Assessing the "Leading Indicators" of Safety Climate in the Shipping Industry

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May 2008

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Abstract

Safety climate is generally acknowledged to be an important concept in order to reveal the level of safety within an organization. However, there is a lack of consensus regarding the underlying dimensions of safety climate. Moreover, there is an overall lack of agreement concerning the stability of safety climate dimensions over different industrial sectors.

Interview data from 30 employees within a shipping company was compared with the dimensions of a generic safety climate model (SCM) to assess the sensitivity of interviews in capturing safety climate relevant information. Additionally, the safety focus in the company was assessed.

About 80% of the descriptive information in the interviews was found to be in accordance with the dimensions identified in the SCM. Among the remaining 20 % residual it was possible to identify four dimensions of relevance to safety, beyond the scope of the SCM. Accordingly, interviews were found to be a sensitive method in capturing theoretically sound information regarding the safety climate concept. The topics reflected upon in the interviews indicated that the safety focus in the company was mature. However, the evaluations connected to these topics indicated a clear tendency to attribute negative and person- focused safety issues at the organizational sharp- end. Methodological, theoretical and practical implications of the results were discussed.

Introduction

Understanding the factors that reflect the level of safety within organizations has been, and still is a primary concern within safety research. Current researchers have been giving increased attention to the role of human and organizational factors when measuring safety systems (Hofmann & Morgeson, 1999). This follows from several stages of theoretical development which culminated in what Hale and Hovden (1998) refer to as the "sociotechnical" stage during the 1990's. It represents a movement away from viewing safety exclusively as an engineering problem or exclusively as a human error problem (Hale & Hovden, 1998; Flin, Mearns, O'Connor, Bryden, 2000). As Dekker (2006:159) puts it: "*A human error problem is an organizational problem*". The main point with this statement is that human error evolves within an organization, and in large part, is created in the organization where people work (Dekker, 2006). Safety is a result of cultural, organizational, and contextual factors that again create attitudes and behaviours which, in turn, influence safety. This change of focus is reflected in the research on safety climate and culture which expanded during the 1990s (Guldmund, 2000). The concepts of safety climate and culture have been launched as an attempt to identify the specific traits which reflect the level of safety within organizations. As such they can be described as "leading indicators" because they can be used to identify potential problems before they are realised as accidents or incidents (Mearns & Håvold, 2003). One of the core ideas in safety climate research is that safety systems can be evaluated by measuring the perceptions and evaluations that employees have with respect to safety in their own organization (Zohar & Luria, 2005).

The present study addresses these "leading indicators" within a Bermuda based shipping company. The purpose of the study is twofold. The main purpose is to investigate current conceptual and methodological questions regarding the safety climate concept. Additionally it combines theories on human error, and theories of safety climate, to illuminate the degree of maturity of the safety perceptions among the employees in the respective company. This will hopefully provide interesting results of practical character for the company in question.

In the following sections, theories on how organizations typically fail when attributing causes and solutions to human error will be presented. Subsequently, safety climate research is reviewed, focusing on current conceptual as well as methodological questions. These questions will be connected to the study at hand.

Attributing causes and solutions, the sharp and the blunt end of an organization.

In the wake of negative incidents one naturally wishes to identify the contributing causes. However, if successful safety interventions are to be developed the underlying causes have to be accurately identified. Unfortunately, there is a tendency in accident investigations to seek both proximal and individual causal connections (Hofmann & Stetzer, 1998). Reason (1997) argues that the answer as to why we are so ready to blame individuals rather than situations (the fundamental attribution error) partly lies in the "illusion of free will". Especially in the western culture people place great value in the belief that people decide their own fate. When people are given accident reports to read and judge which causal factors that were the most avoidable, they almost invariably identify the human factors. Human explanations seem less constrained and fixed than any of the organizational or situational contributions (Reason, 1997). According to Dekker (2006), another tendency is to focus on the people closest to producing or potentially avoiding the mishap. The failure or the weakness is seen as something local, as a problem that includes maybe a group or a couple of individuals that do not behave according to established policies or procedures etc. (Dekker, 2006; Hollnagel & Woods, 2005). Accident investigations often start with the assumption that the operator has failed, and if such attributions can be made the investigations are not continued (Hollnagel & Woods, 2005).

Within a shipping company, the vessels constitute the sharp-end of the organization, and it is reasonable to characterize the crew aboard as the "safety- performing" unit. By this it is meant that the vessel represents the place where people are in direct contact with the safety-critical process, safety hazards and possible accidents or incidents. It is here that accidents physically take place, and it is here where the last and final mistakes are made. The blunt- end of an organization, which in the present study would represent top and mid- level management, is the set of an organization that supports, drives and shapes activities in the sharp- end. They provide the sharp- end with the necessary resources to accomplish what it needs to accomplish. At the same time it imposes constraints or pressures.

Looking for sources of weaknesses far away from people at the sharp- end could be counterintuitive and also threatening (Dekker, 2006). If you find sources of failures at the blunt end, this may question the safety of the entire system, and this will challenge previous views. It may indicate that the system is not that well organised or well designed as people had hoped (Dekker, 2006). Thus, human error can either be seen as the cause of a mishap or it

can be seen as a symptom of deeper trouble. The latter would, according to Dekker (2006), represent the "new view" of human error, and such an approach would reveal that human error is systematically connected to the operational and organizational environment of an organization. The "old view" would be to perceive human error as the cause of trouble.

However, in some organizations people are willing to challenge their existing beliefs about safety as knowledge and theory develops, although this might seem threatening. This is what Argyris (1990) refers to as "double loop learning", and it is within these organizations where learning occurs and where it is possible to create changes for the better (Dekker, 2006). This stands in contradiction to "single loop learning" which involves solving problems within the frame of existing beliefs and policies. The specific problems one focuses on will disappear, but the source of the problem will remain (Argyris, 1990).

Schroder (1970) suggested that measuring employee attitudes towards safety could be a useful form of safety measurement, arguing that the more mature the safety attitudes of employees, the more likely they will search for safer environments, and unsafe behavior will decrease accordingly. Consequently, one might expect that the safety reflections in a "mature" organization would resemble the "new view" of human error, where failures and weaknesses are not only identified in the sharp- end of the organization and connected to situational circumstances.

Safety climate research focuses on the perceptions of the employees and it represents the recognition of the distinction between organizational failures at the sharp- end and at the blunt- end (Hollnagel & Woods, 2005).

Theoretical development of safety climate/ culture.

The terms safety climate and culture have their origin in the more global terms organizational culture and climate, which gained much attention in the 1970s and 1980s (James & Jones, 1974). They evolved as a result of the wish to obtain an overall "helicopter view" of one's organization (Guldenmund, 2000). The terms organizational culture and climate have already been reviewed and discussed (James & Jones, 1974, Schneider, 1975). What becomes clear from the discussions is that some of the debated themes are equally relevant and have had direct implications for the development of the terms safety culture and safety climate. This is with special regard to the ongoing discussion about the distinction between climate and culture, and whether they should be treated as global or specific terms.

Culture vs. Climate. Many attempts have been made to define the distinction between the two concepts. Glick (1985) states that research on climate has mainly evolved from social

psychological research, while culture descends from social anthropology. Hofstede (In Guldenmund, 2000) separates the two terms by claiming that organizational culture is something that top- management deals with, while climate is of importance for lower or mid-levels in an organization. According to Schneider (1990) climate represents the descriptions of what happens with employees in an organization, while culture exists on a higher level of abstraction. Both Schein (1992) and Guldenmund (2000) argue that climate is the reflection and manifestation of cultural assumptions. According to Patterson, West, Shackleton, Dawson, Lawthom, Maitlis, Robinson and Wallace (2005) organizational culture could be measured by asking employees about why the organization operates the way it does. As such, measurements of culture would aim at gathering information on why certain norms for behaviour exist, their legitimacy, not just descriptive information about the status- quo. Despite the disagreements there seems to exist some kind of consensus on treating culture as a global, integrating concept underlying most organisational events and processes, while climate has come to mean the overt manifestation of culture within organizations (Guldenmund, 2000).

Global or specific? Another debated theme has revolved around whether the term climate should be approached as a global or specific term. Zohar and Luria (2005) claim that organizational climate, historically has functioned from an "all inclusive" to a more "domain specific" concept. As such, it is possible to investigate climate on several levels. Schneider (1990, 1975) proposes that the term organizational climate should describe an area of research rather than a specific organizational measure. He further argues that different dimensions for climate will vary according to the field of investigation. General measurements of climate will probably contain dimensions that are not necessarily of interest for each study. One should rather choose a domain- specific approach and thereby identify a specific climate of investigation, such as service climate or safety climate (Schneider, 1990). In this spirit the concept of safety climate was developed (Zohar 1980).

Safety Climate

The concepts safety climate and culture are subject to the same discussion as to the discussion of organizational climate and culture, with the latter denoting attitudes to safety within an organization, and safety culture referring to strong convictions or ideas underlying safety attitudes (Guldenmund, 2000; Mearns, Whitaker, Flin, 2003). Flin et al (2000) states that safety climate can be regarded as surface features of the safety culture discerned from the workforce's attitudes and perceptions at a given point in time. As such, safety climate can be

interpreted as a "snapshot" of the state of safety that provides an indication of the underlying safety culture of a work group or in an organization. In other words; safety culture is assessed by measuring climate (Flin et al, 2000, O`Dea & Flin, 2001).

Zohar (1980) argues that safety climate is the set of perceptions and expectations that employees have regarding safety in their organization. The earliest located paper on safety climate was presented by Keenan, Kerr and Sherman (1951). Zohar (1980) developed the first measure after reviewing the literature and reporting characteristics which differentiated high and low accident- rate companies. Subsequently many studies of safety climate have been carried out (e.g. Glendon & Litherand, 2001; Mearns et al 2003). Among most scientists today it is becoming accepted that a favourable safety climate is essential for safe operation. A large number of studies have demonstrated that perceptions of safety climate are positively correlated with self- reported safety behaviours and that both of these variables are negatively correlated with accidents (Neal & Griffin, 2006; Hayes, Perander, Smecko, Trask, 1998; Hofmann & Stetzer, 1996; Merrit and Helmreich, 1996). Values and norms of an organization are seen to be important when it comes to priorities as well as actual behaviour (Schein, 1992). Despite the fact that it is becoming accepted that safety climate is of critical importance to safe operation, the construct seems to be in an embryonic stage. A unifying theoretical model does seem to be missing in safety climate research, reflecting the state of development within this field (Flin et al, 2000). Hence, the present study aims to address some of the current conceptual and methodological challenges within climate research. These issues will be presented in the following sections;

Methodological and conceptual challenges.

Dimensions. An initial assumption within climate research was that safety level could be characterized by a limited number of dimensions. Focus groups at worksites are used to identify particular issues concerning the workforce, and dimensions are suggested accordingly. Subsequently, factor analysis is used to identify the most important factors. Researchers have considerable freedom to label and interpret the factors in their own way, and many do not consult previous research when naming dimensions (Zohar, 2000). Thus, labelling of factors relies extensively on researcher discretion (Glendon & Litherland, 2001). The result might be that what is actually one single dimension might be labelled differently by different scientists. A dimension named "knowledge" by one researcher might be called "competence" by another. As such it is possible that similarities exist between seemingly different factor structures.

Empirically, factor analytic studies of safety climate scales suggest a hierarchical structure consisting of various first order factors and a global, higher order factor (Zohar & Luria, 2005). According to Zohar and Luria (2005) there is limited agreement concerning "first order factors" such as competence level, safety knowledge, work pressure etc. The global factor is, however, generally identified as "management commitment" and is evaluated as the core meaning of safety climate. This dates back to the early research reviewed by Cohen (1977) where management commitment was a consistent factor in successful safety programs. However, Flin et al (2000) seem to be quite optimistic in identifying a generic factor structure. In their review article of 18 published reports of safety climate surveys Flin et al (2000) identified a set of common dimensions. The selection criteria were that the sample size should be greater than 100, the report should be presented in English, and only industrial sectors should be included. The dimensions identified were as follows:

1. *Management commitment*: degree of satisfaction with management's attitudes and behaviour in relation to safety.

2. *Safety system*: perceptions of safety aspects such as management system, safety policies, safety equipment etc.

3. *Risk*: Self reported risk taking, perceptions of risk/hazards, attitudes towards risk and safety.

4. *Work pressure*: Balance between pressure for production and safety.

5. *Competence*: Perceptions of workers' qualifications, skills and knowledge, quality level of colleagues and supervisors.

6. *Procedures/ rules*: Perceptions of safety rules, attitudes to rule compliance or violation of procedures- related to risk taking behaviour. Training.

7. *Blame*: Perceptions of how blame is distributed in the wake of accidents or incidents.

8. *Organizational learning*: Perceptions of how problems are solved.

The factor structure presented above has a hierarchical order. Flin et al (2000) argue that dimensions such as "management commitment" and "risk" may be perceived as core features because they appeared in almost every single one of the studies reviewed. Dimensions such as work pressure and competence appeared less frequently. In other words, the structure is not presented randomly; it reflects the level of importance of each dimension. Flin et al (2000) further argue that it would be premature to regard the dimensions indentified as a core set of variables, akin to the "Big Five" of the personality theorists. They do, however, state that they have broad support within the safety literature for their particular taxonomy. Both

Guldenmund (2000) and Mearns et al (2003) have identified similar dimensions in an attempt to identify a generic factor structure. 50 % of the studies in the sample were from the energy/ petrochemical sector which, according to Flin et al (2000), is the leading field with safety climate scales becoming an established part of their safety management systems. However, none of the studies in Flin et al's (2000) sample were from the shipping industry. A search for literature on safety climate shows that such studies are largely lacking. Although a few papers do exist (e.g. Håvold, 2005), one might raise the question of whether there exist sufficient evidence for a generic factor structure, or whether the components of safety climate are associated with particular industrial sectors.

Global or specific? Haukelid (2001) argues that industry- specific differences are of significant importance in safety climate research. Coyle, Sleeman and Adams (1995) found different factor structures using the same safety climate scale in two Australian health care organizations and concluded that the likelihood of establishing a universal and stable set of safety climate factors was highly doubtful. Meister (1989) argues that in order to contribute to the solution of applied problems one should pay more attention to the operational settings in which the research is aiming to generalise. Given the fact that safety climate factors are a representation of the employees' perceptions of their work environment, one might question the applicability of Flin et al's (2000) structure in the shipping industry. Especially due to the fact that the sharp- end of the organization is operating aboard a vessel. Something which obviously differs from other land- based industries.

The vessel as a worksite.

The social milieu aboard a ship is unique compared to other worksites. It is like a floating factory with complex machinery and limited space, surrounded by sometimes heavy sea and bad weather. Above all, it is a society where all the necessary competence is included (Håvold, 2007). The employees both live and work with each other 24 hours a day, seven days a week. As such the vessel more or less functions as an organization on its own, independent of the organizational blunt- end. A ship has often been compared with total institutions (Aubert and Arner, 1962; Østreng, 2007). Goffmann (1961: xiii) defines a total institution as: "*a place of residence and work where a large number of like-situated individuals, cut off from the wider society for an appreciable period of time, together lead an enclosed, formally administered round of life*". Total institutions, among other things, are characterized by their hierarchy and the big differences between subordinates and superiors (Goffmann, 1961). Aboard a ship, strong traditions support centralizing control to the Captain

and the senior officers (Perrow,1999). The shipping industry is by nature international and the vessels are often manned by two different nationalities, e.g. Russian or Indian officers and Pilipino ratings (Lamvik, 2002).

When taking these aspects into consideration, it is reasonable to argue that the shipping industry has certain qualitative characteristics which differ from other industries. Accordingly, it might be expected that Flin et al's (2000) model might not account for these characteristics. Safety climate measures performed within specific industries have identified safety dimensions such as personal motivation (e.g. Williamson, Feyer, Cairns, Biancotti, 1997), safety communication (e.g. Edmondson 1996), and job satisfaction (e.g. Gyekye & Salminen, 2005). These are dimensions which are not included in Flin et al's (2000) generic structure. In other words, it might be the case that certain dimensions are relevant to specific industries, but not in other industries. Thus, the applicability of Flin et al's (2000) model within the shipping industry as well as the possible presence of certain industry- specific dimensions within the shipping industry will be investigated in the present study.

However, the common method used to measure safety climate is questionnaires (Rentch, 1999). Relying on general questionnaire items will inevitably result in failure to identify factors idiosyncratic to a particular organization, or a particular industry (Coyle et al, 1995). Accordingly, one might question whether surveys would be the best method to investigate a construct in its developing phase.

The need for qualitative assessment.

One core assumption in climate theory is that when trying to understand the safety climate of a workplace, the perceptions and attitudes of a workforce are important (Williamson et al, 1997; Rentch, 1999; Zohar & Luria, 2005). Surveys are influenced by the author's preconceptions of what questions are important to ask (Coyle et al, 1995). As such, it may be seen as a contradiction to focus too much on testing theories on data, using only surveys, when researchers disagree on which dimensions the concept consists of. As stated by Vicente (1997) it would be meaningless to formalize and quantify a phenomenon, e.g. safety climate within the shipping industry, before one knows in more detail the dimensions of that phenomenon. Rentch (1999) argues that the typical questionnaire method falls short of assessing meaning because often researchers' meaning and not respondents' meanings are attached to the information extracted from the questionnaire. By this it is not meant that the usual approach is wrong or that it does not contribute with important information. Qualitative approaches miss the advantage of the rigor and objectivity that quantitative methods permit,

and are often seen as unscientific and speculative (Vicente, 1997; Rentsch, 1999). The point is that, given the current state of development within safety climate research, it may be argued in favour of exploring more inductive or explorative methods, such as interviews, to investigate the same area. Accordingly, interviews were chosen as method in the present study. This renders it possible to investigate the conceptual questions mentioned above as well as exploring the sensitivity of a methodological approach seldom used within safety climate research.

Interviews.

By using interviews, which are often used by culture researchers, the respondents' interpretations are elicited rather than the researcher's interpretations being imposed (Rentch, 1999). They can potentially address more complex issues, and interviews create better opportunities for motivating the interviewee to provide more accurate information. In addition to this, you get the opportunity to detect errors that typically occur if you use questionnaires; misunderstandings (Flick 2002).

The interviews in the present study were semi- structured. Semi- structured interviews expect that the subject's viewpoints are more likely to be expressed than in an open designed interview situation (Flick, 2002). It leaves the participants with a chance to reflect and to bring up the issues they consider are critical aspects of a certain topic, in this case safety (Flick, 2002). Thus, the goal was to reveal the interviewees' experience, knowledge and evaluations of safety within the organization. The method can be characterised as inductive. By this it is meant that several possible realities exist, and every participant's own interpretation is real, given that they all present their own honest opinion based on their own experience as an employee in the organization.

The interviews were performed within a SWOT format. SWOT analysis (acronym for Strengths, Weaknesses, Opportunities, and Threats), is often used in strategic planning (Mintzberg, 1994, Dyson, 2004). The logic of the format is to consider how current strengths and weaknesses of an organization strategically match upcoming opportunities and threats (Dyson, 2004). According to Straumsheim (2007) the use of SWOT- based interviews may tell "other stories" than questionnaires, and may be more useful than questionnaires when a broader or deeper understanding is needed. The SWOT format was chosen because it is not theoretically grounded in safety theory. Accordingly, it leaves the participants to develop their own theories regarding safety within the organization. Based on the results established by Straumsheim (2007) it was considered as a fruitful method to construct questions which

would generate perceptions and evaluations of safety in the organization. It also allows the participants to attach meaning, or positive or negative evaluations to their reflections, and not only descriptive information. As such, the SWOT format was used to reveal possible patterns of how strengths, weaknesses, opportunities and threats were distributed over the four different organizational levels: industry, top management, mid- level management and vessel.

Thus, the interviews used the SWOT format as a tool for generating informative and evaluative information about safety in the organization, concerning both current and prospective issues.

The present study

The purpose of the present study is twofold. Firstly, it aims to contribute to the ongoing conceptual and methodological discussions of the safety climate construct by answering the questions previously pointed out. Although research on safety climate has expanded over the past two decades the author has yet to see any articles exploring the safety climate concept through interviews.

Secondly, the present study aims to assess the safety focus within the company in question. By safety focus it is meant the maturity of attitudes and evaluations related to safety. This will be done by combining theory of human error and theories of safety climate to shed light upon the perceptions and evaluations among the employees.

Research questions.
The two following research questions were constructed to accomplish the two objectives/ purposes of the study:

1) Whether SWOT- based interviews are sensitive to capturing safety climate relevant information. This involves comparing the information gathered with Flin et al's (2000) eight factor model. The applicability of the model as well as the possible need for industry-specific dimensions will also be assessed.

2) Whether there exists a different pattern in how strengths, weaknesses, opportunities and threats are distributed towards the vessel level compared to the other organizational levels. Connected to this, the qualitative content of SWOT statements directed towards the vessel level will be investigated to evaluate whether they are person- or situation- focused.

Research question 1 will be investigated and discussed by comparing the information extracted from the interviews with Flin et al's (2000) eight factor model, hereafter referred to as the SCM (safety climate model). The rationale behind comparing the results with the dimensions identified in the SCM can be legitimized by three arguments. Firstly; in the capacity of being a review article it covers a broad variety of studies carried out in different industrial sectors, which is a premise when searching for a generic factor structure. Secondly; through an extensive literature search this article was considered to be the latest review article, covering the most important safety climate studies carried out since the first genuine safety climate study was performed by Zohar in 1980. Thirdly; other review articles (e.g. Guldenmund, 2000) have identified similar dimensions, meaning that the additional information gathered from including two models, or choosing a different model, would probably have been limited.

The results following from research question 1 will contribute with information regarding the appropriateness of using interviews in safety climate research, as well as contributing to the discussions of whether safety climate should be treated as a generic concept, applicable over different industrial sectors. Research question 1 will also be able to provide descriptive information regarding what the employees talk about. Given that safety climate dimensions reflect critical traits that indicate the level of safety within an organization, it was expected that by comparing the topics reflected upon in the interviews with the dimensions identified in the SCM, one would be able to draw inferences regarding the safety focus in the company. Research question 2 will be able to give a more evaluative picture of the current safety focus by looking at how positive (strengths and opportunities) and negative evaluations (weaknesses and threats) are distributed towards the vessel compared to other levels of the organization, i.e. not only descriptive information regarding the themes the interviewees talk about, but also their evaluations connected to these issues. By looking at the content of the statements it is possible to assess whether they are person-focused or situation- focused. The reason for especially focusing on the sharp- end, the vessel, can be legitimized in the theories of Dekker (2006), mentioned above. Accordingly, it was considered fruitful to focus on the distribution over the vessel level, compared to the other organizational levels, to gain further insight into the maturity of the safety focus within the organization.

Methods

Organization and Participants

A short explanation of the organizational structure is necessary to understand why the selected procedure for collecting data was chosen. The organizational network can be characterized as quite complex and can roughly be divided into three different levels. Top Management, Mid- Level Management (5 different companies situated all over the world), and the Vessels (about 100). Especially one aspect may distinguish this specific organisation from other organisations; the fact that operation on daily basis is out- sourced to mid- level management. By this it is meant that different groups on shop-floor level (vessel) are not necessarily operated by the same mid- level manager, although they all share the same top management. Thus, there are five different communication routes formed from top management, through mid – level management, and down to the vessels, and vice versa. The present study may be interpreted as a case study. Only one shipping company is under investigation and only one level from each of the organisational levels is represented. As such, it was considered important to select participants who all together constituted one communication route. In other words; the participants from the vessel and the participants from mid- level management were connected in their daily work. One of the goals with the present study was to compare how statements were directed towards different organizational levels. By choosing participants from one communication route it was possible to exclude possible significant effects that may be due to differences in operation between different mid-level management companies.

The Interviews A sample of 30 participants was invited to participate in the interviews. It was voluntary to participate in the study. The sample was not random, but selected on the two following selection criteria: First of all, it was considered important to include participants from all the different organizational levels so that different views would be expressed, and also in order to be sure that the information gathered would not be biased by from where in the organisation the data was collected. Out of the 30 participants, 10 were drawn from top-management, 11 from mid-level management, and 9 from the vessel. The reason for the uneven distribution was due to one participant from the vessel level refusing to use the tape recorder. Secondly, the participants chosen within each level should represent different positions within their own organizational level, from the top to lower down. It was expected that to only involve leaders or only co-workers could create a biased picture.

Out of the 30 participants, there was one woman and 29 men. The average age was 42, with the youngest participant being 19 years old and the oldest 62.

Measures

The interview guide. The interview guide was structured within a SWOT format. SWOT is an acronym referring to the following four components; Strengths, Weaknesses, Opportunities and Threats. Strengths and weaknesses reflect the interviewee's opinions of internal and current aspects of the organization. Opportunities and Threats reflect evaluations of possible problems or facilities in the external environment that may affect the organization in the future (Mintzberg, 1994). The interviewee him/herself was less interesting than the knowledge he or she possessed about safety. As such, the interview guide (presented in the appendix) was structured to exclude unproductive topics. The point was to integrate the participant not as a single case but as a representative of a group, with special knowledge about safety. A typical "main" question was "What do you consider strengths in this organizational network regarding safety?, or "Can you identify any problems that will prevent better safety in the organizational network?" In order to dig deeper into the issues the respondents talked about, the main questions were supported by follow up questions, such as "Could you say something more about that?", "Can you give an example?", or "What do you mean by that?"

Procedure

The interviews. All of the participants received beforehand an e-mail letter, with information about the present study. They also received a description of the study, its aims, content and purpose. This was done to make sure that the participants had an opportunity to think about their own thoughts concerning safety and to remove any doubts about whether their contribution was going to be anonymous. It was also clearly emphasized that it was their own experiences, opinions and evaluations that were of interest. They were also asked to approve the use of a tape recorder during the interviews. They were informed that it was voluntary to use it, that the purpose was only to ensure correct transcription of the interviews and that the tapes would be erased after the transcription was finished. Before the interviews started, each participant was again informed about the information sent out, and they were asked whether they felt comfortable using the tape recorder.

The interviews were carried out between 10.10.07- 10.11.07, and they were all performed by the undersigned and another student. The duration of the interviews was

approximately 45 minutes. They were all performed individually and face to face. This is a method that is considered to be a preferable when the issues under research are complex, and when you wish to probe in depth (Pedhazur, Schmelkin, 1991).

The interviews with the crew onboard the vessel differed from the rest of the interviews as they were carried out during a two week journey onboard the vessel. As the environment onboard was quite new and unfamiliar to the interviewers, an adjustment period of two days was considered necessary. This was done to increase security and familiarity with the system and way of life onboard. Secondly, because of the fact that the crew onboard had a quite different cultural background, a certain degree of mutual trust needed to be built up between the interviewer and the interviewee, something that is considered to be important if information is to be shared honestly.

Transcriptions: The transcription of the interviews was divided equally between the undersigned and another Master student. They were transcribed word for word as far as it was possible. If a sentence was too awkward to make any sense in its original form, the meaning was captured and the sentence rephrased. Information such as names, name of the organization etc. were made anonymous to ensure confidentiality. The transcriptions were completed approximately one month after the last interview was finished. To ensure that the interviews were transcribed correctly, two randomly chosen interviews, one transcribed by the author and the other transcribed by the co- student, were exchanged and listened to. Any discrepancies between what were heard and what had been written in the transcriptions was noted. A consistent understanding was found, meaning that the differences noted from what the other student heard from the interviewee and what the undersigned had written was not of significant importance.

Data treatment/ Analysis

The analysis can be divided in two main steps, the SWOT analysis and the qualitative content analysis. The latter involving a comparison of the themes identified in the content analysis with the eight factors identified in Flin et al's (2000) review of safety climate measures.

SWOT analysis

Coding. The method used for organising the information drawn from the interviews can be described as "thematic coding". This is a method that seeks to guarantee comparability by defining topics and, at the same time, remaining open to the views related to them. The procedure is stated to be, above all, suitable for studies in which theoretically based group

comparisons are to be conducted in relation to a specific issue (Flick, 2002). The coding of the interviews was done using Nvivo, a computer based program for analyzing qualitative data. The program was used both to draw information from the 30 interviews and to cluster themes of statements.

The first step after transcribing the interviews was to identify statements that could be related to safety within each interview. 736 statements were identified and put into a node. The coding of statements was done according to the following definition;

" *One or more sentences, or part of a sentence expressed by the interviewee as an evaluation, in response to open questions, of aspects, directly or indirectly, relating to safety within the organization"* .

Secondly, all of the statements were gone through and, if possible, coded as strengths, weaknesses, opportunities or threats related to safety (SWOT). If coded as strengths or weaknesses, the statements reflected current strengths or weaknesses related to safety within the organization (Mintzberg, 1994). If coded as opportunities or threats, the statements accounted for external factors like industrial, environmental or political factors that promoted or prevented the company from obtaining their goals (Mintzberg, 1994). However, they also accounted for issues where the interviewee pointed out factors internal to the organization that involved opportunities or threats to further safety improvements.

The statements were only coded in one category, meaning that if a statement both could be coded as a strength and as an opportunity, it was discretionally placed in the category that was most suitable. If a statement was repeated more than one time within one paragraph, it was only coded once. If the interviewee repeated the same statement in another paragraph, it was considered as a sign that the issue was important to the participant and the statement was coded and counted again. In addition to coding the statements on SWOT they were simultaneously coded according to where along the organizational hierarchy the statement was directed (target of statement/ TAS). TAS had four possible categories: Top management, mid-level management, vessel and industry.

Top management: Safety issues related to top management's organizational function.

Mid- level management: Safety issues related to mid- level management's organizational function.

Vessel: Safety issues related to vessel's organizational function.

Industry: Safety issues related to the industry as a whole, outside organizational control. This level was included as a result of identifying statements that could not be linked to the organization directly, but was of a broader and super ordinate character. It was reasoned that

if a considerable amount of statements were accounted for by industry level this could be a sign of "fatalism", treating safety as something beyond organizational control.

The reason for coding statements on TAS was that it could reveal possible patterns of differences in what kind of statement that was directed where in the organization.

Statistics applied to statements: To investigate main and interaction effects of SWOT and TAS, repeated measures ANOVA analysis was conducted. Paired samples t-tests were used to explore the main effects of SWOT and TAS.

Inter- rater reliability: In order to investigate the inter- rater reliability, an interview was coded, according to the above mentioned definition, independently by the undersigned and another student. Out of the statements identified in the interview 71,4% were similar. Cohens Kappa (κ) for inter- rater agreement was calculated for both different SWOT levels and the different TAS levels. Cohens Kappa was 0.73 for coding on SWOT, and 0.78 on different TAS levels, which indicates strong agreement (Bordens & Abbot, 2005).

Content analysis of SWOT over TAS. A third step was to do a content analysis of the 736 statements coded on SWOT and TAS. Statement by statement was again gone through and categories were discretionally made so that groups of statements, referring to the same issues, were put in larger categories. This was done because of three concerns. First of all, the information generated from quantifying SWOT statements was considered to be of limited interest unless the qualitative content behind the numbers was known. The substance of the interviewees' experiences and viewpoints needed to be investigated. Secondly, it provided the possibility to potentially reveal other dimensions that might be important for safety, e.g. aspects that may argue in favor of an industry- specific climate measure. This involved using the themes identified from the content analysis and comparing them with the eight factors that were identified in Flin et al's (2000) review article by discretionary categorising (if possible) the themes in one of the eight dimensions. A ninth factor, not accounted for, was also included to account for themes of statements that did not fit in any of Flin et al's (2000) eight factors. Thirdly, the content analysis provided the opportunity to look deeper into the participant's evaluations of current safety challenges at the vessel level of the organization.

Ethical considerations

Taking part in the study was based on voluntary participation and informed consent. The participants received information about the study and its purpose before they decided to be interviewed or not. The participants who decided to be involved signed an informed consent form, which confirmed that information about the study had been given, and that they

agreed on being interviewed. As such, the study meets the ethical standards of the Department of Psychology at the University of Oslo.

The main ethical issue regarding the interviews was about confidentiality. In order to ensure that the participants felt free to discuss whatever they wanted, including sensitive areas, they were assured that no information they provided could be traced back to them personally. After the last transcription was finished and inter-rater reliability was checked, the tapes were destroyed.

<div align="center">Results</div>

SWOT and TAS categorizations

Out of the 30 interviews, 10 from top-management level, 11 from mid-level management level, and 9 from vessel level, 736 statements were identified based on the criteria defined above. Out of the 736 statements drawn from the interviews it was possible to code each as either strengths, weaknesses, opportunities or threats, related to safety. In total (N= 30) 204 statements (*M*= 6,8, *SD*= 5,7) were coded as strengths, 276 statements were coded as weaknesses (*M*= 9,2, *SD*= 4,8), 159 statements were coded as opportunities (*M*=5,4, *SD*= 4,9, and 97 statements were coded as threats (*M*= 3,2, *SD*= 2,2).

The statements were simultaneously coded into what is considered relevant target levels in the organization (TAS). 286 statements (M=9,5, SD=7,3) were directed towards top management, 175 statements (M=5,8, SD=5,8) were directed towards mid-level management, 196 statements (M=6,5, SD=4,6) were directed towards the vessel, and 79 (M=2,6, SD=3,1) were directed towards the industry level. How the statements were distributed on SWOT and TAS is presented in table 1.

Table 1

Distribution of interview statements over four SWOT, and four organizational targets

	Strengths	Weaknesses	Opportunities	Threats	Sum
Top Management	89	98	80	19	286
Mid- Level Management	62	41	55	17	175
Vessel	28	103	21	44	196
Industry	25	34	3	17	79
Sum	204	276	159	97	736

There appears to be a pattern in how the statements are distributed on different SWOT levels and TAS levels. In order to test whether the observed differences occurred by chance, a repeated measures ANOVA analysis was conducted to explore the main effect of the following two variables:

1. SWOT: *Strengths, Weaknesses, Opportunities, Threats*
2. TAS (target of statement): *Industry, Top- Management, Mid- Level Management, Vessel*

The interaction effect of SWOT vs. TAS was also tested by using a repeated measures ANOVA analysis. The results of main effect and interaction effects are displayed in table 2.

Table 2

Tests of main and interaction effects of SWOT and TAS

Factor	*df*	*F*	*Sig*	*n²*
SWOT	3.87	11.74	.000	.290
TAS	3.87	8.65	.000	.230
SWOT * TAS	9.26	6.51	.000	.183

As displayed in the table above the analysis shows statistical significant main-effects for both SWOT and TAS, meaning that the observed differences in the number of statements between the different SWOT levels and TAS levels, are not coincidental. In order to explore the main effects and identify which factors within each category that were significantly different from each other, several paired samples t-tests were performed. The results are displayed in table 3 and 4.

Table 3

Post-hoc comparisons SWOT*

Factor	M	SD	SE	t	df	Sig
S/W	- 2. 40	8. 04	1. 47	- 1. 64	29	.113
S/O	1. 50	4. 83	.88	1. 70	29	.099
S/T	3. 57	5. 94	1. 08	3. 29	29	.003
W/O	3. 90	5. 55	1. 01	3. 85	29	.001
W/T	5. 97	4. 46	.81	7. 33	29	.000
O/T	2. 07	4. 09	.75	2. 77	29	.010

*Note. S=Strengths, W=Weaknesses, O=Opportunities, T=Threats

Table 4

Post- hoc comparisons Target of Statement*

Factor	M	SD	SE	t	df	Sig
I/TM	-6.90	7. 42	1.35	-5.10	29	.000
I/MLM	-3.20	5. 51	1.01	-3.18	29	.003
I/V	-3.90	6. 00	1.09	-3.56	29	.001
TM/MLM	3.70	9. 31	1.70	2,18	29	.038
TM/V	3.00	9. 04	1.65	1.82	29	.079
MLM/V	-.70	6. 64	1.21	-.58	29	.568

*Note. TM= Top Management; MLM= Mid-Level Management; V= Vessel; I= Industry.

As shown in table 3, all SWOT levels were significantly different from each other except for strengths vs. weaknesses, and strengths vs. opportunities.

Post hoc comparisons on target of statement (table 4), indicates that the number of statements directed toward the industry was significantly different from all other levels. The number of statements directed towards top management was found to be significantly different from the number of statements directed towards mid- level management.

Table 2 also shows a statistical significant interaction effect between SWOT and TAS. This indicates that the number of statements distributed on different levels of SWOT levels is influenced by which part of the organization (TAS) the respondent talks about. Figure 1

graphically displays the interaction effect of respectively SWOT vs. TAS by the distribution of statements over different SWOT categories and TAS categories.

Fig. 1
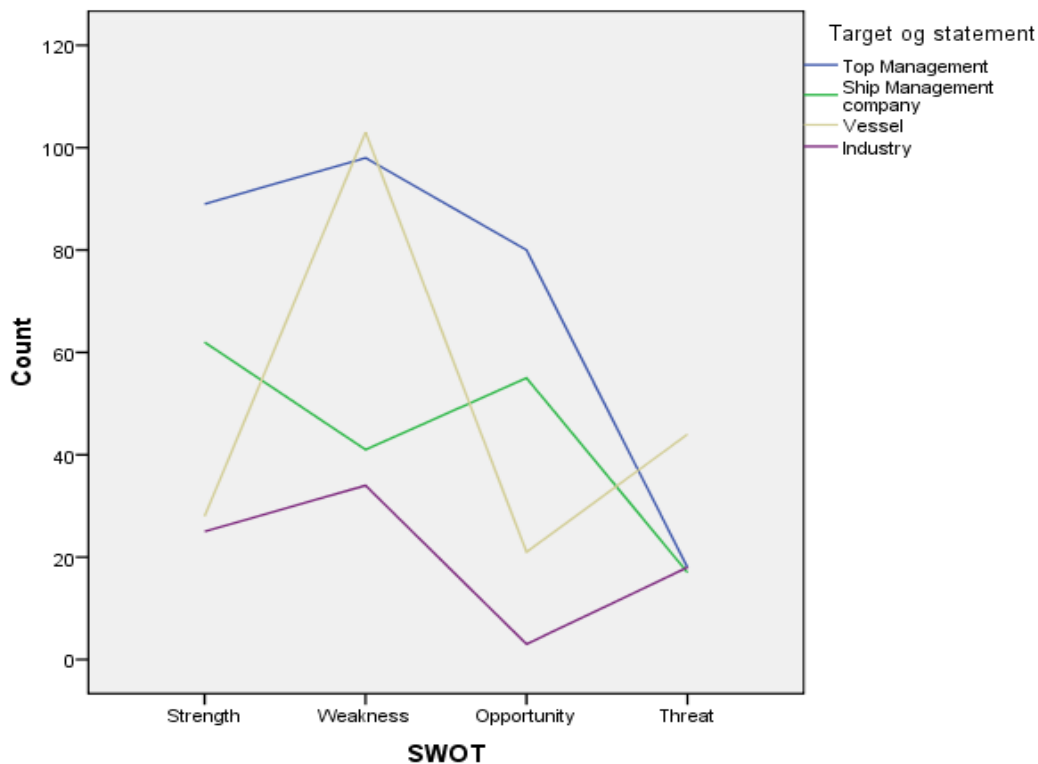
The graph above indicates that there is a pattern in how the participants distribute strengths, weaknesses, opportunities and threats in the organization. The number of weaknesses directed towards the vessel level is proportionally higher than all other organizational levels, and it is also the organizational level that receives most weaknesses and also threats. Additionally, the number of strengths directed towards the vessel level is proportionally lower than the number of strengths directed towards all other organizational levels. Vessel level is also the only organizational level, except" industry", which has more threats than opportunities. Top management also receives more weaknesses than the other organizational levels. At the same time top management is the organizational level that receives most strengths and also most opportunities. Mid- level management seems to be the only organizational level with an exclusively "positive" curve, meaning that they receive more strengths than weaknesses, as well as more opportunities than threats. The graph also indicates that all organizational levels receive approximately the same amount of threats, besides the vessel level.

Qualitative content analysis of SWOT and TAS statements.

In order to evaluate whether the information shared by the interviewees were of any relevance to the eight factors in the SCM, the author discretionally clustered statements that were considered to be similar in suitable themes. The themes were constructed using SWOT and target of statement level frame. The results are presented in table 5, 6, 7, and 8. Additionally, the themes identified at the vessel level were also discretionary categorised as either person- or situation- focused. The results are presented in table 8.

Table 5
Statements clustered in themes on industry level over different SWOT levels

SWOT	Theme	No. Statements
Strengths		
•	Well established international safety routines.*6	10
•	Strict requirements regarding technical quality onboard the vessels (safety equipment).*6	7
•	Regular assessments and audits of ship owners, mid- level management companies and vessels by representatives of the industry and oil- majors.*6	5
•	Very large commercial/ economical consequences if safety is bypassed and if accidents occur.*9	3
Weaknesses		
•	The market is growing faster than the education of new seafarers.*5	14
•	New rules and regulations regarding safety creates more extra work than it enhances safety.*6	9
•	Safety systems tend to be written as an reaction to an incident.*2	9
•	The margins for profit and loss are very small, forcing actors in the industry to take shortcuts.*9	4
Opportunities		
•	The industry must focus on making rules and regulations that will enhance the quality of crew.*5	3
Threats		
•	Shortage of quality seafarers, both ashore and at sea.*5	10
•	When the market is good, safety requirements will be compromised by oil majors and ship owners.*9	5
SUM		79

*Note. 1=management commitment, 2=safety system, 3=risk, 4=work pressure, 5=Competence, 6=procedures/rules, 7=blame, 8=organizational learning, 9=not accounted for.

Table 6
Statements clustered in themes on top- management level over different SWOT levels

SWOT	Theme	No. Statements
Strengths		
•	Top management has pinpointed important safety aspects within the organization that has an improvement potential, and means of attaining those improvements. *1	24

- Top management communicating clear and goal- directed commitment to improving safety throughout the organization as well as creating an open arena for feedback. *1   20
- Concrete safety improvements within the organization as a result of management commitment. *8   14
- Open communication and routines regarding risk assessment and misjudgements/ errors originating from top management.*3   13
- Strong safety profile, both internally and externally, originating from top management. *1   9
- Broad experience and solid competence in top management. *5   3
- Top management demanding and maintaining a high technical standard onboard all vessels. *2   3
- Top management identifying themselves directly to the sea staff. *1   2

Weaknesses

- Lack of safety commitment in top management. *1   30
- Unstructured and insufficient implementation of policies originating from top management and subsequent follow- up. *2   23
- Top management does not sufficiently consider the level of knowledge and cultural differences, or working situation of employees in lower hierarchical levels when communicating policies. *2   21
- Top management and top management policies are not visible to lower hierarchical units within the organizational network and vice versa. *1   15
- Top- management does not include mid- level management in decision making processes and formulation of strategies. *9   5
- Top management distributing blame after incidents or accidents. *7   3
- Insufficient control over technical maintenance onboard the vessels. *2   1

Opportunities

- Adapting/ tailoring tasks related to improving safety to each organizational subunit/ and identifying specific tasks for commercial department. *9   30
- Top management must invest more on training of crew. *5   15
- Top management should commit all employees to safety in terms of responsibility, and act accordingly. *1   12
- Top management should invest more resources on keeping experienced and competent employees within the organizational network to build lotalty.*5   9
- Reducing the distance between shore and sea by letting sea staff join the office for some time, and vice versa.*9   8
- Top- management providing circular letters, news to the whole organizational network.*9   5
- Procedure for measuring safety through formal processes.*2   2

Threats

- Tendency for low participation, commitment and level of knowledge related to safety activities in top management.*1   8
- Pressure from increasingly competitive demands to push safety limits.*9   4
- Cultural and linguistic problems among employees.*9   3
- Low retention rate among sea staff will make it challenging to develop structured and costly safety training.*5   2
- Difficulties in recruiting Norwegian people with sailing experience to top management.*5   2

SUM	286

*Note. 1=management commitment, 2=safety system, 3=risk, 4=work pressure, 5=Competence, 6=procedures/rules, 7=blame, 8=organizational learning, 9=not accounted for.

Table 7

Statements clustered in themes on mid- level management level over different SWOT levels

SWOT	Theme	No. Statements
Strengths		
•	Good communication and support from mid- level management to vessel (including no- blame).*7	24
•	Communicating and practicing safety policies coming from top management in the rest of the organizational network (adapting procedures to its audience).*2	20
•	Initiating tactics to improve safety (seminars, visits to vessels, feedback from vessels, accident investigation).*1	10
•	High standards regarding education and experience requirements for employees at sea and ashore.*5	9
Weaknesses		
•	Problems with supplying crew, information and equipment to the vessels (crew shortage and restricted budgets).*5	15
•	Putting too much workload on sea and shore staff in terms of unuseful paperwork and reporting, and too long contracts.*4	11
•	Sea staff having difficulties identifying with the mid- level management company they belong to.*9	5
•	Putting blame on sea staff on occasions where correct action has not been taken.*7	3
•	Inexperienced employees in mid- level management.*5	3
•	Conflicting commitments to follow policies and procedures from several ship owners (top management).*9	2
Opportunities		
•	Strengthening sea staff in terms of: More crew, stable crew, quality crew training, and improvements in technology.*5	24
•	Strengthening the relationship between the sea and shore side of the organizational network to make sea staff indentify with the organization (visiting the vessels, permanent contracts, and having sea staff in the office.*9	15
•	Simplifying rules and regulations so that they can be understood as procedures that are possible to follow.*2	7
•	Creating an open environment for sharing information throughout the organization.*9	6
•	Putting pressure on regulatory bodies to improve working conditions at sea and reduce pressure on actors in the industry.*6	2
Threats		
•	Overall competence level of sea and shore staff in the international market is decreasing as well as a general lack of sea staff because the market is increasing very rapidly.*5	14
•	Being in a buffer position between top management demands and shop- floor practices makes it difficult to live by a no- blame culture in practice.*7	2
•	Safety is one of the first and easiest factors to compromise in times of financial/ economical recessions and commercial pressure.*1	2
•	Overall workload for mid- level management and sea staff is continuously increasing.*4	1
SUM TOTAL		175

*Note. 1=management commitment, 2=safety system, 3=risk, 4=work pressure, 5=Competence, 6=procedures/rules, 7=blame, 8=organizational learning, 9=not accounted for.

Table 8

Statements clustered in themes on vessel level over different SWOT levels

SWOT	Theme	No. Statements
Strengths		
	• Sea staff read and discuss safety rules and regulations, and apply them in their daily work.*2*p	13
	• Free flow of communication between all ranks onboard the vessel.*9*s	6
	• Competence level among senior officers in terms of experience and education is high.*5*p	4
	• Seastaff report all problems and issues to the shore office (open dialogue).*9*p	2
	• Indications of situational awareness among seastaff.*8*p	2
	• Loyalty towards the ship owner.*9*p	1
Weaknesses		
	• Lack of education, experience, and high turnover in rank among sea staff (especially junior ranks and ratings).*5*p	25
	• Workload is too high for sea staff in terms of: Too much paperwork, breaking work and rest hours regulations, work environment being psychologically challenging, commercial pressure, number of crew.*4*s	23
	• Hesitation to confront superiors about safety issues when safety rules are ignored.*9*p	16
	• Level of English is very poor among sea staff, and cultural barriers are high.*9*p	16
	• Failure to comply with safety rules, and subsequent risk taking in situations in situations where risk is high.*3*p	14
	• Lack of work engagement/ work morale among ratings in terms of professionalism and loyalty.*9*p	9
Opportunities		
	• Reducing the traditional authoritative leadership hierarchy in order to improve communication and team efficiency.*9*s	10
	• Increase number of staff onboard the vessels as well as better utilisation of the existing workforce.*4*s	8
	• Better planning ahead of operations.*6*p	2
	• Shorter contracts, and permanent contracts for sea staff.*4*s	1
Threats		
	• Workload is too high on all crew, especially when at port (commercial pressure, and inspections).*4*s	14
	• With a rapidly growing market, crew language competence, education and experience is increasingly compromised, and retention rate is going down.*5*s	14
	• Responsibility among crew is concentrated to certain senior ranks, reinforcing unhealthy authority.*9*s	12
	• Paperwork and other forms of reporting takes the focus of the crew away from safety.*4*s	4
		196

*Note. 1=management commitment, 2=safety system, 3=risk, 4=work pressure, 5=Competence, 6=procedures/rules, 7=blame, 8=organizational learning, 9=not accounted for.
*Note. P=person focused, S= situation focused.

Comparison of interview data with the eight factor safety climate model.

The themes of statements presented above were compared with the eight safety climate dimensions that were identified by Flin et al, (2000). A ninth category, *"not*

accounted for", was constructed to account for statements that did not fit in any of the eight dimensions. How the themes and statements were distributed over the nine possible categories are presented in table 9.

Table 9

Distribution of statements over SCM dimensions and organizational level*

	TM	MLM	V	I	Sum	%
Management/ attitudes and behaviour	120	12	0	0	132	17, 93
Safety system	50	27	13	9	99	13, 45
Risk	13	0	14	0	27	3, 67
Work pressure	0	12	50	0	62	8, 42
Competence	31	65	43	27	166	22, 55
Procedures/ rules	0	2	2	31	35	4, 76
Blame	3	29	0	0	32	4, 35
Organisational learning	14	0	2	0	16	2, 17
Sum	231	147	124	67	569	77, 31
Not accounted for	55	28	72	12	167	22, 69
Sum	286	175	196	79	736	100, 00

*Note. TM= Top-management; MLM= Mid-Level management; V= Vessel; I= Industry.

As can be seen from the table above, more than 75% of the statements coming from the participants were related to the safety climate dimensions identified by Flin et al. (2000). The themes are presented in the hierarchical order that was identified by Flin et al (2000) where management/ attitudes and behaviour were found to be the most common dimension. As can be seen from the table above, competence is the most reported dimension in the interviews, while management/ attitudes and behaviour is second most reported.

The table also shows that 167, or 22, 69%, of the identified statements did not fit in any of the eight dimensions. It was considered interesting to look deeper into the substance of these statements to evaluate whether these also might be of relevance to safety. The themes of statements that were not accounted for are presented in table 10.

Table 10

Themes of Not accounted for statements

SWOT	Theme	No. Statements
Strengths		
	Free flow of communication between all ranks onboard the vessel.*1	6
	Sea staff reports all problems and issues to the shore office (open dialogue).*1	2
	Very large commercial/ economical consequences if safety is bypassed and if accidents occur.	3
	Loyalty towards the ship owner.*3	1
Weaknesses		
	Hesitation to confront superiors about safety issues when safety rules are ignored.*2	16
	Level of English is very poor among sea staff, and cultural barriers are high.*1	16
	Lack of work engagement/ work morale among ratings in terms of professionalism and loyalty.*3	9
	Top management does not include mid- level management in decision making processes and formulation of strategies.*1	5
	Sea staff have difficulties identifying with the ship management company they belong to.*3	5
	The margins for profit and loss are very small, forcing actors in the industry to take shortcuts.	4
	Conflicting commitments to follow policies and procedures from several ship owners (top management).	2
Opportunities		
	Adapting/ tailoring tasks related to improving safety to each organizational subunit/ and identifying specific tasks for commercial department.*4	30
	Strengthening the relationship between the sea and shore side of the organizational network to make sea staff indentify with the organization (visiting the vessels, permanent contracts, and having sea staff in the office.*3	15
	Reducing the traditional authoritative leadership hierarchy in order to improve communication and team efficiency.*2	10
	Reducing the distance between shore and sea by letting sea staff join the office for some time, and vice versa.*3	8
	Creating an open environment for sharing information throughout the organization.*1	6
	Top management providing circular letters, news to the whole organizational network.*1	5
Threats		
	Responsibility among crew is concentrated to certain senior ranks, reinforcing unhealthy authority.*2	12
	When the market is good, safety requirements will be compromised, by oil majors and ship owners.	5
	Pressure from increasingly competitive demands to push safety limits.	4
	Cultural and linguistic problems among employees.*1	3
Sum		167

*Note. 1=Culture and communication, 2= Leadership style at sea, 3= Organizational identity, 4= tailored safety tasks.

Among the reported themes that did not fit in any of the eight dimensions (table 10) in the SCM the author discretionary identified four dimensions. Only dimensions together accounting for 30 statements or more were included. They are presented hierarchically below:

- *1 *Culture and language*. Culture and language issues are quite often reported. The participants highlight problems with speaking the English language, as well as cultural barriers between nationalities and communication issues between different organizational levels. (43 statements)

- * 2 *Leadership style at sea.* The authoritative leadership at sea are seen as a barrier towards safety. Responsibility is too concentrated on senior ranks and people hesitate to confront superiors when safety rules are ignored. (38 statements)

- *3 *Organizational identity*. Problems in identifying with the organization are also quite salient for the vessel level. Respondents report lack of loyalty and identification with the company they work for, and it suggest that be strengthened the relationship between the sea and shore side of the organisation. (38 statements)

- * 4 *Tailored safety tasks.* Tailoring safety tasks in terms of identifying specific tasks for organizational units, such as the commercial department, are seen as an opportunity to increase safety. (30 statements)

Discussion

The two objectives of the present study were to investigate certain conceptual and methodological questions (previously specified) in safety climate research, as well as the current safety focus in a Bermuda- based shipping company. The qualitative content of the information extracted from the interviews has been investigated and clustered in suitable themes. This information has been compared with the themes identified in the SCM. The possible presence of other safety relevant information, beyond the scope of the SCM, has been analyzed. Additionally, the study has examined how strengths, weaknesses, opportunities and threats were distributed in the organization, especially focusing on the sharp- end, the vessel. The themes of statements targeted at the vessel level were categorized as either person- or situation focused.

Summary of results

The qualitative content analysis indicates that the interviews produced rich information regarding the perceptions and evaluations connected to safety within the company. Out of the themes discretionally identified by the author, almost 80% touched upon issues that could be related to the eight safety climate dimensions identified by Flin et al (2000). About 20 % of the identified themes were not accounted for by the eight dimensions. Among these it was possible to identify four dimensions.

The SWOT analysis revealed that when the participants spoke about the vessel level it was generally in a negative way (weaknesses and threats), and also person- focused. The vessel is also the organizational unit that receives most weaknesses, compared to the other levels. It also receives substantially less strengths than both top and mid- level management (Table 8).

The research questions will be discussed in the same order as previously presented.

The sensitivity of SWOT- based interviews.

In order to evaluate the sensitivity of SWOT based interviews in capturing safety climate relevant information, the results from the comparison with the safety climate model (SCM) identified by Flin et al (2000), and the possible presence of industry specific climate information need to be discussed.

Comparison with the SCM. The distribution over the eight dimensions did not replicate the hierarchical order identified in the SCM. "Competence" accounted for most statements, while "management commitment" towards safety was the second most reported theme. Hence, the results fit into previous findings which indicate that safety climate scales are seldom replicated (Hale, 2000; Coyle et al, 1995). Coyle et al (1995) argues that they do not find it surprising, considering socioeconomic and organizational variations, that different authors have identified different factors. E.g. several researchers have assessed Zohar's (1980) findings, but none of them were able to replicate the factor structure (Coyle et al, 1995). As such, it would probably be only natural to expect a somewhat different distribution over the dimensions found in the SCM. One should also take into consideration that none of the articles reviewed by Flin et al (2000) were performed within the shipping industry. The shipping industry might be in a different stage of development than other industries (Håvold, 2007). This might lead to some dimensions becoming more important, and others less so, e.g. competence before management commitment. Considering the fact that safety climate dimensions represent the employees' perceptions of safety within their organization, the large

proportion of statements that were related to competence might be interpreted as a reflection of current safety concerns in the respective company, or within the shipping industry in general.

On the other hand, one should be careful to draw any conclusions regarding the hierarchical order presented in the SCM based on the results from the present study. The data is collected from only one company, and the aim of Flin et al's (2000) study was to identify a generic factor structure applicable over different industries. It would be surprising if the hierarchical order in the SCM would replicate itself in a study only including one shipping company. Thus, it may be the case that a larger sample, including several shipping companies, could have resulted in a hierarchical structure more akin to the SCM. One should probably rather emphasize the fact that all dimensions identified in the SCM were reflected upon. This supports the idea that the dimensions identified by Flin et al (2000) are important relating to safety, also within the shipping industry. In addition, the results indicate that the dimensions which appeared less frequently in Flin et al's (2000) study were also the ones that accounted for the smallest amount of statements in the present study. The fact that a large proportion of the statements were accounted for by "management commitment" supports previous research in pointing out this as an important factor (e.g. Cohen, 1977; Zohar, 1980; DeDobbeler & Beland, 1991; Flin et al, 2000; Zohar & Luria, 2005).

"Not accounted for" dimensions. The four dimensions that were not accounted for by the SCM also fit into previous research, supporting the impression that a large variety of dimensions exist, depending on, among other things, the industrial sector in which they are identified. However, the mere presence of four other dimensions is not enough to conclude that they are of relevance to the safety climate within the company, or within the shipping industry. If the four dimensions found are of modest importance related to safety it would be nothing more than "empty" safety climate information without considerable relevance. Thus, in order to assess whether they are important or not one has to take a closer look at the content behind these dimensions.

Culture and language accounted for most statements. The participants reported lack of English knowledge, cultural barriers and communication issues between different organizational levels. Such a primary thing as being able to understand each other, to speak a common language, is probably something that most people take for granted. This might again explain why this dimension is not included in the SCM. Nevertheless, in the present company this seems to be an issue of concern. It would probably be unnecessary to argue why being able to speak a common language is of relevance to safety. The specific problem might reflect

the international nature of the shipping industry. Vessels are often manned by people from two different cultures, e.g. Russian officers and Pilipino ratings (Østreng, 2007; Lamvik, 2002). This might reasonably lead to communication problems which could influence the level of safety. Moreover, the fact that the three organizational levels are situated in different places around the world might explain the concern for communication between the different organizational units (Hetherington et al, 2006; Østreng, 2007).

Leadership style at sea. The authoritative leadership at sea is seen as a barrier towards safety. According to the interviewees the concentration of responsibility on the senior officers reinforces this type of leadership. They also report hesitancy to confront superiors when safety rules are broken (table 10). Such information quite clearly fits in with previous research which emphasizes the strong hierarchy and difference between superiors and subordinates when describing the way of life aboard a ship (e.g. Aubert & Arner, 1962; Perrow, 1999; Lamvik,2002; Østreng, 2007). The information could be interpreted as an indication of the workers avoiding addressing safety issues in fear of retribution when confronting superiors. Something which relates to what Edmondson (1996) refers to as "safety communication". When forced to confront safety- related events, workers will look for the easiest way to satisfy their supervisors. This will eventually result in norms of communication that restrict the free flow of information, or "defensive communication" as it's referred to within the communication literature (Edmondson, 1996, Hofmann & Stetzer, 1998). Simard and Marchand (1995, 1997) found that a decentralized approach to safety management was the most effective way in which management can promote safety motivation among the workforce. Participative decision making and decentralization of authority has an influence on safety because they foster consensual behavior among the workforce and greater motivation to work safely.

Organisational identification. With special regard to the vessel level the participants reported lack of work morale and problems with identifying with the rest of the organization ashore (table 10). The fact that the vessel is operating on its own, cut off from the rest of the organization, probably makes it difficult to identify with the rest of the organization. The issues brought up might be related to the dimension "job satisfaction", which was identified by Gyekye and Salminen (2005). They found that job satisfaction motivated behavior which was not directly or explicitly recognized by the formal reward system, and that people who engaged in such behavior were more compliant with safety management policies and had a relatively lower accident involvement rate. Thus, it might be the case, considering the fact that the dimension was discretionally labeled, that organizational identification and job

satisfaction are two sides of the same coin. It is reasonable to argue that lack of work morale and lack of job satisfaction are related aspects. Consequently, organizational identification can be linked to the safety climate concept.

Tailoring safety tasks. This dimension was the one accounting for least statements among the four dimensions identified. Something which might indicate a lower degree of importance compared to the others. However, it is reported that there is a concern for tailoring safety tasks to each organizational unit (table 10). E.g. the commercial department is not directly participating in the daily safety work, which could make it difficult to acknowledge their own part in promoting or preventing safety. The conflict between production and safety is often emphasized in safety climate research (e.g. Hofmann et al, 2003; Zohar & Luria, 2005). Tailoring safety tasks to distal units, e.g. the commercial department, would possibly emphasize the importance of the mutual responsibility throughout the organization. Hence, the degree of shared responsibility throughout the organization may influence the safety climate.

Generic or specific?

It seems like the dimensions discretionary identified by the author can be linked to the safety climate concept. Based on findings of previous researchers and based on the number of statements each dimension accounted for, it would be reasonable to characterize "culture and language" and "leadership style at sea" as the dimensions with the most conceptual sound information. Nevertheless, the dimensions seem to be relevant to safety and not just "safety empty" information. Although, not surprisingly, the results fall into previous research which questions the universal stability of safety climate factors (e.g. Hale, 2000; Coyle et al, 1995). However, the four dimensions were discretionary made, which opens up for the possibility that another researcher would have labeled them differently. It could also be the case that another researcher would have found a different distribution when comparing the themes of the statements with the SCM. Another issue is the concern whether to attribute the findings to the shipping industry or to the specific company in question. Considering that the results rely on semi- structured interviews it might be the case that the hierarchical distribution found, and the four dimensions identified, is idiosyncratic to the specific company and not transferable to the shipping industry in general (Coyle et al, 1995). Thus, one can only suggest that these dimensions may be important to the company in question even though they seem to be related to the industry in which the company is a part of. In order to suggest a distinct climate measure for the shipping industry, a much larger sample including several different shipping

companies, would have been needed.

Nevertheless, the results indicate that there are certain dimensions, not accounted for by the SCM, which seem to be relevant to the safety climate within the present company. Even though it is difficult whether to attribute the results to the shipping industry or to the specific company in question, they seem to be related to safety. Following, they are dimensions not accounted for by the SCM, something which contradicts the idea of one universal set of dimensions. On the other hand, the dimensions identified in the SCM were relevant within the present company, accounting for almost 80% of the statements identified. Hence, based on the current findings it would be reasonable to suggest that a certain set of generic dimensions might exist, but that a generic factor structure needs to be complemented by industry or company- specific dimensions.

SWOT's sensitivity.

The results indicated that SWOT- based interviews were able to capture theoretically sound safety climate relevant information. All dimensions in the SCM were touched upon and four other dimensions were identified. However, to evaluate whether SWOT based interviews are sensitive in revealing safety climate information is not that simple. Theoretically, the interviews could have generated information with no relevance to safety climate. The participants were free to speak about whatever they thought was important connected to safety and human factors in the organization. If the participants had not mentioned anything related to safety climate, or been extremely focused on one of the eight dimensions, this could have meant, although unlikely, that the dimensions identified in the SCM were of no relevance to safety in the present company. It could also indicate that SWOT based interviews are insensitive in capturing safety climate information. Another possible explanation would be that the participants had no conscious idea of the organizational factors, which according to theory are important for safe operation. In other words; whether such information occurs or not, is to a certain degree dependent on the safety focus among the participants, or the safety focus in the organization. Thus, the presence or absence of safety climate relevant information cannot be attributed directly to the sensitivity or insensitivity of SWOT- based interviews. Hence, one can only conclude from the results that SWOT based interviews have the *potential* to extract safety climate relevant information. One should also stress that it is difficult to conclude whether the results were mainly a result of the quality of interviews as a method, or whether the SWOT- format contributed. Thus, constructing the questions in another format may have yielded similar or different information.

Nevertheless, in the present study the SWOT- based interviews produced a lot of safety climate information, as well as extra information that can be considered as relevant to the safety climate in an organization. Thus, the present study supports that SWOT- based interviews may be a fruitful method in collecting theoretically sound information regarding the safety climate concept.

Distribution of SWOT statements over TAS levels.

The results indicate a significant main effect for the number of statements in the different SWOT levels and the different TAS levels. Post- hoc comparisons revealed that there was no significant difference in number of statements directed towards the vessel compared to top management and mid- level management. The number of statements directed towards the industry level was significantly different from all other levels. There was also a significant interaction effect between SWOT and TAS, indicating that number of statements distributed on different levels of SWOT is influenced by which part of the organization (TAS) the respondent talks about.

The fact that the industry level receives considerable fewer statements than the organizational levels might indicate that this level is less important than the others. As the industry level was included to account for statements indicating a tendency to disclaim the organizational responsibility for safety, one might conclude that this tendency is not considerable salient within the present company. Consequently, the industry level will not be emphasized in the following discussions.

Sharp vs. blunt end. If one considers the organization as a whole, 373 statements were negative evaluations (weaknesses and threats) while 363 statements were positive evaluations (strengths and opportunities). This might indicate that there is neither a tendency to focus on current negative aspects nor a tendency to focus on current positive aspects. However, the picture appears quite different if one focuses on the vessel level isolated. A first glance at figure 1 presented in the results, indicates that the SWOT distribution over the vessel level is quite different from the rest of the organizational levels. Weaknesses are highly salient, accounting for over half of the statements directed towards the vessel, and almost 40% of the total amount of weaknesses in the organization. First of all it might reflect, and also confirm, the tendency to firstly and predominantly attach problems and challenges to the organizational sharp- end. Several researchers have emphasized this tendency (e.g. Hofmann & Stetzer, 1998; Dekker, 2006). In the capacity of being in direct contact with safety critical processes it is easy to think of the vessel when sources of failures or weaknesses are reflected upon

(Dekker, 2006). On the other hand, a considerable amount of weaknesses also gets directed towards top management. This might signify an acknowledgement of the blunt- end as a responsible and important participator in the struggle to achieve safe operation. It might reflect an organization ready to challenge existing beliefs. Something which according to both Dekker (2006) and Argyris (1990) would be a sign of an organization willing to learn and to make lasting changes. However, compared to ship management, which has a "positive" curve, the vessel is highly different. Thus, it would be wrong to conclude that the present company falls outside the tendency explained by Dekker (2006).

When taking a closer look at figure 1, another aspect of the vessel curve becomes apparent. It shows substantially less weaknesses and opportunities than both top management and mid- level management. As such, the greatest distinction from the other organizational levels is not necessarily the number of weaknesses, but the huge gap between the number of strengths and opportunities compared to weaknesses and threats. Not only does the vessel receive a large amount of weaknesses, there seems also to be a problem in identifying strengths and opportunities at the vessel level. This might be interpreted in several different ways. One reasonable understanding might be that the crew onboard are seen as people without valuable opinions and resources that could be utilized as a barrier towards accidents and incidents. The vessel is only seen to hinder safe operations, while the opportunities and strengths to avoid accidents or incidents are identified at the blunt- end of the organization. This might point towards a view of the people onboard the vessels as passive receivers of the given policies and procedures, without being able to contribute on their own. If so, the organization could possibly be overlooking constructive and valuable resources utilized from the experience among the workforce aboard.

People or situations? When looking closer at the content of the statements directed towards the vessel an interesting picture arises. The themes, displayed in table 5, show a tendency to attribute person- focused explanations to the strengths and weaknesses. E.g. the participants are reporting lack of work moral, hesitation to confront superiors regarding safety issues, and failure to comply with safety rules, as typical weaknesses. These themes might be interpreted as person focused because they point to negative attributes of the workforce onboard. They do not follow procedures and they do not confront senior officers. According to Hollnagel and Woods (2005) failures at the sharp end tend to be attributed to people. Hofmann and Stetzer (1996) states that there is a tendency in accident investigations to seek individual causal connections. Reason (1997) argues that we all, due to various reasons, are disposed to blame individuals. Even though Hollnagel and Woods (2005), Hofmann and

Stetzer (1996), as well as Reason (1997) discuss these tendencies in connection with accident investigations, they may shed some light upon the current findings. A broad variety of weaknesses were identified at the vessel level. Among the weaknesses there seems to be a majority of themes related to person factors. It is reasonable to suspect that the area where the organization identifies their current weaknesses will also be the place where they attribute possible explanations in the wake of an accident. Thus, the findings might be interpreted as confirming the tendency to look at both the sharp- end of the organization, as well as identifying person- factors when looking for sources of failure. According to Hollnagel and Woods (2005) looking for the human path of failure is bound to succeed. This is because no system has ever been operated, built, or maintained by itself. Hence, to attribute the cause of an incident or accident to lack of work morale among the crew is easy, but it would not solve anything except contributing an explanation that might be satisfactory. A more fruitful approach would be to search for the reason that elicited the lack of work morale, and make changes accordingly. This would render it possible to reach the clarifying causes as well as identifying means of changing unwanted behavior.

However, the picture is different when looking at the themes coded as opportunities and threats. All themes except one, seems to be situation- focused. As a possible opportunity, they report that reducing the authoritative leadership style onboard will improve communication and team efficiency. This is, apparently, a situational factor that will affect the ability of individuals to work safer. This might be taken as an indication that it is easier to identify situational factors when one is looking ahead or searching for solutions. It might also be understood as an indication of a mature safety focus in the organization. The participants could hypothetically have reported opportunities like removing unmotivated people from hazardous work, or punishing people that do not report to the Master when safety rules are broken. However, the number of opportunities are substantially lower than number of weaknesses. This might be interpreted as a limited ability to attach constructive solutions to existing problems.

The current safety focus in the organization.

As suggested by Schroder (1970), measuring employee's attitudes or evaluations towards safety could be a useful form of safety measurement because the more mature the safety attitudes of employees, the more likely they will search for safer environments thus unsafe behavior will decrease accordingly. It is difficult to draw any clear conclusions regarding the maturity of the safety reflections in the company. The results are ambiguous,

meaning that they tell different stories depending on how you look at them. All of the dimensions identified by Flin et al (2000) were reflected upon. As safety climate factors are a representation of the employees' perception of their work environment, their perceptions indicate areas where analysis or change may be necessary. Accordingly, the fact that they touch upon a variety of safety climate dimensions may indicate that the organization has developed its outlook on safety along with the general development, as explained by Hale and Hovden (1998). This is something which obviously should be regarded as a sign of an advanced safety focus. Hypothetically, knowledge about the connection between human error and safety could have been limited, resulting in reflections mainly connected to technical issues.

On the other hand, when analyzing meaning, or how positive and negative events were distributed along the organizational structure, a less favorable picture arises. This part of the analysis point in another direction, indicating a troubling tendency to attribute negative issues at the sharp- end of the organization, while positive aspects are more or less missing. As such, the degree of maturity is shown in a new light when analyzing the results in this way. Another worrying tendency is that most of the weaknesses are person- focused. Although there seems to exist certain situation- focused opportunities they do not compensate for the large amount of weaknesses.

Thus, the ambiguity found in the safety focus might be seen as an interesting finding. Although descriptive information indicates that the employees reflect upon safety in an abstract and mature manner, this is not automatically positive. If evaluations attributed at the blunt- end are mainly positive while the evaluations directed towards the sharp- end are mainly negative, this modifies the meaning one can attach to the fact that the descriptive content is mature.

Limitations and strengths of the current study

Several potential limitations for the present study deserve attention. A possible limitation was the demand characteristics associated with asking sensitive questions about safety. The fact that the interviewers (the undersigned and another student) may have been perceived as representatives from top- management could have influenced the way the participants responded. It could be the case that the participants wanted to present the organization in a more positive light or a more negative light than what was actually their honest opinion. In other words; a neutral interviewer may have found different results. However, in an effort to compensate for this potential problem special precautions were taken

to ensure that the participants were informed that demographic data about individuals would not be identifiable. It was also clearly emphasized that it was their honest opinion that was of interest.

Another potential limitation of the study concerns the methodology used. Because all the measures were collected at the same interviews, there was a potential problem of common methods effect. By this it is meant that the results found could be explained by the measurement method rather than the constructs the measurements represent (Podsakoff, MacKenzie, Podsakoff,2003). The way the interviews were performed could have elicited a certain way of responding, e.g. the relationship between the different SWOT level and the different TAS levels. It would probably have been interesting to use questionnaires in addition to the interviews, enabling a method triangulation which would have increased the validity of the results.

A third limitation concerns the fact that the current study was performed at a single point in time. The disadvantage with such a cross- sectional design is that one cannot draw any causal inferences. Thus, the pattern that was found in how SWOT statements were targeted in the organization may only be true at that point in time. Fourthly, the interviews carried out onboard the vessel was performed in English, which was neither the native language of the interviewers nor the interviewees. The interviews performed with participants from mid-level management were also performed in English. This might have affected the conversation, as such, affected the quality of the information collected.

Certain strengths can also be connected to the current study. The SWOT- based interviews enabled the interviewees to reflect freely, but at the same time it provided an opportunity to reveal possible patterns in these reflections. Secondly, by focusing both on the quantitative distribution of SWOT statements as well as the qualitative content it was possible to both assess the substance of what the participants talked about as well as how positive and negative evaluations were distributed in the organization. Thirdly, by including participants from all three organizational levels and participants from different positions within their respective levels, it was possible to avoid that the results reflected opinions from only one organizational level or from one position within these levels, e.g. top management or superiors.

Possible implications

The results indicate several findings which are interesting both concerning ongoing discussions within safety climate research as well as the safety focus in the organization. This

has already been discussed in connection to the objectives of the current study. However, some possible implications will be presented in the following section.

SWOT based interviews seems to be a fruitful method for gathering interesting information regarding the safety climate concept. The present study indicates that some dimensions might be common, but that others probably need to be identified at a company or industry- specific level. Four dimensions beyond the scope of the SCM were identified. Consequently, this might argue in favor of increasing the use of interviews to investigate the safety climate concept. This might contribute in identifying both a set of generic dimensions, as well as tailoring certain dimensions to specific industries. E.g. in further research it would be interesting to see whether the four residual dimensions replicates in other shipping companies, something which would support that idea the shipping industry has certain qualitative characteristics which need to be taken into consideration in terms of safety climate.

Regarding the safety reflections in the company, it is reassuring that they touch upon all dimensions in the SCM. This indicates that they are able to identify both distal and proximal issues which relate to safe operation. It's also reassuring that they are able to identify a considerable amount of weaknesses in the blunt- end of the organization. This might indicate a willingness to learn (Dekker, 2006). On the other side of the coin, it is worrying that there seems to be a tendency to attribute negative and person- focused statements at the sharp- end of the organization, while most of the positive evaluations are targeted at the blunt- end. Consequently, the organization probably needs to work with changing the perception of the vessel as an organizational unit only bringing problems and constraints. They should probably also focus on identifying more situational explanations for current conditions, as well as situational or organizational opportunities to improve these conditions. Without doing this the problems may remain unsolved.

Conclusions

The results from the present study indicated that the dimensions identified in the safety climate model (SCM) accounted for almost 80% of the statements extracted from the interviews. Among the remaining 20% residual it was possible to identify four dimensions of relevance to safety beyond the scope of the SCM. Accordingly, SWOT based interviews were found to be potentially sensitive in capturing safety climate relevant information. Based on the results one might suggest that a set of generic dimensions probably needs to be complimented by dimensions identified at a company or industry- specific level. One might

also suggest that interviews could be used as a fruitful instrument to explore the safety climate construct in the future.

The topics reflected upon in the interviews indicated that the safety focus in the company was mature. However, the evaluations connected to the descriptive information indicated a troubling tendency to attribute negative and person- focused safety issues at the organizational sharp- end, the vessel. Thus, the organization probably needs to work with changing the perception of the vessel as an organizational unit only bringing problems and constraints. One possible solution could be to work with attaching situational explanations to current conditions, as well as identify situational or organizational opportunities to improve these conditions.

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Appendix

Introduction to interview
(to be handed out to participants on beforehand)

We are very grateful that you have taken the time to let us interview you. We are Master's degree students in psychology at the University of Oslo. During the following year we will be writing our Master's thesis in cooperation with Company X on evaluating their safety initiatives since 2002. Data from this interview will, together with all the other interviews we will be performing, create the basis for our analysis. The aim of this interview is to gain knowledge, insights and understanding of what you have experienced, what your views are and your thoughts and feelings are concerning safety in the organizational network with an emphasis on the human side of safety.

We would like to tape record the interview so that important information will not be lost or forgotten. Only the two of us, together with our supervisors at the university will have access to the recordings. All the information you will be giving is anonymous and confidential. All names and personal identification will be deleted in the final thesis, and it will not be possible to trace any information back to you. Nothing you say will be known to any of your colleagues or to your employer. However, if you do not feel comfortable with recording the interview, we would like you to tell us, and the interview will not be recorded. Your participation is voluntary and you may at any time choose to end the session if you wish to do so. By answering the questions, you will give your consent to participate in this research.

The interview will be based on a technique called SWOT analysis, aiming to shed light upon four aspects of safety within the organizational network– strengths, weaknesses, opportunities and threats. The questions will be very open and general, so the focus in the interview will be largely up to you to decide. No answers are considered more correct than others; the only thing we are interested in is your honest opinion.

Signature, interviewer   Signature, interviewee

Date and place   Date and place

Interview guide

Welcome to this interview. Did you read the introduction to the interview that we handed out to you? How do you feel about tape recording the interview? Do you have any questions before we start?

Demographic/practical information
We would like to start by asking you some demographic/practical questions such as age and position/rank. This will not be directly relevant to us, but might have an impact on your experiences and thoughts.

1. Position
2. Nationality
3. Sex
4. Age
5. *Which parts of Company X's safety campaign training have you completed? (only for crew onboard the vessel)*

The following questions will be related to safety (main questions)

What do you consider strengths in this organizational network regarding safety?

What do you consider weaknesses in this organizational network regarding safety?

Can you think of any means for improving the quality of safety in the organizational network?

Can you identify any problems that will prevent better safety in the organizational network?

(Follow up questions for all main questions)

Could you say something more about that?
Can you give an example?
Can you think of anything else?
What do you mean by that?
Am I understanding you correctly in that what you are saying is…?

Thank you for answering our questions! Do you have any questions regarding the interview or your anonymity?