Changes in Norwegian probation officers' attitudes, behaviour, perceptions and evaluations following a national safety training intervention

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ABSTRACT

A new law was introduced in Norway in 2002 that resulted in the probation service having to deal with more serious crimes and becoming more tightly connected to prisons. A safety training programme was implemented, the aim of which was to increase the level of safety in the probation service by developing a shared safety culture. Safety training programmes are often conducted with only minimal measures of their effectiveness. The aim of the present study was to determine changes in Norwegian probation officers' safety beliefs, risk perception, attitudes, behaviour, strain, perceived safety and experiences of threats and violence during the four year period following the safety training intervention. The results are based on self-completion questionnaire surveys carried out among all probation service units in Norway. The questionnaire has undergone a rigorous process of development and has demonstrated good data quality and reliability. The data were collected in 2005 (*n*=173; prior to the intervention, and thus representing baseline data) and 2009 (*n*=218). The response rate was 68% in 2005 and 64% in 2009.The results revealed significant changes in 9 of the 14 scales after carrying out the training intervention. Effect sizes were small, but all were in the direction of greater safety. The most important improvements were found for perceived safety at the probation office, leaders' monitoring of safety and, finally, meetings with offenders alone, in a car or in the office.

INTRODUCTION

Background

The Norwegian Correctional Service consists of the prison and probation service and is organized on three levels: central, regional and local administrations. Norwegian law distinguishes between crimes and misdemeanours, and the probation service deals exclusively with offenders who have committed crimes.

The main activities of the probation service are to prepare and execute community sentences, supervise conditional releases from prison and preventive detention, execute the "driving while intoxicated" programme, home detention with electronic monitoring and pretrial reports. Traditionally, individual work has been the rule in probation. Mainly the meetings between the officers and the offenders take place in the office of the probation service, but there used to be, and in some places still are, situations in which officers meet with offenders outside the office without assistance. The latter is mostly due to geographic and demographic challenges: long distances between the office and the home of the offender and few employees in the office. The Correctional Service of the Norway Staff Academy (KRUS) provides prison officers with basic training and offers further and supplementary education for both prison and probation officers but most probation officers are educated in academic institutions.

During 1999–2002, the "Safety in Prison" (SIF) programme was developed and implemented in Norwegian prisons. The initiative was taken by one of the largest prisons in Norway, the Correctional Service of Norway and KRUS. A new law was introduced in 2002, after which the probation service had to deal with more serious crimes and became more tightly connected to the prisons. In 2005, the SIF programme was modified and adjusted to meet the challenges and culture of the probation service. From March 2006 to April 2007 all probation officers were trained in a modified programme, named "Safety in Probation" (SIFO). The main goal of the SIFO programme was to increase the level of safety in probation by developing a shared "safety culture". Limited statistics are available regarding accidents and adverse events in Norwegian probation. The program was intended to prevent adverse events such as violence, threats and other stressful incidents for employees. Another aim was to improve the offenders' safety while they are clients of probation by developing a more predictable and uniform practice. The main effort to achieving a shared safety culture involved focusing on attitudes, behaviour and organizational aspects that influence the level of safety. The field of safety culture is relatively new to occupational research, and has traditionally been approached at a corporate level. Developed from the nuclear industry, it was extended first to safety-critical areas, but is now also used in many other areas. Safety culture describes shared attitudes, values and beliefs in relation to safety within an organization (Cooper, 2000), and hence it operates at an individual level.

The SIF and SIFO programmes are based on well-known research on safety in the petroleum and aviation industries (Mearns et al., 2001; Engen and Olsvik, 2010). The focus is on the human factor: how people contribute to or reduce safety. Furthermore, errors are reduced via both proactive and analytical work, and by setting up functional "safety layers" (Reason, 1997). Safety layers may be dynamic, organizational or static and, in the context of the present study, dynamic safety will typically represent the quality of the relationships among probation officers and between officers and offenders. Examples of organizational safety would be how work is planned and managed, or how information flows. Static safety refers to physical actions or remedies, such as cameras and alarms, and how the interior of an office might be arranged.

When developing a safety culture it is crucial to avoid a "blaming culture", instead developing the characteristics of so-called generative organizations (Reason and Hobbes, 2003). Such organizations value learning by encouraging people to observe, to enquire and to make their conclusions known. Error should be seen as a consequence of a range of errors and weaknesses in the system (Reason, 1997). When implementing a safety culture it is necessary to strengthen safety layers via appropriate routines and social support among colleagues.

The Programme

The SIFO programme is based on a pedagogical approach that stresses the active involvement of the learner. Few ready-made answers are presented; instead, the appropriate level of safety is largely developed by cooperation between the probation officers and the management at each unit. It is considered crucial for all employees to attend the activities, since tacit knowledge and various perspectives are important to the discussions and for achieving agreed-upon procedures.

Topics worked on during the programme are safety culture, situational perception, risk perception and assessment, and decision-making. Furthermore, social support among colleagues, cooperation, communication and leadership are focused on throughout the programme. The importance of these issues, and social support and cooperation in particular, became more evident during the implementation process. Accepting and communicating uncertainty are examples of behaviours that support safety culture, and are often highlighted during the programme.

The aim of the program was to improve safety by developing a shared safety culture. For this to be meaningful to the employees who participated, it was important that they were involved in defining the attitudes and behaviors associated with risk, safety and security in their context. Early in the program an exercise was therefore undertaken in which all participants defined potential adverse events and what might prevent such incidents. The participants came to the conclusion that situations associated with risk and insecurity were typical situations where they were alone with the offender at the office, in cars or in the offender's home. No answers or solutions were presented to the participants, but were found through discussions, exercises and by sharing experiences.

The teaching methods used include films specifically produced for the programme, short presentations and group discussions. Examples of learning activities are analysing a newly experienced accident, assessment of the risk of a typical work situation, or reflection on safety dilemmas experienced by the officers. An office located in an urban city and an office located in a small suburban area or a village will have different safety concerns. Consequently, it is important that the employees at each office define their specific safety concerns. The activities in the programme facilitate relevant assessments and decision-making. In a typical learning session, the teacher puts a question to the participants that they need to reflect upon. The answers are written down collectively. The teacher then presents the theory on the subject matter. The presentations are short, and they elaborate only on what the participants themselves bring up. Finally, the participants discuss a given case or a situation that they have experienced themselves that casts light on the specific matter being considered. Group discussions on the consequences of individual decision-making, risk perception and individual levels of acceptance are other examples of learning activities.

To succeed in achieving an increase in the level of safety in the probation service through the development of a shared safety culture, it was considered crucial that the probation officers and leaders participated in finding good solutions to safety problems and dilemmas. Consequently, the chosen model of implementation was a step-by-step model, combining central courses and local learning activities. Each probation office had to recruit one probation officer (in addition to the leader) as a trainer. The leaders did not have to attend the prison programme, which in retrospect was considered a weakness in the programme. Therefore, it was made mandatory for the probation leaders to attend the training when the programme was adapted to the probation service.

Forty officers were given training centrally by first attending courses that lasted for six days. The first part of the course was a three day course, which focused on the different theoretical topics related to relevant dilemmas taken from probation practice. The second part of the course was intended to make the trainers capable of leading further training activities both regionally and locally. This involved training of pedagogical skills, working on relevant scenarios, and of course structuring and planning the implementation process. Both courses were led by instructors/supervisors from KRUS who had also developed the training material in cooperation with two probation officers.

The next step was taking part in regional workshops led by local trainers and the trainers from KRUS. All employees participated at the workshops together with the regional management.

The final step was a six month period of local training activities led by the local trainers. The activities were spread out as weekly meetings or monthly gatherings. The purpose of this step was to develop activities at each office that would be maintained after the implementation phase. For instance, some

offices put up SIFO as a regular item on the agenda for the weekly ward meetings, while others decided to arrange a semi-annual "SIFO day". Leaders and regional managers followed up the programme locally and KRUS arranged annual national seminars for local trainers, during which they shared experiences and any new insights.

The study

The aim of this study was to elucidate the effects of the SIFO programme. We performed a pre- and post-survey to determine the impact of the safety intervention on the officers, leaders and administrative staff. Changes in the officers' safety beliefs, risk perception, attitudes, behaviour, strain, perceived safety and experiences of threats and violence were investigated.

MATERIALS AND METHODS

Sample

The present study was based on two self-completed questionnaire surveys carried out at two measurement time points. Both surveys included all 17 of the probation service units in Norway. Paper questionnaires were distributed by internal mail and returned in sealed envelopes. A general reminder was sent by e-mail to all offices, not particularly to non-respondents.

The first survey was carried out in the autumn of 2005, and included all employees at the probation offices in Norway. The response rate was 68%, and the final sample comprised 173 respondents, of which 67% were women. Age was reported in categories: less than 30 years old (7%), 30–39 years (25%), 40–49 years (28%), 50–60 years (35%) and more than 60 years old (5%). Of the entire cohort, 77% had a college or university education, 18% had been educated up to senior high school level only, and the remainder up to junior high school level only. With regard to employment positions, 64% were probation officers, 17% held a management position and 19% were administrative staff; 9% of the respondents had worked in the probation service for less than one year, and 36% for more than ten years.

The second survey was carried out in 2009 and also involved all employees at the Norwegian probation offices; the response rate was 64%. The final sample included 218 respondents, of which 69% were women; 7% were less than 30 years old, 26% were aged 30–39 years, 28% were 40–49 years old, 29% were 50–60 years old and 10% were more than 60 years old. With regard to education level, 84% had a college/university education, 15% had been educated to senior high school level only and the remainder up to junior high school level only. As to their employment positions, 66% were probation officers, 19% held a management position and 15% were administrative staff; 13% of the respondents had worked in the probation service for less than one year, and 34% for more than ten years.

The probation service consists of professionals with an academic education, and traditionally probation officers are qualified social workers with a bachelor's degree. The average caseload of a probation worker depends on the type of work he or she deals with, or, in some cases, the type of work his or her section deals with. Some offices have specific sections dealing with community sentences and electronic monitoring. A survey in 2005 showed that each worker had on average nine active cases on any given day.

Measures

Questionnaire development was based on a systematic literature review of existing questionnaires addressing safety, observation at three probation offices in Oslo county and Akershus county, telephone interviews with probation officers in different parts of Norway and expert group consultations. All activities were designed to ensure the content validity of the final questionnaire.

Since the main goal of the intervention programme was to increase the level of safety by developing a shared safety culture, the focus was on attitudes, behaviour and other aspects assumed to influence the level of organizational safety. A review of the literature identified areas of potential relevance for the measurement of attitudes, safety or risk behaviour, and informed the content of semi-structured face-to-face interviews and telephone

interviews. The interviews were performed with 16 employees by two researchers independently. Questions specifically addressing aspects that have previously been shown to influence safety were constructed based on existing generic safety surveys, but adapted to a Norwegian context. Minor changes were made to the initial list of items after the observation and interviews, and a final version of the questionnaire was completed.

The same items were applied in both surveys (i.e. 2005 and 2009). The questionnaire was comprehensive, and only aspects considered relevant to this specific study are addressed here. Positive and negative items were mixed to minimize the response set. Sociodemographic data including gender, age, educational status and work experience were included, as well as experienced threats or violence. Administrative staff was asked to only answer questions that were considered relevant according to their position at the probation office.

The questionnaire included items related to beliefs regarding safety, risk perception related to both affective and cognitive judgements, as well as experiences of strain and perceived safety at the probation office. The attitudinal questions included 12 items addressing safety issues related to appropriateness of rules and routines as well as acceptance for rule violations and taking chances. The respondents judged on a five point Likert scale how much they agreed or disagreed with the statements. The scale ranged from "fully agree" (four points) to "fully disagree" (0 points). Self-reported acts of behaviour comprised 12 items related to deviation from rules or routines and taking initiative to improve safety. Respondents were asked to report how often they carried out each of the activities. A five point rating scale was applied, with options ranging from "very often" (four points) to "never" (0 points).

Statistical analysis

Principal-components analyses (PCAs) with varimax rotation were applied to detect the underlying dimensions for the measures. PCAs were first conducted separately for the two samples. The results showed identical factor structures, and so the final analyses were conducted including respondents from both the 2005 and 2009 studies. Cronbach's alpha coefficient was calculated to investigate the internal consistency of the scales. An alpha value greater than 0.70 is considered satisfactory (Nunnally, 1978; Kline, 1986). Average corrected item-total correlations were also investigated. The corrected sum score for all indicators included in the factor were correlated with each of the single indicators (total corrected inter-item correlation). A correlation coefficient of 0.30 or higher is recommended as being acceptable (Robinson et al., 1991; Hair et al., 1998).

Analysis of variance (ANOVA) was used to test whether or not there were significant differences in perceived safety at the office and experienced threats or violence measured between 2005 and 2009. Multivariate analysis of variance (MANOVA) was applied to test whether or not there were significant differences in beliefs regarding safety, risk perception, attitudes, behaviour and strain between the two samples. MANOVA involves overall tests of the effects of dimensions, and its estimates take into account the association between the criterion variables. MANOVA also makes it possible to estimate discriminant functions that can be interpreted as latent variables tapped for the individual scales.

Analyses were then conducted to determine effect sizes. According to Kirk (2001), statistical significance testing evaluates the probability of obtaining the sampling outcome by chance and relies heavily on sample size, while the effect size provides some indication of practical meaningfulness, assists in the interpretation of results, and makes it more difficult to ignore trivial effects. Fan (2001) also argues for the use of effect size to provide practical meaningfulness. The effect-size index *d* standardizes the raw effect size, as expressed in the measurement unit of the dependent variable, by dividing it by the common standard deviation of the measures in their respective populations. Values of d=0.2–0.5 are considered to indicate a small effect, d=0.5–0.8 a medium effect and $d \geq 0.8$ a large effect (Cohen, 1992). The PCA, ANOVA and MANOVA were all conducted using SPSS (17.1).

RESULTS

Principal-components analysis

PCAs were conducted for all of the measures. Results from the psychometric testing showed that assumptions on latent traits or components could be applied for beliefs regarding safety, risk perception, attitudes, behaviour and strain (Table 1). For the two remaining measures, perceived safety at the office and experienced threats or violence, sum scores were calculated. When it comes to the items relating static safety, there is no reason to expect that these items will correlate. The latter procedure was based both on theoretical considerations and the psychometric testing.

PCA was conducted for the measure of belief regarding safety. Two components were identified: "common understanding and practice" and "leaders' monitoring of safety" (Table 1). The item-total correlations for the first component exceeded 0.4, and Cronbach's alpha was 0.82. For the second component, the results yielded item-total correlations above 0.5 and a Cronbach's alpha of 0.78.

The PCAs for risk perception identified two components: affective risk perception and cognitive risk perception (Table 1). The item-total correlations for both exceeded 0.6, and Cronbach's alpha was 0.83 for affective risk perception and 0.85 for cognitive risk perception.

The PCA for the attitude measure yielded two components (Table 1). All items had component loadings exceeding 0.6. The first component can be described as "attitude towards the appropriateness of rules and routines". Item-total correlations for this component exceeded 0.4, and Cronbach's alpha was 0.81. The second component was entitled "attitude towards acceptance for rule violations and taking chances". Item-total correlations for this component exceeded 0.4, and Cronbach's alpha was 0.78.

PCA for the measure of behaviour identified four components (Table 1), whose loadings all exceeded 0.5. The first component was "taking initiative to improve safety"; the item-total correlations exceeded 0.5 and Cronbach's alpha was 0.73. For the second component, "own deviation from rules/ routines", item-total correlations exceeded 0.7 and Cronbach's alpha was 0.72. The third and fourth components, "breaking rules in the interest of offenders" and "meetings with the offender alone in the car/office", both had item-total correlations exceeding 0.7 and a low Cronbach's alpha (0.48). However, the estimation of reliability increases with scale length (i.e. the number of items in the scale), and the two components only included two items each. Item-total correlations for the scales were high, and so it was decided to keep the four-component solution.

The PCA for the strain measure yielded two components related to work content and lack of clarity in the role as a probation officer (Table 1). Item-total correlations exceeded 0.5 for "strain related to work content", and Cronbach's alpha was 0.76. For the component "strain due to lack of clarity in the role as a probation officer", the results yielded item-total correlations above 0.8 and a Cronbach's alpha of 0.73.

Following theoretical considerations and the results of the PCA, the items measuring perceived safety at the office and experienced threats or violence were treated as separate scales.

Multivariate analyses of variance

Table 2 lists the results of the MANOVA performed to investigate the changes in beliefs regarding safety, risk perception, attitudes, behaviour and strain among employees between 2005 and 2009. The components were entered as dependent variables, and the time of data collection was a fixed factor. Cohen's *d* values were calculated to estimate the effect sizes.

TABLE 1. PCA COMPONENT LOADINGS AND INTERNAL CONSISTENCY FOR THE SCALES.

	Component											
Questionnaire/ scale (Cronbach's alpha)	1	2	3	4	5	6	7	8	9	10	11	12
Beliefs regarding safety												
Common understanding and practice α =.822												
The office has a set of common, basic attitudes when it comes to dealings with the offender	.794											
We have a set of clear, common primary goals that we all strive to attain	.744											
I have the impression that employees are following rules/ procedures	.704											
There's a common perception of which rules / procedures that must apply	.662											
Agreement about goals is decisive in order to get good professional discussions	.657											
	.641											
Executive officers are regularly sharing experience about their own practices	.427											
Employees are good at communicating to the offenders what breach of agreements will lead to												
		.918										
Leaders' monitoring of safety α =.781		.909										
Department head checks that security is monitored / followed up		.499										
Department head raises security issues on a regular basis												
Breach of agreements gives rise to responses required by statutory rules												
Risk perception			.853									
Affective-worries that the offender α =.830			.833									
Will behave in a threatening manner			798									
Will seek out my family			.772									
Will hurt me physically			.721									
Will hurt himself/herself			.679									
Will get reactions that may affect other persons after the conversation			.633									
Will start acting out			.591									
Is drugged when he/she shows up												
Will become too loud												
				.833								
Cognitive –judgement of the probability that the offender α=.853:				.819								
Will behave in a threatening manner												
Will seek out my family				.783								
Will hurt me physically												
Will hurt himself/herself				.741								
Will get reactions that may affect other persons after the conversation				.712								
Will start acting out				.692								
Is drugged when he/she shows up				.679								
Will become too loud				.630								
				.602								
Attitudes					.678							
Towards the appropriateness of rules and routines α =.809					.643							
If everyone followed the rules to the letter, we would not get the job done					643							
Rules/ procedures may be an obstacle to individual adaptation												
My colleagues would not be pleased if I followed the rules at all times					.641							
You should observe rules/procedures no matter what kind of offender you're dealing with					.638							
A number of formal rules/procedures cannot be observed if I'm to do a good job					.630							
It's no wonder that rules/procedures are disregarded, since they often are too strict or complicated					.617							
It makes sense to disregard rules/procedures as long as you know the offender well						.790						
						.764						
Towards acceptance for rule violations and taking chances α =.783						.668						
There's no point in following all the rules when there are no serious incidents						.648						
						.626						
It's OK to take risks when it's only yourself that is exposed to risk												
If you're a skilled executive officer it is acceptable to disregard the rules												
It's OK to depart from rules/ procedures when the situation demands it							.789					
It's OK to depart from rules/procedures if you feel safe							.781					
							.698					
Behaviour												
Taking initiative to improve safety α =.730												
I tell my colleagues if I feel they are acting irresponsibly							.690					
I report it if I detect security weaknesses							.538					
I report to the department head if I think other employees are acting irresponsibly												
I report it to the department head when I have been exposed to serious incidents								.817				
								.789				
I take the initiative to improve rules that I find unsuitable								.754				
Own deviation from rules/routines α =.720												
I break the rules/ procedures because they prevent me from doing a good job									.842			
I listen to my gut feeling rather than following rules to the letter									.808			
I consciously break some formal rule/ procedure or other												
Breaking rules in the interest of offenders α =.481												
I don't pursue incidents that, if reported, may have negative impacts for the offender										.799		
										.777		
I don't report breaches because this will have negative impacts for the offender person												
Meetings with the offender alone in the car/office.475											.807	
I have meetings with the offender when I'm alone in the office											.651	
I have meetings with the offender alone in my car											.648	
Strain											.624	
Related to work content .755											.611	
I feel a strain relating to situations requiring difficult decisions to be taken vis-à-vis the offender											.527	
I feel strain when I talk with the offender to impress the rules												
I feel a strain when I give advice that has a large impact on the offender's future												.870
												.834
I feel a strain when I perform drug checks												
I feel a strain because of the influence I have on the life situation of the offender												
I feel a strain about the relationship I have with the offender												
Due to lack of clarity in the role as a probation officer α =.728												
I feel a strain because my role as an executive officer is unclear												
I feel a strain because of decision making procedures relating to the offender												

TABLE 2. MULTIVARIATE ANALYSES OF VARIANCE FOR PERCEIVED SAFETY CULTURE, RISK PERCEPTION, ATTITUDES, BEHAVIOUR AND STRAIN RELATIVE TO THE TIME OF DATA COLLECTION. M, MEAN; SD, STANDARD DEVIATION.

	2005		2009		Comparison		
	M	SD	M	SD	*F*	*p*	Cohen's *d*
Beliefs regarding safety							
Common understanding and practice	4.00	0.55	4.17	0.52	8.32	<0.01	0.16
Leaders' monitoring of safety	3.55	0.84	3.88	0.70	17.71	<0.001	0.21
Risk perception							
Affective	2.34	0.66	2.21	0.59	3.06	<0.05	0.10
Cognitive	2.76	0.57	2.57	0.67	7.95	<0.01	0.15
Attitudes							
Towards the appropriateness of rules and routines	2.25	0.58	2.16	0.62	2.12	0.15	0.08
Towards acceptance for rule violations and taking chances	1.85	0.52	1.72	0.47	5.83	<0.05	0.13
Behaviour							
Taking the initiative to improve safety	2.83	0.69	2.76	0.65	0.81	0.34	0.05
Own deviation from rules/routines	2.08	0.55	1.95	0.57	4.62	<0.05	0.12
Breaking rules in the interest of offenders	1.53	0.72	1.56	0.72	0.04	0.74	0.02
Meetings with the offender alone in the car/office	2.01	0.87	1.67	0.81	13.15	<0.001	0.20
Strain							
Related to work content	1.93	0.56	1.74	0.59	12.68	<0.001	0.17
Due to lack of clarity in the role as a probation officer	1.65	0.67	1.59	0.78	0.41	0.52	0.04

Beliefs regarding safety: Wilks' λ=0.95, p<0.001, η^2=0.05
Risk perception: Wilks' λ=0.98, p<0.05, η^2=0.21
Attitudes: Wilks' λ=0.98, p=0.06, η^2=0.02
Behaviour: Wilks' λ=0.95, p <0.01, η^2=0.05
Strain: Wilks' λ=0.96, p<0.01, η^2=0.04

The results show that 8 out of 12 scores changed significantly between 2005 and 2009, with *d* ranging from 0.10 to 0.22 (Table 2). All of the significant changes were positive, in the sense that they were in line with the objective of the program, but most did not meet the threshold of even a small effect size.

Responses of both components measuring beliefs regarding safety indicated a tendency to report more ideal beliefs in 2009 than in 2005. Both changes were statistically significant, but only "leaders' monitoring of safety" (F=17.71, p<0.001) met the threshold of a small effect size (d=0.21).

Table 2 indicates that even though the difference was statistically significant for two of the components measuring behaviour, only the component addressing "meetings with the offender alone in the car/office" (F=13.15, p<0.001) met the threshold of a small effect size (d=0.20).

With regard to changes in the components measuring risk perception between the two measured time points, the results showed a significant change for both "affective risk perception" (F=3.06, p<0.05) and "cognitive risk perception" (F=7.95, p<0.01). However, the effect sizes were small, indicating that the differences have a low practical significance.

The change in "attitude towards the appropriateness of rules and routines" was not significant (F=2.12, p=0.15), and while the change in the second component ("attitude towards acceptance for rule violations and taking chances") was significant (F=5.83, p<0.05), the effect size was low (d=0.13).

The MANOVAs revealed a significant change in experienced "strain related to work content" (F=12.68, p<0.001), but this effect size was also small (d=0.17). The change in the component "strain due to lack of clarity in the role as a probation officer" was not significant (F=0.41, p=0.52).

The next step involved examining the overall effect from the time of measurement on the five dependent variables. The components were entered as dependent variables, and time of data collection was a fixed factor. The data in Table 2 reveal a significant overall main effect on beliefs regarding safety at the probation office (Wilks'λ=0.95, p<0.001). The effect on risk perception was also significant (Wilks' λ =0.98, p<0.05). The effect on attitudes was not significant (Wilks'λ =0.98; p=0.06); however, the overall effect on behaviour from the time of measurement was significant (Wilks'λ =0.95, p<0.01). The data in Table 2 also indicate a significant effect on perceived strain (Wilks'λ=0.96; p<0.01).

Table 3 lists the results from the ANOVA exploring changes in experienced threats and violence as well as perceived safety among employees between 2005 and 2009. The components were entered as dependent variables, and the time of data collection was a fixed factor. Cohen's *d* values were calculated to estimate the effect sizes. The difference in perceived safety at the probation office between the two samples was significant (F=0.60, p<0.001), and was the most prominent effect size of all of the analyses (d=0.22). The change in experienced threats and violence was not significant (F=1.16, p=0.28).

TABLE 3. UNIVARIATE ANALYSES OF VARIANCE FOR PERCEIVED SAFETY AND EXPERIENCED THREATS OR VIOLENCE RELATIVE TO THE TIME OF DATA COLLECTION.

	2005		2009		Comparison		
	M	SD	M	SD	*F*	*p*	Cohen's *d*
Perceived safety at the office	1.47	0.28	1.35	0.23	20.60	<0.001	0.22
Experienced threats or violence	1.43	0.31	1.39	0.34	1.16	0.28	0.06

DISCUSSION

The aim of this study was to examine reported changes in Norwegian probation officers' beliefs regarding safety, risk perception, attitudes, behaviour, strain, perceived safety at the office and experienced threats or violence over a four year period following a training intervention. Significant changes were identified, all of which were positive, but small. Respondents in the 2009 survey reported more positive beliefs regarding safety and the situation at the probation office, had more ideal attitudes towards safety issues, practiced fewer risk-related behaviours, and reported lower strain and a lower degree of risk perception than did the 2005 survey respondents. Six of the nine changes did not meet the threshold of even a small effect, indicating that it was of low practical significance. However, the changes must all be considered as improvements; their magnitude was small, but statistically significant.

As with most training interventions, there are limitations with regard to the validity and generalizability of the findings. While improvements were identified for several aspects, we cannot attribute them specifically to the intervention. Other events or organizational changes at the offices may also have impacted the scores in ways that are difficult to estimate. Consequently, conclusions cannot be drawn regarding the potential causes of the change, but it seems plausible that the programme had a positive effect.

Furthermore, limited research has been conducted to demonstrate how an organization can go about building a positive safety culture (Cox and Flin, 1998; Guldenmund, 2000; Neal et al., 2000). However, there is evidence that interventions in work organization can be more effective when they form part of an integrated approach that encompasses both health and safety related outcomes (Clarke and Cooper, 2004). The SIFO programmes aimed to meet these challenges when organizing the training, discussion and teaching, advocating a holistic approach.

Most authors agree with the concept of addressing safety culture, but not on what this concept might encompass (i.e. their operationalizations of the concept differ) (Guldenmund, 2000). However, the determinants of safety are generally thought to be multifactorial, with individual, social, organizational, technological, physical, economical and societal conditions being assumed to interact in ways that may influence safety (Eklöf, 2004). Although studies have suggested theoretical models for interventions (e.g. Kluger and DeNisi, 1996), few if any of them are able to encompass the totality implied by the models. In the current study it was decided to operationalize safety culture based on safety research in the petroleum and aviation industries, with adjustment for the specific organizational setting.

Guldenmund (2000) emphasizes that subsequent interventions should only be undertaken with detailed knowledge of a company's particular basic assumptions as explanatory variables. However, changing the safety attitudes given a particular set of basic assumptions might take years; assessing the safety climate or safety culture with the object of changing it is both ambitious and time-consuming, spanning a period that will exceed the employment duration of many managers (Guldenmund, 2000). Also, transforming items such as attitudes takes time, and it is important not to set unrealistic expectations for change.

When it comes to adapting the intervention to the specific context, this was partly done through the choice of pedagogical model and the adaptation of the conceptual frame. A possible success factor may be the pedagogical model. The theoretical topics such as "risk perception" and "decision making" was included in the program and developed as a framework in advance (top-down), while the practical solutions to what was good decision-making in certain situations, appropriate practices and procedures, was something that the participants arrived at themselves during the process (bottom up). The activities was more about reflection and analysis than learning specific solutions and measures, and were led by trainers at each office.

The use of a pre- and post-design without a control group, rather than a more-robust randomized design could obviously introduce bias. It is also recommended for future studies to consider the use of incentives or a shorter version of the questionnaire in order to enhance response rates, eg exclude some

of the components or themes. At the same time a limitation of the study is that four of the components include less than four items. This can threaten the robustness of the components. Because most of the items have loadings over 0.7 on one component and close to 0 on at least one another component, we still included them in the analysis. Future studies may benefit on including more items to test these components, as this will strengthen the internal consistency. Further studies should also undertake more detailed comparisons of respondents and non-respondents in order to more fully assess the extent of any bias. However, the response rate in our study was high, implying that potential effects related to non-response are of minor concern.

Safety culture was perceived to be better at four years after the intervention had started, and particularly leaders' monitoring of safety, but the small number of employees at each office prevent us from investigating whether the impact of the interventions differed across the probation offices.

Notwithstanding the limitations outlined above, several conclusions can be drawn from the study. The main goal of the programme was to increase the level of safety in probation by developing a shared safety culture, and the main effort was to focus on attitudes, behaviour, and organizational aspects. We have demonstrated that changes were reported by employees between 2005 and 2009. However, further studies are needed to explore the aforementioned limitations.

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