

**The Work Environment Component in a Police  
Investigative Context: An assessment of Job Diagnostic  
Survey and the Organizational Climate Measure**

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## **Abstract**

The purpose of the current study is twofold. Firstly, it examines which work environment factors are considered important by police investigative employees when asked to reflect upon quality aspects of investigative work in SWOT interviews. Secondly, it seeks to uncover whether the instruments Job Diagnostic Survey and the Organizational Climate measure are relevant for measuring work environment factors in knowledge intensive organizations such as the Police. Qualitative open-ended interviews were conducted with 51 representatives from 16 of Norway's 27 police districts. The interviews generated a total of 12 429 statements which were coded on the scales of the two work environment instruments. Three main findings resulted from the current study. The results showed that a 62,9% of police investigative reflections about quality of investigative work in Norway corresponded to central aspects in a modern understanding of work environment as operationalized by OCM. Furthermore, the results indicated that the Organizational Climate Measure captured significantly more statements than the Job Diagnostic Survey. Finally, the results showed that the police investigative employees addressed significantly more work issues at the organizational level than the individual, group – and leadership levels. The findings indicate that attention to work environment factors, particularly on the organizational level, might be important when addressing quality issues in police investigative work in Norway. The study may also have practical implications for assessment of work environments in general as it showed that open-ended interviews generated work environment issues not covered by established survey instruments today.

## **The Work Environment Component in a Police Investigative Context: An Assessment of Job Diagnostic Survey and the Organizational Climate Measure**

Work environment factors are assuming an increasingly important role in today's working context. Research has shown that work environment is related to several outcomes like performance, motivation, satisfaction and organizational commitment (Humphrey, Nahrgang & Morgeson, 2007). Compared to the working context a few decades ago, organizations now find themselves in a setting characterized by globalisation, competition, technological developments and rapid change. Evaluating whether work environment instruments applied today are relevant to contemporary working context, is therefore essential.

The predominant method for studying work environment factors is via the use of surveys (Torvatn, Saksvik & Hammer, 2005). Survey instruments are advantageous in that they may be administered to large numbers of employees, are time- and cost effective, they ask the same questions to everyone, are comparable, and yield rapid results. An underlying assumption for this method is that the survey appropriately targets key aspects in the work environment of the organization it is to map. This assumption has however been criticized by numerous researchers (Sparks & Cooper, 1999; vanVeldhoven, Taris, de Jonge & Broersen, 2005). A primary critique concerns the lack of attention to contextual factors as well as predominately emphasising the individual level of analysis at the expense of other organizational levels (Nordrik, 2010; Parker, Wall & Cordery, 2001). A further problem with surveys is the issue of common methods variance. Research shows that survey data can create false correlations if the respondents provide similar answers to survey questions that are not conceptually related (i.e. not measuring the same construct). This means that systematic measurement errors may occur that either inflate or deflate the observed relationships between constructs, generating both Type I and Type II errors (Chang, van Witteloostuijn & Eden, 2010).

An alternative method for work environment research is to use SWOT interviews. In this method information about work environmental factors is gathered through open-ended SWOT-questions addressing Strengths, Weaknesses, Opportunities and Threats in the organization of interest. Research indicates that the SWOT framework is a useful tool for organizational analysis and planning (Helms & Nixon, 2010). Furthermore, SWOT has been applied extensively within research in general, as well as for the analysis of work

environmental components (Breivik, 2010; Hoff, Straumsheim, Bjørkli & Bjørklund, 2009; Hoff et al., 2009; Lone, 2012; Straumsheim, 2007). The SWOT approach does not assume any pre-defined categories, but lets the employee bring up the aspects that are relevant to his or her working environment. The SWOT approach may therefore also be a useful tool for the evaluation of established survey instruments (Breivik, 2010; Hoff, Straumsheim, Bjørkli & Bjørklund, 2009; Østerud, 2011).

### **The current study – background and contribution**

Initiative for this research was taken as the Ministry of Justice and Public Security gave the research department of Oslo Police Academy the task of mapping the quality of investigative work in the Norwegian Police. The Centre for Applied Positive Work Psychology (SAPA) at the University of Oslo was invited to be involved in the project, and four master students, including myself became part of the project team. The focus of the current study has been to investigate the work environment component in a police investigative setting. SWOT interviews with 51 representatives from 16 Police Districts were performed. The interviews were then transcribed into written text, and coded on different descriptive models, as well as on established work environment instruments.

Two survey instruments were chosen representing somewhat differing theoretical approaches to work environment measurement. The current study may contribute to assessing whether these survey instruments are relevant and applicable when measuring work environmental factors in the police investigative context specifically- and in knowledge-intensive contexts generally. Additionally, the study may provide an increased understanding of work environment factors considered important by police investigative employees, when asked to reflect upon their work. In the following, I will firstly introduce the concept of work environment, and then turn to discuss some of the practical and theoretical challenges related to work environmental studies. Secondly, I will make a presentation of the police organization and examine perspectives related to understanding the role of the work environmental factors in the police.

### **The Work Environment concept**

Organizational analysts have long considered work environment a key aspect of organizational functioning. Research in this field has reported relations between work environment and various outcomes such as motivation (Hackman & Oldham, 1976), work satisfaction (Tumulty, Jerningan & Kohut, 1994), health (Karasek, 1971, van Veldhoven et

al., 2005) performance (Wilderom, Glunk & Maslowski, 2000), and productivity (Patterson et al., 2005). The Norwegian government emphasises the importance of this topic by stating that healthy organizational work environments are a prerequisite for the Norwegian welfare system (Arbeidsdepartementet, Meld. St. 29, s. 15). Furthermore, organizations are required by law to routinely assess the work environment (Working Environment Act § 3-1). In spite of the importance attached to the concept of work environment, a common definition of the concept is lacking.

Work environment factors are frequently described by the use of different concepts such as *organizational climate* (Patterson et al., 2005), *psychosocial work environment* (Hoff et al., 2007; Skogstad et al., 2011) and *work design* (Hackman & Oldham, 1976; Parker et al., 2001). These concepts represent historically different approaches towards studying work environments, like for example the socio-technical approach (Rice, 1958; Trist & Bamforth, 1951), motivational approach (Herzberg, Mausner & Snyderman, 1951; Hackman & Oldham, 1976), stress approach (Karasek & Theorell, 1990; Siegrist, 1996), and organizational climate approach (Litwin & Stringer, 1968; Patterson, 2005). Different yet overlapping emphasis characterizes these schools of thought, and it is not clear whether the different constructs are separable.

The school of thought that has had the most fundamental impact in the Norwegian work life, through informing the working environment act, is the socio technical approach. Also known as the quality of working life movement, this approach emphasized the notion of autonomy as a key aspect to good work environments (Gustavsen, 2011). It also argued that good work environments are *created* rather than *discovered* (Emery & Trist, 1965; Gustavsen, 2011). Inherent in this understanding is that organizations should focus on creating work environments that provides opportunities for a healthy and meaningful working situation (Working Environment Act § 1-1). In other words, this approach accentuates the role of organizational factors as key influences to work environments.

### **Challenges in work environment studies**

A result of this versatility of conceptualizations, coupled with the dominant use of work environment surveys, leads to three main challenges when assessing work environment factors in organizations (Hoff, 2009a). Firstly, it leads to a problem of *interpretation*. According to The National Institute of Occupational Health, results from work environment assessments have proven difficult to compare and interpret. Surveys yield results represented by numbers that are not self-explanatory. In order for the numbers to make sense they need to

be interpreted in light of a theory, and due to the large amount of theories and different conceptualizations, this task may be daunting for leaders or employees who do not possess expertise in the field (Nordrik, 2010).

The second challenge is related to the concept of *reflection*. Whereas interviews compel the respondent to reflect, surveys merely require the respondent to indicate on a Likert Scale how much they, for example agree or disagree with statements such as: "I consider my work meaningful" (Hoff, 2009a). The answer to such a question may vary from day to day, and a survey is unable to uncover nuances or the factors that lead to a certain response (Nordrik, 2010). Furthermore, research indicates that employee reflection is related to outcomes like performance and innovation, and thus an important aspect for organizational success (West, 2002). The value of reflection in the assessment phase of work environment mapping should therefore not be underestimated.

Thirdly the lack of attention to different *organizational levels* has been described as a weakness with existing theories of work environment (Parker, 2001). Different work environment components occur at different levels in an organization. As an example, welfare and job satisfaction typically refer to the individual level; team cooperation and integration occur at the group level; management decisions and practice refer to the leadership level; and retention and efficiency refer to the organizational level (Hoff, 2009a; Skogstad et al., 2011). Lack of attention to the different organizational levels, may hinder a thorough understanding of organizational strengths and weaknesses (West, Hirst, Richter & Shipton, 2004). For example, many studies have attempted to uncover whether "happy workers" are more productive workers, and have found overall very weak correlations (Iaffaldano & Munchinsky, 1985). However, by adding organizational level as a variable, Ostroff (1992) found that although the relationship was weak at the individual level (i.e. individual work-satisfaction did not correlate with individual performance outcomes), results showed organizations with more satisfied employees tended to be more effective than organizations with less satisfied employees.

A further reason to attend to organizational level is that work environment assessments often inform organizational change initiatives. It is therefore important that challenges are addressed at the proper organizational level (Hoff, 2009a).

## **The Police Organization**

The Norwegian police is the oldest public service in Norway. It is organized into 27 regional districts and employs approximately 13 000 people. Each district consists of police stations and district offices and is headed by a Chief of Police ([www.politi.no](http://www.politi.no)). Preventing and fighting crime is the common goal for the police organization, and documentation of results is an important part of police work (National Police Directorate publication, 2010). The goal orientation, which is pervasive in the police organization today, has not always been present. In the past thirty years however, the New Public Management tradition has had a strong influence on how police work is performed and measured (Neyroud, 2008). This approach emphasises clearly defined goals as a key element of organizational success (Kelleher, 2003). Specific measurement parameters in police work include the number of cases solved, time spent on administrative procedures and preventative work (National Police Directorate publication, 2010). Performance related to these parameters has also become a political and public subject, and due to rising accountability expectations, police have to continuously maximise and document the output of their limited resources (Hoque, Arends & Alexander, 2004).

### **Knowledge-based police**

Police work is also commonly referred to as knowledge-based (Balchen, 2004). This means that collection, processing, systematisation and analysis of information should be performed in a methodological manner, and should further inform all decisions made by the police (National Police Directorate publication, 2010). Due to this knowledge-based work approach, the police as an organization has thus been described as a knowledge-intensive enterprise (Glomseth & Gottschalk, 2009). According to some researchers, this categorization also applies to a growing body of contemporary organizations and reflects changes in the general work context during the last decades (Grant, Fried, Parker & Frese, 2010).

### **Knowledge-intensive work**

Alvesson (1995, 2000) defines knowledge-intensive organizations as enterprises where the greater part of work is intellectual, and where highly qualified workers constitute the majority of employees. Knowledge-intensive organizations are often contrasted to traditional work in industrial enterprises. In the former, knowledge is considered the main source of competitive advantage, whereas in industrial enterprises, labour intensity and control of resources play a larger role (Blackler, 1995).

Knowledge-intensive organizations (Kelloway & Barling, 2000) and The new working life (Forskningsrådet, 2011) are concepts commonly applied by many researchers. They refer to a work-life fundamentally different to that of 30 years ago where the premises for work have completely changed (Nordrik, 2010). Some of the differences described are the increased intensity and complexity of work, the need to adapt content and organization of work, and the need for flexibility and organizational changes (Rønning, 2002). Several studies have also shown that in knowledge-intensive organizations, attention to work environment factors on the organizational level surpasses that of individual, group and leadership levels (Hønsen, 2010; Straumsheim, 2007).

Although police work has been described as knowledge-intensive (Glomseth & Gottschalk, 2009), Guttulsrød (2010) contend that a large proportion of police work is still reactive. He further questions whether the police have the proper preconditions required for knowledge-based work, and whether there is a structure in place to promote the cooperation needed to work in a knowledge-based manner. To address these questions it is therefore important to obtain increased knowledge about how police work is organized today. The current project seeks to shed light on these issues by giving police investigative employees the opportunity of free reflection around the strengths, weaknesses, opportunities and threats connected to their work. Furthermore, the focus of the current study is to analyse data from the police organization by means of two established work environment instruments, as research has revealed that work environmental factors are related to key organizational outcomes (Humphrey, Nahrgang & Morgeson, 2007). The first instrument, Job Diagnostic Survey (Hackman & Oldham, 1974), represents a traditional measure that was developed in an industrial setting. The second, Organizational Climate Measure (Patterson, 2005) is a multidimensional measure that incorporates work characteristics assumed to be central for contemporary work life.

## **Work Environment Instruments**

### **Job Diagnostic Survey (JDS)**

The Job Diagnostic Survey (JDS) is an instrument designed by Oldham & Hackman (1974) to measure the key job characteristics included in the Job Characteristic Model. This model was developed in a setting where the idea of *job enrichment* had come to replace the Tayloristic principles of *job simplification* in the Scientific Management tradition. The Job Characteristic Model specifically proposed that enriched jobs include five core job

characteristics that have a major impact on employee motivation and performance (Arnold et al., 2010)

The first job characteristic, *skill variety* addresses the degree to which the job requires a variety of different activities in carrying out the work, and thus lets the employee use a number of different skills and talents. *Task identity* is the degree to which the job requires completion of a "whole" and identifiable piece of work. *Task significance* reflects the degree to which the job has a substantial impact on the lives or work of other people – either in the immediate organization or in the external environment. *Autonomy* is a dimension that describes the degree to which the job provides substantial freedom, independence and discretion of the employee in scheduling the work and in determining the procedures to be used when carrying it out. The final core characteristic, *feedback* concerns the degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his or her or her performance (Hackman & Oldham, 1974).

The core characteristics are specified to produce *three critical psychological states*, in which: skill variety, task identity and task significance lead to experienced meaningfulness of the work; autonomy lead to experienced responsibility for work outcomes; - and feedback lead to knowledge of actual results of the work activities. The critical psychological states will further affect the following work *outcomes*: increased motivation, improved performance, and- greater job satisfaction, reduced absence- and turnover. Motivation and feedback are considered to be the most important of the core characteristics. Furthermore the model proposes that three moderators (i.e. context satisfaction, knowledge- and skill growth, and need strength) affect the relationships between the critical psychological states and the work outcomes (Oldham & Hackman; 1976, Parker et al., 2001).

The Job Characteristic Model has been highly influential both in Norway (Emery & Thorsrud, 1976) and internationally, and has triggered a vast amount of research (Arnold et al., 2010; Fried & Ferris, 1987). It is considered to be one of the dominant models in the field of work design (Humphrey, Nahrgang & Morgeson, 2007). All in all it has stood empirical testing fairly well, especially in terms of the proposed relations between job characteristics and affective outcomes. The results are however less consistent when it comes to the behavioural outcomes (i.e work performance, turnover and absence). Furthermore, the more specific features of the model still remain unconfirmed (i.e the relationships may be correlational rather than causal; the mediation role of the critical psychological states are uncertain) (Arnold et al., 2010).

JDS was included in the current study as it is an established measure that has a dominating position within work environment studies (Humphrey et al., 2007). Recent research also indicates that the job characteristics are highly relevant also in a modern working context as they are seen to be essential predictors of knowledge sharing, work satisfaction and organizational commitment (Humphrey et al., 2007, Gagné, 2009, Oldham & Hackman, 2010).

### **Organizational Climate Measure (OCM)**

The Organizational Climate Measure (OCM) was developed by Patterson and colleagues (2005) in- and for a modern working context. It is a multidimensional measure that consists of 17 dimensions. The theoretical basis for OCM is the Competing Values Model, which is based on 60 years of organizational research (Quinn, 1988; Quinn & McGrath, 1985; Quinn & Rohrbaugh, 1983).

The dimensions included in OCM measure employees' perceptions of their work environment on the individual, group, leadership and organizational levels. The 17 organizational climate dimensions in OCM defined by Patterson and colleagues (2005) are as follows:

- *Autonomy* regards whether jobs are designed in ways which give employees wide scope to enact work
- *Integration* concerns the extent to which interdepartmental trust and cooperation exists
- *Involvement* describes whether employees have considerable influence over decision-making
- *Supervisory Support* regards the extent to which employees experience support and understanding from their immediate supervisors
- *Training* is concern with development of employee skills
- *Welfare* describes the extent to which the organization values and cares for employees
- *Formalization* describes a concern with formal rules and procedures
- *Tradition* concerns the extent to which established ways of doing things are valued
- *Innovation* concerns the extent of encouragement and support for new ideas and innovative approaches
- *Flexibility* describes an orientation toward change

- *Outward Focus* is the extent to which the organization is responsive to the needs of the customer and the marketplace in general.
- *Reflexivity* describes a concern with reviewing and reflecting upon objectives, strategies, and work processes, in order to adapt to the wider environment.
- *Clarity of Organizational Goals* is a concern with clearly defining the goals of the organization
- *Efficiency* regards the degree of importance placed on employee efficiency and productivity at work.
- *Effort* indicates how hard people in organizations work towards achieving goals.
- *Performance Feedback* concerns the measurement and feedback of job performance
- *Pressure to Produce* is the extent of pressure for employees to meet targets
- *Quality* describes the emphasis given to quality procedures

An additional category was also added:

- *Residual*, all statements that does not fit into any of the other OCM categories defined

OCM is a relatively new measure and has therefore not undergone the same amount of empirical scrutiny, as established measures like JDS have. However, a major validation study including 6869 employees from 55 British organizations indicated that OCM had satisfactory reliability and validity when compared to an established validated instrument (Patterson et al., 2005). A Norwegian version of OCM has also been tested. This study found support for the factor structure of the 17 OCM dimensions (Bernstrøm, 2009). The testing of OCM has therefore so far yielded promising results, and Patterson (et al., 2005) argues that it captures the essential aspects of work environmental factors in a modern context. OCM is therefore presented as a general- and global measure for work environments.

## **Hypotheses**

The current study seeks to clarify whether JDS and OCM are relevant and applicable when it comes to measuring work environmental factors in knowledge intensive organizations in general- and the police investigative context specifically. The OCM instrument represents a measure developed to capture work environmental factors in a modern working context. JDS is on the other hand developed in a setting dominated by industrial work. Based on existing studies (Anderssen, 2011; Hønsen 2010), and the fact that the police organization has been described as a modern knowledge-intensive organization (Glomseth & Gottschalk, 2009), it is

reasonable to assume that the OCM instrument will cover more of the police investigative employees' perceptions of their work environment than JDS. Hypothesis 1 is therefore:

There will be significant differences in the number of statements captured by the two work environment instruments JDS and OCM, with a majority of statements coded on OCM.

This study also seeks to uncover which work environmental factors are considered important by police investigative employees when asked to reflect upon their work. Research indicates that in contemporary work life, it is important to make distinctions between work environment factors that occur at different levels of the organizations (Dallner et al., 2001). In the current study, statements will therefore also be coded on different organizational levels (i.e. IGLO - individual, group, leadership and organizational level). Previous studies have shown that organizational aspects are important for knowledge workers when asked to reflect upon their work environment (Østerud, 2011; Lone, 2012). It is therefore assumed that the number of statements coded on the IGLO levels will vary, with the majority being captured by the organizational level. Hypothesis 2 is therefore:

There will be significant differences in the number of statements coded on the IGLO levels, with a majority of statements on the organizational level.

## **Method**

### **Research Project**

This research is part of a long-term cooperation project between the Norwegian Police University College and the Centre for Applied Positive Work psychology at the University of Oslo. The Ministry of Justice and Public Security is funding the project. The duration of the project has been set to last from 2008 until 2013, focusing on mapping the quality of investigative work in Norway.

### **Sample**

Data were collected from the Norwegian police investigative units. A strategic sampling procedure was used to select 51 participants from 16 of the 27 police districts. Districts were selected based on size and geographical factors. Representatives from 3 levels of the organization were included in each district: Chief of Police (N=16), Senior

Investigating Officer (N=19) and Investigator (N=16), respectively. Chief of Police selected Senior Investigative Officer and Investigator in their respective districts. In the current study, questions related to position levels are however not addressed. Hence, position levels are not included in the statistical analyses. Participant attrition was zero; all 51 participants volunteering for the research project completed the interviews.

## Measures

Qualitative semi-structured interviews based on open questions in the SWOT-format were used to gather data. SWOT is an acronym meaning Strengths, Weaknesses, Opportunities and Threats. The SWOT framework has mainly been used in analysing organizations and informing strategic planning (Helms & Nizon, 2010). Additionally, it has been applied for analysis on the individual level (Ames & Runco, 2005). In a SWOT interview the participant is not bound to a particular type of answer, but the format facilitates reflection along three dimensions: positive-negative, past-future, internal-external (Hoff, 2009c). The interviews were performed according to the PEACE structure. PEACE is an interviewing model developed for police investigation, which is founded on cognitive interviewing procedures (Clarke & Milne, 2001). The participants were encouraged to reflect upon the following four SWOT-questions:

1. *“Please tell us what you think works well regarding the investigative work here in the police district - we call this the strength of the investigative work.”*
2. *“Please tell us what you think does not work well regarding the investigative work here in the police district – we call this the weakness of the investigative work.”*
3. *“Please tell us what you consider to be opportunities for improving the investigative work here in the police district – we call this the opportunities in the investigative work.”*
4. *“Please tell us what you consider to be threats against improving the investigative quality here in the police district - we call this the threats in the investigative work.”*  
(My translation).

Additional information was acquired by follow-up questions encouraging the participant to elaborate on, and clarify specific *statements/meanings*. For example, *“Are there any other strengths regarding the investigative work you would like to add?..... Could you specify what you mean by.....? You mentioned... could you elaborate on this?”*

## **Procedure**

The interviews were conducted between April 2010 and September 2012. A letter of information about the project was sent to the participants prior to the interviews, informing the participants about practical details concerning the interviews as well as the interview questions (see Appendix A). One main-interviewer extensively trained in the PEACE structure and modified SWOT format conducted all interviews. Some interviews had two interviewers, in which case the second interviewer had also undergone training. The procedure was chosen to ensure standardization and reliability of the interviews. The duration of the interviews ranged between 31 minutes and 131 minutes with a mean of 64 minutes. All interviews were conducted in Norwegian and recorded digitally.

## **Data treatment and analysis**

**Transcriptions.** Transcription entails preparing the interview material for analysis by means of transforming oral conversations into written text (Kvale & Brinkmann, 2010). In the current study the interviews were transcribed verbatim, including “ehm” and other verbal expressions. Laughter and other emotional expressions were however not included in the transcriptions. Special attention was given to enhance reliability of transcriptions. Due to the large amounts of data, multiple transcribers were used, including research assistants and four master students working on the project. A common transcription procedure was also used amongst the master students (see Appendix A). We assessed the reliability of the transcription procedure by comparing four independent transcriptions of three randomly chosen interviews. These comparisons did not reveal any meaningful differences between the four transcriptions.

**Content Analysis.** The content analysis procedure used in this project contained three steps in chronological order: (1) unitizing, (2) coding on SWOT and organizational levels (IGLO), and (3) coding on work environment instruments.

The first step, unitizing, was performed according to the approach described by Krippendorff (2004, p. 105), denoted as categorical distinctions. This consisted of dividing the transcriptions into meaningful statements, where units were defined by membership in a category or class. According to Krippendorff (Ibid, p.220), the process of unitizing needs to be done based on appropriate instruction. Such instruction was achieved by establishing a

common codebook for the four master students (see appendix B). A statement was defined “as a part of a sentence, a whole sentence, or several sentences expressed by the interviewee, constituting a coherent, meaningful description or category of an aspect of the investigative work” (Hoff, et al., 2009b). Each new piece of information that was semantically different from the previous would be considered a new statement. A full time employed research assistant unitized and coded the material at the beginning of the project, and the four master-students unitized and coded the material towards the end of the data collection period. To test agreement, each student transcribed and unitized three randomly chosen interviews. A unitizing reliability-test was conducted, which showed a 67% average pairwise agreement between student-coders. The unitizing procedure resulted in a total of 12 429 statements from the 51 participants. The statements were derived in total and transferred into the PASW 18 Software (Predictive Analytic SoftWare).

The second step of the content analysis included coding on the four SWOT dimensions. Statements that did not fit into any of the four SWOT dimensions were coded as residuals. A residual referred to any statement entailing historical- or general information that analysts were unable to fit into the SWOT categories. The statements were also coded on the four organizational levels (individual, group, leadership and organization - IGLO) in order to provide an analytical framework that would be used to clarify and compare the distribution of statements coded on the two different work environment instruments. An external level category was included in the model. This captured statements connected to elements of external matter, i.e. circular letter from the Director of Public Prosecutions. The definitions used as a basis for the coding on SWOT and IGLO were as follows:

- *Strengths:* Positive aspects of the investigating work in the present situation
- *Weaknesses:* Negative aspects of the investigating work in the present situation
- *Opportunities:* Opportunities for good investigating work in the future
- *Threats:* Threats towards good investigating work in the future

- *SWOT residuals:* Statements that did not fit the above categories
- *The individual level:* Individual perceptions, feelings and opinions
- *The group level:* Interaction and cooperation in work groups, teams and departments
- *The leadership level:* Behaviour of immediate supervisors, other leaders or top management
- *The organizational level:* Management practices, organizational culture, strategies, organizational goals and values, and the physical environment of the organization
- *The external level:* Statements directed towards elements of external matters, i.e. circular letter from the Director of Public Prosecutions
- *IGLO residuals:* Statements that did not fit the above categories

Of the total 12429 statements, 11044 statements were coded on the SWOT/IGLO categories. An example of a SWOT statement was: *“We have dedicated investigators on organized crime who show a lot of effort in their work”*. This was coded on the strength category. All statements coded on the SWOT dimensions also allowed for IGLO categorization. An example of an IGLO statement was: *“I perceive it to be a strength, that we have routines for establishing interdisciplinary teams when crime cases reach a certain size”* which was categorized as a statement on the group level. The 1385 SWOT/IGLO residuals were statements concerning for example questions about the interview situation, non-coherent sentences, and information about work history or past events. An example of a SWOT/IGLO residual was: *“Some of these questions, or the answers to these questions, will in part evolve around organizational issues or may evolve around material issues.”*

In the third step of the content analysis, the SWOT/IGLO statements were additionally coded on the two separate and established work environment instruments: The Job Diagnostic Survey (JDS) (Hackman & Oldham, 1975) and the Organizational Climate Measure (OCM) (Patterson et al., 2005). Each of the 11044 statements that were coded in SWOT/IGLO were

assessed and coded on the core dimension, capturing the meaning of the statement. Statements that could not be categorized in the core dimensions were coded as residuals. Three master students, including the author, completed coding on JDS dimensions.

The OCM coding procedure entailed coding all 11044 statements on the 17 OCM dimensions (Patterson, 2010). As for JDS, statements that did not fit into the 17 categories of OCM were coded as residuals. One other master student, in addition to the author, performed coding on the dimensions of OCM.

**Intercoder Reliability.** According to Krippendorff (2004), familiarity with the transcription and its themes is a prerequisite for reliable coding. Coding was therefore performed after transcription and unitizing. Additionally, to ensure consistency in the coding process, four master students including the author coded 3 randomly selected interviews separately. This was done after the development of a common codebook (see Appendix B). The selected interviews were then tested for intercoder reliability on both SWOT and IGLO, using the ReCal Intercoder Reliability Calculation (Freelon, 2010). Intercoder reliability of the SWOT dimensions ranged between 67% and 82,4%, with an average of 76,4% on the first interview. The second interview ranged between 76,8% and 88,9%, with an average of 82,2%, and the third interview ranged between 67,7% and 88,3% with an average pairwise agreement of 77,5%. Moreover, two interviews were coded on IGLO. The intercoder reliability of the first interview ranged between 82,4 % and 96,9 %, with an average of 86,3%. The second interview ranged between 75,2% and 90,8 %, with average pairwise agreement of 81,8%.

To ensure reliability of the content analysis, interrater reliability tests were performed during the coding process for both JDS and OCM codings. For JDS, three master students coded two randomly selected interviews, while for OCM one other master student coded x number of randomly selected interviews. The intercoder reliability of the JDS coding ranged between 83,7 % and 86,3% with an average of 84,8% for the first interview. For the second interview, the pairwise agreement ranged between 97,4% and 100% with an average of 98,3%. The intercoder reliability of the coding on OCM showed an average pairwise agreement of 52,5% for the first interview. For the second interview, the pairwise agreement was 52,2%. According to Neuendorf (2002), there is no established consensus regarding an acceptable level of intercoder reliability in content analysis. The results from the reliability tests did however range at such a level that it was considered acceptable to proceed with further analysis.

## **Data treatment and statistics**

The 11044 statements coded on SWOT and IGLO categories were used as a foundation for further analyses. The analyses were performed using PASW 18 (Predictive Analytics Software). The 1385 SWOT and IGLO residuals were excluded from further analyses as they were not considered to contain information relevant to investigations of the work environment component.

In order to conduct the statistical analysis required to test the hypothesis, statements were aggregated to the individual level. Organizational levels and the two work environment instruments were analysed using multivariate tests (MANOVA), in a repeated work environment instruments (2) X organizational levels (4) design. Alpha level,  $p < .05$  was adopted as criterion for establishing statistical significance on all comparisons. Partial Eta Squared was used to calculate effect size. Cohen (1988) classifies effect sizes smaller than .01 as a small effect, whilst sizes between .01 and .06 are considered a moderate effect. Effect sizes larger than .14 show a large effect.

## **Ethical considerations**

The study was conducted according to Norwegian ethical standards for research on human beings. All participation was voluntary and the participants were well informed about the project through a briefing prior to the interview, as well as an information letter distributed beforehand (see appendix C). The participants gave their informed consent to take part in the study and were informed about the possibility for withdrawal at any time during the process. Participants were assured of confidentiality regarding information given in interviews. Personal names and police districts will not be cited. Each participant verbally accepted the tape recording of the interviews. The interviews were not regarded to have any negative impact on health, and participants were treated in accordance with the principles in PEACE (Clarke & Milne, 2001), which emphasizes integrity and respect.

## **Results**

### **Descriptive Statistics**

A total of 12 429 statements were unitized from the interviews. From the total number of statements, 10 386 (83,6%) remained after removing SWOT- (1385 statements), and IGLO residuals (460 statements) and statements referring to external factors (197 statements). Examples of external factors were circular letter from Director of Public Prosecutions. These statements were not included in further analysis based on the assumption that they did not

contain any relevant information about the police investigative work environment. The distribution of SWOT and IGLO statements included in the analysis is presented in table 1.

Table 1: *Distribution of statements in SWOT and IGLO (N=51)*

	Strength	Weakness	Opportunities	Threats	Total
Individual	595	568	272	155	1590 (15,3%)
Group	832	292	252	43	1419 (13,7%)
Leadership	765	678	489	129	2061 (19,8%)
Organization	1789	1721	1211	595	5316 (51,2%)
Total	3981 (38,3%)	3259 (31,4%)	2224 (21,4%)	922 (8,9%)	10386 (100%)

The distribution shows that most statements were coded on the *strength*-category, constituting 38% (3981). The *weakness*-category constituted 31,4% (3259), and *opportunities* 21,4% (2224). The least amount of statements in the SWOT distribution was coded on the *threats*-category, constituting 8,9% (922). Furthermore, the distribution of statements on organizational levels (IGLO) shows that the majority of SWOT statements were coded on the organizational level. The organizational level constituted 51,2% (5316) of the total amount of statements, the leadership level constituted 19,8% (2061) and the individual level constituted 15,3% (1590). The least amount of SWOT statements was coded on the group level, constituting 13,7% (1419).

**JDS.** The distribution of statements in the work environment JDS, can be found in table 2.

Table 2: *Distribution of statements for work environment instrument JDS (N=51)*

	Frequencies	Percentage	Mean	SD
Skill Variety	82	0.8	1.58	2.74
Task Identity	147	1.4	2.83	3.59
Task Sign	184	1.8	3.54	3.94
Autonomy	116	1.1	2.23	2.62
Feedback	476	4.6	9.15	20.27
Total	1005	9.7	19,33	23,55

As table 2 shows, 9,7% (1105) out of the total number of statements (10386) could be coded on the 5 dimensions of the work environment instrument JDS. The dimension capturing the majority of statements was *feedback from task*, containing 4,6% (476). *Task significance* contained 1,8% (184) of the statements, *task identity* contained 1,4% (147) and *autonomy* contained 1,1% (116). The dimension covering the smallest number of statements was *skill variety*, containing 0,8% (82). Means and standard deviations can be found in table 2.

**OCM.** Table 3 depicts the distribution for statements coded in the work environment instrument OCM.

Table 3: *Distribution of statements for work environment instrument OCM (N=51)*

	Frequencies	Percentage	Mean	SD
Autonomy	96	0,9	1,86	2,20
Integration	1061	10,2	20,67	11,13
Involvement	205	2,0	4,08	6,56
Supervisory Support	186	1,8	3,70	4,30
Training	837	8,1	16,37	12,22
Welfare	279	2,7	5,41	5,56
Formalization	395	3,8	7,78	6,92
Tradition	332	3,2	6,43	9,34
Innovation and Flexibility	303	2,9	5,96	6,27
Outward Focus	178	1,7	3,35	3,23
Reflexivity	650	6,3	12,78	11,34
Clarity of Organizational Goals	215	2,1	4,33	4,28
Efficiency	380	3,7	7,31	6,08
Effort	288	2,8	5,57	5,77
Performance Feedback	369	3,6	7,20	7,29
Pressure to Produce	242	2,3	4,80	5,55
Quality	518	5,0	10,12	7,64
Total	6534	62,9	128,1	23,62

According to table 3, the work environment instrument OCM captured 62,9% (6534) of the total 10 386 statements. Of the 17 dimensions, *integration and training* captured the largest amount of statements, with 10,2 % (1061) and 8.1% (837) respectively. The dimensions covering the smallest number of statements was *autonomy and outward focus*, containing 0,9% (82) and 1,7% (178) statements respectively. Means and standard deviations can be found in table 3.

**JDS and OCM distribution on IGLO.** The two work environment instruments were aggregated on the four organizational levels. The overall distribution of the instruments on IGLO is visualized in table 4.

Table 4: *Descriptive Statistics for OCM and JDS on the four organizational levels (IGLO)*

Organizational level	JDS			OCM		
	Frequency	M	SD	Frequency	M	SD
Individual	159	3.12	3.83	880	30.98	24.69
Group	101	1.98	2.55	853	27.69	22.14
Leader	188	3.69	5.77	1340	40.27	32.27
Organization	557	10.92	14.82	3461	103.71	62.63

The descriptive statistics for the two work environment instruments on the organizational levels reveal that at the *individual level*, JDS contained 159 statements, whereas OCM contained 880 statements. At the *group level*, JDS captured 101 statements and OCM 853 statements. Furthermore, 188 statements were contained by JDS at the *leadership level*, whereas OCM contained 1340. Finally, the number of statements accounted for by the two instruments at the *organizational level* was 557 for JDS, and 3461 for OCM. The specific distribution on the organizational levels for each of the models is found in table 5.

Table 5: *Descriptive Statistics for the categories for OCM and JCM at four organizational Levels*

		IGLO					
		Individual	Group	Leadership	Organizational	Total	
OCM	Autonomy	20	12	18	46	96	
	Integration	70	283	212	496	1061	
	Involvement	16	23	82	84	205	
	Supervisory Support	16	3	146	21	186	
	Training	191	81	126	493	837	
	Welfare	99	35	56	89	279	
	Formalization	26	57	103	209	395	
	Tradition	48	27	41	216	332	
	Innovation & Flexibility	36	27	42	198	303	
	Outward Focus	11	29	7	131	178	
	Reflexivity	44	56	122	428	650	
	Clarity of Organizational Goals	16	13	72	114	215	
	Efficiency	42	39	56	243	380	
	Effort	90	44	40	114	288	
	Performance-Feedback	31	43	109	186	369	
	Pressure to Produce	54	13	50	125	242	
	Quality	70	68	58	322	518	
	JDS	Skill Variety	23	8	4	50	85
		Task Identity	25	22	15	81	143
		Task Sign	31	14	13	133	191
Autonomy		20	8	29	58	115	
Feedback		42	43	91	155	331	

## Testing the hypotheses

In order to test the hypotheses, multivariate tests (MANOVA) were performed in a repeated work environment instruments (2) X organizational levels (4) design.

**Hypothesis 1.** H1 predicted that there would be significant differences in the number of statements captured by the two work environment instruments JDS and OCM. MANOVA revealed a significant *main effect* of the work environment instruments, Wilks' Lambda = 0.163,  $F(1,50) = 256.03$ ,  $p < 0.001$ . Effect size measured by partial eta squared = 0.84. This indicates a large effect size (Cohen, 1988). The number of statements covered by JDS and OCM were 1105 ( $M = 19.7$ ,  $SD = 23.62$ ) and 6534 ( $M = 128.1$ ,  $SD = 56.97$ ), respectively. The results indicated support for hypothesis 1.

**Hypothesis 2.** H2 predicted that there would be a significant difference between the number of statements coded on the organizational levels of IGLO. Results from the multivariate tests (MANOVA) revealed a significant *main effect* of organizational levels, Wilks lambda = 0.464,  $F(3,50) = 18.42$ ,  $p < .001$ . Partial Eta Squared = 0.54, which indicates a large effect size (Cohen, 1988). To examine these relations further, post hoc tests were carried out for the different organizational levels. Bonferroni correction of alpha-levels was used to control for family-wise error associated with multiple paired sampled t-tests (Field, 2009). The post hoc tests indicated 3 pairs of significant differences out of six possible combinations: the organization level was higher than the individual level ( $t = 7.37$ ,  $p < .001$ ), group level ( $t = 8.00$ ,  $p < .001$ ) and leadership level ( $t = 6.52$ ,  $p < .001$ ), respectively. Table 6 shows mean values of IGLO. Overall the *organizational level* was significantly different from the other levels whilst none of the other possible differences were significant. The results indicated support for hypothesis 2.

In addition to the hypotheses laid out in this study, another finding resulted from the multivariate tests performed. MANOVA also revealed a significant *interaction effect* between the work environment instruments and the organizational levels, Wilks lambda = 0.464,  $F(1,50) = 18.472$ ,  $p < .005$ , Partial Eta Squared .536 (see figure 1). Closer examination of the interaction effect was done by a separate t-tests presented of the two instruments (see table 8, 9 and 10). Results indicated that the interaction effect between OCM and JDS was at the organizational level (highest mean difference). The results are presented in table 10.

Table 6: Mean number of statements distributed on the four organizational levels (IGLO) (N=51)

Organizational level	Statements	
	M	SD
Individual	34.1	26.2
Group	29.7	23.5
Leader	44.0	33.7
Organization	114.6	69.22

Figure 1: Graphical representation of interaction effect between work environment instruments and organizational levels.

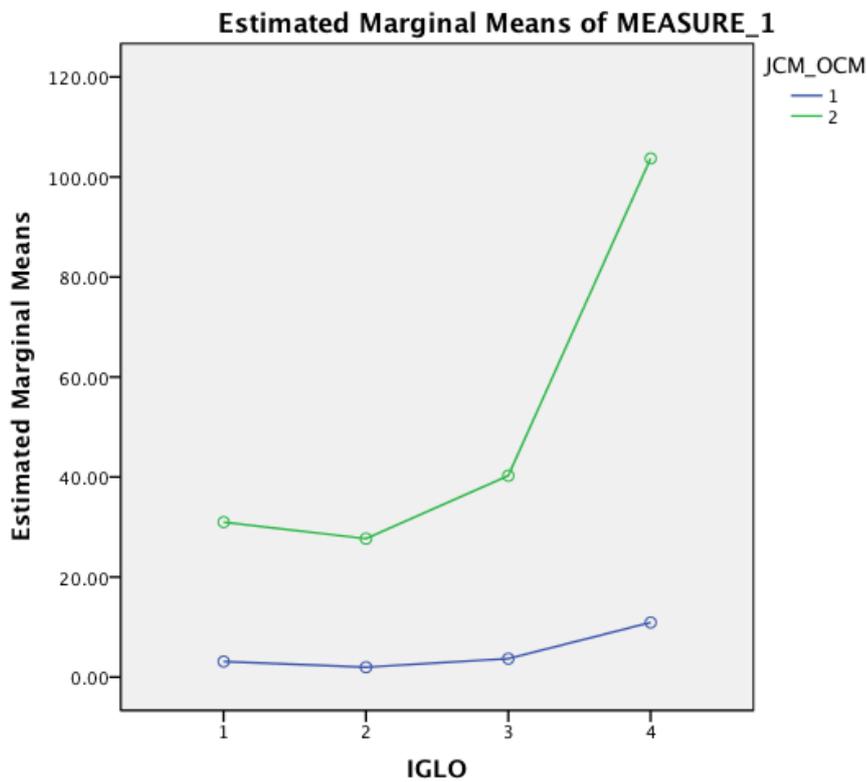


Table 7: Paired sample Tests between the Organizational levels on work environment instrument JDS and OCM (N=51)

	Organizational level and JDS	Mean difference	SD	t	Sig. (2-tailed)
Pair 1	Individual-level	27.9	23.7	8.4	.001***
Pair 2	Group – Level	25.7	21.0	8.7	.001***
Pair 3	Leadership - Level	36.6	31.9	8.2	.001***
Pair 4	Organization-Level	92.8	59.1	11.2	.001***

\*\*\* $p < .013$  after Bonferroni correction of alfa-level

Table 8: Paired sample tests between the organizational levels on work environment instrument JDS

	Organizational level and JDS	M	SD	t	Sig. (2-tailed)
Pair 1	JDS Individual-Group	1.14	3.58	2.27	.028
Pair 2	JDS Individual-Leadership	-0.57	3.55	-1.15	.250
Pair 3	JDS Individual-Organization	-7.80	12.69	-4.39	.001***
Pair 4	JDS Group-Leadership	-1.71	5.07	-2.40	.020
Pair 5	JDS Group-Organization	-8.94	14.23	-4.49	.001***
Pair 6	JDS Leadership-Organization	-7.24	11.11	-4.65	.001***

\*\*\* $p < .008$

Table 9: Paired sample tests between the organizational levels on work environment instrument OCM

	Organizational level and OCM	M	SD	t	Sig. (2-tailed)
Pair 1	OCM individual-group	3.29	21.60	1.09	.281
Pair 2	OCM individual-leadership	-9.29	31.05	-2.14	.037
Pair 3	OCM individual-organizational	-72.73	71.42	-7.27	.001***
Pair 4	OCM group-leadership	-12.59	36.54	-2.46	.017
Pair 5	OCM group-organizational	-57.76	68.48	-7.93	.001***
Pair 6	OCM leadership-organization al	-43.47	70.94	-6.39	.001***

\*\*\* $p < .008$

Table 10: Paired samples correlations between instrument sum scores and organizational level

		M	SD	Correlation	Sig
Pair 1	JDS individual sum - OCM individual sum	-27.86	23.69	.334	.017
Pair 2	JDS group sum - OCM group sum	-25.71	20.99	.494	.001***
Pair 3	JDS leadership sum – OCM leadership sum	-36.59	31.89	.156	.273
Pair 4	JDS group sum - OCM organizational sum	-92.78	59.12	.349	.012

\*\*\* $p < .005$

## Discussion

### Main findings

The purpose of this study was twofold. Firstly, it aimed to examine which organizational factors were considered important by police investigative employees, when asked to reflect upon their work. SWOT interviews were used in order to generate information about the work environment component. Secondly, it aimed to assess whether two commonly applied survey instruments are relevant and applicable specifically when it comes to measuring work environmental factors in the police investigative context, and in knowledge intensive context generally. Content analysis was the approach used for the analysis; all the respondents' statements were first coded on the SWOT and IGLO categories. Furthermore, the statements were coded on two established work environment instruments; Job Diagnostic Survey and Organizational Climate Measure. The main findings from the study were:

1. A significant difference between the numbers of statements captured by OCM and JDS was uncovered. The finding revealed that OCM captured significantly more perceptions describing work environmental factors considered important by police investigators than did JDS.
2. Differences between the numbers of statements captured by the different organizational levels were also revealed. Significant differences were found between the *individual and organizational level*, the *group and organizational level* and between the *leadership and organizational level*. Overall the *organizational level* captured significantly more statements than the other levels.

3. There was an interaction effect between OCM and JDS at the organizational levels. OCM captured more statements on all levels, yet the largest difference between the two instruments was found on the organizational level. This finding was not hypothesised.
4. Most statements were coded on the strength- and weakness categories, constituting 38% and 31,4%, respectively. The least amount of statements in the SWOT distribution were coded on the opportunities- and threats categories containing 21,4% and 8,9% of the statements, respectively.
5. Integration and training were the most frequently occurring themes regardless of organizational level for OCM.
6. Outward focus was the least reported theme on both the leadership- and individual levels, and supervisory support was least frequent on group- and organizational levels for OCM
7. Feedback was the most frequent theme on all levels for JDS.
8. Autonomy and skill variety were the least reported on all organizational levels for JDS
9. 62,9% of police investigative reflections about quality of investigative work in Norway corresponded to central aspects in a modern understanding of work environment as operationalized by OCM.

Hypothesis 1 tested the applicability of two survey instruments JDS and OCM in a police investigative context. It proposed that OCM would capture more of the police investigative employees statements than JDS. In total the interviews generated 10 386 SWOT statements. Of these, JDS captured a total of 1005 statements (9,7%). OCM captured a total of 6534 statements (62,9%). Statistical analyses indicated that OCM captured significantly more statements compared to JDS. A previous studies performed in different knowledge intensive contexts showed that JDS captured 9% (Lone, 2012). This findings corresponds to the amount of statements JDS captured in the police investigative context. As for OCM, the number of statements captured in the current study (62,9%) was somewhat larger than previous studies. Lone (2012) found that OCM captured 53%, whereas Hønsen (2010) found that it captured 50%. Both of these studies were performed in knowledge-intensive contexts. The results for the current study indicate support for hypothesis 1.

Hypothesis 2 tested which work environmental factors were considered important by police investigative employees, concretely focusing on which organizational level would capture the majority of the statements. It proposed that there would be significant differences

in the number of statements coded on the individual, group, leadership and organization levels, with a majority of statements on the organizational level. The group level captured the least amount of statements 1419 (13,7%). The individual level captured 1590 (15,3%). Furthermore, the leadership level captured 2061 statements (19,8%). All in all the organizational level captured the majority of statements 5316 (51,2%), and the differences between the organizational level and the individual, group- and leadership levels were significant. In a previous study from the public university sector, Østerud (2011) found that the individual level captured the largest amount of statements (42,6%) followed by the organizational level (34,7%). The group and leadership levels captured 13,3% and 9,6% respectively. However, other studies have shown that employees consider the organizational level to be of major importance in knowledge-intensive organizations (Hoff et al., 2009c; Hønsen, 2010). The results in the current study indicate support for hypothesis 2.

## **General discussion**

### **Main effect of instruments**

With regards to support for hypothesis 1, the results indicated that a significantly larger number of statements could be coded on OCM compared to JDS.

The most apparent explanation for this result is that JDS was developed for a different work context- and workforce characterized predominantly by industrial work (Parker et al., 2001). It was therefore founded on the industrial society's perceptions of work-life, giving prominence to how job content factors influenced employee motivation and health (Skogstad et al., 2011). Major changes have occurred in the organizational landscape since the time JDS was developed. According to Schumacher (2006) there have been structural changes in the composition of services in most western countries. A common trend has been a considerable increase of knowledge-intensive services paralleled with a relative decrease in the non-Research & Development-intensive industries (i.e. manufacturing services). Other changes concern the composition of the workforce where women and culturally diverse employees now constitute a considerable amount of employees. Several researchers have therefore highlighted the problematic aspects of applying instruments that are founded on research on male manufacturing workers in a different context (Parker et al., 2001).

Another explanation may be connected to the type of organization included in the current study. It can be argued that police-investigative work is knowledge-intensive, and that JDS, focussing mainly on the nature of work-tasks, fails to capture significant aspects of

police work (Glomseth, Gottschalk & Solli-Sæther, 2007; Glomseth & Gottschalk, 2009). JDS does not incorporate work characteristics such as: knowledge-requirements (whether the job requires deep specialist knowledge), social factors (whether the job facilitates feedback and cooperation with others) and contextual factors (physical demands and working conditions). Recent research indicates that these factors are positively related to work-outcomes in knowledge intensive contexts (Humphrey, Nahrgang & Morgeson, 2007; Morgeson and Humphrey, 2006). In the police organization, it appears that contextual factors especially (i.e. organizational structure and various aspects of organizational life like training, resources and internal affairs) have specific bearing on work outcomes like performance and experienced stress (Shane, 2010). It appears therefore that JDS is too narrowly focused, and thus neglects more general organizational characteristics that are important in the police investigative work setting (Hoff et al., 2009b).

Contrary to JDS, OCM was developed in a modern work context. It incorporates several organizational levels, and claims to cover all essential characteristics of work environments assumed to be relevant for employees, regardless of organizational type- and setting (Patterson, 2005). OCM thus represents a general and global approach for conceptualizing work environment. This study does however indicate that given the opportunity of free reflection in the SWOT interviews, employees in a police investigative context also emphasize aspects of their work environment that are not covered by OCM today. In other words, although OCM covers 62,9% of the statements, 37,1% remain coded as residuals. It is therefore relevant to ask whether these findings are specific to the police investigative context, or whether OCM in general overlooks aspects considered important by knowledge workers. It appears that the finding from the current study represents a common trend, indicating that OCM as it is today fails to capture 100% of knowledge workers reflections concerning their work environment (Hønsen, 2010; Lone, 2012). On the other hand, the statements coded on OCM do spread across all 17 categories. This implies that the instrument broadly captures key aspects of investigative work environment factors. General survey instruments like OCM, have however been criticized for approaching modern work life in a static and narrow-focused manner (Bakker & Demerouti, 2007; Grant & Parker, 2009; Humphrey et al., 2007; Parker et al., 2001), which might explain the occurrence of 37,1% residual statements.

On the basis of this study alone it is nevertheless impossible to conclude whether 62,9% may be considered satisfactory or not. There are two main reasons for this: (1) no residual analysis has been performed to determine the content of statements not captured by

the instruments, and (2) the study did not include weighting of the statements, hence we do not know whether the instrument included the important aspects as evaluated by the participants. Furthermore, OCM has not undergone the same empirical scrutiny as for example JDS. One major validation study exists, which indicates satisfactory reliability and validity for OCM. However, the companies included in the study were predominantly from industrial settings (Patterson et al., 2005). It is therefore important that future studies seek to clarify whether OCM is a relevant and applicable instrument for knowledge intensive settings, in general.

### **Main effect of organizational levels (IGLO)**

Hypothesis 2 predicted that there would be significant differences in the number of statements coded on the IGLO levels, with a majority of statements on the organizational level. All in all there were significantly more statements coded on the organizational level compared to individual, group- and leadership levels. Hypothesis 2 was thus supported.

The finding indicates that the majority of perceptions of work environment in the police investigative context are associated with organizational work characteristics. This exemplifies a topic of great debate in organizational psychology, namely whether one should describe, explain or theorize at the level of the individual, group or the organization (Furnham, 2005; Schein, 1996). Do the results from the current study indicate that the organization is the primary shaper of police investigators' perceptions of their work environment, or do they simply reflect a general phenomenon common to most organizations?

Looking at previous studies, it is possible to argue that this might be a general phenomenon in the Norwegian work setting (Hønsen, 2010; Larsen, 2008; Skauli, 2009; Straumsheim, 2007). Attention to contextual factors might therefore provide some insights into the importance attached to the organizational level compared to the other IGLO levels. The Socio-technical tradition has had a major impact in the Norwegian work context. A central focus in this tradition has been on *creating* working environments characterised by interesting, varied and developmental work tasks (Skogstad, 2011). This approach thereby strongly emphasizes the organizational aspect of work environment (Gustavsen, 2011). It could therefore appear that Norwegian workers are prone to reflect- and emphasize organizational aspects in their work environment above individual, group or leadership levels.

On the other hand, it is also possible that the majority of statements on the organizational level might be a consequence of the sample included in this study. It is worth noting that two thirds of the respondents represent the leadership level of the police

organization, and all respondents have extensive organizational experience. Managers' perceptions are often based on more comprehensive knowledge than non-managerial employees, and they have a larger impact on company performance. This might lead to their responses being more heavily associated with organizational variables (Patterson, Warr & West, 2004). A possible explanation is therefore that the respondents are more inclined to focus on organizational features, than a less experienced sample would be.

A final explanation worth considering concerns key characteristics of the police organization. The police is the oldest public service in Norway, and may be described as a mature organization ([www.politiet.no](http://www.politiet.no)). It is therefore possible that the police, having a long and established history, might inadvertently influence employees' perceptions to evolve around organizational aspects. In a study of the British police, Kiely and Peek (2002) found that respondents perceived most members of the police organization to share the established values of the police service. Research from a branch of the Norwegian police showed that the culture had an orientation towards competence, development, legality, structure, performance, tasks, cooperation and humility (Glomseth et al., 2009). Several of these characteristics could be seen to describe organizational concerns. Moreover, a central part of investigative work is to monitor and confront on-going changes in the crime-situation (Myhrer, 2001). The results showed that *integration* (which concerns interdepartmental cooperation and trust) and *training* (which is concerned for development of employee skills and abilities) were the most frequently occurring themes on the organizational level. Organizational factors might therefore be perceived as crucial in meeting these changing trends, and an important factor for success in police investigative work.

It is however important to note that *integration* and *training* were the most frequently occurring themes regardless of organizational level for OCM. Additionally, *feedback* was the most frequent theme on all levels for JDS. Regarding the least frequent themes, there was a similar pattern: *outward focus* was the least reported theme on both the leadership- and individual levels, and *supervisory support* was least frequent on group- and organizational levels for OCM. On JDS, *autonomy* and *skill variety* were the least reported on all organizational levels. It is therefore essential to ask whether the IGLO framework is a useful descriptive tool for content analysis of qualitative data.

### **IGLO as a descriptive tool for qualitative analysis**

The results showed that the majority of statements could be coded on both the SWOT and IGLO categories. This finding is consistent with results from previous research using this

descriptive framework (Lone, 2012). It is however possible that the number of statements that could not be coded on the SWOT and IGLO categories (16,4%), denotes a limitation related to the method used. Additionally, as mentioned earlier, the same themes reoccur as most and least frequent, regardless of organizational level. The IGLO framework is thus unable to differentiate between the concepts that are included in the analysis, which might imply a further potential limitation with IGLO as a descriptive tool.

On the other hand there are several arguments for including the IGLO framework in this study. Firstly, the police as well as other organizations, find themselves in an environment marked by rapid changes. Managing these changes has therefore been described as the primary task for organizational leaders (Turner & Crawford, 1998). Work environment assessments are amongst the factors that often inform managers in organizational change initiatives. Addressing challenges at the proper organizational level is therefore imperative. Additionally, early theorists like Kurt Lewin (1943) have recommended attention to different organizational levels. In his pioneering work on planned change, he considered the individual, group, intergroup and community aspects particularly important during change processes (Burnes, 2004; Burnes, 2007). However, more recent theory- and research on organizational work environmental factors, has been criticized for not adhering to these recommendations, and thus described as being context-insensitive and underspecified. Parker and colleagues (2001) therefore contend that future research needs to incorporate individual, group- and organizational levels of analysis when addressing work environmental factors.

The recommendations from Parker and colleagues specify 3 levels, but the IGLO concept also includes the leadership level of analysis. It may be argued that this is important as a total of 2061 statements from the interviews were related to leadership activities- or behaviour. Research also indicates that leadership style is related to outcome variables on individual, group- and organizational levels (Liu, 2010). Furthermore it is essential to note that the data were gathered in a Norwegian setting, where the government has strongly emphasized the importance of principles of public leadership in recent years (Leadership in Norway's civil service, 2008). Incorporating the leadership level is thus in line with both governmental strategy as well as recent research.

Regarding the statements not captured by the IGLO framework, a bottom-up analysis would be required to determine whether the information they contain is relevant to the investigative work environment component. Bottom-up analysis or inductive analysis is often contrasted to the deductive, or top-down approach used in the current study. The latter describes a process where the researcher has a model and a theoretical framework that he

“tests” on the data. A bottom-up approach is on the other hand a process whereby the researcher observes themes in the text and makes descriptive categories in which the occurrence of similar kinds are assigned (Krippendorff, 2004). The categories thereby emerge from the text and are not formed based on a preconceived understanding or theoretical framework. All in all, the inclusion of IGLO as a descriptive framework is in line with research recommendations and has in the current study contributed to clarifying that the majority of work environmental factors considered important by police investigators, concern the organizational level. Regarding the statements that were not captured by the IGLO framework, it is recommended that this important issue be addressed through a bottom-up analysis in future research.

### **Interaction effect between work environment instruments on organizational level**

The results also revealed a significant interaction effect between the work environment instruments (JDS and OCM) and the organizational level (IGLO). The interaction effect implies that OCM captured significantly more statements compared to JDS on the individual, group, leadership- and organizational level, with the most pronounced difference on the organizational level.

Although hypothesis 1 predicted that OCM would capture more statements in general, the finding was somewhat unexpected regarding the *individual* level. JDS focuses on how job characteristics produce critical psychological states in the individual employee, which again are believed to influence the work outcomes: motivation, satisfaction and performance. A recent meta-analysis also found that the five JDS job characteristics were strongly correlated with motivation, job satisfaction and organizational commitment (Humphrey et al., 2007). This indicates that the work characteristics are influential regarding the individual level also in a modern work-setting. Furthermore, JDS assumes that autonomy and feedback are the most important aspects, which should lead to more statements coded on these two characteristics (Parker et al., 2001). It was therefore assumed that JDS would capture more statements on the *individual level* compared to OCM. There might be at least three potential explanations as to why this did not occur:

Firstly, an explanation of the results may be found by looking closer at which categories capture most statements in JDS. As previously mentioned, feedback was the most frequently coded theme on JDS. It appears however that police investigators consider feedback primarily to be an organizational aspect, as the majority of statements captured by this category were coded on the organizational level.

Secondly, autonomy was the second least occurring theme, constituting only 1,1% of the statements coded on JDS. This might be accounted for by the fact that autonomy was a key notion in the Quality of Working life movement, which has had a major impact on the Norwegian work context (Gustavsen, 2011). It might be that the idea of autonomy has become so engrained in Norwegian employees' concept of work that it is considered self-evident, and therefore not emphasized in the interviews.

Thirdly, although hypothesis 2 proposed that the organizational level would capture a larger amount of statements, the results indicated that the organizational level was significantly different from the individual, group- and leadership level for *both* JDS and OCM. The result was somewhat unexpected due to the fact that JDS has greater emphasis on the individual level compared to the organizational level. Regarding OCM the result was unexpected as the OCM dimensions addresses factors at all organizational levels, and previous studies using OCM in knowledge intensive contexts have yielded somewhat more equal distributions on the organizational levels (Østreng, 2011; Hønsen, 2010; Straumsheim, 2007).

The strong performance orientation in the police might shed light on why these results occurred. The police organization is under constant pressure to improve performance and maximise the output of their limited resources (Hoque et al., 2004). The focus in national and international media on how police handle critical issues is an indication of the fact that police performance has become a high profile and political subject (Neyroud, 2008). Additionally, the police compete with other services in the public sector for governmental funding, and the customers of this sector are increasingly demanding higher service quality leading to increased attention to the economic "bottom line" (Luen & Al-Hawamdeh, 2001; O'Malley & Hutchinson, 2007). According to Neyroud (2008) the quality and effectiveness of policing 50 years ago could be described and measured according to Tayloristic principles, where aspects such as rapidity of response were key characteristics. In the last 30 years however, there has been a political push for new public management in the police emphasizing the "policing by objectives" approach. This approach accentuates the significance of clearly defined goals (Kelleher, 2003). It is therefore possible that this orientation in the police organization leads to higher focus on organizational factors as opposed to other aspects. This performance orientation might further explain why JDS in total captured only 9,7% of the statements as Humphrey and colleagues (2007) showed that JDS does not correlate with performance outcomes.

## **Relationship between work environment and the quality of police investigative work**

Focus on the quality aspect of investigative work in Norway is a frequently debated subject. In the Central Police Strategy document and the circular letter from the Director of Public Prosecutions, the first goal listed for the police service is: "to perform efficient police-work characterized by good quality" (Ministry of Justice and the Police, 2009/2010). It is therefore key finding in the current study that the responses to questions about quality of investigative work, largely correspond to central aspects in a modern understanding of work environment as operationalized by OCM (Patterson et al., 2005; Parker et al., 2001). This finding indicates that it may be hard to separate work environmental concerns from quality issues in a modern organization such as the police.

One reason for this may be found in the established understanding that "behaviour is a function both of a person's characteristics and the nature of his or her environment" (Lewin, 1945; Patterson et al., 2004). A study from (2010), Shane found that organizational aspects were a more significant cause of experienced stress than the demanding aspects of police work inherent in the occupation. This provides one explanation as to why police investigators' perceptions to a large degree centre around work environmental concerns when asked about current strengths and weaknesses as well as future opportunities and threats to the quality of their work.

An additional explanation to the finding might be related to the theoretical development, and expansion of focus in the field of work environment research. Where traditional models, such as JDS only focused on a narrow set of variables, the modern understanding of work environment incorporates a wide range of antecedents, work characteristics, outcomes, mechanism and contingences related to contemporary work (Parker et al., 2001).

Quality issues in the police organization have primarily been addressed by creating quantifiable standards against which to measure and reward performance (i.e. number of solved cases and time spent on administrative procedures). According to Kerr (1975), this might lead to overemphasis on highly visible behaviours, at the expense of less visible- and measureable factors. The attention to performance indicators in the police might also shed light on why the majority of statements concerned current strengths and weaknesses, and the future aspect of opportunities and threats were less reflected upon. All in all, the findings from the current study indicates that work factors at the organizational level play an important part in quality aspects in the police investigative setting. Taken together with the high correspondence between police investigative employees' reflections and a modern

understanding of work environment, this might indicate that change initiatives in the police organization could benefit from focusing on building strong organizational structures rather than an exclusive attention to measurable performance indicators. This might partly be what Guttulsrød (2010) seeks to highlight by asking whether there is a structure in place in the police that promotes cooperation needed to work in a knowledge-based manner.

### **Limitations**

The results from the current study should be viewed in light of its potential limitations.

**Sample.** One main limitation regards the sample chosen for the study. Out of a total of 27 police districts, 16 were included. This indicates that we have no data from 11 police districts. Additionally, the sample selected included two representatives from the leadership level (i.e. Chief of Police and Senior Investigating Officer) and one representative from the operational level (i.e. Investigator) in each district. This has bearing on the external validity of the study in that the findings from this study may not be generalizable to the general population of police investigators (Huberman & Miles, 2002). Future research should therefore include the remaining police districts as well as police investigators with different levels of experience from the field. It is possible that perceptions of the work environment in the investigative context might change with time and experience. For example, it might be that a graduate from the Police Academy would be more focused on individual aspects, as opposed to the experienced investigator who, according to this study, indicates to be predominately focused on the organizational aspects. On the other hand, generalizability of results might not always be the primary goal. Instead, selecting a strategic sample of experienced investigators gives the opportunity for in-depth examination of the organization, which is often the primary focus of qualitative research (Huberman et al., 2002).

**Method.** Another potential limitation concerns the method of enquiry. This study used qualitative structured interviews. Studies of work environment components in organizations however commonly use a quantitative approach. There are numerous established and validated survey-instruments developed to map the work environment in organizations (i.e. Amabile, Conti, Coon, Lazenby & Herron, 1996; Hackman & Oldham, 1975; Isaksen, 2007; Patterson et al., 2005). An alternative approach would therefore be to distribute surveys to all police employees involved with investigative work. This approach might increase generalizability, given a reasonable response rate (Bradburn & Sudman, 1979). Survey-research does however require anchoring the concept of interest in observed reality, in order to make valid abstractions that can be measured (Schein, 1996). Regarding the concept of

investigative work environment, there was to my knowledge no previous research to provide a basis for valid operationalization. It was therefore considered important to gain deeper understanding of practices, structures, and processes considered important by police investigators, which might otherwise be disregarded, or overlooked (Sparks and Cooper, 1999). Additionally surveys are at risk for common method variance, which might either inflate or deflate the observed relationships between constructs. To avoid these limitations, and to facilitate for the benefits associated with employee reflection, interviews were considered to be the proper approach for this study.

**Validity.** Thirdly, this study examined whether the police investigators' perceptions of their work environment could be coded on established instruments. This approach is based on a common assumption in content analysis, namely that (1) respondents will verbalize their genuine opinions, and (2) that frequently occurring themes are considered important by respondents (Duriau, Reger & Pfarrer, 2007). An alternative view is that respondents will vocalize only those aspects that correspond with the expressed values of the organization, and perhaps leave out aspects that are not "politically" correct. A study by Kiely and Peek (2002) showed that parts of the information verbalized by police through interviews, contradicted information and behaviour captured through participant observation. A related mechanism that might come into play in the interview is demand characteristics whereby cues in the setting lead to respondents speculating over the "real" purpose of the study, in which case both validity and reliability of the research is threatened (Barribal, 1994). In the current study steps were taken to minimize these factors: all participation was voluntary and informed consent was given prior to the interviews. The respondents were also granted full anonymity and assured that all recordings would be deleted once data analysis was completed. Furthermore, the same trained interviewer conducted the interviews according to the PEACE model, which assured consistency of all interviews. However as the study by Kiely and Peek (2002) highlights, it is recommendable that future research also would include behavioural data.

**Reliability.** A final potential limitation concerns reliability of the interviews, transcription, unitizing, and coding. Due to the large amounts of data, multiple researchers were involved in the data collection and analysis. It is therefore possible that inconsistencies along the different steps of the research process might have occurred. However, extensive effort to increase reliability was undertaken. Specifically, the coders were trained in the principles of content analysis prior to approaching the data. Common codebooks were developed and interrater tests were performed frequently through the data treatment.

## Conclusion

The results from this study demonstrate that a majority of police investigators' reflections when asked about the quality of investigative work, concerns work environmental factors. It is also evident that a majority of these work environmental factors were related to the organizational level of analysis. This might indicate that quality improvements for investigative work could be achieved by attending to organizational structures at the macro level in the police organization, in addition to the measurable performance indicators given priority today. The results may also have practical implications for assessment of the work environment in general, as it indicates that given the opportunity of free reflection in SWOT interviews, employees address issues not covered by established survey instruments today. Consequently, organizations may want to supplement established surveys with methods that are tailored to capture the salient work characteristics in different work settings, such as open-ended interviews. This might lead to a greater understanding of key work environment factors in the given organization, which might further provide more nuanced information for organizational quality improvement initiatives. Furthermore, the current study addresses the question of applicability of the Job Diagnostic Survey and the Organizational Climate Measure in the police investigative context. Results indicate that OCM is more sensitive towards covering broad aspects of the work environment in a knowledge intensive context like the police, than JDS. Future research should however seek to uncover the situation-specific work characteristics not captured by OCM, as well as the usability of OCM in different knowledge-intensive contexts. Finally, an inductive analysis of the data could expand our comprehension of work environment in the police investigative context.

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## APPENDIX A: Transcription procedure

### Procedure for transcription

There are three core guidelines for the transcription procedure:

1. Adaption: the transcriptions should be adapted to the purpose of the study
2. Consistency: transcriptions should be consistent from time to time and between transcribers
3. Openness: the procedures for transcription should be described in the study

### Transcriptions for the current study were performed according to these instructions:

- Interviews will be transcribed into "bokmål" regardless of respondents dialect
- All verbal content will be transcribed, word for word
- Full stop and comma is included according to the natural breaks in the interview
- Repetitions are included
- Verbal fillers such as "Mmm" and "Eh" are included
- If the recording is unclear the transcriber will try to make out the content by re-listening to the section of interest. If unable to identify the verbal content this is marked in the transcription as: "**unclear, time....**" in bold
  - Transcribers refrain from guessing the content when it is unclear
  - When more than one person speaks at once this is marked as unclear if transcriber is unable to hear what is being
- Interviewer is identified as **Int.** (and **Int 1. Int 2.** In the case of multiple interviewers) and then followed by indent
- Respondent is identified according to their title (i.e. chief investigator /etterforskningsleder is identified as **EFL**) and then followed by indent
- Pauses, and other verbal fillers such as laughter, coughing etc. are not included in the transcription. These are considered irrelevant as they do not contain content central to the the purpose of the study

### Literature

Kvale, S. & Brinkmann, S. (2010). *Interviews: Learning the Craft of Qualitative Research Interviewing*. Thousand Oaks, California: Sage Publications.

## APPENDIX B: Codebook

### The definition of a unit:

- In the content analysis, a unit is an identifiable message or message-component (Neuendorf, 2002, p. 71)
- Units can be words, characters, themes, time periods, interactions, or any other result of “breaking up a ‘communication’ into bits” (Carney, 1971, p 52, cited in Neuendorf, 2002)
- Generally, units are wholes that analysts distinguish and treat as independent elements. For example, in the operation of counting, the objects that are counted must be distinct- conceptually or logically, if not physically- otherwise the numerical outcome would not make sense. The counting of meanings is problematic unless it is possible to distinguish among meanings and ensure that one does not depend on another, also called categorical distinctons (Krippendorff, 2004 p. 97).

### The definition of a statement:

A statement was defined as the smallest meaningful unit that reflects the informant’s experience and understanding of the topic of interest, namely work environmental factors (Hoff, Flakke et al., 2009, p. 7) A statement is a part of a sentence, a whole sentence, or several sentences expressed by the interviewee, that constitute a coherent, meaningful point of view that describe an aspect of the work environment (Hoff, Straumsheim et al., 2009, p 14). A change from positive to negative or a change in topic may indicate a new statement.

### SWOT categories

Statements derived from the transcription will be coded on SWOT, i.e. strengths weaknesses, opportunities and threats. Statements that do not fit the SWOT categories will be coded as residuals.

The SWOT categories

- **Strengths:** Positive aspects of the work environment in the present situation
- **Weaknesses:** Negative aspects of the work environment in the present situation
- **Opportunities:** Future opportunities for a good working environment
- **Threats:** Future threats towards a good working environment
- **SWOT residuals:** Statements that do not fit the presented categories

The context in which each statement appears is taken into consideration during the coding procedure. If the context does not provide enough information regarding appropriate code, the SWOT question preceding the statement is taken into consideration.

Example: “We have many **training days.**” The preceding question and context may provide information regarding appropriate code for this statement.

### Examples of statements coded on the four categories + residual:

- **Strengths:** "There is competition for every vacancy, which results in a highly competent staff"
- **Weaknesses:** "We get more cases than we can handle"
- **Opportunities:** "A higher degree of flexibility would enhance the organizational performance"
- **Threats:** "We face the threat that there is a tendency to choose operative work over investigative work, because it provides a higher income"
- **Residual:** "Sorry, I have to take this phone call"

### The IGLO categories

- **The individual level:** Individual perceptions, feelings and opinions
- **The group level:** Interaction and cooperation in work groups, teams and departments
- **The leadership level:** Behaviour of immediate supervisors, other leaders or the top management
- **The organizational level:** Management practices, organizational culture, strategies, organizational goals and values, and the physical environment of the organization
- **IGLO External:** Statements directed towards external matter, e.g. circular letter from the director of public prosecutions
- **The IGLO residuals:** Statements that did not fit the categories above

### Procedure:

1. Unitize statements without predispositions
2. Statements are coded on the SWOT categories + residuals
3. Statements are coded on the IGLO categories + the external category and residual

### Literature

- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Thousand Oaks, California: Sage Publications.
- Neuendorf, K. A (2002). *The content analysis guidebook*. Thousand Oaks, California: Sage Publications, Inc.
- Hoff, T., Flakke, E., Larsen, A. K., Lone, J. A., Bjørkli, C. A., & Bjørklund, R. A. (2009). On the validity of M-SWOT for innovation climate development. *Scandinavian Journal of Organizational Psychology, 1*, 3-11.
- Hoff, T., Straumsheim, P., Bjørkli, C. A., & Bjørklund, R. A. (2009). An External Validation of Two Psychosocial Work Environment Surveys– A SWOT Approach. *Scandinavian Journal of Organizational Psychology, 1*(1).

## APPENDIX C: Letter of informed consent



# POLITIHØGSKOLEN

### Chief of Police

XXX police-district  
Po.Box. XXXX

### NORWEGIAN POLICE UNIVERSITY COLLEGE

Your reference:

Our reference:

Place, Date:

### PROJECT POLICE INVESTIGATION

We hereby refer to the previous presentation at the national meeting for the Chief of Police. As we explained, the National Police Directorate has given the Norwegian Police University College the task of carrying out a project aiming to assess the organization of police investigative work in Norway.

The project group from the Norwegian Police University College consist of:

- Professor Tor-Geir Myhrer.
- Professor Johannes Knutsson.
- Police inspector Trond Myklebust.

In addition we have a formal cooperation with the professional group at Centre for Applied Positive Work-psychology at the University of Oslo.

We will contact the Chief of Police in each police district requesting participation in the project.

Data will be gathered through interviewing:

- i) Chief of police / Deputy Chief of Police
- ii) Senior Investigating Officer
- iii) Detective/Investigator

Participation in the project is voluntary. Interviewees may withdraw their participation at any given time without providing any explanation for their choice. If a participant withdraws, all responses from him/her will be made anonymous. The data will be treated with confidentiality, and personal identifying information will not be included in the written outputs from the project (i.e. reports/articles)

Signatory will in the upcoming days contact you to schedule the interview with yourself or the Deputy Chief Police. Additionally, I request that you select one Senior Investigating Officer and one Detective/Investigator for the project. I will contact them directly, providing them with information about the project and scheduling a time- and place for the potential interviews.

The interviews will be structured according to the so-called SWOT approach and will include four themes / questions:

- I. Please tell us what you think works well regarding the investigative work here in the police district - we call this the strength of the investigative work.
- II. Please tell us what you think does not work well regarding the investigative work here in the police district – we call this the weakness of the investigative work.
- III. Please tell us what you consider to be opportunities for improving the investigative work here in the police district – we call this the opportunities in the investigative work.
- IV. Please tell us what you consider to be threats against improving the investigative quality here in the police district - we call this the threats in the investigative work.

We primarily request to tape- and video record the interviews, but if for practical reasons only tape recording is accomplishable, we wish to record interviews in the MP3 format. The duration of interviews will vary according to the amount of information given by the respondent. Experiences with this type of interviews from other projects indicate an average duration of approximately 90 minutes.

Interviews will be made anonymous such that names and personal information will not be transcribed or included in the analyses.

We want to express our appreciation for your police district conveying a positive attitude towards the current project.

Questions or comments to the project may be addressed to the signatory.

(e-mail: [trond.myklebust@phs.no](mailto:trond.myklebust@phs.no) , tlf direct 23 19 98 55, tlf switchboard 23 19 99 00).

Best regards

**Trond Myklebust**

*Detective Chief Superintendent*

*PhD Psych*