one-size-fits-all approach is unlikely to work. Instead, it should be vital that the implementation of an incentive program allows for some flexibility. The chapter has also drawn attention to the substantial gaps in our current knowledge of the relationships between various components of incentive programs and workplace safety. Further research on the multifaceted matter of safety incentives, possibly utilizing more comparative and alternative research strategies, would be called for to contribute with new insights to this field of research.
Summary of Studies

The three empirical studies in the present thesis address the issue of workplace safety management by investigating leadership and managerial practices in relation to safety. This section provides a brief description of each of the studies in terms of background, aim, method, main findings, and conclusions. A general overview of the three studies is presented in Table 1. Study I and II mainly focus on the relationships between leadership aspects (leadership style and leader communication, respectively) and safety outcomes, while Study III focuses on staff bonus systems as a managerial practice and its potential effects on workplace safety.

Study I

*Leading for safety: A question of leadership focus*

Background and Aim

Most previous studies investigating the relationships between leadership styles and workplace safety have tended to focus on the role of a single leadership style, such as transformational leadership (e.g., Inness et al., 2010) or transactional leadership (Zohar, 2002b). Some researchers have examined the association between safety-specific leadership, that is, a leadership style that specifically emphasizes the promotion and enhancement of safety, and workplace safety outcomes. Safety-specific leadership is often based on general leadership models but with the additional focus on safety. Since there has been a lack of research on the effects of safety-specific leadership as a separate construct from other leadership styles, it has not been possible to determine the unique impact of safety leadership per se. The first aim of Study I was to investigate the relative importance of three different leadership styles for safety, namely transformational leadership, transactional leadership, and safety-specific leadership that is not directly associated with any of the more general leadership styles. When it comes to previous research regarding the impact of leadership styles on safety outcomes, there is only weak support for leadership styles being related to accident and injury frequencies. One plausible explanation for the weak
<table>
<thead>
<tr>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
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</thead>
<tbody>
<tr>
<td><strong>Research question(s)</strong></td>
<td>Which is the relative importance of different leadership styles for safety outcomes?</td>
<td>Are different leader communication approaches related to patient safety and are they mediated by different behavioral mechanisms?</td>
</tr>
<tr>
<td><strong>Sample</strong></td>
<td>Employees at a processing plant in Sweden</td>
<td>Employees at a Swedish hospital</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>Cross-sectional, quantitative</td>
<td>Cross-sectional, quantitative</td>
</tr>
<tr>
<td><strong>Time of data collection</strong></td>
<td>Fall 2013</td>
<td>Fall 2012</td>
</tr>
<tr>
<td><strong>Method of data collection</strong></td>
<td>Web-based questionnaire</td>
<td>Web-based questionnaire</td>
</tr>
<tr>
<td><strong>Analytical method</strong></td>
<td>Standard multiple regression analysis</td>
<td>Structural equation modelling</td>
</tr>
</tbody>
</table>
findings is that they may be due to methodological reasons associated with the infrequent occurrence of major accidents and injuries (Barling et al., 2002; Zohar, 2000). The second aim of Study I was thus to investigate whether a relationship between leadership style and injury frequency could be found when the occurrence of minor injuries was measured in addition to that of major injuries.

Method

The data was collected as part of a larger longitudinal intervention study at a processing plant in Sweden in 2013. The data collection was conducted by a research team in cooperation with the company and the local occupational health services. The employee questionnaire data used in the present study consisted of employee ratings of their direct supervisor, their own safety related behavior, and of the frequencies with which they had experienced minor injuries, major injuries, and near injuries over the preceding six months. The company had about 800 employees at the time of the study. All of the approximately 100 supervisors and managers at the company were asked to participate and to select and invite five subordinates to fill out a questionnaire. From these, 87 managers and supervisors agreed to participate and sent an email to the selected employees with a link to a web-based survey. A total of 345 employees were invited, of whom 269 responded in the second wave, which was the wave of data examined in the present study. Of this effective sample, 25% were women, the mean age was 45 years, and the mean tenure was 24 years. The measures used in Study I are presented in Table 2. The measures demonstrated sound psychometric properties with Cronbach’s alphas >.70. Hierarchical multiple regression analysis was applied to determine the relative contribution of each of the three leadership styles for the different safety outcomes. In the first step of the analysis, effects due to gender and tenure were controlled for.

Main Findings

The results showed that safety leadership contributed more than the other styles to overall safety, since it was most strongly related to both safety compliance and safety initiatives among employees. A positive relationship was also found between transformational leadership and safety initiative behavior. However, this effect disappeared when the influence of the other leadership styles were accounted for. Transactional leadership was found to be negatively associated with safety, in that it contributed to less safety initiative behaviors and to an essential increase in the frequency of minor injuries. None of the leadership styles showed any significant relationship with major injuries.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Reference</th>
<th>No. of items</th>
<th>Scale range</th>
<th>Alpha</th>
<th>Example item</th>
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</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
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<tr>
<td>Transactional leadership (MBEA)</td>
<td>Avolio and Bass (2004)</td>
<td>4</td>
<td>1 (not at all) to 5 (frequently, if not always)</td>
<td>.72</td>
<td>“The person I am rating talks optimistically about the future”</td>
</tr>
<tr>
<td>Transformational leadership</td>
<td>Avolio and Bass (2004)</td>
<td>20</td>
<td>1 (not at all) to 5 (frequently, if not always)</td>
<td>.89</td>
<td>“The person I am rating focuses attention on irregularities, mistakes, exceptions and deviations from what is expected of me”</td>
</tr>
<tr>
<td>Safety leadership</td>
<td>Zohar (2000)</td>
<td>10</td>
<td>1 (totally disagree) to 5 (totally agree)</td>
<td>.84</td>
<td>“My supervisor approaches workers during work to discuss safety issues”</td>
</tr>
<tr>
<td><strong>Safety outcomes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Safety compliance</td>
<td>Storseth (2006)</td>
<td>4</td>
<td>1 (not true at all) to 5 (very true)</td>
<td>.72</td>
<td>“I have to break rules in order to get the job done”</td>
</tr>
<tr>
<td>Safety initiative</td>
<td>Pettinger (2000)</td>
<td>4</td>
<td>1 (cannot do that) to 10 (of course I can do that)</td>
<td>.78</td>
<td>“How comfortable would you be in stopping a colleague who you think might be performing an unsafe act”</td>
</tr>
<tr>
<td>Variable</td>
<td>Reference</td>
<td>No. of items</td>
<td>Scale range</td>
<td>Alpha</td>
<td>Example item</td>
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<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Minor injuries</td>
<td>Hayes, Perander, Smecko, and Trask (1998); Hemmingway and Smith (1999); Barling, Loughlin, and Kelloway (2002)</td>
<td>6 (2 for reported, 2 for unreported, 2 for near-injuries)</td>
<td>1 (never) to 5 (very frequently)</td>
<td>-</td>
<td>“How often during the last six months did you experience each of the following injuries at work, which you reported to your supervisor or to health care personnel?”</td>
</tr>
<tr>
<td>Major injuries</td>
<td>Hayes, Perander, Smecko, and Trask (1998); Hemmingway and Smith (1999); Barling, Loughlin, and Kelloway (2002)</td>
<td>6 (2 for reported, 2 for unreported, 2 for near-injuries)</td>
<td>1 (never) to 5 (very frequently)</td>
<td>-</td>
<td>“How often during the last six months were you close to experiencing each of the following injuries at work?”</td>
</tr>
<tr>
<td>Control variables</td>
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<td>格尔</td>
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<tr>
<td>Gender</td>
<td>-</td>
<td>1</td>
<td>1 (man)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>1</td>
<td>In years</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Conclusions

The results imply that the most important predictor of safety is the extent to which the leader exhibits leader behaviors associated with the promotion of safety, regardless of transformational or transactional elements involved in the leadership. Another important conclusion to be drawn from the results is that correcting and controlling leadership behaviors can have a negative influence on safety. The fact that an association was found between at least one leadership style (transactional) and minor injuries, but not between any of the leadership styles and major injuries, gives support for the value of distinguishing between injuries of differing severity in future research.

Study II

Leader communication approaches and patient safety: An integrated model

Background and Aim

The issue of improving patient safety has become an area of increasing attention and urgency for both researchers and practitioners as well as for politicians. Although communication within organizations has been assumed to affect the occurrence of accidents and injuries within health care (Joint Commission, 2009), research regarding the influence of leaders communication approaches on safety outcomes is still rather rare (Michael et al., 2006) and has shown ambiguous results (e.g., Hofmann et al., 2003; Vredenburgh, 2002). It can therefore be assumed that the relationship between leadership and safety outcomes is more complex, possibly involving differing effects from various leadership communication approaches as well as mediating behavioral mechanisms. The aim of Study II was to test a model where two different leader communication approaches (safety priority communication and feedback communication) are related to patient safety through the mediation of employee safety behaviors (safety compliance, organizational citizenship behavior, and reporting of accidents).

Method

The study was based on cross-sectional data collected through web-questionnaires at two hospital wards in Sweden in 2012. The data was gathered as part of a general work environment survey conducted by the local occupational health services and a university research team in cooperation with the hospital management. All the staff at the two wards
(260 employees) was sent a request to fill in the questionnaire via an internet link. The response rate was 85%. Among the respondents, 15% were medical doctors, 71% were nurses, and 14% were administrative or other personnel. The average tenure of the respondents was 14 years and 46% were women. The measures used in Study II are presented in Table 3. The measures demonstrated sound psychometric properties with Cronbach’s alphas >.70 (with the exception of organizational citizenship behavior which had an alpha of .67). Structural equation modelling was applied to test the suggested model.

Main Findings
Support was found for the proposed model ($\chi^2 [161] = 233.9; p<.05; \text{RMSEA} = .045; \text{PCLOSE} = .72; \text{CFI} =.98$), including all the hypothesized relationships. The two leader communication approaches were both positively related to patient safety through the mediating effect of incident reporting. In accordance with predictions, the communication approaches were associated with incident reporting and, consequently, patient safety through different mechanisms, in that the relationship between safety priority communication and the reporting of incidents was mediated by employee safety compliance, while the relationship between feedback and the reporting of incidents was mediated by organizational citizenship behaviors.

Conclusions
The results from the study indicate that leader communication both regarding the priority of safety and feedback to the employees may play vital roles in the improvement of patient safety. The fact that the two communication approaches seem to be associated with two different kinds of employee safety behaviors, safety compliance and organizational citizenship behaviors – which are both essential for safe work practices and, consequently, the safety of patients – also implies that it should be important for managers and supervisors to make use of both of these communication approaches in order to achieve increased patient safety. In addition, the results indicate that the extent to which employees report incidents and accidents may substantially impact safety by mediating the relationship between safety behaviors and patient safety. The rather strong relationship between the reporting of incidents and patient safety also emphasizes the importance of implementing and encouraging efficient reporting routines in high-risk organizations.
Table 3. Overview of measures for Study II

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reference</th>
<th>No. of items</th>
<th>Scale range</th>
<th>Alpha</th>
<th>Example item</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leader communication</strong></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Safety priority</td>
<td>Neal, Griffin, and Hart (2000); Zohar (2002)</td>
<td>3</td>
<td>1 (totally disagree) to 5 (totally agree)</td>
<td>.94</td>
<td>“My supervisor clearly communicates the importance of patient safety”</td>
</tr>
<tr>
<td>Feedback</td>
<td>Hackman and Oldham (1975)</td>
<td>3</td>
<td>1 (totally disagree) to 5 (totally agree)</td>
<td>.96</td>
<td>“My supervisor usually lets me know how satisfying my performance is”</td>
</tr>
<tr>
<td><strong>Safety behaviors</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Safety compliance</td>
<td>Neal, Griffin, and Hart (2000)</td>
<td>3</td>
<td>1 (totally disagree) to 5 (totally agree)</td>
<td>.74</td>
<td>“I have to break safety rules or regulations to cope with certain tasks”</td>
</tr>
<tr>
<td>Organizational citizenship</td>
<td>MacKenzie, Podsakoff, and Fetter (1993); Neal, Griffin, and Hart (2000)</td>
<td>3</td>
<td>1 (totally disagree) to 5 (totally agree)</td>
<td>.67</td>
<td>“I provide feedback and make suggestions for improvements when I discover the need for them”</td>
</tr>
<tr>
<td>Incident reporting</td>
<td>Evans, Berry, Smith, Esterman, Selim, Shaughnessy, and DeWit (2006)</td>
<td>3</td>
<td>1 (totally disagree) to 5 (totally agree)</td>
<td>.89</td>
<td>“In my work group we always report incidents that could have harmed the patient regardless of the nature of the incident”</td>
</tr>
</tbody>
</table>

(continued)
Table 3 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reference</th>
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<th>Scale range</th>
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<th>Example item</th>
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<tbody>
<tr>
<td><strong>Outcome</strong></td>
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</tr>
<tr>
<td>Patient safety</td>
<td>Rundmo and Hale (2003)</td>
<td>3</td>
<td>1 (never) to 5 (10 times or more)</td>
<td>.91</td>
<td>“Did you, during the last year, act in a manner that put patients at risk?”</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
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<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-</td>
<td>1</td>
<td>1 (female)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 (man)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenure</td>
<td>-</td>
<td>1</td>
<td>In years worked at the present ward</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Study III
Effects of staff bonus systems on safety behaviors

Background and Aim
Bonus systems are often used as a managerial practice for encouraging improved employee performance or for achieving particular organizational objectives. Previous studies regarding the effects of such incentive programs on performance show ambiguous results (Deci, Koestner, & Ryan, 1999; Cameron & Pierce, 1994). In addition, research on the influence of bonus systems on organizational safety is particularly scant. Considering the potentially negative consequences that a lack of knowledge regarding the possible unintended effects of such a system could have in high risk organizations, an increased understanding of the impact of different bonus systems on safety is warranted (Sinclair & Tetrick, 2004). The aim of Study III was to gain an increased understanding of whether and in what ways the use of staff bonus systems may compromise safety in high risk organizations. An additional aim was to investigate whether differences in the perceived effects of a bonus system on safety were associated with differences in system content and design.

Method
In order to gain a deeper understanding of the complexities involved in the motivational process associated with a bonus program, a qualitative approach was applied. As a first step, a thorough literature review was carried out, mainly focusing on theories on motivation but also on theories involving different organizational perspectives as well as previous research regarding safety-related bonus systems. The literature review resulted in the generation of a number of themes that were considered to be relevant for the possible effects of bonus systems on employee behaviors in general, including safety concerns. These themes are presented in Table 4. In a second step, data was collected through interviews with employees at three different nuclear power plants in Sweden and through the gathering of relevant organizational documents potentially containing information related to the functioning of the bonus systems, such as descriptions of the bonus systems’ design, content, organizational level at which the goals and rewards apply, means of communicating the goals, and principles for distributing the rewards. The previously generated theoretical themes were used as a platform for developing an interview guide. Based on suggestions from the Swedish Radiation Authority, a contact person was selected at each nuclear...
### Table 4. Theoretical themes in Study III

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<tr>
<th>Theoretical themes</th>
<th>Theories/empirical evidence</th>
<th>Example references</th>
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<tr>
<td>General Satisfaction and Meaningfulness of</td>
<td>Need theories</td>
<td>Herzberg (1966); Alderfer (1969); Hackman and Oldham (1976); Ryan and Deci (2000); Kerr (1975); Deci and Ryan, (1985); Frank (1988); Elster (1989); Zohar (2002a); Hertel, Konradt and Orlikowski (2004); Cohen-Charash and Mueller (2007)</td>
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<td>Intrinsic and Extrinsic Motivation</td>
<td>Need theories</td>
<td>Herzberg (1966); Alderfer (1969); Hackman and Oldham (1976); Ryan and Deci (2000); Vroom (1964); Porter &amp; Lawler (1968); Locke &amp; Latham (2002); Jensen &amp; Meckling (1976); Deci and Ryan, (1985); Frank (1988); Elster (1989); Frey and Jegen (2001); Cohen-Charash and Mueller (2007)</td>
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<td>Value and expectancy theories</td>
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<td>Research/theories on bonus systems</td>
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<tr>
<td>Perceived Effects on Performance</td>
<td>Reinforcement theories</td>
<td>Skinner (1938); Kerr (1975); Deci and Ryan (1985); Elster (1989); Frey and Jegen (2001); Zohar (2002); Hertel, Konradt and Orlikowski (2004); McLain and Jarell (2007)</td>
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<tr>
<td>Employee Participation and Influence on the</td>
<td>Need theories</td>
<td>Herzberg (1966); Alderfer (1969); Hackman and Oldham (1976); Ryan and Deci (2000); Deci and Ryan, (1985); Frank (1988); Elster (1989); Frey and Jegen (2001); Zohar (2002a)</td>
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<th>Theoretical themes</th>
<th>Theories/empirical evidence</th>
<th>Example references</th>
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<td>Justice and Fairness</td>
<td>Equity theories</td>
<td>Adams (1965); Korman (1970); Ramaswami and Singh (2003); Kerr (1975); Deci and Ryan, (1985); Frank (1988); Elster (1989); Frey and Jegen (2001); Hertel, Konradt and Orlikowski (2004); Cohen-Charash and Mueller (2007)</td>
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<tr>
<td>Clarity, Information, and Feedback</td>
<td>Need theories</td>
<td>Herzberg (1966); Alderfer (1969); Hackman and Oldham (1976); Vroom (1964); Porter &amp; Lawler (1968); Locke &amp; Latham (2002); Skinner (1938); Jensen &amp; Meckling (1976); Kerr (1975); Frey and Jegen (2001); Zohar (2002); Hertel, Konradt and Orlikowski (2004); Cohen-Charash and Mueller (2007)</td>
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<td>Interrelations between Goals and</td>
<td>Equity theories</td>
<td>Adams (1965); Korman (1970); Ramaswami and Singh (2003); Jensen &amp; Meckling (1976); Katz &amp; Kahn (1978); Kerr (1975); Deci and Ryan, (1985); Elster (1989); Frey and Jegen (2001); Hertel, Konradt and Orlikowski (2004); Cohen-Charash and Mueller (2007); McLain and Jarell (2007)</td>
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plant who was asked to aid in the retrieval of organizational documents and participate in an interview. The contact person was then asked to propose additional employees at the plant to be interviewed who represented different organizational levels, functions, positions, and views and experiences within the organization. Each interview lasted between 25 and 90 minutes. Fifteen employees (five at each plant) were interviewed, consisting of four middle-level managers, four supervisors, five shift team workers, and two maintenance workers. Two of the respondents were women and the age range of the participants was 32 to 63 years. The interviews were conducted by one or the other of the two authors of the study and recorded digitally.

The data was analyzed using a theory-led thematic method (Hayes, 2000). The theoretical themes that emerged in the literature review functioned as a guide for the interpretation of the interview data. The full-length transcriptions of the interviews were examined in order to identify which statements belonged to which of the theoretical themes. The resulting thematic categorization of statements was then analyzed with respect to meanings and implications. From this analysis, a pattern of the most relevant aspects emerged, revealed by the content of the participants’ statements within each of the themes. The structuring and analysis of the material was carried out independently by the two authors, producing concordant results.

The three examined bonus systems had essential differences in terms of their design, content, and distributional principles. One way in which they differed was in regard to the organizational level the goals applied to. While one of the systems only used goals on the corporate and organizational level, the second one also had goals on the group level and the third had a large proportion set on the individual level. After finding these important differences, the data from the three plants was also examined separately and compared in additional analyses.

Main Findings
The results indicated that all of the bonus systems generally were perceived to provide limited incentive for behavioral change, due to the small size of the bonus in relation to their salaries and to their perceived inability to influence goal fulfillment. However, the ways and the extent to which the systems could be held to affect the employees’ motivation for safe behaviors varied greatly between the plants. Employees at the plant where the bonus system was based almost exclusively on corporate goals on a collective level did not perceive any behavioral effects from the system, due to a lack of clarity and knowledge about the objectives, a perceived lack of opportunity to participate in the setting and achievement of goals, and a weak perceived connection between their own behavior and the subsequent reward (i.e., size of bonus). On the other hand, the fact that all employees received an equal
amount of bonus each year seemed to contribute to perceived fairness, cooperation between individuals and groups, and to fostering a good attitude towards the bonus system in general. At the plant where the bonus was based on the achievement of individual goals to a significant extent, the system provided the employees with a stronger link between their own efforts and variations in bonus. However, this potential positive effect seemed to be prevented by other problems regarding its design, since it tended to give rise to goal conflict and a feeling of unfairness. The third system had a proportion of the bonus goals associated with achievements on the group level, goals which mainly concerned safety aspects. This system seemed to be perceived as closely related to the employee’s performance while at the same time being fair in its distribution and encouraging cooperation.

Conclusions

The results imply that none of the three examined bonus systems posed any significant threat to safety within the plants. The system in which most of the goals were individually based could be seen as potentially undermining safety due to frustration arising from perceived goal conflicts, unfairness, and lack of clarity. However, considering that many of these individual bonus goals concerned safety issues, that the bonus amount was considered by the employees to be insignificantly small, and that the system itself seemed to play only a marginal role in the everyday work of the employees, any potential risk should be small. The findings further indicate that designing and using a bonus system that mainly relies on clearly formulated group goals that are linked to performance goals concerning safety could contribute to enhancing workplace safety. The fact that the differences in design between the bonus systems were so clearly reflected in how they were perceived by the employees highlights the importance of carefully considering a number of factors when designing and implementing this kind of system.
Discussion

The managing of workplace safety is a complex matter, due to the many interrelated and potentially conflicting interests and goals within an organization. The most evident goal conflict in a high-risk organization is presumably the one between production and safety. Given that competitiveness is vital for the survival of most organizations in a market economy, there is a constant pressure for production in many organizations. A heavy production pressure is held to be a strong contributor to unsafe work practices and workplace accidents (Dwyer & Raftery, 1991; Kaminski, 2001; Probst & Graso, 2013). However, there are a number of ways in which top management can take action to diminish these risks. A common approach is to implement management practices and encourage leadership behaviors that emphasize the importance of safety while minimizing potential goal conflicts that could endanger safety. The overall aim of the present thesis was to contribute to an increased understanding of the ways in which such management practices can influence safety in organizations. The three studies included in this thesis investigated different aspects of this overall aim by focusing on various managerial practices and leadership approaches in relation to safety. In the following, the objectives of each study will be addressed, after which the theoretical and practical implications of the findings will be discussed along with suggestions for future research within the area.

Safety-specific leadership as a predictor of safety

The main objective of the first study was to investigate the relative importance of three leadership styles for safety, namely those of active transactional leadership, transformational leadership, and safety-specific leadership. A secondary objective of the study was to examine the potential benefits of using an outcome measure of injury frequency which distinguished between minor and major degrees of injury severity. Regression analysis revealed that safety-specific leadership contributed the most to positive safety outcomes, as it was a considerably stronger predictor of both employee safety compliance and safety initiative behaviors than the other two leadership styles. The results also indicated that the role of transformational leadership in predicting safety outcomes was very limited,
since it only contributed to a slight increase in employee safety initiatives, an 
association that, moreover, disappeared as soon as the impact of safety 
leadership was taken into account. Lastly, transactional leadership was found 
to contribute negatively to safety, in that it predicted a decrease in employee 
safety initiatives and an increase in minor injuries. None of the leadership 
styles were found to predict the occurrence of major injuries. 
The main conclusion from the results is that a focus on safety is the most 
important leadership factor for contributing to the improvement of 
workplace safety. The finding that safety-specific leadership had a greater 
influence on safety than transformational leadership, despite some previous 
research showing that a transformational leadership without a specific focus 
on safety can be beneficial for safety (e.g., Inness et al., 2010), could be 
explained by the difficulties of distinguishing a safety focus from a general 
leadership style. These difficulties may be due to some of the elements of 
transformational leadership, such as individualized consideration and 
idealized influence, influencing safety outcomes when the focus of these 
behaviors are only slightly safety oriented. By measuring transformational 
leadership characteristics separately from the extent to which a leader 
exhibits a safety focus in relation to the employees, it becomes possible to 
determine which aspect of the leadership is the main predictor of safety 
outcomes. Thus, even though transformational leadership can have a positive 
effect on workplace safety, the results from Study I imply that these effects 
are only present as long as the leader also has a focus on safety in relation to 
the employees.

Another implication of the findings is that leadership characterized by 
monitoring and controlling, as in the case of active transactional 
(management-by-exception active; MBEA) leadership, may actually have 
negative consequences for safety. Although these results are supported by 
previous research (Hoffmeister et al., 2014), other studies have shown 
MBEA to be positively associated with safety (Clark, 2013). A plausible 
explanation for the results in Study I concerns the fact that the wordings in 
the Multi Leadership Questionnaire (MLQ; Bass & Avolio, 2004) used to 
measure MBEA in the study present the controlling and monitoring 
behaviors in a negative light. MBEA is defined as a kind of leadership that is 
characterized by intrusive, controlling forms of monitoring and corrective 
behaviors, focused on finding mistakes and enforcing rules to avoid mistakes 
(Zohar, 2002b). However, some advocate for a more positive definition of 
MBEA, emphasizing a proactive approach to potential problems and active 
monitoring with the purpose of preventing problems and providing 
employees with constructive feedback (Clarke, 2013). In fact, it is mainly 
studies using this more positive definition of MBEA, and consequently, 
more positive item wordings in the measurement of it, that have shown a 
positive relationship between MBEA and workplace safety (Clarke, 2013). 
These findings of a more positively defined MBEA being related to safety
improvements are also in line with research showing that effective supervision is characterized by performance-based monitoring and timely communication of consequences (Komaki, 1998). A study by Zohar (2002a) indicated that leader training in transactional supervision incorporating these proactive and communicative elements was associated with decreased injury rates and increased employee compliance. However, since part of the leader intervention involved the direct supervisors of the leaders communicating that safety was a high priority, the positive impact on safety could simply be due to an increased emphasis on safety rather than the transactional leadership. This assumption would correspond to the finding in the present study that having a safety focus is the most important leader behavior for enhancing workplace safety. In sum, the conclusion that can be drawn from this reasoning, and from the findings in Study I regarding MBEA, is that an overly controlling, monitoring, and corrective type of leadership can potentially pose a threat to safety when these behaviors are not accompanied with constructive feedback and an emphasis on the importance of safety.

The finding concerning the secondary objective of Study I, that MBEA predicted the frequency of minor but not major injuries, supports the notion that it is beneficial to distinguish between minor and major injuries in safety research. It is reasonable to assume that previous ambiguities and lack of evidence for a relationship between leadership styles and accident and injury rates may be a result of distributional problems, as has been previously claimed in regard to this kind of measurement (Hoffmeister et al., 2014). With the increased base rate that comes with including minor injuries in the measurement, the possibilities of detecting a significant relationship are increased. Even though major injuries are the ones that are most costly, on personal, organizational, and economic levels, awareness of the relationships between certain leader characteristics and minor injuries could be just as useful. In cases where the organizational-level causes of major injuries are difficult to determine due to their low frequency, results on minor injuries can be useful for indicating problem areas that can then be taken into consideration when taking precautions and instituting measures to avoid future accidents with potentially more severe outcomes (Zohar, 2002a).

Study I also had the advantage of including near injuries along with actual injuries, which could be assumed to have further contributed to the possibility of detecting predictors of unsafe situations. The more comprehensive use of both minor injuries and near injuries in addition to major injuries as criteria for safety has previously been suggested (Barling et al., 2002) but never used in an empirical study.
The role of leader communication

The objective of the second study was to examine the role of leader communication in relation to workplace safety. The results indicate that mainly relying on a top-down type of leader communication for conveying safety priority and safety values was not a significant predictor of employee behaviors associated with organizational citizenship behaviors (OCB), but it was essential for increasing safety compliance among employees. The opposite seems to be true for feedback communication, which was associated with an increase in employee OCB but not with compliance. These results have important implications, as they suggest that leaders need to make use of several, or at least two, different kinds of communication approaches in order to both achieve a high level of compliance to safety rules and regulations and to enhance safety citizenship behaviors such as raising concerns, making suggestions, and taking initiatives for improved safety. The potential variations in the effects from different mechanisms involved in the two kinds of communication approaches may partly explain why previous studies on leaders’ communication and safety came to ambiguous conclusions (Hofmann et al., 2003; Michael et al., 2006; Parker, Turner, & Griffin, 2003; Vredenburgh, 2002). By distinguishing different kinds of communication approaches and the respective mechanisms involved in their relationship to safety, as was done in Study II, it becomes possible to gain an increased understanding of the ways in which leader communication can be related to safety.

Considering that the two investigated leader communication approaches to some degree are characteristic of different kinds of leadership styles, the results from Study II can also be related to general leadership research. Although some top-down communication of safety priority, values, and directives occurs even among leaders utilizing transformational leadership, this kind of mainly one-directional communication is primarily considered to be a characteristic of transactional leadership. Feedback communication, on the other hand, can be considered to be more closely associated with transformational leadership than with transactional leadership (at least with respect to the conceptualization of MBEA in MLQ), in that it often involves a more relational and interactive element (Avolio & Bass, 2004; Bass, 1985). When it comes to these connections between communication approaches and leadership styles, previous research gives support for the types of relationships proposed in Study II. Several studies have shown that transactional leadership is more closely related to safety compliance than to transformational leadership, while transformational leadership has been found to be more closely related to employee safety behaviors similar to OCB, such as safety participation (Clarke, 2013; Inness et al., 2010). This pattern is also partly supported by the findings in Study I, in that transformational leadership was positively related to safety initiative (cf.
OCB), while transactional leadership was slightly negatively related to this behavior.

A plausible reason for feedback communication being related to OCB and safety participative behaviors is due to its often bi-directional and interactive character. Most occasions for feedback communication give employees an opportunity to respond, an act of upward communication. When this kind of response from employees is encouraged by the leader, it is a good forum for employees to express their safety concerns or make suggestions for improvements, which are key aspects of OCB (Hofmann et al., 2003; Organ, 1997). This reasoning is supported by evidence showing that the willingness to raise safety concerns tends to increase when employees feel that their managers are supportive, ready to listen, and open to their ideas regarding safety issues (Mullen, 2005). In addition, when feedback communication contains elements of bi-directionality, it is often appreciated by the employees because it is seen as a sign that management is interested in their suggestions and opinions, and concerned about their individual well-being (cf. the transformational dimension individualized consideration; Bass, 1985). Results from a study by Zohar (2002a) also indicated that those leadership dimensions associated with greater concern for group members’ welfare, arising from closer, individualized relationships, were associated with perceptions of a more positive safety climate and, consequently, safer behaviors.

The conclusions regarding the importance of a relational and interactive communication for employee willingness to perform citizenship behaviors is also supported by other related leadership theories, such as the theory of leader–member exchange (LMX; Graen & Uhl-Bien, 1995). According to this theory, a highly interactive exchange process between leader and subordinate is held to encourage a more open and positive atmosphere and promote a positive employment experience for the subordinate. Thus, a high-quality leader–member exchange may give employees an increased sense of obligation to reciprocate the high-quality relationships in ways that will benefit the leader, coworkers, and the organization itself (Settoon, Bennet, & Liden, 1996; Wayne & Green, 1993). One way in which subordinates can reciprocate these relationships is by enlarging their roles to also include behaviors beyond those formally required, such as engaging in citizenship behaviors. In this sense, engaging in organizational citizenship behaviors would be a way for subordinates to “pay back” their leaders for their high-quality relationships (Hoffman et al., 2003; Settoon et al., 1996).

In line with Study II, previous research has also found that one-way communication of safety values and priorities is essential for safety (Dahl & Olsen, 2014; Zohar, 2002a; Zohar, 2010). Relatedly, in Study I, the extent to which leaders emphasize the value and priority of safety (i.e., a safety-specific leadership) was identified as the most important predictor of both safety compliance and safety initiative. It would therefore be reasonable to
conclude that when a leader’s focus and emphasis on safety issues are communicated through a more or less one-directional message from leader to subordinate, it is likely to result in increased employee safety compliance, but when the emphasis on safety is communicated through more interactional feedback conversations, it may lead to increased OCB (including safety initiative behaviors).

Safety compliance has been shown to be a key factor in achieving workplace safety (Fleming, 1999; Mearns, Flin, Fleming, & Gordon, 1997; Neal & Griffin, 2006; Probst, 2004). Since the reporting of incidents is considered an essential tool in the efforts to increase patient safety within healthcare (Barach & Small, 2000), compliant safety behavior can be assumed to also include adherence to regulations regarding reporting. This assumption is supported by the findings in Study II, indicating that employee safety compliance is a predictor of incident reporting. As the results imply, a high degree of OCB adds to the variance explained in reporting behaviors, presumably due to the sense of personal responsibility that typifies individuals high in OCB.

The results of Study II, which indicate that employee safety behaviors (compliance and OCB) function as a mediating mechanism between leader communication and safety, could have important implications when it comes to explaining ambiguities in previous research regarding the relationship between leadership and injuries/accidents. For example, it is probable that finding only one rather weak association between leadership styles and injury frequency in Study II was due to this mediating role of safety behaviors. Based on the finding that employee safety behaviors function as mediating mechanisms between leader communication approaches and safety outcomes, it can be concluded that leader behavior is a key factor in predicting safety outcomes, but that this influence is likely to work through the subsequent safety behaviors of the subordinates. It can also be concluded that in order to achieve as high a degree of safe behavior as possible among employees, leaders should adopt communication approaches that involve both engaging in feedback communication with employees and expressing that safety is a priority.

Managing safety through rewards

It is becoming increasingly common for organizations to make use of staff bonus systems. The rationale is that employees will improve their performance when they are offered rewards for achieving particular goals. However, in accordance with psychological theories such as cognitive dissonance theory (Festinger, 1957) and self-determination theory (Ryan & Deci, 2000), research has found that while financial rewards can be beneficial for quantitative and simple tasks, it tends to be detrimental to
intrinsic motivation and to the performance of more complex and qualitative tasks that require a higher level of judgment, problem solving or creativity (e.g., Amabile et al., 1986; Jenkins, Gupta, Mitra, & Shaw, 1998; McGraw, 1978). Considering the complex work situations of employees in many high-risk organizations, such findings suggest that bonus systems might pose a risk to safety through the emphasis on fast production instead of enhancing qualitative problem solving. Despite this, there is a lack of research on the impact that these bonus systems can have on safety in high-risk organizations.

The third objective of the thesis was to contribute to an increased understanding of whether and how the implementation of staff bonus systems in high-risk organizations can potentially have an impact on employee motivation for safe performance. In Study III, which examined the bonus systems at three nuclear power plants by interviewing the employees at each plant, there was no indication that the bonus systems posed any notable threat to safety. Due to the low bonus amount offered and the perceived lack of clear links between performance and reward, the systems were generally not considered by the employees to have much impact on their behavior at all. This is in line with motivation theories such as goal-setting theory (Locke & Latham, 2002), which suggests that goals have to be clear, specific, and attainable in order to be motivating. The results also correspond with equity theory (Adams, 1965), which points to the importance of having a perceived balance between the additional effort that an individual puts into a task and the value of the subsequent reward. Based on these theories and the results from the interviews in Study III, it might therefore be suggested that in order for a bonus system to have any incentivizing potential, differences in employee performance should be distinguished by larger variations in the subsequent rewards, and the maximum amount receivable should be higher than it was in the studied organizations. However, research has shown that the greater the pay disparity within a group or organization, the lesser the job satisfaction, product quality, productivity, and collaboration among employees (Pfeffer & Langton, 1993; Cowherd & Levine, 1992). In order to implement an effective bonus system, the challenge may therefore lie in achieving a balance between high reward incentives and perceived justice in the distribution of rewards.

In fact, the importance of a bonus system being perceived as fair when it comes to its design and its distributional principles emerged as a theme in the literature review and in the interviews with employees. The results of Study III showed that feelings of injustice associated with bonus systems may give rise to negative attitudes towards the system in general and also potentially lead to conflicts with other individuals or groups. This, in turn, could carry with it a potential threat to safety in high-risk organizations, as counterproductive work behaviors could emerge following feelings of anger.
and frustration (Cohen-Charash & Mueller, 2007; Gruys & Sackett, 2003; Jones, 2009). In relation to this, the findings of study III also revealed that the bonus system with individual goals was the one perceived as most unfair, while the system with only collective goals was perceived as most fair. This indicates that the organizational level at which the goals are directed might be crucial for the functioning of the system. Nevertheless, even though the employees at the plant with only collectively based goals were most satisfied with their system, this kind of design might still not be ideal from an organizational perspective. This conclusion is based on the finding that the employees were not notably knowledgeable about the criteria of the bonus goals and did not perceive themselves as being able to affect the bonus amount, which would presumably lead to a very low degree of incentive towards the bonus. Regarding the system with group-based rewards, the results revealed that the employees perceived the goals to be fair and were also content with the overall bonus system design. Furthermore, they perceived a clearer connection between their own actions and the subsequent reward than did those at the other plants. However, the interviewees indicated that their satisfaction with the bonus system was due to top management’s clear emphasis on what areas were being prioritized. One important conclusion from Study III is thus that safety behaviors may be promoted by a bonus system insofar as the bonus rewards are closely linked to performance goals concerning safety. This conclusion is in line with previous claims that one of the main functions of organizational incentives could be their role in communicating what is prioritized in the organization (Pfeffer, 1997). In addition, Study III’s finding that goals have a communicating role accords with the results from Studies I and II in stressing the importance of managers and supervisors explicitly communicating that safety is a priority within the organization. The results from Study III thus suggest that a bonus system, if properly designed and implemented, can be a beneficial tool for this kind of safety-related communication.

Group-based rewards might therefore be a good compromise by helping to prevent unhealthy competition and feelings of unfairness while at the same time providing the employees with an awareness of what is prioritized and a clear connection between their own performance and the subsequent rewards. This conclusion is supported by previous research claiming that bonus systems should use group-level goals rather than individual-level goals. For example, a meta-analysis by Condly et al. (2003) showed that team-directed incentives had a significantly superior effect on performance compared to individually-directed incentives. When it comes to rewards in relation to safety, there is also research-based support for the benefits of rewarding behaviors that go beyond individual-level safety. A study by Fox, Hopkins, and Anger (1987) revealed that employees who were rewarded for
working safely as a group, rather than only on an individual basis, experienced significantly fewer injuries.

It is not only the principles and practices associated with the distribution of rewards that can be perceived as unfair however. Feelings of injustice can also be a consequence of conflicting goals within the bonus system or within the organization as a whole. When a bonus system is designed without taking into consideration how the various goals could affect each other on a systemic level, it is not unlikely that the goal achievement of one group could unintentionally hinder the goal achievement of another group – which could give rise to internal conflicts (McLain & Jarell, 2007; Miozza & Wyld, 2002). Not properly considering the interrelatedness of goals could also result in general organizational objectives seeming at odds with each other, such as a perceived conflict between production- and safety-related goals (Kenny, 1995). At one of the plants, the results indicated that the fulfillment of individual bonus goals was in conflict with the completion of ordinary tasks. This may suggest that the more trivial tasks associated with bonuses were prioritized instead of the more essential tasks related to the functioning of the plant, which may have had consequences for safety. This is often a question of what behavior is rewarded. When most of the rewards are for behaviors related to production, there is a risk that safety will be compromised in favor of speed and quantity (Kaminski, 2001; Probst & Graso, 2013). However, interrelated goals can lead to problematic consequences even when the bonus system is focused on rewarding safety. When the achievement of a certain goal is rewarded instead of the behavior leading to that goal, there is a risk for the occurrence of unintended and undesirable behavior among employees. One example of this is when rewards within safety bonus systems are based on reductions in injury and accident frequency, since it has been shown that this design may promote underreporting by encouraging employees to not report minor events or injuries that would affect their compensation (Pransky et al., 1999). Even though none of the bonus systems in Study III seemed to link the rewards to reduced injury rates, the fact that production was rewarded to some extent within the bonus system could potentially pose a risk to safety due to conflicting goals. The finding that employees perceived a conflict between bonus goals and ordinary tasks when individual goals were utilized might be an indication of such a safety-compromising goal conflict being present at one of the plants.

The use of bonus systems in high-risk organizations can also be related to issues concerning leadership. The link between a bonus system and transactional leadership can be assumed to be strong, since this kind of leadership is mainly focused on monitoring employees’ compliance to rules and regulations as well as on reinforcing these behaviors through rewards and/or punishments. The apparently weak impact of the bonus systems on behaviors in Study III is somewhat in line with Study I’s finding that active
transformational leadership showed no associations with, or in some regards even negative associations with, factors for improved safety. One reason why the results in the present thesis indicated that rewards and transactional leadership were only weakly or negatively related to safety, despite some previous research finding contradictory results, might be that contingent rewards and transactional leadership are relatively situation and resource dependent. For example, it has been claimed that rewards and transactional leadership are less likely to be effective and even possibly ineffective for positively affecting performance in ambiguous or stressful situations (Pfeffer, 1997). A study by Judge and Piccolo (2004) revealed that contingent rewards had the most positive effects in business settings (compared to college, military, and public sector settings). This is assumed to be due to the leaders being better able to provide tangible rewards to employees in exchange for their efforts in a business context. In environments with more complex goals and where tangible resources are scarcer, however, contingent reward leadership is considered to be less effective. Since transformational leadership is focused on increasing commitment, stimulating initiatives, and enhancing performance through less tangible rewards related to feedback, appreciation, concern, and participation, it is held to be less dependent on the access to resources and more appropriate in complex environments (Judge & Piccolo, 2004; Pfeffer, 1997). Considering that many high-risk organizations are characterized by a high degree of complexity, it could thus be concluded that the implementation of bonus systems in such organizations might not be the most appropriate means of achieving enhanced employee performance.

In sum, the results from Study I imply that even though the degree of incentive elicited from bonus systems can be regarded as relatively low, the differences in design, when it comes to, for example, the criteria for the goals (what is rewarded), the level at which the goals are directed, and principles behind the feedback and distribution of rewards, resulted in variable degrees of effectiveness of the bonus systems at the plants. This highlights the importance of taking system design as well as potentially interrelated goals into careful consideration before implementing a bonus system in a high-risk organization.

Methodological considerations

A number of methodological issues need to be taken into account when evaluating the contribution and validity of the findings in the present thesis. To start with, one potential methodological limitation of the studies concerns the fact that they are all based on cross-sectional data. The disadvantage with this kind of data is that since the information is only derived from a single time-point, causal inference cannot be made (Bollen, 1989). This implies
that it is not possible to draw conclusions about which variables are affecting other variables. The possibilities of determining causality can be enhanced by studying changes in the variables of interest and their relationships over time. One way of doing this is by the use of a cross-lagged longitudinal research design where data is collected on two or more occasions (Kenny, 2005). Even though the cross-sectional (one time-point) studies most commonly conducted within occupational safety research are not suitable for conclusions about causality, this kind of study can still contribute considerably to our knowledge and understanding of the relationships and associations between organizational variables. Cross-sectional studies can be especially useful when it comes to filling in research gaps and when the research objective is to identify hypothesized relationships prior to testing them in more thorough longitudinal research that could provide additional information regarding causality (Mann, 2003; Spector, 2006). Since relatively little research has been carried out on how safety leadership and incentive systems are related to safety, a cross-sectional study design may be considered an acceptable alternative to a longitudinal design in this case. Nevertheless, future research within this area would benefit from the use of a more rigorous longitudinal design in order to further investigate the relationships identified in the present thesis.

The fact that both of the studies that investigated leadership characteristics only relied on self-report questionnaires for data collection might also be considered a limitation due to the risk for mono-method bias in the results. Mono-method bias implies that a result is an effect of variance attributable to the measurement method rather than to the constructs the measures represent (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). One way to handle this kind of bias is to collect the measures of predictor and criterion variables from different sources (Campbell & Fiske, 1959). With regard to the leadership studies in the present thesis, this could, for instance, involve obtaining measurements of leader behaviors from subordinates and measurement of the subordinate’s safety performance from the leader. Despite the advantages of this approach, there are several reasons for this method not always being feasible in research. One issue concerns the difficulties of linking the different sources of data together, since it requires an identifying variable (e.g., names of supervisor and subordinate) (Podsakoff et al., 2003). In the case of the present thesis, this kind of identification has not been possible due to reasons of anonymity. In addition, recent research has shown that correlations between variables based on the same method are quite accurate in estimating true-score relations, thus indicating that the impact of mono-method bias might not be as severe as previously suggested (Conway & Lance, 2010; Lance, Dawson, Birkelback, & Hoffman, 2010). It should also be noted that although there are some similarities in the methods used in the three studies, the thesis has the advantage of including studies based on three different samples and
conducted by both quantitative (in the form of questionnaires) and qualitative methods (in the form of interviews and documents).

The use of self-reports as the main measurement method in the thesis may also be considered a limitation of the present thesis due to the risk for social desirability bias. This kind of bias implies that responses are systematically affected by a need for social approval and a tendency to present oneself in a favorable light (Crowne & Marlowe, 1964; Podsakoff et al., 2003). Instead of self-report data, a more objective measurement method of outcomes is often recommended, such as archive or register data. In the area of safety research, register data on organizational injury and accident rates has often been used as a criterion for workplace safety (Shannon et al., 1997). However, safety statistics of this kind are associated with a number of methodological problems. Firstly, the relatively rare occurrence of injuries or accidents (notable enough to be reported) results in low base rates and a very skewed distribution of outcome data (Christian et al., 2009; Frone & Barling, 2004; Zohar, 2000). Secondly, injury and accident rates have been shown to be greatly affected by problems associated with underreporting (Eisenberg & McDonald, 1988; Probst & Estrada, 2010), which has led to this kind of data being considered unreliable and unstable as a criterion measurement of safety (Cooper & Phillips, 1994; DeJoy, Schaffer, Wilson, Vandenberg, & Butts, 2004; Hopkins, 1995). Research comparing independent observations, supervisor reports, and self-reports of accidents and unsafe behaviors also provides evidence that self-reports are a reliable measure of safety, since they have been shown to be highly correlated with independent observations (Lusk et al., 1995). Given these findings, self-reports of safety behaviors and injuries can be considered a relatively accurate measure of safety.

Considering the potential problems associated with accident and injury data, the measurement of injury frequency in the present thesis has been based on questionnaire self-ratings by the employees, instead of official injury registers. By ensuring the confidentiality of the questionnaire-based self-reports on injuries, an increased willingness to be open about safety problems can be expected as there is no risk of retaliation from the organization in this regard, which lessens the likelihood of underreporting (Probst & Graso, 2013).

Further, in order to reduce the distributional problems associated with accident and injury data, measures of minor injuries in addition to major injuries were utilized in Study I, and in Study II a composite measure comprising minor, major, and near incidents was used. This has been a recommended method for handling these methodological challenges (Barling et al., 2002; Hemingway & Smith, 1999; Zohar, 2000), though rarely used together in previous research.

The studies in the present thesis have also used safety behaviors as a criterion variable for workplace safety. Measures regarding employees’ safety-related behaviors, including behaviors regarding maintaining safety
(e.g., complying with safety procedures), coping with hazards (e.g., handling errors once they have occurred), reporting incidents, and taking a proactive approach toward safety, are becoming more common in safety research (Griffin & Hu, 2013). This is due to their more normal base rate and distribution, which recommends them as more appropriate and accurate measures of safety than accident and injury rates (Christian et al., 2009). In sum, several precautions have been taken in the present thesis to reduce the potential methodological problems that are common in the area of occupational safety research. Nevertheless, future research within the area would benefit from the use of multiple sources of outcome data in order to keep method biases in check, such as those associated with common method variance and social desirability.

The fact that all three studies in the thesis have been carried out in Sweden could affect the possibility of generalizing the results to other countries and cultural contexts. For example, it could be the case that the finding that practices and leadership styles of a transactional character had no direct positive effects on safety, in Study I and III, had been influenced by Swedish work life norms and politics (see e.g., Employment (Co-Determination in the Workplace) Act 1976:580, 2011). In Sweden, which has a tradition of emphasizing worker participation and autonomy, attempts to monitor and control behavior through leadership or reward systems might be seen as manipulative. The possibility of these kinds of behaviors and practices being seen in this manner has also been pointed out in previous research (Walker, 1998). However, considering that many countries have similar views to Sweden’s regarding the benefits of workplace characteristics such as participation and autonomy, the results can be assumed to have a fairly high degree of generalizability to other countries. Nevertheless, cultural differences in how leadership styles and management practices are perceived in relation to safety would be an interesting topic for future research to further examine. When it comes to the generalizability of the findings of this thesis in terms of occupational sectors, it should be possible to a fair degree, since all three studies have been carried out in different kinds of workplace settings.

Finally, it should be mentioned that neither of the two leadership studies (Study I and Study II) distinguished between whether the supervisor or manager was at a high or low organizational level within the hierarchy. That is, the role of leadership style and practices was investigated regardless of whether it referred to leadership on a high or low organizational level. Considering that previous research has found the relationships between both transformational and transactional leadership and effectiveness to be moderated by the level of the leader (high vs. low) in the organization (Lowe, Kroeck, & Sivasubramaniam, 1996), further research investigating such a potential difference due to hierarchical level when it comes to safety-related outcomes is warranted.
Implications of the results and suggested future research

Despite some potential limitations of the thesis, a number of conclusions can still be drawn based on the results. The findings can be held to have certain general implications of both theoretical and practical relevance for the management of workplace safety. In the following sections, some of these implications will be discussed along with suggestions regarding potentially fruitful areas to focus on in future research within the field.

Theoretical implications

By using several different approaches to examine a number of organizational variables associated with managerial practices, leadership, and safety in different settings, the thesis has helped expand our understanding of the relationships between these variables and the ways in which leadership and managerial practices can affect workplace safety. There is still, however, a lot of research left to be done in order to reach a more comprehensive understanding of the processes involved in achieving a safe workplace. To take research within the area a step further, it is essential for future studies to take the complexities and interrelations within an organization into account in order to better understand the antecedents and mechanisms involved in achieving workplace safety.

One such complexity concerns the fact that an individual’s behavior may be simultaneously influenced by many different factors, such as organizational culture, communicational climate, compensation policies, team norms, and management values and practices. When employees find themselves in situations where there may be a choice between striving towards goals that emphasize safety or profitability, these various influences may affect how they act. In this context, leadership approaches and managerial practices play important roles in clarifying priorities and communicating safety values. This is supported by the findings in the thesis which suggest that managers’ and supervisors’ actively focusing on, emphasizing, and communicating the importance of safety is more closely associated with positive safety outcomes than either transactional or transformational leader behaviors. It has been theorized that any potential positive effects of transformational leadership might be due to behavioral elements emphasizing safety rather than the transformational leadership itself.

The findings also indicate that transactional leadership and management practices based on transactional principles, such as bonus systems, have only weak or slightly negative effects on employee safety behaviors. However, it could be argued that a transactional management approach might still be beneficial if it is accompanied with constructive feedback and a clear communication of safety being a priority. One way of doing this is to set up,
emphasize, evaluate, and reward the achievement of realistic and specific goals concerning safety along with other important organizational goals. However, this is an area within safety research that still needs further examination. Considering the often negative wordings and definitions of transactional leadership in existing leadership research, focusing mainly on controlling and correcting behaviors, there is a need for more nuanced investigations of the potential impact that a more positive, clear, and communicative type of transactional leadership can have on safety. Such leadership would involve leader behaviors such as setting clear and realistic goals, encouraging positive employee behaviors, measuring performance, and providing employees with feedback (and sometimes rewards) on how well they are achieving their goals. The fact that previous research (Clarke, 2013) using this more positive approach to transactional leadership has indicated that its influence on safety might be positive implies that this leadership style and its relationship with safety might depend on the ability of the leader to communicate safety values and well-defined goals in a constructive manner. An implication of this reasoning is that the communication approach utilized by the leader and emphasizing safety values might be more crucial for the enhancement of workplace safety than any particular leadership style.

The situation is similar with regard to the criticism directed towards incentive programs in relation to safety. The lack of positive effects that incentive programs have been found to have on performance in some previous studies (Marsden & Richardson, 1994; Pearce, Stevenson, & Perry, 1985) might have been due to an absence of clearly defined and communicated goals and to systemic deficiencies regarding performance follow-ups, feedback, and the distribution of rewards. In fact, the finding in the present thesis that these design characteristics are crucial for how well bonus programs affect performance implies that managerial practices involving transactional elements might be beneficial for safety as long as they are characterized by a continuous communication of clearly defined safety goals and the distribution of rewards is closely linked to the level of goal attainment. Still, considering the relatively small amount of empirical research that has been conducted on the effects of incentive programs on safety, more longitudinal and interventional research is needed which examines these design factors in order to draw more definite conclusions on their impact on safety. In addition, even though the present thesis provides evidence for the importance of certain design factors for achieving safe work behaviors, research is still lacking on the impact that other kinds of incentive programs, such as merit pay plans and stock sharing systems, may have on safety.

Another finding of this thesis is that none of the examined leader behaviors were to any notable extent directly associated with safety outcomes such as injury frequency or patient safety. This is also in line with
several previous studies (e.g., Hoffmeister et al., 2014). However, the results from Study II suggest that previous studies (including Study I) may not have been able to find this relationship because of the mediating effects of employee safety behaviors. The findings revealed that both safety compliance and organizational citizenship behavior (cf. safety initiative) mediated the relationship between leadership communication approaches and reporting behaviors, which, in turn, was associated with patient safety. This implies that the relationship between management and leadership practices and injury and accident outcomes is more complex than had previously been thought. Thus, future studies investigating the relationships between leadership and safety outcomes should consider the interacting mechanisms in order to capture a more complete picture of what influences workplace safety.

Practical implications

The results from the three studies that suggest the crucial roles that managerial practices and leadership have for the achievement of enhanced safety also have important practical implications. In order to enable a safety-enhancing process within an organization, management practices should aim at providing the right organizational prerequisites for employees to adopt a positive attitude towards safety issues. By continuously emphasizing that safety is a priority and encouraging the integration of safety considerations in all activities, an increased awareness and attention to safety issues is likely to characterize behaviors throughout the organization.

In communicating the importance of safety within an organization, the results from the thesis imply that leaders should make use of downward communication to convey safety values as well as more bi-directional feedback communication with their employees. Safety priority communication and feedback communication can be seen as constituting complementary approaches for influencing safety behaviors and safety outcomes. While leader safety priority communication is essential for signaling what is valued and rewarded within the organization and, consequently, mainly affects employee compliance to rules and regulation, feedback communication provides an occasion for leader–subordinate interaction, learning, and improving employee motivation for safety initiatives (cf. Clarke, 2013; Griffin & Neal, 2000; Griffin & Hu, 2013; Humphrey, 2012; Michael et al., 2006). By utilizing both of these communication approaches, managers and supervisors can improve their possibilities of bringing about increased employee compliance to safety regulations and increased workplace safety through employee initiatives and safety-related activities.

When it comes to feedback, it does not only have a vital function as a means of communicating information about individual performance but also
as a means for the employee to provide leaders with information (i.e., upwards communication). The reporting of accidents, injuries or other unsafe occurrences is one kind of upward feedback, which previous research (Hutchington et al., 2009; Smits et al., 2012) and the present thesis have found to be important for safety. The close relationship between incident reporting and safety found in the present thesis suggests that efforts should be made to improve routines and practices that encourage employees to report incidents. Underreporting and the suppression of information that is vital for safety improvements have been associated with blame culture, a type of culture where employees fear retaliation and disciplinary actions as a consequence of reporting an unsafe event or acting in an unsafe manner (Webb et al., 1989). In a blame culture, where a reduction in the number of accidents and injuries is rewarded, there is a risk that employees will avoid reporting all such negative experiences to their supervisors. Most organizations today strive towards creating a no-blame culture, which encourages reporting as a means of improving workplace safety (Turner, 1991). By encouraging and rewarding safety behaviors such as the reporting of incidents, rather than just looking to reduce the number of incidents, a no-blame culture may be achieved; this can also serve the purpose of conveying that the safety of employees truly matters – as opposed to potentially giving the impression that top management is only concerned with demonstrating low injury rates (Hale, 2000; Pidgeon & O’Leary, 2000). Drawing from the findings in the thesis, it is suggested that leadership and managerial practices such as incentive systems in high-risk organizations can have vital roles in this process by emphasizing the focus on safety on a daily basis and using various non-conflicting approaches in communicating and rewarding these safety values, priorities, and reporting routines.

Since employees are affected by the functions of organizational systems, including human resources, production systems, and top management, consideration should be given to the connections between these systems in regard to leadership and the implementation of safety-related management practices. In the planning and implementation of safety practices or interventions, it is thus vital to carefully align the goals, values, and perceptions in each of these systems in order to achieve the best possible effect and avoid being met with active resistance (Sinclair & Tetrick, 2004). This reasoning is supported by the findings in the present thesis, especially in regard to the design of effective bonus systems. The present thesis also indicates that practices aimed at improving safety may be undermined if employees perceive that other organizational goals conflict with safety goals, given that management does not clearly communicate that safety is highly valued and prioritized. It is therefore important for management to be aware of and to try to prevent potential problems associated with competing organizational goals – while consistently stressing the importance of safety in the daily communication with the employees. In order to be successful in
these efforts, safety management practices should preferably be considered as part of a larger HRM system in the organization.

Concluding remarks

The increasing numbers of workplace injuries and accidents in many countries around the world has led to many negative consequences, not only for the individuals involved in the accidents but also for the organizations and society, especially in terms of higher expenses and damaged legitimacy (International Labour Organization, 2014; Health and Safety Executive, 1997). As a result, work environment issues have become an area of increasing concern for employers and politicians as well as researchers. However, most of the work environment research has mainly focused on poor physical or psychosocial factors affecting individual health and wellbeing (Clarke & Cooper, 2004). In order to achieve workplace safety, however, the responsibility of employers to provide the right prerequisites for employees to behave safely is vital. Organizational factors affecting working conditions and the occurrence of accidents and injuries have therefore gained increased research attention. The aim of the thesis was to contribute to a better understanding of how leadership and management practices can influence safety in organizations. The main findings from the thesis highlight the importance of taking managerial practices and leadership behaviors into consideration in the work towards improved safety. More specifically, the results show that an active emphasis on and communication regarding safety-related issues through leadership and managerial practices is associated with enhanced employee safety behaviors, regarding incident reporting, safety compliance, and safety initiative. In addition, by engaging in both one-way communication to express safety values and personalized feedback communication with subordinates, managers and supervisors can improve their chances of positively affecting employee safety behaviors.

Another general conclusion from the results in the thesis concerns the apparent interrelatedness of issues regarding leadership, communication, and managerial practices in an organization, which highlights the benefits for top management of adopting a systems view in their efforts to enhance workplace safety. In adopting a systems perspective, researchers and practitioners are encouraged to view safety-related issues as part of larger organizational context. This view of the more overarching context in which workplace hazards might arise is essential in order to identify the root causes of safety problems and the most appropriate preventative actions. In order to integrate safety-related issues into the larger context of an organization, it is essential for leadership and managerial practices to be characterized by both systemic and a safety-oriented approaches.
References


