Organizational values and valuing safety at work

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1 Introduction

Organizations are increasingly interested in the value of safety: What does it mean for organizations? What kind of consequences does it have for organizations, their employees, performance, reputation and financial success? Many organizations have recognized that organizational values are important for safety, but there is a need for better understanding of the relations between the value of safety and safety performance, as well as the value conflicts affecting safety.

This study is the second part of the Value of Safety (ValoSa) research project. The first part of this project consisted of a literature review, interviews with CEOs and senior managers, and a Delphi study of several stakeholder groups. The second part of the project consisted of interviews at the supervisor and worker levels, as well as the "Organizational values and valuing safety at work" survey carried out in three Finnish companies. This report covers the second part, whereas the first part is detailed in the previous report (Ratilainen et al. 2016).

In the first part of our project, we revealed that there is no unanimous definition of safety as an organizational value. Through the Delphi study, we were able to develop a consensus on what it means when safety is a true organizational value, together with a consensus on what the potential benefits of safety as a value are, what factors influence it, and how it can be recognized in practice.

Based on our literature review, the top managers and supervisors can strengthen safety as a value through consistent actions, and it is important to distinguish between values that are really shared and lived up to, and espoused values, which are mainly communicated verbally and in writing. If there is a conflict between the shared values and espoused values, employees will not believe the espoused values.

The CEOs and top managers from several European forerunner companies whom we interviewed in the first part of the research identified good safety as a sign of good business and management, a responsible and respected employer, and engaged employees. They saw safety as a priority and as quality of work, and also as an investment for workers and the future of the organization. According to the CEOs, safety as a value was shared most commonly through communication: meetings, safety walks, campaigns, etc., as well as through safety training and an open climate for new ideas and reporting accidents and near

misses. The CEOs emphasized the role of the behaviour of management and supervisors, which was also identified in the literature review. As the challenges related to sharing safety as a value and safety at work, CEOs and managers mentioned, for example, the employees' attitudes and motivation towards safety, the dilemma between safety and costs, and the need for new innovations when it comes to ways of working.

In the second part of our research, using data gained from the literature review, the CEO interviews, and the Delphi study, we developed the "Organizational values and valuing safety at work" survey. In addition, we carried out interviews with employees and supervisors in order to identify any other aspects related to safety as an organizational value. The aim of our survey was to study 1) how safety is valued in different organizational groups, 2) what kind of value conflicts come up in everyday work, decision-making and value communication, 3) how organizations promote and share the safety as a value in practice, and 4) what factors in companies and organizations can strengthen safety as a value.

2 Interviews with supervisors and employees

2.1 Participants

We carried out ten group interviews in two of the three companies participating in the value questionnaire. The group interviews were held in June 2015. Altogether 32 persons participated in the group interviews: 12 supervisors, 12 employees and 8 interviewees from the safety organization.

2.2 Implementation of the group interviews

The interviews were theme interviews with 2–5 interviewees. The aim of the interviews was to provide information 1) to develop the value questionnaire and 2) to better understand and interpret the results from the value questionnaire. The interviews consisted of following themes:

1. Organizational values and their visibility at the workplace
2. The value of safety and exposing it at the workplace
3. Value-related conflicts at work
4. Needs for improvements concerning safety
5. Your own role in safety matters (only for the safety organization)

The interviewer had elaborative questions for each theme. The duration of the interviews varied from one to two hours. The results of the group interviews are described at a general level for reasons of privacy protection.

2.3 Main observations from the group interviews

Both companies had defined their organizational values, with safety being one of the values of both companies.

The factors interviewees considered to improve safety included the following:

- open discussion/communication and emphasizing safety matters
- anticipating safety, risk assessments
- continuous training and orientation
- in-work safety management practices (safety observations system, safety walks, safe tools and equipment, etc.)

The factors mentioned by the interviewees as weakening safety included:

- inadequate/over-optimistic planning and scheduling, not updating the schedules after delays due to other quarters
- supervisors hurrying employees
- ➔ perceptions of haste; temptation to take a short cut in safety instructions or choose a faster but less safe way of work
- poor design of the work environment, processes or equipment

The ways safety as a value was communicated according to the interviewees included:

- safety information (safety bulletin, safety info emails)
- safety training and other events, safety matters as a part of weekly meetings, etc.
- encouraging employees to report safety-related problems
- rewarding based on safety matters
- Some of the interviewees considered safety to be communicated mostly through events and bulleting, and not so much in everyday work.

With regard to value-related conflicts, the interviewees pointed out the following, for example:

- time pressure/efficiency vs. safety: middle/top managers or customers do not necessarily understand what or how long it takes to perform a certain task safely
- competing safeties, e.g. occupational safety vs. process safety
- planning and developing safety procedures/instructions at work are not participative ➔ impossible instructions or requirements
- supervisors/managers do not always intervene in unsafe actions or safety deficiencies they have noticed

As regards ways to improve safety, the interviewees suggested the following, for instance:

- better devices for work, safer equipment
- a genuinely responsive and open atmosphere for employees' ideas and suggestions for safety and work
- more participative safety development
- decreasing perceptions of haste.

3 "Organizational values and safety as a value" survey

3.1 Participants

The sample was gathered from three Finnish companies operating in different fields of industry: construction, chemical industry, and paper industry. The survey took place between September and December 2015, depending on the company. The surveys were filled out using the Digium digital survey tool or in paper format. Altogether 2804 individuals were approached in order to participate in the survey. In total, 1362 individuals responded, representing a response rate of 49 %.

Eighty-six percent of the respondents were male and 14% female. Most of the respondents belonged to the age group of 45–54 years (Figure 1).
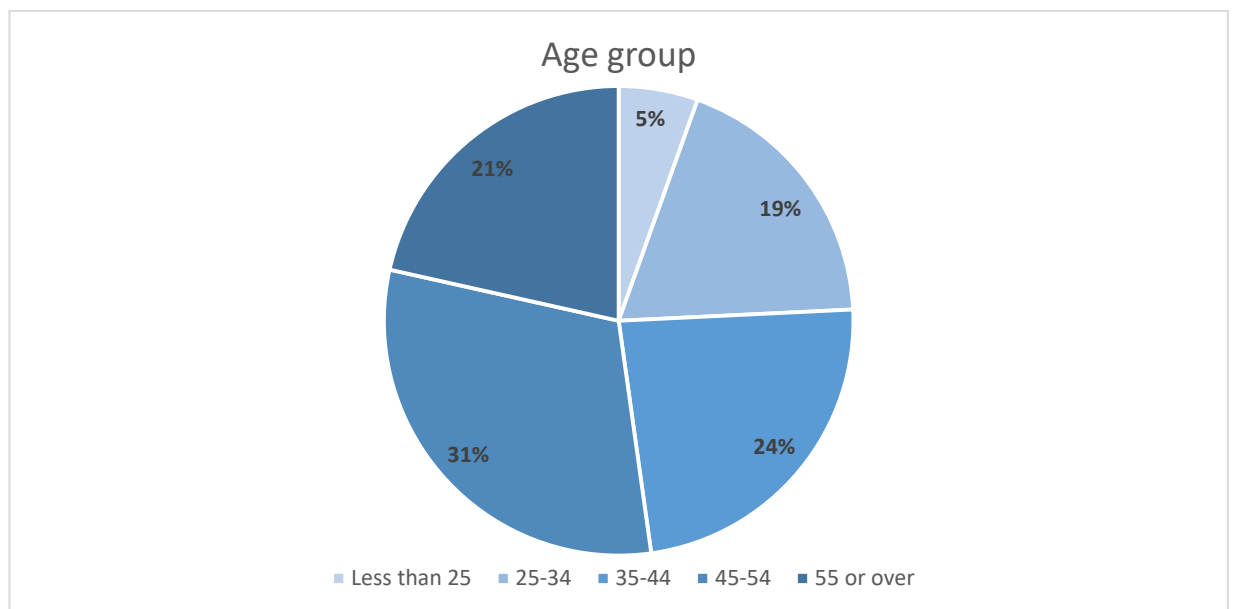
Figure 1. Respondents by age group.

Twenty-four percent of the respondents had a supervisory position, while 76% were working in a non-supervisory position. The average age of the respondents was 44 years (SD=12). The personnel groups of respondents are presented in Figure 2.
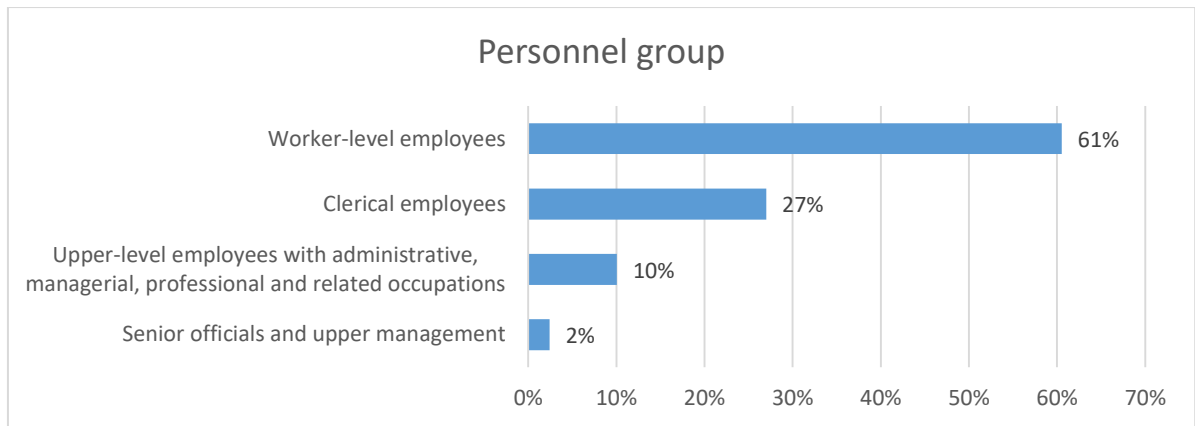
Figure 2. Respondents by personnel group.

Most of the respondents had 11–20 years of work experience (Figure 3). Only around one out of ten respondents had work experience of two years or less.
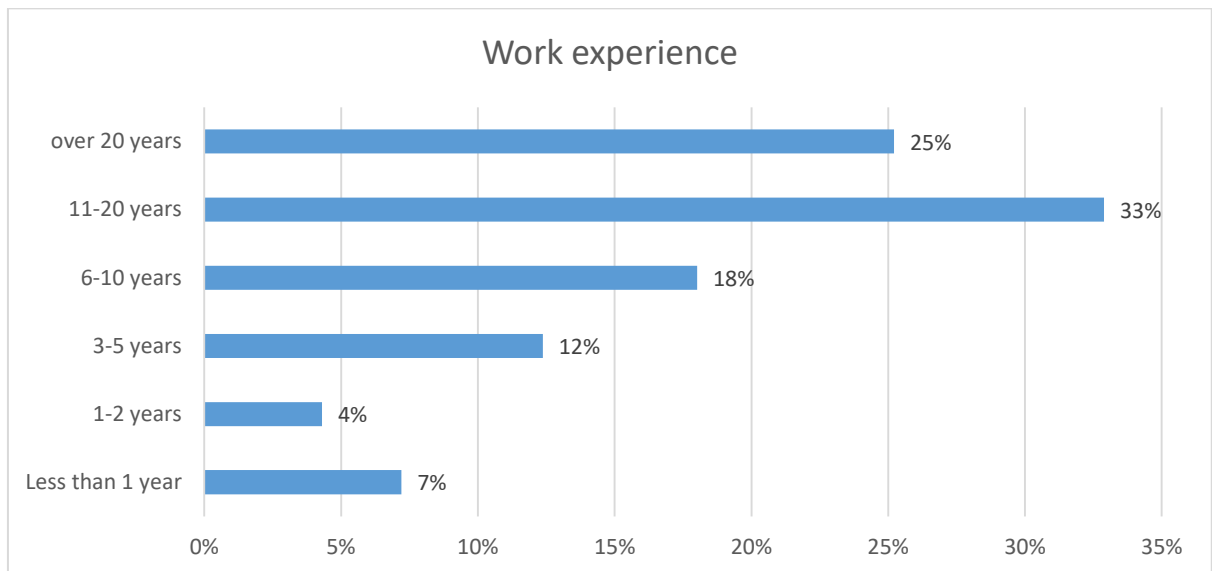
Figure 3. Respondents by work experience.

Most of the respondents (90%) had a permanent employment position, while 10% were working with a temporary contract.

3.2   Survey method

3.2.1   The content of the survey

The "Organizational values and valuing safety at work" survey was developed in this study by combining existing survey methods with new items generated for this study. The survey was intentionally compiled to

be quite extensive, in order to identify the different aspects related to safety as a value and the value of safety in organizations.

We constructed the survey with ten different sections, covering personal values, work values, and items describing how safety is valued by respondents themselves and how respondents consider their supervisors, managers and co-workers to value safety. We also included items describing ways of sharing and communicating safety as a value, as well as the barriers preventing individuals from acting safely in everyday work. The content of the survey is presented in Table 1.

Table 1. The content of the "Organizational values and valuing safety at work" survey.

| Section	Method and focus
A. Organizational unit	Respondent's working unit
B. Background information	Year of birth, sex, personnel group, educational background, supervisory role, work experience, type of employment, Occupational Safety Card
C. Accidents and near misses	Accidents involving oneself and colleagues/subordinates, reporting near misses, effective ways to prevent accidents
D. Safety activities at the workplace	Items describing the safety performance and activities in everyday work at the individual, group, management, and organizational levels. 5-point Likert scale, where 1=fully disagree and 5=fully agree.
E. Valuing safety at the workplace	Items describing the employer's motives for safety and the value of safety, and social responsibility for the safety of the employees, environment and community. 5-point Likert scale, where 1=fully disagree and 5=fully agree.
F. Safety and risk perceptions at the workplace	Items describing the risk perceptions and motivations for safety. 5-point Likert scale, where 1=fully disagree and 5=fully agree.
G. Practical safety challenges	Items describing the value conflicts in everyday work, decision-making and value communication. 5-point Likert scale, where 1=fully disagree and 5=fully agree.
H. Typical working conditions and circumstances at work	Frequency of typical straining work conditions and circumstances. The scale consisted of twelve items from the SUJUVA scales (Kalakoski et al 2012) concerning typical human errors and straining work conditions. 5-point Likert scale: 5=daily, 4=weekly, 3=monthly, 2=yearly, 1=never.
I. Work-related values	The Work Value Survey (Ros, Schwartz & Surkiss

		1999) was used to study the work-related values of the participants. 5-point Likert scale, where 1=not important at all, and 5=very important.
J.	Values in life	21-item version of the Portrait Values Questionnaire (Schwartz & Bilsky, 1987, 1990; Schwartz, Melech, Lehmann, Burgess, & Harris, 2001; Schwartz & Sagiv, 1995; Schwartz, 1992, 1994) with two additional items concerning safety at work. 6-point Likert scale, where 1=Not like me at all, 2=Not like me, 3=A little like me, 4=Somewhat like me, 5=Like me, 6=Very much like me

To study the participants' basic values in life, we used the 21-item version of the Portrait Values Questionnaire (PVQ) (Schwartz & Bilsky, 1987, 1990; Schwartz, Melech, Lehmann, Burgess, & Harris, 2001; Schwartz & Sagiv, 1995; Schwartz, 1992, 1994) with two additional items concerning safety at work. The items added to the original questionnaire were:

- Safety at work is important to him/her. He/she wants his/her employer to ensure that working is safe.
- It is important for him/her to work safely in every situation. He/she tries to avoid safety risks at work.

To measure respondents' values at work, we used the Work Value Survey (WVS) (Ros, Schwartz & Surkiss 1999).

Twelve items were selected from the SUJUVA survey (Kalakoski et al. 2012), describing typical straining work conditions and typical human errors at work.

3.2.2 Statistical methods

Factor analysis with initial extraction rotation was used to determinate sum of the variables, excluding PVQ and WVS. Since the items of the new sections of the questionnaire were not based on a single theory but on several theoretical approaches and findings, there was no single theoretical motivation to find certain subscales. Therefore, exploratory factor analysis was chosen in order to discover a factorial structure that is statistically, theoretically, and practically justifiable. The reliability of the sums was measured by counting Cronbach's α-values. The Pearson correlation coefficient was calculated for the sum of the variables. The association between work injuries and the sum of the variables was analysed with binary logistic regression. Linear regression analysis was used for continuous variables. All analyses were adjusted for sex, age and

education. One-Way ANOVA with Bonferroni ad-hoc tests were used to analyse the differences between different respondent groups.

3.3 Findings and discussion

3.3.1 Dimensions for valuing safety

Based on the factor analysis, we ended up with 19 subscales. These are presented in

Table 2. Perceptions of workplace safety values are transmitted across levels of the organization, but on the other hand, different organizational groups have different perspectives on safety as a value, and therefore also tend to have different ways espousing safety as their value. (See e.g. Colley and Neal 2012; Salminen and Koivula 2006.) In our study, we have categorized the subscales based on the organizational level that the subscale mainly describes. For example, "Acting safely is not supported in everyday work" indicates that the prerequisites for valuing safety are not provided by the organization and/or employer (see

Table 2).

Table 2. The subscales of the survey based on the factor analysis.

Factor	Organizational level	No. of items	Positive/ negative effect on safety	Cronbach's α	Theme
Organization values safety in order to avoid negative outcomes	Organization / Employer	3	- (/+) (*	α=0.854	Motivations for safety (SV1)
Organization values safety in order to pursue positive	Organization / Employer	4	+	α=0.872	

outcomes					
Organization has an extensive interest in safety	Organization / Employer	3	+	α=0.894	
Safety personnel is active	Safety personnel	3	+	α=0.920	Support for safety performance (SV2)
Safety training is useful	Organization	3	+	α=0.879	
Acting safely is not supported in everyday work	Organization / Management	5	-	α=0.799	
Safety deviations are handled actively	Organization / Management	3	+	α=0.895	
The management's safety communication is open and active	Management	3	+	α=0.918	Management's actions and priorities regarding safety (SV3)
Safety is not the management's priority	Management	6	-	α=0.901	
The management participates and involves employees	Management	3	+	α=0.909	
Supervisors ignoring safety	Supervisors	3	-	α=0.913	Supervisors' actions and priorities regarding safety (SV4)
Supervisors showing their responsibility	Supervisors	3	+	α=0.944	
Supervisors showing a good example and encouraging employees in safety matters	Supervisors	5	+	α=0.908	
Acting safely is valued in the work community	Work group / Organization	2	+	α=0.936	Valuing safety at the work-group level (SV5)
Employees are acting for the common safety	Work group	3	+	α=0.862	
Safety is ignored in work-group level	Work group	3	-	α=0.770	
The value of safety is not recognized by individuals	Individual	6	-	α=0.805	Valuing safety at the individual level (SV6)
Individuals are committed to work safely	Individual	5	+	α=0.874	
Concerned about getting in an accident at work	Individual	2	-	α=0.823	Concerned about getting in an accident at work (SV7)
*) This subscale can be considered both a positive and a negative factor.					

The internal consistencies (Cronbach's alpha based on standardized items) for most of the subscales (17/19) were at least at a good level ($\alpha \geq 0.8$) and for 2 subscales at an acceptable level ($0.7 \geq \alpha > 0.8$). We also categorized the subscales to negative and positive scales (see

Table 2). The positive (+) category means that the scale represents a positive/beneficial aspect relative to safety, and the negative (-) category means that the scale represents a negative aspect relative to safety. For example, "Acting safely is appreciated in the work community" is considered beneficial for safety as a value.

One of the subscales, "Organization values safety in order to avoid negative outcomes", could be considered both negative and positive. It is negative since the reason for valuing safety should not only focus on avoiding negative outcomes (e.g. sanctions), although avoiding negative outcomes is a traditionally accepted goal for safety. We propose that when safety is an intrinsic and 'true' value for the organization, the motivators for valuing safety should be the understanding of the positive outcomes and 'the greater good' that can be achieved.

3.3.2 Values in life

The Portrait Values Questionnaire was used to measure the personal values of respondents, and it resulted in good internal consistencies ($\alpha = 0.756...0.939$) for the scale and its subscales. The means and standard deviations of the subscales for the questionnaire are presented in Table 3, as well as differences between personnel groups.

Table 3. The means and standard deviation of Portrait Values Questionnaire subscales, and differences between personnel groups.

Portrait Values Questionnaire	N	Mean	Std. Deviation	Crohnbach's α	Differences between personnel groups
Security (J5, J15)	1230	4.23	1.066	α=0.845	Senior officials/upper management scored significantly lower than other groups.

Conformity (J7, J17)	1224	3.96	1.059	α=0.859	Worker-level employees scored significantly lower than upper-level employees and clerical employees.
Tradition (J9, J21)	1229	3.62	1.015	α=0.756	No differences between groups.
Benevolence (J13, J19)	1243	4.74	0.892	α=0.892	Worker-level employees scored significantly lower than clerical employees.
Universalism: (J3, J8, J20)	1248	4.47	0.933	α=0.849	Worker-level employees scored significantly lower than upper-level employees.
Self-direction (J1, J12)	1239	3.94	0.979	α=0.817	Worker-level employees scored significantly lower than other groups.
Stimulation (J6, J16)	1231	3.54	1.034	α=0.852	No differences between groups.
Hedonism (J10, J22)	1235	3.79	1.132	α=0.919	No differences between groups.
Achievement (J4, J14)	1233	3.20	1.130	α=0.908	Worker-level employees scored significantly lower than other groups.
Power (J2, J18)	1236	2.80	1.014	α=0.846	Worker-level employees scored significantly lower than other groups.
Occupational Safety (J11, J23)	1239	5.05	0.905	α=0.939	Worker-level employees scored significantly lower than upper-level employees and clerical employees.
The answering scale was: 1: Not like me at all, 2: Not like me, 3: A little like me, 4: Somewhat like me, 5: Like me, 6: Very much like me					

On average, the most highly scored personal values were occupational safety, which was added to the original scale, and benevolence. The most lowly scored items were power and hedonism. Interestingly, the worker-level employees

scored significantly lower than upper-level and clerical employees on the occupational safety factor, however there was no significant difference between workers and senior officials/upper management concerning the occupational safety factor.

3.3.3 Work-related values

The Work Value Survey was used to measure respondents' work-related values. The survey resulted in good internal consistencies (α= 0.819...0.875). The standard deviations of the subscales are presented in

Table 4.

Table 4. The means and deviations of the Work Value Scale, and differences between personnel groups.

Work Value Survey	N	Mean	Std. Deviation	Crohnbach's α	Differences between personnel groups
Extrinsic work values: I1 & I2	1268	4.40	.658	α=0.875	Worker-level employees valued significantly higher than senior officials/upper management.
Intrinsic work values: I3 & I6	1262	4.06	.713	α=0.819	Worker-level employees valued significantly lower than other groups.
Social work values: I4, I7 & I9	1270	3.70	.780	α=0.850	Worker-level employees valued significantly lower than other groups. Clerical employees valued significantly lower than upper-level employees.
Prestige work values: I5 & I8	1256	3.03	.856	α=0.828	Worker-level employees valued significantly lower than other groups.
The answering scale was: 1: Not important at all … 5: Very important.					

On average, the extrinsic work values were considered most important and the prestige work values least important. The only work value factor that worker-level employees valued higher than other personnel groups was extrinsic values.

3.3.4   How safety is valued in the organizations

Three subscales described the motivations for safety (Figure 4). Around four out of five of the respondents at least partly agreed that their organization values safety in order to pursue positive outcomes (e.g. to improve the organization's competitiveness or image) and has an extensive interest in safety (e.g. promoting safety at the industry level). Seven out of ten respondents at least partly agreed that the motivation for safety is to avoid negative outcomes (e.g. avoiding sanctions or costs).
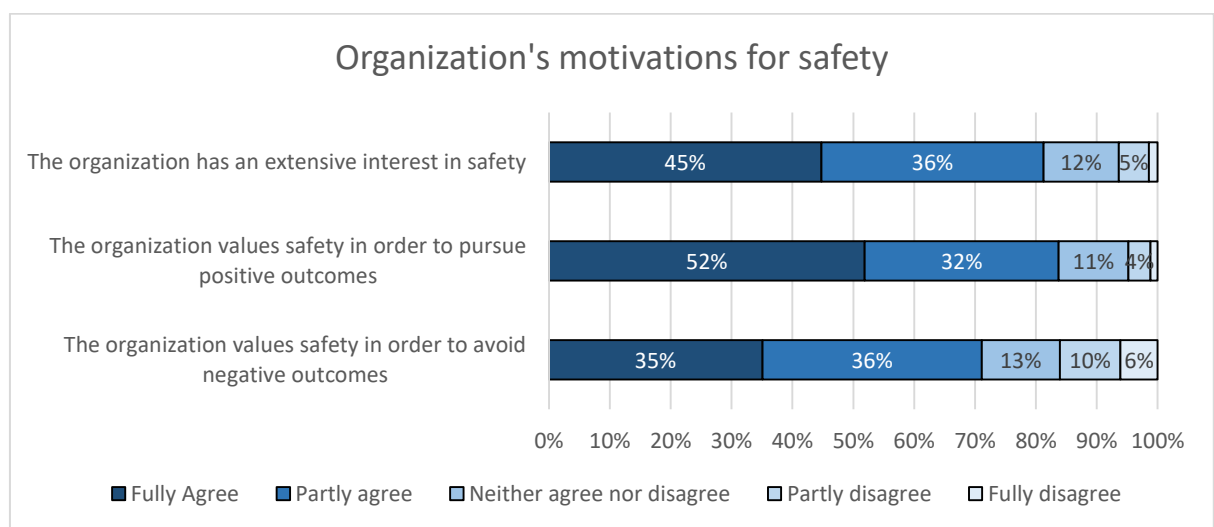
Figure 4. Organization's motivations for safety.

The management's actions and priorities regarding safety were measured using three subscales (Figure 5), and almost nine out of ten respondents at least partly agreed that the management's safety communication is open and active (e.g. management openly talks about safety issues). Three out of four respondents at least partly agreed that the management participates and involves employees in safety matters (e.g. management holds safety walk-arounds on a regular basis). Less than one third of the respondents at least partly agreed that safety is not the management's priority (e.g. top management talks about safety but the commitment is not shown in practice, or the rewarding systems are based on financial matters, not on safety).
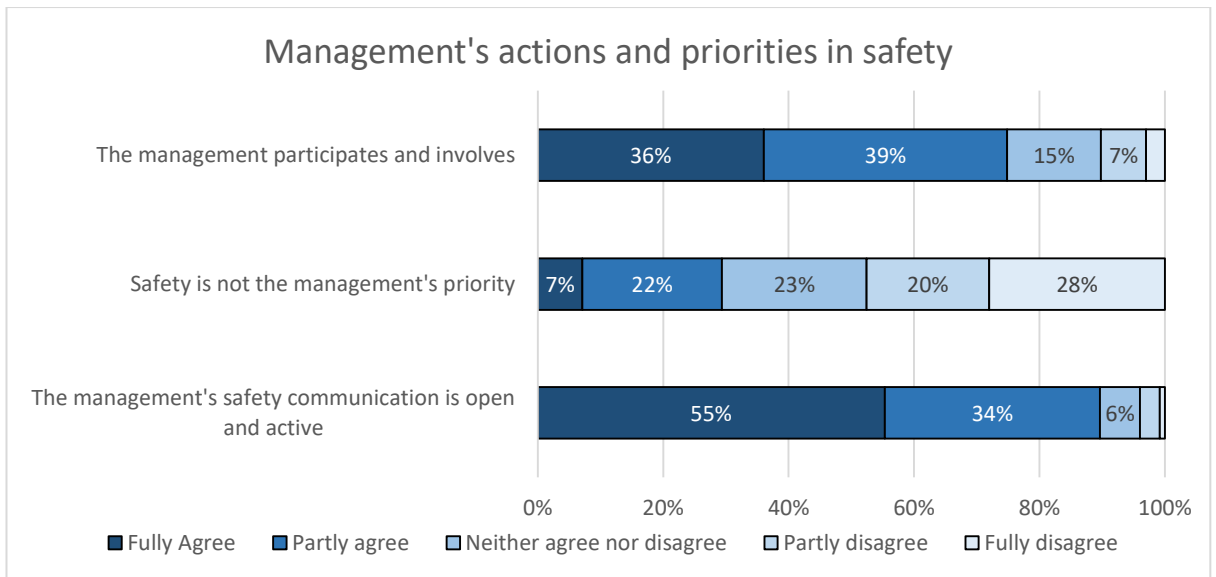
Figure 5. Management's actions and priorities in safety.

Three subscales measured supervisors' actions and priorities in safety (Figure 6). Around eight out of ten respondents at least partly agreed that supervisors show a good example and encourage employees in safety matters (e.g. encouraging reporting on safety deviations and being exemplary in safety), and that supervisors show their responsibility when it comes to safety. Less than one third of the respondents at least partly agreed that supervisors ignore safety matters (e.g. supervisors agreeing to take risks when the schedule is tight).

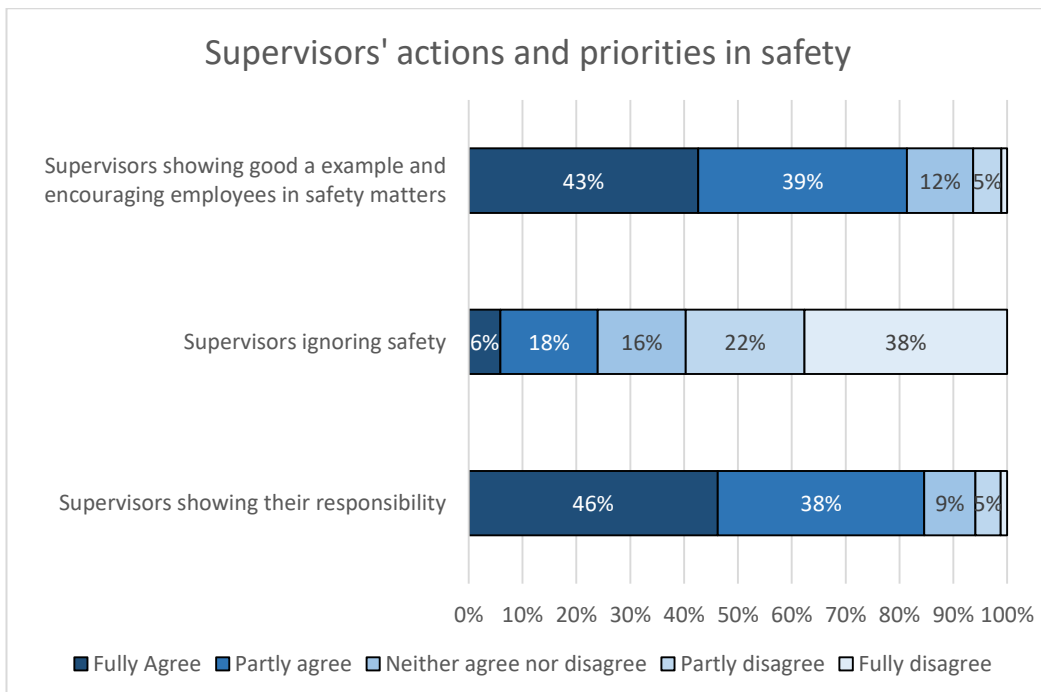*Figure 6. Supervisors' actions and priorities in safety.*

Four subscales measured support for safety performance (

). Around four out of five respondents at least partly agreed that safety deviations are handled actively (e.g. the actions decided on after incidents are always implemented). Around seven out of ten respondents at least partly agreed that safety personnel is active, and that safety training is useful. Around every fourth respondent at least partly agreed that acting safety is not supported in everyday work (e.g. not obtaining suitable tools for safe working or too tight schedules leading to unsafe work).

Support for safety performance

Statement	Fully Agree	Partly agree	Neither agree nor disagree	Partly disagree	Fully disagree
Safety personnel is active	42%	31%	19%	5%	
Safety deviations are handled actively	47%	35%	13%		
Acting safely is not supported in everyday work	5%	19%	17%	19%	40%
Safety training is useful	36%	39%	17%	7%	
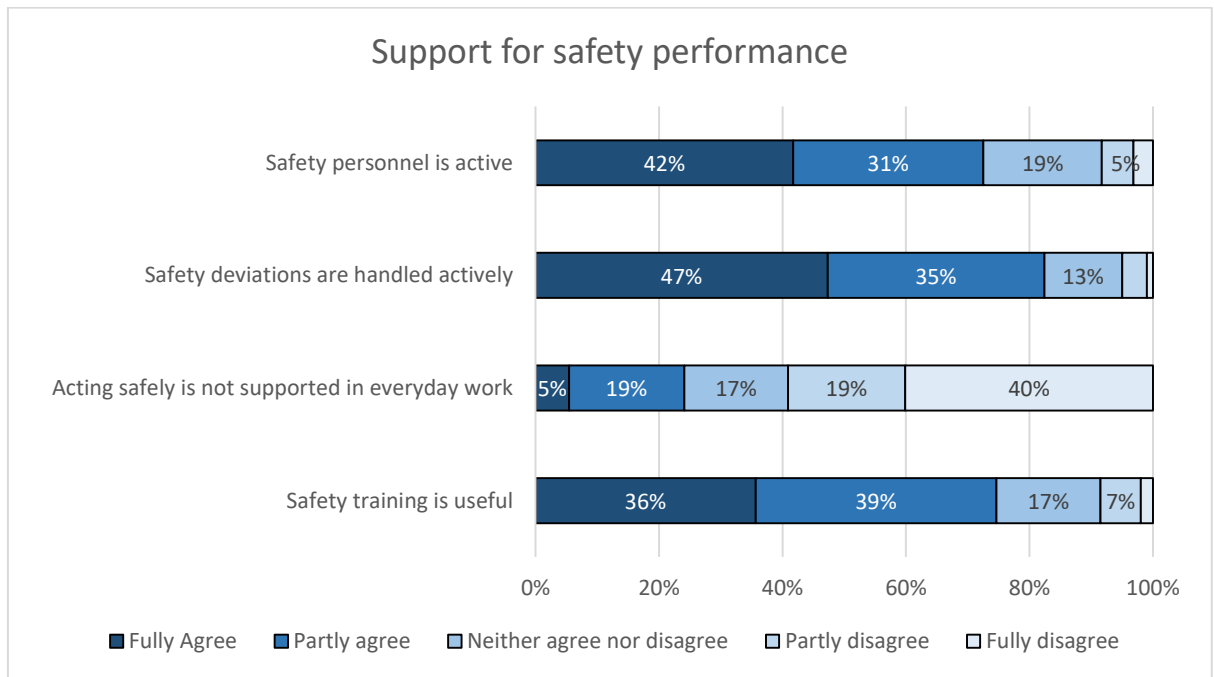
Figure 7. Support for safety performance.

Three of the subscales measured how safety is valued at the work-group level (Figure 8). Over nine out of ten respondents at least partly agreed that acting safely is valued in the work community (e.g. people working here value a high level of safety performance). Around eight out of ten respondents at least partly agreed that employees are acting for the common safety (e.g. co-workers intervene if someone is working unsafely). Only 2% totally agreed and 12% partly agreed that safety is ignored at the work-group level (e.g. work group sometimes taking a short cut with safety procedures).

Valuing safety at the work-group level

	Fully Agree	Partly agree	Neither agree nor disagree	Partly disagree	Fully disagree
Safety is ignored at the work-group level		12%	15%	29%	42%
Acting safely is valued in the work community	53%	39%		5%	
Employees are acting for the common safety	38%	45%	11%	5%	

Figure 8. Valuing safety at the work-group level.

Our survey had two subscales describing how individuals value safety (Figure 9). More than nine out of ten respondents at least partly agreed that they are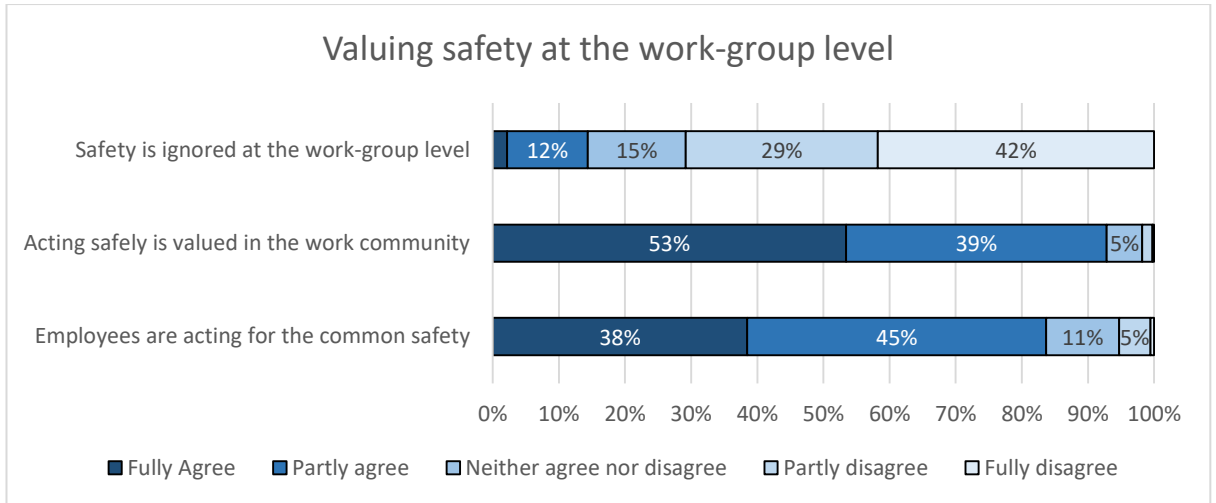 committed to working safely (e.g. working safely even when not supervised). Less than one out of ten respondents at least partly agreed that the value of safety is not recognized by individuals (e.g. working safely requires too much effort).

Valuing safety at the individual level

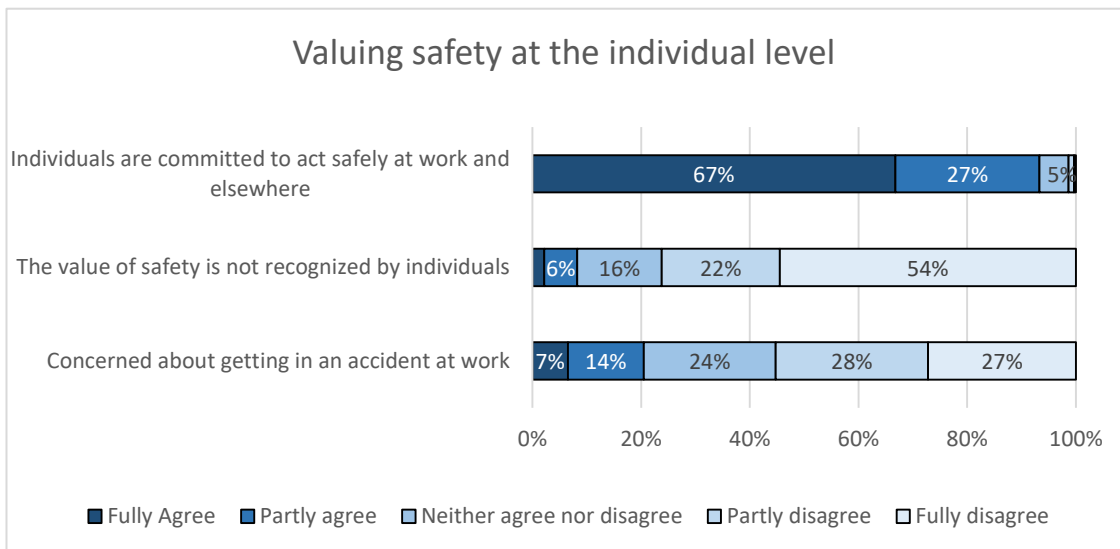|	Fully Agree	Partly agree	Neither agree nor disagree	Partly disagree	Fully disagree
Individuals are committed to act safely at work and elsewhere	67%	27%	5%		
The value of safety is not recognized by individuals	6%	16%	22%	54%	
Concerned about getting in an accident at work	7%	14%	24%	28%	27%

Figure 9. Valuing safety at the individual level.

Our analyses showed that there were significant differences (p=0.000-0.009) between supervisors' and non-supervisors' opinions regarding every factor describing how safety is valued in the organization, with non-supervisors being

more critical than supervisors. The summary of the analyses is presented in *Table 1*. For example, non-supervisors considered significantly more often that safety is not a priority for management and that supervisors are ignoring safety. However, the non-supervisors were also more critical towards group and individual-level factors.

*Table 5. Differences between non-supervisors' and supervisors' views concerning safety as a value in their organization (**higher** scores bolded).*

	Non-supervisor			Supervisor			Total			ANOVA
	Mean	N	SD	Mean	N	SD	Mean	N	SD	Sig.
The organization has an extensive interest in safety	4.101	922	.8045	**4.420**	295	.6078	4.178	1217	.7734	0.000
The organization values safety in order to pursue positive outcomes	4.233	922	.6953	**4.485**	295	.5478	4.294	1217	.6711	0.000
The organization values safety in order to avoid negative outcomes *	**3.897**	922	.8877	3.649	295	.9640	3,837	1217	.9126	0.000
The management participates and involves employees	3.889	918	.8858	**4.212**	294	.8095	3.968	1212	.8785	0.000
Safety is not the management's priority *	**2.742**	905	.9728	2.243	295	.9222	2.619	1200	.9840	0.000
The management's safety communication is open and active	4.335	922	.7363	**4.593**	296	.5509	4.398	1218	.7043	0.000
Supervisors show a good example and encourage employees in safety matters	4.083	918	.7527	**4.391**	294	.5875	4.158	1212	.7280	0.000
Supervisors ignore safety *	**2.459**	922	1.1298	1.937	295	.9602	2.333	1217	1.1135	0.000
Supervisors show their responsibility	4.154	921	.8433	**4.465**	296	.5970	4.230	1217	.8014	0.000
Safety personnel is active	3.950	919	.9338	**4.238**	295	.7764	4.020	1214	.9062	0.000
Safety deviations are handled actively	4.182	921	.7730	**4.411**	295	.5961	4.237	1216	.7403	0.000
Acting safely is not supported in everyday work *	**2.373**	903	.8350	2.120	295	.7130	2.310	1198	.8137	0.000
Safety training is useful	3.919	920	.8034	**4.236**	295	.6985	3.996	1215	.7907	0.000
Safety is ignored at the work-group level *	**2.069**	908	.7872	1.933	295	.7243	2.035	1203	.7742	0.009
Acting safely is valued in the work community	4.381	917	.6563	**4.599**	294	.5279	4.434	1211	.6342	0.000
Employees are acting	4.106	918	.6870	**4.323**	295	.5551	4.159	1213	.6637	0.000

for the common safety										
Individuals are committed to working safely	4.555	908	.5219	**4.661**	295	.3990	4.581	1203	.4965	0.001
The value of safety is not recognized by individuals	**1.858**	908	.6804	1.627	295	.5164	1.801	1203	.6515	0.000
Factors with reversed scales are marked with an asterisk (*); a lower mean is better.										

In addition, one subscale described how concerned respondents are about getting into an accident at work (Figure 10). In total, 23% of respondents in non-supervisory positions and 14% of respondents in supervisory positions at least partly agreed that they were concerned about getting into accidents.
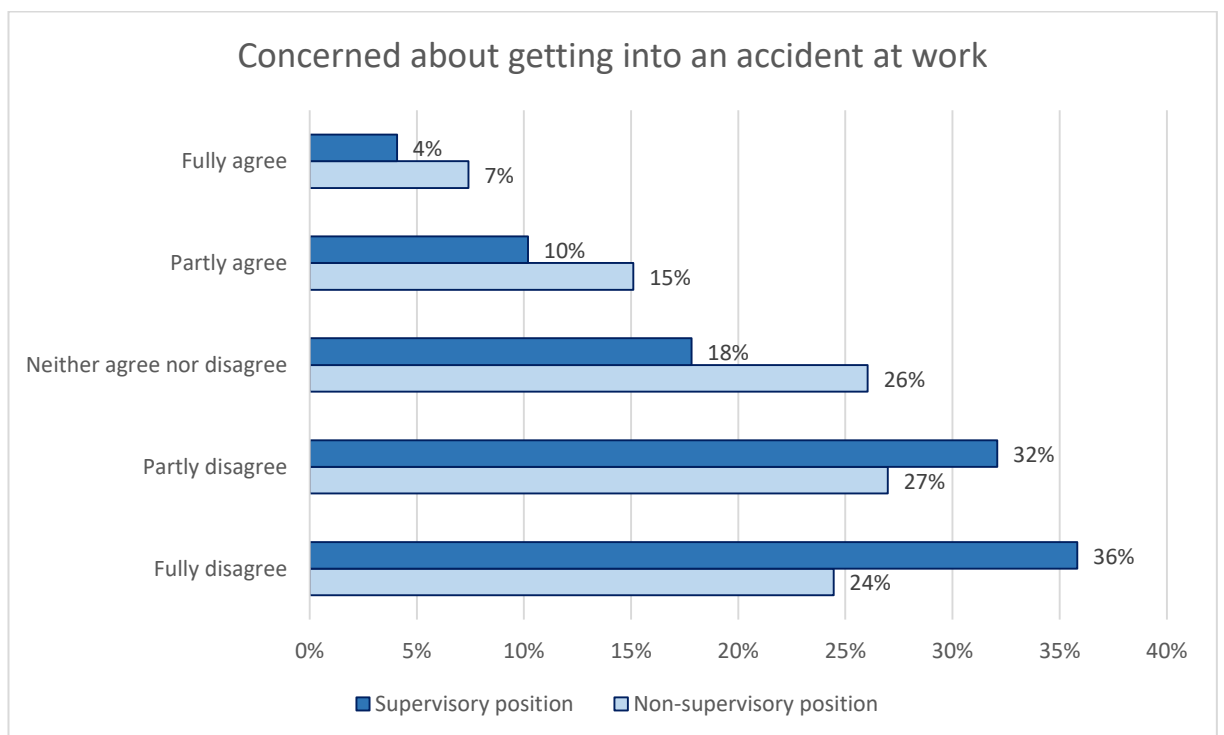

Figure 10. Concerned about getting into an accident at work.

3.3.5   Negative safety outcomes

Roughly one out of ten of the respondents have had an accident in the last three years. A total of 28% reported that either their co-worker or subordinate had had a serious accident at some point.

Three subscales were used to measure the human errors occurring at work, and three subscales to measure straining working conditions respondents are facing (Figure 11 and Figure 11. Human errors occurring at work.
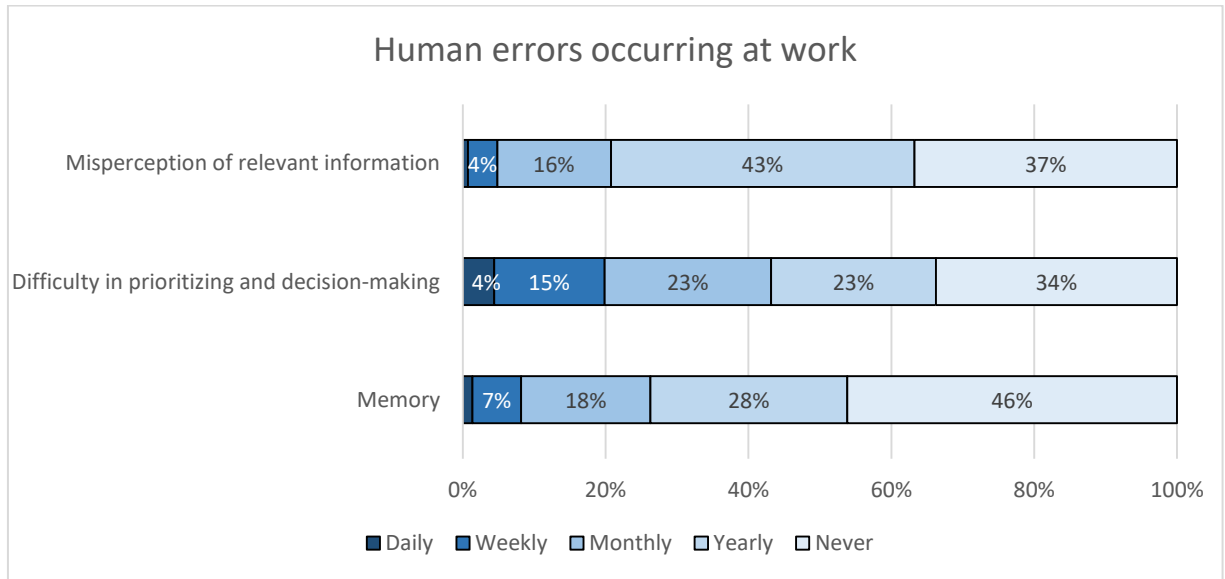
).

Figure 11. Human errors occurring at work.
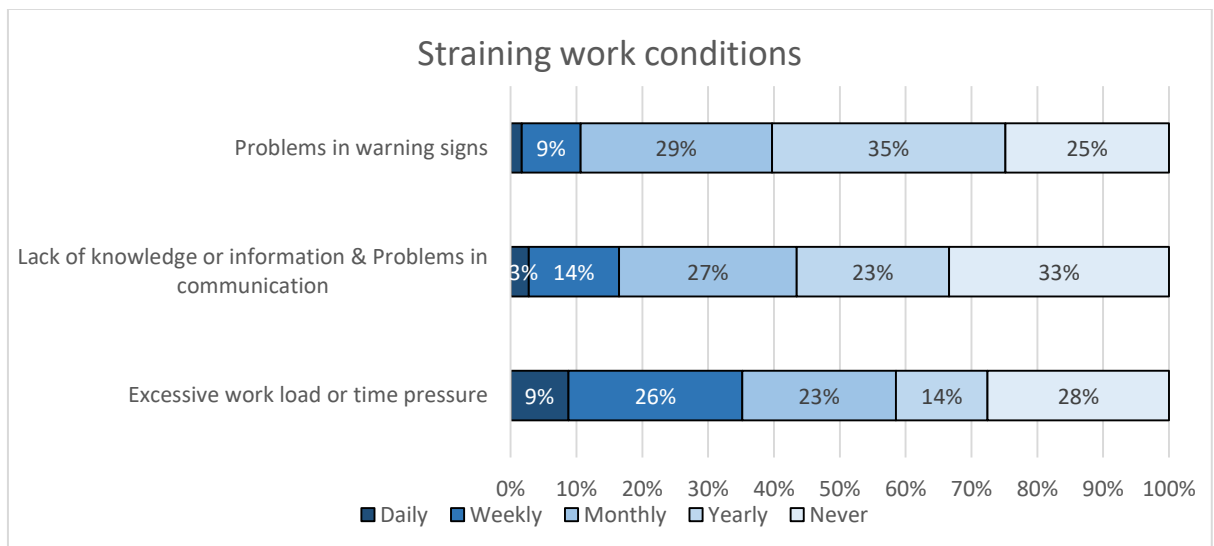
Figure 12. Straining work conditions.

The most common human error was difficulties in prioritizing and decision-making, which was faced at least weekly by every fifth respondent. Excessive workload or time pressure was the most common straining work condition, with more than every third of the respondents suffering from it at least weekly. The frequency of human errors and straining working conditions can be considered weak signals for safety problems.

3.4 Value conflicts and practical problems affecting safety in everyday work

In our survey, we studied the possible value conflicts and practical problems concerning valuing safety. We questioned the participants on how much they feel that different factors are in decision-making and everyday work, in order to identify the possibly competing values (Figure 13). We discovered that non-supervisors felt that the three most important values (based on the average scores) were 1) productivity, 2) cost efficiency, and 3) occupational safety. Among supervisors, the same three values were at the top, but in a different order: 1) occupational safety, 2) productivity, and 3) cost efficiency.
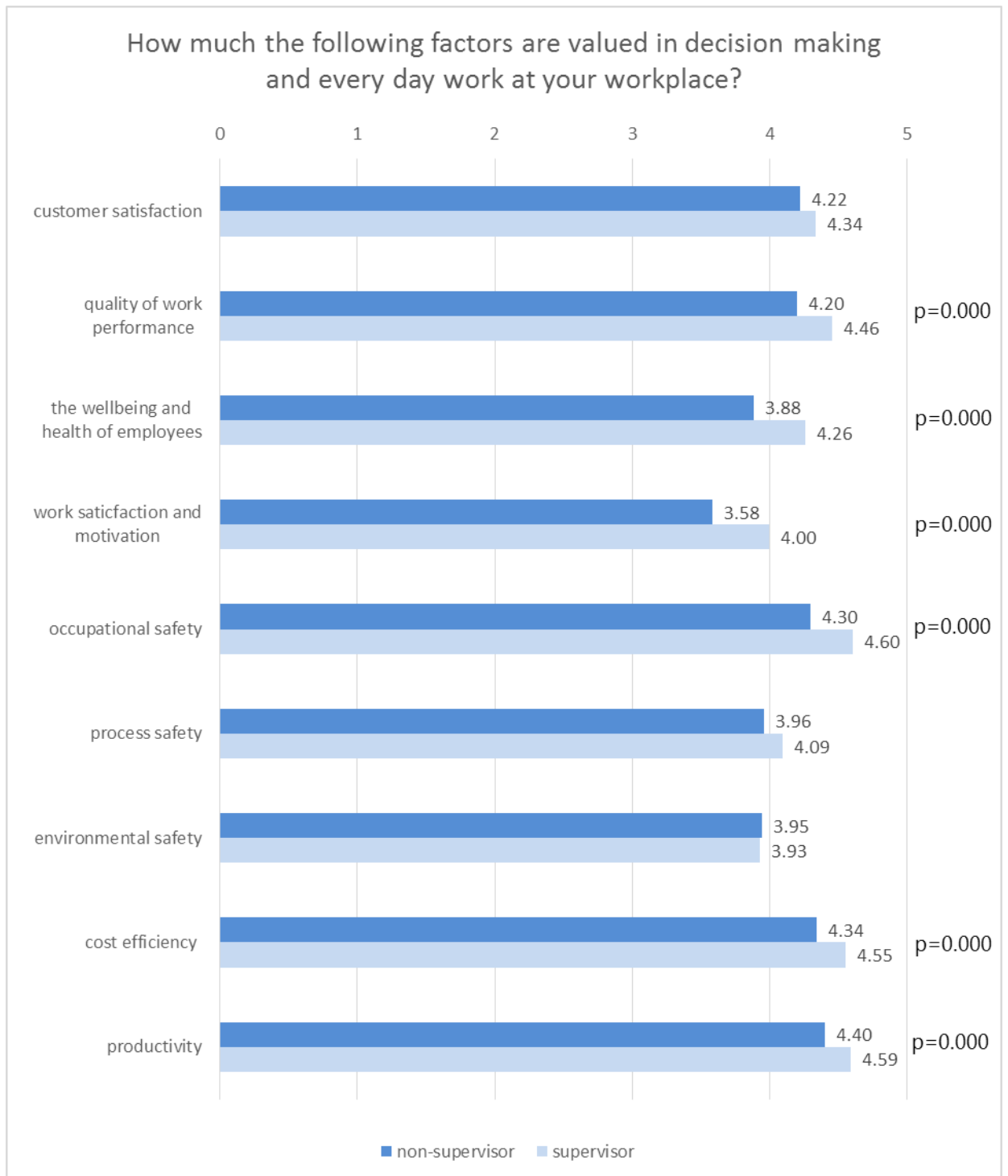
Figure 13. How different factors are valued in decision-making and everyday work; non-supervisors vs. supervisors (5-point Likert scale where 1= very little and 5 = very much).

As regards the items indicating that safety is not supported in everyday work, the most common issues among non-supervisors were that it is sometimes impossible to follow safety instructions, customers/partners do not understand the requirements for safe work, and the schedules set by others lead to safety

matters being ignored. The supervisors, too, felt that customers/partners do not understand the requirements for safe work. (Figure 14)

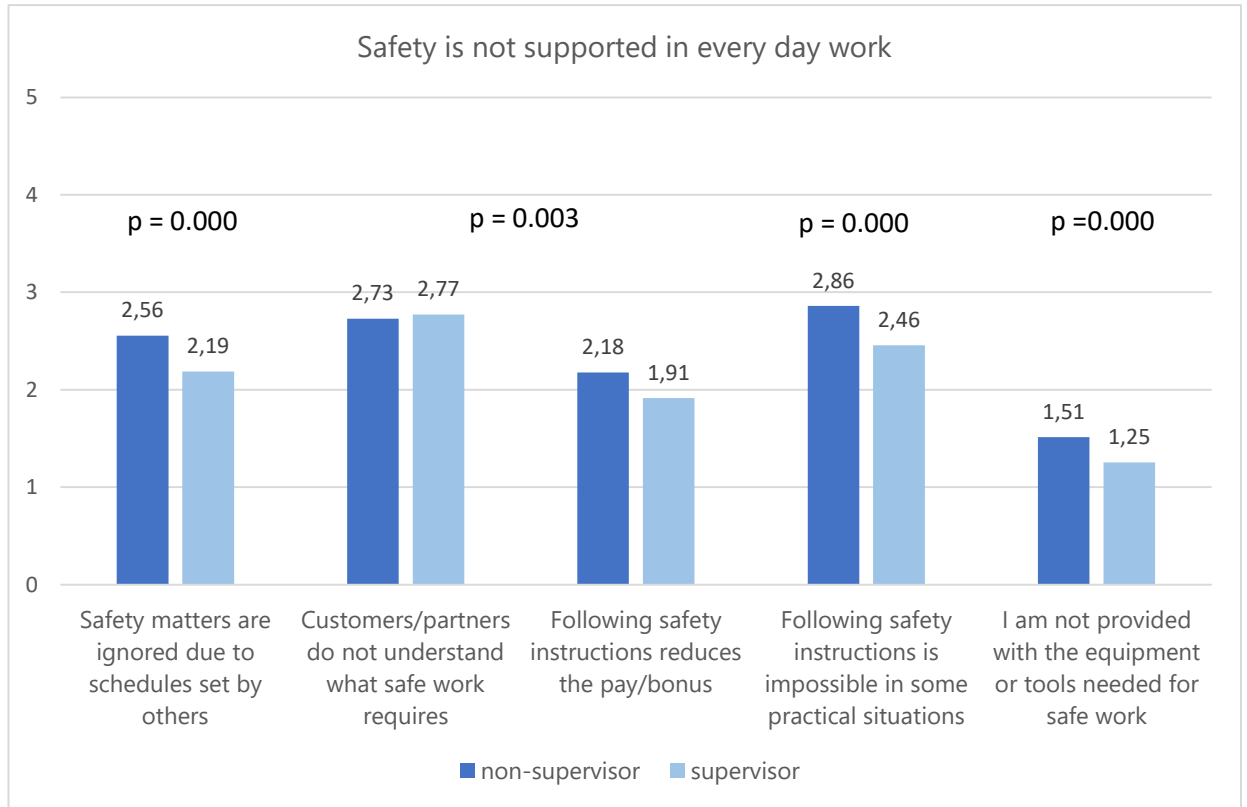*Figure 14 The average scores concerning items indicating that safety is not supported in everyday work; non-supervisors vs. supervisors (5-point Likert scale where 1 = totally disagree and 5 = totally agree; a lower score is better).*

3.5   Ways to improve safety at work

We asked the respondents how effective different means are in order to improve safety at work.

Table 6 shows the significant differences between supervisors' and non-supervisors' perceptions.

Table 6. Ways to improve safety at work

	Very efficient	Rather efficient	Not so efficient	Difference between supervisors and non-supervisors
Improving own attitude	**61%**	**32%**	**7%**	Supervisors consider this more efficient than non-supervisors
supervisors	79%	18%	3%	
non-supervisors	56%	36%	8%	
Improving the safety climate	**52%**	**43%**	**5%**	Supervisors consider this more efficient than non-
supervisors	60%	39%	1%	

non-supervisors	*49%*	*44%*	*6%*	supervisors
Improving introduction/orientation	**50%**	**43%**	**7%**	
Better tools, machines or equipment	**50%**	**42%**	**8%**	Non-supervisors consider this more efficient than supervisors
supervisors	*40%*	*48%*	*11%*	
non-supervisors	*53%*	*40%*	*7%*	
Improving lighting	**48%**	**44%**	**8%**	
Improving ergonomics or usability	**43%**	**51%**	**6%**	Non-supervisors consider this more efficient than supervisors
supervisors	*37%*	*55%*	*8%*	
non-supervisors	*46%*	*48%*	*6%*	
Revising the safe work practices	**42%**	**51%**	**7%**	Non-supervisors consider this more efficient than supervisors
supervisors	*52%*	*44%*	*4%*	
non-supervisors	*39%*	*53%*	*8%*	
Increasing the competence of supervisors	**38%**	**49%**	**13%**	
Decreasing workload	**38%**	**49%**	**13%**	Non-supervisors consider this more efficient than supervisors
supervisors	*28%*	*52%*	*21%*	
non-supervisors	*41%*	*48%*	*11%*	
Increasing safety training	**34%**	**56%**	**10%**	
Developing instructions	**32%**	**58%**	**10%**	
Better work clothing or outfits	**31%**	**49%**	**20%**	Non-supervisors consider this more efficient than supervisors
supervisors	*28%*	*55%*	*23%*	
non-supervisors	*41%*	*48%*	*18%*	
Reducing noise	**28%**	**51%**	**22%**	
Decreasing overwork	**20%**	**43%**	**38%**	Non-supervisors consider this more efficient than supervisors
supervisors	*12%*	*46%*	*43%*	
non-supervisors	*22%*	*42%*	*36%*	
Using checklists	**19%**	**59%**	**22%**	
Improving working shift arrangements	**17%**	**51%**	**32%**	Non-supervisors consider this more efficient than supervisors
supervisors	*9%*	*50%*	*43%*	
non-supervisors	*19%*	*52%*	*36%*	

The supervisors seem to focus on attitude and climate while non-supervisors point out concrete issues such as better tools/machines/equipment or improving ergonomics or usability. In addition, 41% of the non-supervisors considered decreasing the workload a very efficient way to improve safety at work, but among supervisors, the corresponding number was only 28%.

3.6 Experiencing an accident in one's vicinity increases mistrust in safety as a value of the organization

We analysed the relations between the experience of a serious accident involving a co-worker or subordinate at some point and experienced perceptions of safety as a value in the organization, work-related values, and personal values (Table 7).

Table 7. Binary regression analysis for relations between an experienced accident in one's vicinity and safety perceptions.

Experience of serious accidents in vicinity and safety perceptions			
Reference category 2 (RR=1) Respondents with experience of accident in vicinity: 28%	*RR	95% CI	p-value
Problems in warning signs	1.23	1.12-1.35	p<0.001

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Supervisors ignoring safety	1.18	1.10-1.28	p<0.001
Safety is not the management's priority	1.15	1.05-1.27	p=0.004
Misperception of relevant information	1.15	1.04-1.29	p=0.009
Acting safely is not supported in everyday work	1.14	1.03-1.27	p=0.016
Safety is ignored at the work-group level	1.14	1.02-1.28	p=0.021
Achievement	0.91	0.83-0.99	p=0.031
Safety personnel is active	0.91	0.83-1.00	p=0.043
Prestige work values	0.89	0.80-0.99	p=0.038
Supervisors showing their responsibility	0.89	0.81-0.99	p=0.035
The management participates and involves employees	0.85	0.77-0.94	p<0.001
Supervisors showing a good example and encouraging employees in safety matters	0.85	0.76-0.96	p=0.008
The organization has an extensive interest in safety	0.84	0.76-0.93	p<0.001
The organization values safety in order to pursue positive outcomes	0.81	0.71-0.93	p=0.002
Acting safely is valued in the work community	0.8	0.71-0.90	p<0.001
*)Model adjusted for age, sex and education			

We discovered that people whose co-worker or subordinate has had a serious accident at some point tend to be more critical on issues related to the work environment as well as to the safety values of management, supervisors, safety personnel and employees. For example, they were more likely to feel that supervisors are ignoring safety and that safety is not a priority for the management. They also tend to consider that safety is ignored at the work-group level. Further, they identified more problems with warnings and misperceptions of relevant information. Again, they were less likely to feel that safety personnel were active or to view supervisors as demonstrating responsibility or a good example.

In addition, they were less likely to feel that their organization had an extensive interest in safety or that it valued safety for positive goals. Concerning personal and work-related values, people who had experienced a serious accident involving co-worker/subordinate put less weight on achievements in personal life and prestige work values. This is a logical result, since the accident experienced in their vicinity has probably revealed several deficiencies regarding safety and therefore fed their mistrust in safety as a value of the organization.

3.7   Factors predicting that safety is valued by individuals
In our analysis, we used regression analyses and regression tree analyses to identify the factors predicting that safety is not valued by certain individuals. Using the regression analysis (

Table 8), it was found that Problems in management's safety communication, Safety not supported in everyday work, Organization valuing safety to avoid negative outcomes, Safety not being management's priority, Problems with warnings, and Usefulness of safety training explain a significant amount of the variance in the value of safety not being recognized by individuals ($F_{(22.61)}$ = 4.63, $p < .01$, $R^2 = .44$, $R^2_{Adjusted} = .42$).

Table 8. Regression analysis predicting "The importance of the value of safety is not recognized by individuals".

Regression analysis predicting "The importance of the value of safety is not recognized by individuals"	B	SE B	BETA	
Security	.008	.019	.012	
Conformity	-.038	.020	-.062	
Tradition	.044	.019	.067	
Benevolence	-.065	.026	-.084	
Universalism	-.055	.025	-.077	
Self-direction	-.022	.021	-.033	
Stimulation	.006	.019	.009	
Hedonism	-.002	.018	-.003	
Achievement	.022	.020	.039	
Power	.028	.023	.043	
Extrinsic work values	-.075	.029	-.072	
Intrinsic work values	-.041	.031	-.045	
Social work values	-.052	.031	-.061	
Prestige work values	.041	.028	.052	
Excessive workload or time pressure	.002	.019	.003	
Lack of knowledge or information & Problems in communication	.056	.022	.082	
Problems in warning signs	-.118	.022	-.165	a
Management's safety communication is open and active	-.139	.034	-.150	a
Supervisors showing their responsibility	.049	.033	.060	
Safety training is useful	.073	.027	.087	b
Acting safely is not supported in everyday work	.247	.029	.307	a
Safety is not the management's priority	.113	.026	.172	a
Organization values safety to avoid negative outcomes	.051	.019	.071	b
Organization values safety to pursue positive outcomes	-.107	.036	-.108	
Organization has an extensive interest on safety	-.012	.037	-.014	
Safety deviations are handled actively	-.041	.032	-.045	
Supervisors ignoring safety	.029	.021	.049	
Management participates and involves employees	.073	.027	.098	b
Supervisors showing a good example and encouraging employees in safety matters	.017	.041	.019	
Safety personnel is active	-.055	.024	-.077	
Memory	.036	.025	.047	
Difficulty in prioritizing and decision-making	-.012	.022	-.020	
Misperception of relevant information	-.006	.027	-.007	
			a: $p<0.001$ b: $p<0.01$	

Furthermore, we predicted 'The Importance of valuing safety is not recognized by individuals' using individual items from the PVQ, WVS, SUJUVA scales, as well as SV1-SV4, using regression tree analysis (Figure 15). The model was least-squares regression tree (pseudo R-squared = 0.24), selected using standard techniques (250-fold cross-validation, 1-SE rule)
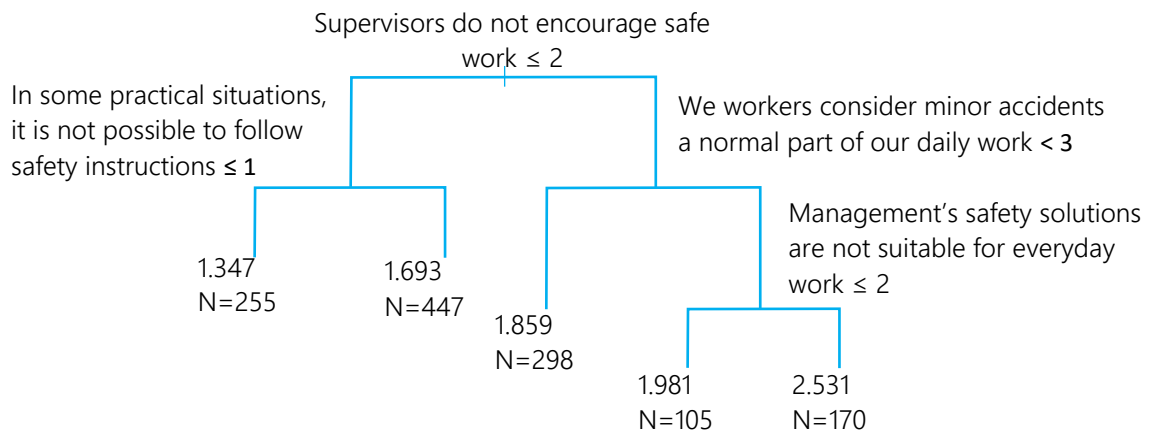
Figure 15. Regression Tree for Predicting 'The importance of the value of safety is not recognized by individuals'. (5-point Likert scale, where 1=fully disagree and 5=fully agree)

Based on the regression tree, the most significant items predicting that the importance of valuing safety is not recognized by individuals were:

- Supervisors do not encourage safe work
- We workers consider minor accidents a normal part of our daily work
- The management's safety solutions are not suitable for everyday work
- In some practical situations, it is not possible to follow safety instructions

If the respondent feels that supervisors **do not** encourage safe work, the probability that he or she will ignore safety as a value increases if the respondent has a conception that minor accidents are a normal part of his/her work, and even more so if the respondent also feels that the management's safety solutions are not suitable for everyday work. Even if a respondent feels that supervisors **do** encourage safe work, the risk for the individual not valuing safety increases if the respondent feels that following safety instructions is not possible in some situations.

4 Safety as an organizational value – the main challenges and proposals for solutions

4.1 Beyond safety as an employee's value

Values can be described as beliefs regarding what is important and core conceptions of what is desirable or acceptable (e.g. Rokeach 2000; Colley et al. 2013; Meglino and Ravlin 1998). Although safety is often considered a core value, this study showed that the motivation for safety still lies in avoiding negative outcomes, i.e. financial sanctions. Most of the survey participants agreed that they are committed to working safely and that acting safely is valued in their work community. The most highly scored personal value was occupational safety, and there was no significant difference between workers and management. However, at all points, respondents in non-supervisory position gave more negative scores concerning how safety is valued in their organization. When asked about the values in everyday work and decision-making, the top three items in supervisors' minds were occupational safety, productivity, and cost efficiency, but the experiences of non-supervisors were that occupational safety is overtaken by productivity and cost efficiency. The results show that the extrinsic work values were considered most important and the prestige work values least important.

As regards valuing safety, there is a tendency to think – wrongly – that an individual's unsafe behaviour results mostly from his/her bad personal values and attitudes concerning safety. Instead, we need to understand that most of the safety behavior at work results from how people experience that safety is (or is not) valued, communicated, rewarded, directed, demanded and managed in their organization. For example, based on previous value research and safety climate studies, there are several organizational issues affecting how individuals value and prioritize safety in their work:

- The safety climate – referring here to the perceptions of how safety is valued and managed in the organization – affects the safety behavior of people. (Clarke 2006a, b)
- If managers and supervisors are not consistent with their actions and communications concerning priorities, employees cannot be sure what is expected from them. (Colley and Neal 2012)
- If there is a lack of clarity regarding the importance of safety compared to other values (e.g. working safely vs. completing work as fast as possible), or if the organization's reward systems are mostly based on factors other than safety measures, it soon leads to employees valuing other things more than safety. (Meglino and Ravlin 1998)

- Employees' trust and mistrust towards management have been identified as the strongest influence on safety performance. (Conchie and Donald 2006)

Our value survey confirm that employees' values regarding safety are mainly influenced by organizational and managerial factors. This study revealed the importance of safety communication and the role of supervisors in encouraging safe work, and the interviews support these results. The factors are quite practical: how safety and the value thereof are communicated and prioritized by supervisors and management in everyday work, and how working safely is enabled in practical situations. An additional finding is that the value of safety decreases among employees if they feel that employer does not genuinely value the safety of employees and is just trying to avoid sanctions. Meanwhile, employees consider near misses and minor accidents to be part of their work. This may also be seen as a result of organizational and managerial values and priorities regarding safety.

Some of the most essential safety-related problems were safety communication and inapplicable safety instructions. The results also show that the most typical human errors and straining work conditions were difficulties in prioritizing and decision-making, excessive workload or time pressure, which can be considered weak signals for safety problems.

Our results show that when it comes to improving safety, supervisors and managers tend to focus on the safety climate and attitude, while workers focus more on concrete barriers to safety in everyday work. This kind of difference is typical between workers and supervisors, but it can be also a sign that the motivations and backgrounds behind unsafe behaviour are not understood by supervisors. In addition, the non-supervisors considered time pressure and workload issues more problematic than the supervisors.

4.2   How to strengthen safety as a value?

Quite often, organizations ask for tools for improving the safety attitudes of their employees. However, that should be the last step, after ensuring that all the prerequisites are on the rails.

Values the organization wishes to acknowledge can be conveyed through organizational socialization, when leaders themselves set and implement the values of the organization and propagate them to employees (Meglino and Ravlin 1998). This requires that safety as a value be communicated openly, systematically and on a regular basis, and the values must be presented as the only possible interpretation of the situation (Meglino and Ravlin 1998).

The aim should be an organizational state of mind in which working safely is seen as the only possible and acceptable way of working. Strengthening safety

as a value requires co-operation on safety issues between management and employees. Based on our study, different managerial practices can be recommended in order to manage and promote safety as an organizational value.

Defining the core values of an organization should start by analysing the current values directing the operations. Next, the values and value priorities that the organization wishes to implement should be discussed in cooperation with management and employees, in order to improve the mutual understanding and commitment of all the personnel. If employees are asked to work safely, safety should also be one of the core values. The management should make sure it is possible and acceptable, even desired, in every day work. As we have described, a great deal of safety behaviour results from the safety-related experiences employees have at their workplace. It is useful to figure out what perceptions employees and supervisors have regarding safety and its value at work, and to identify the issues preventing people from valuing and prioritizing safety at work.

To communicate safety as a value, one of the most important things is for top management to ensure adequate resources (time, people, equipment, competence) for safe work. The employer should also be rewarding both employees and supervisors for safety as much as for production objectives, in order to emphasize the importance of safety.

There should be several practices in place to increase positive safety communication along with everyday work between the supervisor and employees, as well as between supervisors and management. Even top management should be visible for employees on safety issues on a regular basis, e.g. by visiting work sites and actively asking for and listening to employees' opinions and suggestions.

The top management should ensure that supervisors are trained to communicate safety matters in the right way in everyday work. There is a huge difference between saying to an employee, "you must get this work finished as soon as possible" compared to "even though we are on a tight schedule, there is no need to risk your safety". It is often more about the perceptions and experiences people have regarding the management's safety values, not always just facts.

> *In a processing industry company, the management has decided to invest on new expensive production line. The most important specifications for the new production line were its safety and usability for the workers, manufacturing efficiency, and easier maintenance. However, when communicating the investment to employees, the main message was that of the employer making a large investment in manufacturing efficiency, even though the*

safety issues were the top criteria. As a result, the workers felt that their employer was hardly valuing safety. It was not about the facts but the experience. The management had a good intention but the communication was defective.

The management should make good use of participative safety development where employees act as experts concerning their work, and ask for employees' opinions even then when beginning to plan changes to processes or new machinery investments. Participative practices improve both the quality and applicability of instructions as well as the commitment of the employees, and prevent the problem demonstrated also in our study, when employees felt that following the safety instructions was impossible in some practical situations. In addition, the aspect of human cognitive abilities and limitations should be taken into account when planning work and designing work environments.

Since both supervisors and non-supervisors felt that customers or partners do not understand what safe work requires, and this might be one of the reasons for unnecessarily tight schedules, top management should also communicate regarding these issues with their interest groups.

Middle managers play key roles in interpreting strategic values in terms of employees' values and employees' everyday work responsibilities, as well as communicating and rewarding performance toward those values. The middle managers act as integrators, connecting employees' individual values, derived from their societal, cultural, and religious experiences, with the organization's strategic practices. (Paarlberg and Perry 2007.) It is important for middle managers to ensure that supervisors understand and agree with their subordinates on the value of safety. It is beneficial for middle managers to participate in the safety meetings and discuss safety-related matters directly with the employees. They should also monitor that the appointed safety procedures (e.g. safety observations, toolbox meetings) are being put into practice by supervisors. If there are any inadequacies, the middle manager should step in and ensure that the competence and resources needed for these procedures are available.

Supervisors are the link between the employer and employees, and their actions and talk are everyday communication of the value of safety. Supervisors should show a good example and monitor that employees are following the safety instructions. If any unsafe behavior arises, they should intervene systematically. When intervening, it is important to determine the circumstances and reasons for unsafe behavior, for example by exploiting the rule-breaking analysis from HERA-JANUS (Isaac, Shorrock, Kennedy, Kirwan, Anderson & Bove, 2003): Was there an intent to break a rule; was the person aware of the rule; were the

procedures understood and applicable; was it a common way of working; were there some competing values/goals against safety.

Most people have good intentions to fulfil the expectations they are facing, but often there are practical reasons, value or goal conflicts, and problems in prioritization, which will lead to unsafe behavior. Of course, there might be a small minority of people intentionally neglecting the instructions and rules, and, therefore, sanctions are also necessary in some cases.

As regards risk perceptions, people are quite incapable of estimating the risks. It is known that people tend to overestimate their own abilities, and especially if they have not faced any accidents, their perceptions of risks might become even more distorted. Our results show that experiencing an accident in one's vicinity increases one's criticality towards safety practices, which might be partly because of the increased awareness regarding safety risks. In our study, we also discovered that many of the respondents considered minor accidents a normal part of daily work, which can be seen as a sign of distorted perceptions of risks and safety. Supervisors and workers should discuss what is actually normal in one's work. Of course, the employer should state that accidents are not part of normal work.

To improve the competence of employees in identifying work-related risks, envisioning training might be useful. By discussing the accident and near-miss reports from one's own workplace as well as other departments or companies, envisioning the different possible scenarios and determining preventive actions, people are trained to better understand the causalities behind accidents. The methods used in the analysis should include elements that also help to identify the real factors behind the unsafe behavior (see Kalakoski et al. 2015).

4.3 Limitations

The number of organizations in our study is small, and therefore the results cannot be generalized to the entire working population. However, our data represented different industries and organizational groups and we consider the results to represent the phenomenon of safety as an organizational value quite well.

4.4 For future research

Based on our research, we feel there is a need for further study regarding the value-forming mechanisms in organizations. We also suggest a pilot study to develop and test the "safety as an organizational value" socialization process.

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