Leadership and Health in four European Countries
- Sweden, Poland, Italy and Germany

Anna Nyberg, Peggy Bernin and Töres Theorell

Stress Research Institute
Leadership and Health in Europe in four European Countries – Sweden, Poland, Italy and Germany

Anna Nyberg
Peggy Bernin
Töres Theorell
Stressforskningsinstitutet vid Stockholms universitet är ett nationellt kunskapscentrum inom området stressreaktioner och hälsa.
Föreståndare: Professor Torbjörn Åkerstedt

*Stress Research Institute at Stockholm University is a knowledge centre focusing on stress reactions and health.*
*Director: Professor Torbjörn Åkerstedt*

Editor-in-Chief: Torbjörn Åkerstedt

Stressforskningsinstitutet och författarna, 2008
E-mail: info@stressforskning.su.se
Webbsite: www.stressforskning.su.se
This project was financed by:
SALTSA – JOINT PROGRAMME FOR WORKING LIFE RESEARCH IN EUROPE. The National Institute for Working Life and The Swedish Trade Unions in Co-operation.

The institutes and researchers who have contributed to this report:

Stress Research Institute, Stockholm University, Sweden
Töres Theorell, MD, Professor
Peggy Bernin, MD, BA, PhD
Anna Nyberg, psychologist, PhD student

Stockholm School of Economics, Sweden
Ingalill Holmberg, Associate Professor
Staffan Åkerblom, PhD student

Central Institute for Labour Protection - National Research Institute, Warsaw, Poland
Maria Widerszal-Bazyl, PhD
Malgorzata Milczarek, PhD

University of Milano Bicocca, Italy
Maria Elena Magrin, psychologist, PhD
Giuliana D’Angelo, psychologist, research assistant

University of Wuppertal, Germany
Hans-Martin Hasselhorn, MD, PhD
Melanie Denk, psycholgist, research assistant

Contact person:
Anna.Nyberg@ki.se
# Table of contents

Summary 5
Introduction 7
  Work environment and employee health 7
  European comparisons of job strain 7
  Cross-cultural research on leadership 8
  Leadership and employee health 8
  Aim 9
Method 9
  Participants and recruitment procedure 9
  Instruments 11
  Statistical analyses 13
Results 14
  Leadership ideals and leadership practice 15
  Autocratic leadership 16
  Malevolent leadership 17
  Self Centred leadership 18
  Administratively competent leadership 19
  Diplomatic leadership 20
  Inspirational leadership 21
  Integrity 22
  Team I : Collaborative Team Orientation 23
  Team II: Team Integrator 24
  Visionary leadership 25
  Psychosocial work environment 26
  Stress and Health 26
  Associations between leadership/work environment and stress/health 32
  Stepwise linear regression analyses 33
  Summary 34
  Swedish hotels 37
Discussion 40
References 42
Appendix 46
Summary

The aim of the project “Leadership and Health in Europe” was to investigate leadership characteristics and behaviours in relation to work environment and subordinate health in four European countries; Sweden, Poland, Italy and Germany. The hotel industry was chosen for the study because of its similarities across countries and because of the variety of occupational groups employed in this sector. The study design was cross-sectional. There were 632 hotel employees participating in the study; 214 from Sweden, 224 from Poland, 111 from Italy, and 78 from Germany. The response rate was 45 % (48% in Sweden, 52% in Poland, 36% in Italy, and 28% in Germany). Leadership practice and leadership ideals, as reported by the hotel employees, were measured with the GLOBE questionnaire. Working environment, stress, and health were measured with the Copenhagen Psychosocial Questionnaire.

Swedish hotel employees reported higher quantitative demands than participants in the other countries, but apart from that, lower emotional and other demands, a higher degree of influence, more social support, and better security at work. Polish hotel employees reported good predictability and role clarity, but on the other hand high emotional demands, little freedom, and a high degree of insecurity at work. The Italian employees indicated having low quantitative demands and demands for hiding emotions, but apart from that, high demands, little freedom and predictability, and poor role clarity and feedback. In Germany, the hotel employees reported high demands for hiding emotions, a low level of predictability and a low level of social support.

Leadership ideals and leadership practice differed between the participating countries, in accordance with what has been shown in earlier studies on culture and leadership. Leadership ideals and leadership practice generally (for Sweden, Poland, and Italy) went hand in hand, meaning that high ideals regarding a certain behaviour were often accompanied by high behaviour/practice in the managers in that particular country. This was however not valid in Germany, where the discrepancy between the employees’ ideal manager, and the one they reported having, was very large. This may be due to a non-representative sample in Germany, since the German participants had been recruited from the hotel workers’ unions. Generally, Swedish hotel workers reported having managers that show more of the health promoting leadership characteristics
(diplomatic, team oriented, integrity) than the other three countries. Autocratic leadership, and malevolent leadership were reported more often in Italian participants than in the other countries. Which leadership characteristics that showed the strongest associations with health differed between Sweden, Poland, Italy, and Germany. Autocratic, Self Centred and Visionary leadership explained variation in health and stress in Sweden. In Poland, none of the leadership variables showed independent associations with health and stress outcomes, once iso-strain was adjusted for. Hotel employees in Italy reported Malevolent leadership, Integrity in the leader, and Self-Centred leadership as important for stress and health, and in Germany Autocratic leadership was the only leadership dimension that explained any variance after adjustment for iso-strain.

The significant variations in leadership and working conditions between hotel employees in Sweden, Poland, Italy, and Germany were not reflected to the same extent in stress and health outcomes. There were some variations in behavioural stress, where Italian and to some extent Polish employees showed more stress than Swedish employees. Vitality was reported as more prevalent in Poland than in the other participating countries.

This study showed that leadership practice was statistically associated with stress and health among employees. Which leader characteristics that were the most important differed between the participating countries. In Sweden and Italy some leadership qualities were strongly associated with employee stress and health, also after adjusting for iso-strain. In Poland, and Germany, iso-strain appeared to play a more important role for the health and stress among employees than in the other countries.

This was a cross-sectional study where no claims on explaining causal relationships were made. Nor was the sampling representative of employees in general in Sweden, Poland, Italy, and Germany. The claim of the study is limited to comparisons of leadership and work environment in the hotel industry between four European countries. In addition to these comparisons, associations between reported leadership, working environment, and health were estimated.
Introduction

Work environment and employee health

Psychosocial work environment research has to a great extent been carried out with the Karasek Demand-Control Model (Karasek & Theorell, 1990). Though indirectly including aspects of management, this model does not specifically focus on the impact of leadership practice on the work environment and the stress/health of employees. The Demand-Control Model has been successful in explaining a significant part of the illnesses in working life due to psychosocial work environment. Iso-strain (high demands combined with low control and poor social support) has been found to be related to, for example, elevated risks for cardiovascular disease (Johnson, Hall & Theorell, 1989), the metabolic syndrome (Chandola, Brunner & Marmot, 2006), and anxiety and depression (Sanne, Mykletun, Dahl, Moen & Tell, 2005).

European comparisons of job strain

De Smet, Sans, Dramaix, Boulenguez, de Backer & Ferrario (2005) have studied regional differences in perceived job stress in northern (Sweden), middle (Ghent, Brussels, Lille, and Hoofddorp), and southern (Milano and Barcelona) Europe. Overall, they found the regional factor to be a weak independent predictor of perceived stress at work, which confirms results presented by Karasek, Brisson, Kawakami, Houtman, Bongers, & Amick (1998), comparing the United States, Canada, the Netherlands, and Japan. Karasek, Brisson, Kawakami et al (1998) and de Smet, Sans, Dramaix et al (2005) conclude that working conditions in modern industrial countries are far more similar across national boundaries than they are across occupational boundaries. De Smet, Sans, Dramaix et al (2005) found however that country/region-based differences in stress perception exist, but with different magnitude according to occupational class. Job strain was less prevalent in Sweden than in southern Europe in two out of five occupational groups (office clerks, and sales and services elementary occupations), but lower in southern Europe in services workers.
Cross-cultural research on leadership

Comparative research on leadership and management styles across different cultural contexts have pointed to distinctive aspects and distinguishing properties of organisational leadership in one region in relation to other cultural regions (Joynt & Warner, 1996; Ronen, 1986; Zander, 1997). For the majority of studies conducted, the cultural contexts have mostly been national cultures or clusters of nations as a proxy for culture. In a recent GLOBE study (the Global Leadership and Organisational Behaviour Effectiveness Research Program), using similar research instruments as in the present study, it was shown that leadership ideals – conceptions or “implicit theories” of what constitutes outstanding leadership – differ within 22 European nations, i.e. even within the same geopolitical region (Brodbeck et al, 2000). As for the nations included in this study, Brodbeck et al (2000) show that there are significant differences among these, assigning them different memberships in European clusters based on leadership conceptions, or “leadership prototypes”. These clusters are strongly in accordance with cultural clusters as distinguished by the famous study by Ronen & Shenkar (1985).

Leadership and employee health

There are to date relatively few studies investigating the relationship between leadership practice and subordinate health. The studies published are to a large extent based on leadership theories and instruments developed in the US, and are performed in one country only. The sectors investigated are mainly the health care and educational sectors, and the study designs are cross sectional (Nyberg, Bernin, and Theorell, 2005). There are two leadership theories that have often been used in research on the impact of leadership practice on the health of subordinates. The first one studies task- vs. relationship orientation, and assumes that the leader has two main responsibilities; to make sure that the relationships within the group are satisfying and that the group performs according to what is demanded. The results from published studies indicate that a relationship oriented leadership is related to a low level of stress among subordinates (Sheridan & Wredenburgh, 1979; Melchior et al, 1997; Mccain, 1995), or that a combination of relationship and structure orientation in the leader promotes good health in subordinates (Harris, 1999; Wilcoxin, 1989). A combination of behaviours of high structure and low consideration in the leader is related to more stress in employees (Seltzer et al, 1988; Duxbury et al, 1985).
The second theory discusses different ways of motivating followers and describes transformational and transactional leadership. A transactional leadership tries to motivate followers through rewards such as money and status. A transformational leadership motivates followers by communicating a vision, arousing strong identification with the leader, showing consideration, and providing intellectual stimulation. Some researchers have found both transactional and transformational leadership styles to be antecedents to a favourable work environment and less burnout (Schultz, Greenley, and Brown, 1995) and others that particularly transformational leadership relates to a low level of job stress and burnout (Corrigan, Diwan, Campion, and Rashid, 2002). Laissez-faire leadership behaviours have an inverse effect (Sosik, and Godshalk, 2000). A longitudinal study of leadership and subordinate well-being, where staff in two community trusts participated 4 times in a 14-month period concludes that leadership behaviour and subordinate responses are linked in a feedback loop, lending support for the proposition that the relationship between leader and subordinate is a two-way reciprocal process (van Direndonck et al, 2004).

Aim

The aim of the project “Leadership and Health in Europe” was to investigate leadership characteristics and behaviours in relation to work environment and subordinate health in four European countries; Sweden, Poland, Italy and Germany.

Method

Participants and recruitment procedure

The hotel industry was chosen for the study because of its similar features across countries, and because there is a diversity of professional groups represented within hotels.

Each respective research group in Sweden, Poland, Italy and Germany collected questionnaires from employees within the hotel industry. The goal was to collect 200 questionnaires from each country, a goal which has been reached in Sweden and Poland. The total data base includes 632 responses.
The objective was to collect questionnaires from local hotels, and not international hotel chains. We were interested in the cultural variations in leadership ideals and practice. We also aimed at getting at least 20 responses from each hotel, which was not possible in the end. The response rate was also lower than 50%, a level that we aimed at exceeding.

The inclusion criteria for participation was that the employee worked at least half time at the hotel, was employed there since at least 6 months, and had a good knowledge of the language spoken in each respective country.

Hotel managers were contacted by telephone, and if they were interested in participating a written presentation of the study was sent out, and a meeting was arranged with the manager or a contact person. The questionnaires were delivered to the contact person to hand out to employees. The responses were collected by this person and sent back to the research institutes. Two reminders were sent out.

Recruitment was however very hard. The leadership questionnaire was originally constructed for middle managers and requires language skills that are better than average and many hotel employees are either originally from a different country or are not so well educated. The questionnaire was extensive and took 30-40 minutes to fill in. A large number of hotels have been contacted in each country, but only a few have agreed to participate. Hotel managers have considered the questionnaire too extensive and time consuming to fill in, they have their own work environment surveys that they give priority, they have a large number of recently employed personnel, they are changing the organization or management of the hotel, they are tired of questionnaires and so on.

The response rate was 48% in Sweden, 52% in Poland, 36% in Italy and 28% in Germany.

In Sweden 50 hotels were contacted, all situated in Stockholm. 14 agreed to participate. Half of these come from a national hotel chain, four are local hotels, two of them part of an international chain, partly Swedish owned, and one is part of an American owned international chain. 449 questionnaires were handed out, and 214 were filled out and sent back.
In Poland 64 hotels were contacted: 37 in Warsaw, 10 in Krakow, 9 in Katowice, and 8 in Gdansk. 50 hotels declined to cooperate or had too few employees. 14 hotels agreed to participate. 443 questionnaires were handed out, and 229 were filled out correctly and inserted into the database. Of the 14 participating hotels, five belonged to international chains, one a national chain and eight were local hotels.

In Italy 120 hotels were contacted and 14 agreed to participate; five of 40 in Milan, two of 20 in Naples, two of 15 in Venice, three of 15 in Florence and two of 30 in Rome. Eight national chains were contacted, of which one is participating in the study. 111 questionnaires are included in the database.

It was particularly hard to recruit respondents to the study in Germany. The German research group started by contacting hotels directly. Three of 10 hotels agreed to participate. 24 responses were returned. The hotel worker’s union was then contacted to help find participants. 200 questionnaires were sent out to their members in the five largest German cities. 54 responses were returned. The overall response rate was 28%. The selection of respondents is accordingly different in Germany than in the other countries, and the impression of the German researcher is that those who responded to the questionnaire were more dissatisfied with their job situation than hotel employees in general.

**Instruments**

Two questionnaires were used in this study: The leadership section of a questionnaire developed in the Global Leadership and Organizational Behavior Effectiveness Program (GLOBE), and the medium-length version of the Copenhagen Psychosocial Questionnaire (COPSOQ).

**GLOBE:** The theory behind the development of the leadership dimensions in GLOBE encompass traditional leadership theories, but also expand upon these. This broad approach was suitable to our study because we still know very little about what leadership dimensions are important for the health of employees. The dimensions were also developed through international cooperation, meaning that the dimensions were sensitive to cultural differences. All countries in the present study had participated in the GLOBE study. Accordingly the questionnaire had been translated to Swedish, Polish, Italian and German.
In the original leadership section of the GLOBE questionnaire, respondents were asked to answer 112 questions concerning behavioural and trait descriptions of leaders that they thought distinguished outstanding leaders. All items in the questionnaire were rated on a seven point Likert-type scale, ranging from “This behaviour or characteristic greatly inhibits a person from being an outstanding leader” (response score = 1) to “This behaviour or characteristic contributes greatly to a person being an outstanding leader” (response score = 7). Table 1 exhibits a sample of items and their definitions as presented to the respondents, as well as the response alternatives.

**Table 1. Sample items and definitions used in the questionnaire, and the response alternatives (English version).**

<table>
<thead>
<tr>
<th>Sample items</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitive:</td>
<td>Aware of slight changes in moods of others</td>
</tr>
<tr>
<td>Bossy:</td>
<td>Tells subordinates what to do in a commanding way</td>
</tr>
<tr>
<td>Diplomatic:</td>
<td>Skilled at interpersonal relations, tactful</td>
</tr>
<tr>
<td>Evasive:</td>
<td>Refrains from making negative comments to maintain good relationships and save face</td>
</tr>
</tbody>
</table>

Response alternatives:
1: This behaviour or characteristic greatly inhibits a person from being an outstanding leader
2: This behaviour or characteristic moderately inhibits a person from being an outstanding leader
3: This behaviour or characteristic slightly inhibits a person from being an outstanding leader
4: This behaviour or characteristic neither inhibits nor contributes to a person being an outstanding leader
5: This behaviour or characteristic contributes slightly to a person being an outstanding leader
6: This behaviour or characteristic contributes moderately to a person being an outstanding leader
7: This behaviour or characteristic contributes greatly to a person being an outstanding leader

Subsequent factor analyses (reported in detail by Hanges & Dickson, 2004) of this item pool generated 21 leadership subscales (first order factors) which were found to be unidimensional, aggregatable to the country level of analysis, and to reliably differentiate countries from one another. Table 2 (in appendix) summarises the labelling and composition of the identified 21 leadership subscales, composed of a remaining collection of 75 leadership items. The present study used this collection in order to answer the research questions.

In the present survey, respondents were asked both to evaluate an outstanding leader, and to evaluate their present superior. If they had more than one superior, they were asked to choose the one who has the most influence on their daily work. They were also asked to indicate whether this superior was their closest manager, a middle or a top manager (it was possible to tick more than one box).
The instruction for this part was: “Next to each behaviour or characteristic, tick how often your manager is or behaves like that. Choose between almost never, very seldom, seldom, sometimes, often, very often, and almost always.”

**COPSOQ:** Work environment, stress and health were measured by the medium-length version of the Copenhagen Psychosocial Questionnaire (Kristensen et al 2005). Dimensions measured in this study are quantitative demands, cognitive demands, emotional demands, demands for hiding emotions, sensory demands, influence at work, possibilities for development, degree of freedom at work, meaning of work, commitment to the work place, predictability, role clarity, role conflicts, social support, feedback at work, social relations, sense of community, insecurity at work, job satisfaction, general health, mental health, vitality, behavioural stress, somatic stress, and cognitive stress (see table 3 in appendix).

**Blood samples:** In Sweden and Poland, blood samples were collected from female hotel employees at some of the larger hotels. Each woman at these hotels was given a separate request to participate in blood sampling. They were informed that a nurse was to come to their work place and take blood samples and blood pressure. 27 women in Sweden and 39 women in Poland agreed to participate in blood sampling.

*Statistical analyses*

All statistical analyses were conducted in SPSS version 14.0. Normal distribution of the variables were tested with histograms, and Kolmogorov’s test of normality. All variables were considered normally distributed enough for parametric tests to be used.

The internal consistency of all indices were evaluated by means of Cronbach’s Alpha (see tables 2 and 3 in appendix).

ANOVA and Bonferroni post hoc – tests have been used to study differences in leadership, work environment, and health between countries (the significance level of these are indicated in the text in the result section).

Pearson correlations estimated the associations between leadership/work environment and stress/health (tables 2 and 3 in appendix).
For the analyses of the relationship between leadership, working conditions, and health, we had to choose an operationalisation of working conditions. We decided to use iso-strain as an overall measure of working conditions. Iso-strain was calculated by multiplying high demands by low control and poor social support. The demands dimension encompassed quantitative demands, emotional demands, and demands for hiding emotions. Cognitive demands were not included, because Kristensen et al (2002) have shown that cognitive demands are in general associated with better than average health. The control dimension included influence, freedom at work, and predictability. Development was not included because certain items in this dimension (skill discretion) is perceived by some groups as a demand rather than control (Kawakami et al, 1995, Karasek et al, 1998). Social support was derived simply from the Copenhagen social support scale.

Stepwise multiple linear regression analyses were conducted to estimate the relationship between leadership, iso-strain, and the health of employees. These were conducted for each of the four countries separately. To decide which leadership variables were to be included in the stepwise model building, we first had to investigate which ones were independent of other variables, and at the same time showed significant correlations with stress and health outcomes. These conditions differed strongly between countries, which means that the models were built with different leadership variables in the respective countries.

**Results**

The gender distribution was equal in Italy. In Germany there were a few more men, and in Sweden and Poland most employees were women. The age distribution did not differ substantially between countries. In Sweden, Poland, and Italy, more than half of the employees were born between 1960 and 1979. Germany had a more equal age distribution ranging from the birth years 1940 to 1989. The Polish employees were the best educated, followed by the Germans. In Sweden and Italy around 60% of the employees had finished high school only, whereas the equivalent was 30 % in Poland and another 40 % had obtained a university degree. Cleaners were the best represented in Italy and the least in Germany. The number of administrative staff was lower in the Italian sample, and the number of kitchen staff was higher in the German sample, compared to other countries.
Table 4. Descriptive statistics of participants in Sweden, Poland, Italy, and Germany in frequency and valid percent.

<table>
<thead>
<tr>
<th></th>
<th>Sweden</th>
<th>Poland</th>
<th>Italy</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of individuals</strong></td>
<td>214</td>
<td>229</td>
<td>111</td>
<td>78</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>156 (72.9 %)</td>
<td>161 (70.3 %)</td>
<td>51 (49.5 %)</td>
<td>35 (44.9 %)</td>
</tr>
<tr>
<td>Men</td>
<td>58 (27.1 %)</td>
<td>68 (29.7 %)</td>
<td>52 (50.5 %)</td>
<td>42 (53.8 %)</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td><strong>Year of birth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1940-49</td>
<td>17 (8 %)</td>
<td>3 (1.3 %)</td>
<td>1 (1.1 %)</td>
<td>13 (17.1 %)</td>
</tr>
<tr>
<td>1950-59</td>
<td>15 (7 %)</td>
<td>36 (16 %)</td>
<td>17 (19.1 %)</td>
<td>12 (15.8 %)</td>
</tr>
<tr>
<td>1960-69</td>
<td>53 (24.9 %)</td>
<td>42 (18.7 %)</td>
<td>30 (33.7 %)</td>
<td>19 (24.4 %)</td>
</tr>
<tr>
<td>1970-79</td>
<td>82 (38.5 %)</td>
<td>90 (40 %)</td>
<td>30 (33.7 %)</td>
<td>14 (17.9 %)</td>
</tr>
<tr>
<td>1980-89</td>
<td>46 (21.6 %)</td>
<td>54 (24 %)</td>
<td>11 (12.4 %)</td>
<td>18 (23.1 %)</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>4</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>6 (2.9 %)</td>
<td>0 (0 %)</td>
<td>5 (6.1 %)</td>
<td>2 (2.7 %)</td>
</tr>
<tr>
<td>Vocational school</td>
<td>12 (5.7 %)</td>
<td>39 (17.2 %)</td>
<td>19 (23.2 %)</td>
<td>7 (9.3 %)</td>
</tr>
<tr>
<td>High school</td>
<td>124 (59.3 %)</td>
<td>73 (32.2 %)</td>
<td>48 (58.5 %)</td>
<td>28 (37.3 %)</td>
</tr>
<tr>
<td>College/vocational institute/equivalent</td>
<td>51 (24.4 %)</td>
<td>25 (11.0 %)</td>
<td>- not applicable</td>
<td>22 (29.3 %)</td>
</tr>
<tr>
<td>University degree</td>
<td>16 (7.7 %)</td>
<td>90 (39.6 %)</td>
<td>10 (12.2 %)</td>
<td>16 (21.3 %)</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>2</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td><strong>Profession</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reception/booking</td>
<td>64 (30.9 %)</td>
<td>70 (31.3 %)</td>
<td>24 (23.8 %)</td>
<td>17 (21.8 %)</td>
</tr>
<tr>
<td>Cleaning</td>
<td>25 (12.1 %)</td>
<td>50 (22.3 %)</td>
<td>37 (36.6 %)</td>
<td>4 (5.1 %)</td>
</tr>
<tr>
<td>Kitchen/breakfast</td>
<td>21 (10.1 %)</td>
<td>18 (8.0 %)</td>
<td>9 (8.9 %)</td>
<td>21 (26.9 %)</td>
</tr>
<tr>
<td>Restaurant/bar</td>
<td>30 (14.5 %)</td>
<td>24 (10.7 %)</td>
<td>13 (12.9 %)</td>
<td>18 (23.1 %)</td>
</tr>
<tr>
<td>Administration/sales/marketing</td>
<td>39 (18.8 %)</td>
<td>42 (18.8 %)</td>
<td>9 (8.9 %)</td>
<td>11 (14.1 %)</td>
</tr>
<tr>
<td>Porter’s office</td>
<td>11 (5.3 %)</td>
<td>17 (7.6 %)</td>
<td>4 (4.0 %)</td>
<td>4 (5.1 %)</td>
</tr>
<tr>
<td>Management</td>
<td>7 (3.4 %)</td>
<td>1 (1.0 %)</td>
<td>1 (1.3 %)</td>
<td>1 (1.3 %)</td>
</tr>
<tr>
<td>Conference</td>
<td>10 (4.8 %)</td>
<td>3 (1.3 %)</td>
<td>4 (4.0 %)</td>
<td>2 (2.6 %)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td>5</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Leadership ideals and leadership practice

There are 21 leadership subscales included in this study. Ten of these were selected for further analyses according to two principles: The indices of either leadership ideals (a) or leadership practice (b) had a Cronbach’s Alpha > 0.8, and leadership practice (b) showed significant correlations with stress and health outcomes. The leadership subscales included were accordingly Autocratic leadership, Malevolent leadership, Self Centred leadership, Administratively Competent leadership, Diplomatic leadership,
Inspirational leadership, Integrity, Visionary leadership, Team Integrator, and Collaborative Team Orientation.

60% of the participants have evaluated their closest manager, 24% the top manager of the hotel, and 13% a middle manager. The rest have reported that they have thought of a manager who is both their closest and a top/middle manager. A few more of the Polish and Italian participants have thought of their top manager as the manager who influences their daily work the most, compared to Swedish and German participants. Italian and Germans have also more often evaluated a middle manager, whereas that number is low in the Swedish and Polish sample.

All differences between countries, in leadership ideals and leadership practice, are evaluated by ANOVA and Bonferroni post hoc test.

**Autocratic leadership**

This dimension encompassed the following items:

- Autocratic (makes decisions in a dictatorial way)
- Dictatorial (forces her/his values and opinions on others)
- Bossy (tells subordinates what to do in a commanding way)
- Elitist (believes that a small number of people with similar backgrounds are superior and should enjoy privileges)
Swedish hotel employees appeared satisfied with the level of autocracy among their leaders, and the level was lower than in all other countries. Differences in leadership practice were significant between all countries ($p = 0.000-0.002$) except between Italy and Germany. The ideals concerning autocratic behaviours were significantly higher in Italy than in other countries ($p = 0.000$). Italian hotel employees appeared rather content with more autocratic leaders whereas German hotel employees (may depend on a non-representative sample) appeared very dissatisfied.

**Malevolent leadership**

Malevolent leadership was an indice consisting of the following items:
- Hostile (actively unfriendly, acts negatively towards others)
- Dishonest (fraudulent, insincere)
- Vindictive (vengeful; seeks revenge when wronged)
- Irritable (moody; easily agitated)
Italy was prominent in this analysis since the participants there expressed leadership ideals that were a lot more tolerant to malevolent behaviours than other countries (p = 0.000 – 0.025). Sweden expressed the lowest levels of malevolent behaviours in their present leaders and the differences in relation to all other countries were significant (p = 0.000). There was also a significant difference in leadership practice between Poland and Italy, where Italian leaders were rated more malevolent than Polish (p = 0.036).

Self Centred leadership

This dimension was made up of the following items:

- Self-interested (pursues own best interests)
- Non-participative (does not participate with others)
- Loner (works and acts separately from others)
- Asocial (avoids people or groups, prefers own company)
Figure 3. The picture shows the mean of the items making up the index Self centered for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

There were no significant differences between countries concerning leadership ideals. There was a significant difference in self centered leadership practice between Poland and Italy \((p = 0.044)\), where Italian leaders were rated more self centred than were Polish leaders. German employees reported self centred leadership practice to be significantly more frequent than Swedish and Polish employees \((p = 0.000)\), which may have to do with the German non-representative sample.

**Administratively competent leadership**

Administratively competent was an indice made up of four items:
- Orderly (is organized and methodological in work)
- Administratively skilled (able to plan, organize, coordinate and control work of large numbers (over 75) of individuals)
- Organized (well organized, methodical, orderly)
- Good administrator (has ability to manage complex office work and administrative systems)
Figure 4. The picture shows the mean of the items making up the index Administratively competent for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

We could see that employees in all countries described an ideal of a leader, who was more administratively competent than what they evaluated their present leaders to be. Sweden and Poland had discrepancies of approximately one scale degree. Italian hotel employees were slightly more satisfied with the level of administrative competence whereas German hotel employees described the lowest level of administrative competence among their leaders and appeared to be the most dissatisfied with the situation. This may well depend on the selection of respondents to the German sample, which may not have been representative of hotel employees in Germany at large. The differences between countries were significant only for leadership practice (b) between Germany and Poland (p = 0.005) and Germany and Italy (p = 0.001).

Diplomatic leadership

Diplomatic leadership was made up of the following items, with explanations:

- Diplomatic (skilled at interpersonal relationships, tactful)
- Worldly (interested in temporal events, has a world outlook)
- Win/win problem solver (able to identify solutions which satisfy individuals with diverse and conflicting interests)
- Effective bargainer (is able to negotiate effectively, able to make transactions with others on favorable terms)
**Figure 5.** The picture shows the mean of the items making up the index Diplomatic for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

Italian hotel employees expressed a significantly lower level of diplomatic leadership in their leadership ideals compared to Sweden \((p = 0.032)\) and Poland \((p = 0.009)\). The leadership practice in Italy was also significantly less diplomatic in relation to Sweden \((p = 0.009)\) and Poland \((p = 0.048)\), but not compared to the German sample. In spite of differences in levels, the discrepancies between ideal and practice made up a pattern in Sweden, Poland and Italy. German participants were prominent by reporting a large discrepancy between ideals and practice. We could not exclude the explanation of a misguiding German sample, though.

**Inspirational leadership**

This index consisted of the items:

- Enthusiastic (demonstrates and imparts strong positive emotions for work)
- Positive (generally optimistic and confident)
- Morale booster (increases morale of subordinates by offering encouragement, praise, and/or being confident)
- Motive arouser (mobilizes and activates followers)
Figure 6. The picture shows the mean of the items making up the index Inspirational for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

There was a significant difference in leadership ideals between Sweden and Poland, where Swedish hotel employees evaluated inspirational leadership as more important than did Polish hotel employees (p = 0.004). The difference in leadership practice was only significant between Germany and other countries (p = 0.000-0.001), which may again reflect the lack of representativity in the German sample.

**Integrity**

Integrity encompassed the following items:

- Honest (speaks and acts truthfully)
- Sincere (means what he/she says, earnest)
- Just (acts according to what is right or fair)
- Trustworthy (deserves trust, can be believed and relied upon to keep his/her word)
Figure 7. The picture shows the mean of the items making up the index Integrity for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

There were significant differences in leadership ideals between Sweden and Poland (p = 0.004), Sweden and Italy (p = 0.049), between Germany and Poland (p = 0.004) and between Germany and Italy (p = 0.012). Leadership practice concerning integrity differed significantly between all countries (p = 0.004 - 0.049) except between Italy and Poland.

Team I: Collaborative Team Orientation

This dimension consisted of:

- Group-oriented (concerned with the welfare of the group)
- Collaborative (works jointly with others)
- Loyal (stays with and supports friends even when they have substantial problems or difficulties)
- Consultative (consults with others before making plans or taking action)
Figure 8. The picture shows the mean of the items making up the index Collaborative team orientation for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

There was a significant difference between Poland and Sweden in leadership practice ($p = 0.045$). Swedish leaders were rated more collaborative team oriented than the Polish. There were also differences between Germany and all other countries ($p = 0.000$), which has to be interpreted with caution due to the German sample.

Team II: Team Integrator

This index was made up of the following items:

- Communicative (communicates with others frequently)
- Team-builder (able to induce group members to work together)
- Informed (knowledgable, aware of information)
- Integrator (integrates people or things into cohesive, working whole)
Figure 9. The picture shows the mean of the items making up the indice Team integrator for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

The discrepancy between leadership ideals and practice was large in all countries, and the largest in Germany. The only significant difference between countries was found in leadership practice between Germany and all other countries \((p = 0.001 – 0.033)\). We do not know if this result can be trusted as a real difference in leadership practice between Germany and other countries.

**Visionary leadership**

Visionary leadership was made up of the following items:

- Foresight (anticipates possible future events)
- Prepared (is ready for future events)
- Anticipatory (anticipates, attempts to forecast events, considers what will happen in the future)
- Plans ahead (anticipates and prepares in advance)
Figure 10. The picture shows the mean of the items making up the index Visionary for leadership ideals (a) and present leadership practice (b) in Sweden (1), Poland (2), Italy (3) and Germany (4).

The general pattern was that hotel employees in all countries would prefer their leader to be a fair bit more visionary than what they were. There were no significant differences between countries.

**Psychosocial work environment**

**Quantitative demands**
This dimension measured if the employee had enough time for his/her work tasks, if the work load was unevenly distributed so it piled up, if the employee got behind with his/her work, and how often the employee could take it easy and still do his/her work. Swedish hotel employees in this study reported a significantly higher degree of quantitative demands than did hotel employees in Poland, Italy and Germany (p = 0.000-0.008).

**Cognitive demands**
Cognitive demands refered to having to keep your eyes on a lot of things while you work, having to make difficult decisions, remembering a lot of things and being good at coming up with new ideas. There were no significant differences between countries regarding cognitive demands.
**Emotional demands**

Emotional demands refer to if the employee’s work put him/her in emotionally disturbing situations, if the work was emotionally demanding and if the employee got emotionally involved in his/her work. Poland reported significantly higher emotional demands than Sweden and Germany (p = 0.000). The difference between Italy and Sweden was also significant (p = 0.000).

![Figure 11. Means of quantitative, cognitive, emotional, sensory demands, and demands for hiding emotions in Sweden, Poland, Italy, and Germany.](image)

**Demands for hiding emotions**

This meant that the work required of the employee not to state his/her opinion, and/or to hide his/her feelings. Demands for hiding emotions was the lowest in Sweden. The difference was significant in relation to both Poland (p = 0.009) and Germany (p = 0.008).

**Sensorial demands**

This demand concerned having very clear and precise eyesight, controlling your movements, paying constant attention, and having a high level of precision. Sensorial demands were the highest in Italy and Germany, statistically significant in relation to Sweden (p = 0.000) and Poland (p = 0.000 – 0.002).
Influence
Influence referred to the degree of say the employee had regarding who he/she worked with, how much work was assigned to the employee, and the employee’s work tasks. Swedish hotel employees reported the highest degree of influence, a difference that was statistically significant in relation to all other participating countries (p = 0.000 – 0.044).

Development
The questions making up this index were about how varied the employee’s work was, if it demanded taking initiatives, if it involved a possibility of learning new things at work, and whether the employee could use his skills or expertise at work. The Swedish participants reported the highest degree of development, a difference that was statistically significant in relation to Italian participants (p = 0.009), who reported the lowest level of development.

Freedom at work
Freedom at work measured the extent to which the employee, if desired, could take a brake, have a chat with a colleague, take holidays, or leave work for half an hour for a private business. The Swedish hotel employees reported the highest degree of freedom at work, significant in relation to Italy (p = 0.005) and Poland (p = 0.000).
Predictability
This dimension measured the degree to which the employee was informed well in advance concerning e.g. important decisions, changes, and plans for the future - information that was needed in order to perform well at work. Polish employees reported the highest level of predictability, significant in relation to Italy (p = 0.009) and Germany (p = 0.003).

![Graph showing means of social support, feedback, social relations, and sense of community in Sweden, Poland, Italy, and Germany.]

Figure 13. Means of social support, feedback, social relations, and sense of community in Sweden, Poland, Italy, and Germany.

Social support
The questions making up this index concerned how often the employee got help and support from colleagues and immediate superior, and how often the employee’s colleagues and immediate superior was willing to listen to the employee’s work related problems. Swedish employees reported the highest level of social support, significant in relation to Germany (0.004).

Feedback
This regarded how often the employee talked with his/her colleagues and immediate superior about how well he/she carried out his/her tasks. Italian participants were prominent by reporting a significantly lower amount of feedback than all other participating countries (p = 0.000).
**Social relations**
This dimension concerned whether the employee could talk with colleagues while he/she worked, or if he/she worked very isolated. Swedish participants were prominent by reporting a significantly greater amount of social relations at work than the other countries (p = 0.000 – 0.009).

**Sense of community**
Sense of community meant the degree to which the employee thought that there was a good atmosphere and good co-operation between the colleagues at work, and if he/she felt part of a community. Germany had the lowest level of sense of community at work, significant in relation to Sweden (p = 0.049) and Poland (0.014).

![Figure 14](Image)

*Figure 14. Means of role conflicts and role clarity in Sweden, Poland, Italy, and Germany.*

**Role clarity**
Role clarity meant that the employee knew how much say he/she had at work, that the work had a clear objective, that the employee knew what areas were his/her responsibilities, and what was expected from him/her at work. Italian employees reported the lowest level of role clarity, significant in relation to Poland (p = 0.000) and Germany (p = 0.002).

**Role conflicts**
Role conflicts encompassed having to do things at work, which were accepted by some people but not by others, having contradictory demands being placed upon you, having
to do things that ought to be done in a different way, or that were unnecessary. Germany reported the highest level of role conflicts and Poland the lowest (p = 0.002).

Insecurity at work
Sweden reported the lowest level of insecurity at work and Poland the highest. The difference was significant between Sweden and all other countries (p = 0.000 – 0.008) and between Germany and Poland (p = 0.003). Other dimensions measured; Meaning, Job satisfaction, and Commitment, showed no significant differences between countries.

Stress and Health
Self reported General Health, Mental Health, Vitality, Behavioural Stress, Somatic Stress, and Cognitive Stress were measured. Only Vitality and Behavioural Stress showed significant differences between countries.

![Figure 15. Means of behavioural, somatic, and cognitive stress in Sweden, Poland, Italy, and Germany.](image)

Vitality was the highest in Poland and the lowest in Sweden (p = 0.027). Behavioural stress differed significantly between Italy and Sweden (0.020), where the Italian hotel employees reported a higher degree of stress.
Figure 16. Means of general health, mental health, and vitality in Sweden, Poland, Italy, and Germany.

Blood samples

27 women in Sweden and 39 women in Poland participated in blood samples. Analyses made were:

- Triglycerides
- Cholesterol
- HDL – Cholesterol
- LDL – Cholesterol
- Apolipoprotein A1
- Apolipoprotein B
- S-Apo B/ Apo A1
- LDL/HDL cholesterol
- CRP
- CDT
- Fibrinogen
- Blood pressure.

Leadership variables and iso-strain showed no significant correlations with blood analyses.
Associations between leadership/work environment and stress/health

The dimensions measured in this study, that appeared to be especially “bad” for the health of employees (show a correlation with stress and health > 0.2) were high quantitative demands, role conflicts, insecurity at work, and autocratic, malevolent, and self centred leadership. The work environment dimensions that came up as good for the health of employees (show a correlation with stress and health > 0.2) were having a good sense of community and good social support at work, a high level of predictability and role clarity, and having a feeling that the work was meaningful. The leadership dimensions that were associated with good health were diplomatic leadership, leader integrity, collaborative team orientation, and team integration.

Stepwise linear regression analyses

For the stepwise linear regression analyses we created the variable isostrain (high demands multiplied by low control multiplied by low social support) to measure work environment. We selected the leadership variables that were independent of other leadership variables (correlation < 0.7), and that showed a significant correlation with stress and health outcomes. This was done for all countries together and for each country separately.

The variables tested in the stepwise linear regression model when all countries were included, were iso-strain and the leadership dimensions autocratic, visionary, self centred, collaborative team orientation, and integrity. The results showed that autocratic and self centred leadership independently explained some of the variance in general health, mental health, and behavioural stress, though isostrain was a stronger predictor (table 5 in appendix).

When conducting the analyses separately for each country, we could see that the results differed strongly between countries.

Sweden: In Sweden the following dimensions came out as independent and with significant correlations with stress and health: administratively competent leadership, autocratic leadership, visionary leadership, leader integrity, malevolent leadership, self centred leadership, collaborative team orientation, and iso-strain. Regression models showed that autocratic, self centred and visionary leadership, together with isostrain, explained some of the variance in general health and behavioural stress (table 6 in appendix).
Poland: In Poland only iso-strain, autocratic leadership, and team integrator were tested. None of the leadership variables explained any variance in the health outcomes. Isostrain was the sole predictor of all outcomes (table 7 in appendix).

Italy: In Italy the following variables were tested: Iso-strain, leader integrity, malevolent, and self centred leadership. Malevolent leadership played an especially important role for stress and health. In general and mental health, malevolent leadership was the strongest predictor. Integrity also had an impact on mental health. Self centred leadership was a significant predictor of behavioural stress, and cognitive stress (table 8 in appendix).

Germany: In Germany autocratic leadership independently explained some of the variance in mental health and behavioural stress. Isostrain was however the strongest predictor of all health outcomes. Variables tested were iso-strain, integrity, autocratic leadership, and visionary leadership (table 9 in appendix).
Summary

The following summary is built on the above comparisons between Sweden, Poland, Italy, and Germany. Thus, “low” and “high” signify low and high compared to the other countries participating in this study.

Swedish hotel employees

Leadership
- Low autocratic and malevolent leadership ideals and low levels of autocratic and malevolent leadership practice
- High ideals regarding inspirational leadership
- High ideals regarding integrity, and high reported integrity in leaders
- High degree of collaborative team orientation in leaders.

Work environment
- High quantitative demands
- Low emotional demands, demands for hiding emotions, and sensorial demands
- High degree of influence, development and freedom at work
- High level of social support, social relations, and sense of community
- Low level of insecurity at work

Health and stress
- Low level of vitality
- Low level of behavioural stress

Associations according to regression models
- Iso-strain was associated with mental health, vitality, behavioural stress, cognitive stress, and somatic stress.
- Autocratic leadership was associated with general health
- Self centred and visionary leadership was associated with behavioural stress

Polish hotel employees

Leadership
- A low level of self centred leadership practice
- Low ideals concerning inspirational leadership
- Low ideals and low level of practice concerning integrity in leaders
- Low degree of collaborative team orientation in leaders

Work environment
- Low levels of quantitative demands, and sensorial demands
- High levels of emotional demands, and demands for hiding emotions
• A low level of freedom at work
• A high degree of predictability, role clarity, and sense of community
• A low level of role conflicts
• A high degree of insecurity at work

Health and stress
• A high level of vitality

Associations according to regression models
• Iso-strain was associated with all stress and health outcomes.

Italian hotel employees

Leadership
• High tolerance towards autocratic and malevolent leadership and more autocratic and malevolent leadership practice
• A high level of self centered leadership practice
• Low ideals concerning diplomatic leadership and less diplomatic leadership practice

Work environment
• Low levels of quantitative demands, and demands for hiding emotions
• High levels of emotional demands, and sensorial demands
• Low level of freedom, and predictability at work
• Low degree of role clarity, and of feedback

Health and stress
• A high level of behavioural stress

Associations according to regression models
• Malevolent leadership was associated with general health
• Malevolent leadership and integrity were associated with mental health
• Iso-strain was associated with vitality, and somatic stress
• Self Centred leadership was associated with behavioural, and cognitive stress.
German hotel employees

Leadership

- A large discrepancy between leadership ideals and leadership practice in all dimensions.
- Regarding leadership practice, generally low levels of “positive” leadership qualities and high levels of “negative” leadership qualities.

Work environment

- High demands for hiding emotions and high sensorial demands.
- A low level of predictability
- A high degree of role clarity, but also a high degree of role conflicts
- A low level of social support, and of sense of community.

Associations according to regression models

- Iso-strain was associated with general health, vitality, somatic stress, and cognitive stress.
- Iso-strain and autocratic leadership were associated with mental health and behavioural stress.
Swedish hotels

When comparing the Swedish hotels, participating in this study, one could see that there were large variations in leadership ideals and leadership practice also here. Two illustrative graphs showing Diplomatic and Self Centred leadership ideals and practice at the Swedish hotels (hotel 12, 13, and 14 are here put together into hotel 12) are shown below.

Figure. The picture shows the mean of the items making up the index Diplomatic for leadership ideals (a) and present leadership practice at the 12 participating Swedish hotels.
Figure. The picture shows the mean of the items making up the index Self Centred for leadership ideals (a) and present leadership practice at the 12 participating Swedish hotels.

The general pattern regarding the relationship between leadership ideals and leadership practice appeared to be that the employees would have liked to be shown slightly more of the leadership dimensions that were related to good health and slightly less of the qualities that were related to bad health. At some hotels the picture diverged from this pattern, either by exhibiting very small discrepancies between ideal and practice, or very large ones. This was a general pattern across the different leadership dimensions. Where discrepancies were large, one could guess that the confidence between the leader and the subordinates had been broken for some reason, or had never been established.
**Discussion**

The general pattern regarding leadership practice was that Swedish managers show the most of the leadership qualities that are positively associated with good health and a low level of stress in employees. The exception is administrative competence, which especially Italian managers, but also Polish managers, were reported to be better at. Swedish managers were reported to be less autocratic and malevolent than managers in other countries, leadership qualities that were negatively related to good health and positively related to stress. Self centered leadership, a dimension that measured level of participation with others, was not the lowest in Sweden, but in Poland (the difference was not statistically significant).

Generally, and not surprisingly, we could see that employees would like their managers to have more of the qualities that were related to good health, and less of the qualities related to bad health and stress. Worth noticing is that leadership ideals and leadership practice seemed to go hand in hand, meaning that if you reported more malevolent leadership in a country, you also had leadership ideals that were more tolerant to malevolent behaviours. An interpretation of this is that people accept, and even want to have, what they are accustomed to. This was generally valid for Sweden, Poland, and Italy, but not for Germany. Leadership was in Germany rated more negatively than in other countries, and the discrepancies were considerably larger. One could imagine a situation of conflict between employees and managers, with role conflicts, demands for hiding emotions, low social support and sense of community as a result, or for that matter as an explanation. This was however not reflected in reported stress and health. Whether these results depended on a non-representative sample, or reflected a true situation in Germany, is hard to say.

The largest discrepancies between leadership ideals and leadership practice were not found in the leadership dimensions that were associated with stress and bad health, but in the dimensions that had positive effects on subordinates. Subordinates in all countries would have liked their managers to be a lot more team-oriented, inspirational, visionary, and diplomatic. This could reflect people generally having very high expectations on leaders; their abilities, responsibilities, and possibilities to motivate, stimulate and make us feel good about ourselves and our work.
Looking at leadership ideals and leadership practice at the Swedish hotels in this study, one could see that the magnitude of the discrepancy between leadership ideal and practice varied greatly between hotels. At most hotels ideals and practice went hand in hand. At a couple of hotels the discrepancy was very small and at another couple of hotels very large. This was, as discussed earlier, also seen in the country comparisons, where the German hotel employees’ ratings showed much larger discrepancies between ideal and practice than the other countries. When discrepancy was large in a country or hotel, it was large for all measured leadership dimensions. There appears to be a lack of confidence for the manager in general. It would be interesting to find out what behaviours are crucial to keep the confidence of subordinates. One could imagine that self centred leadership plays an important role, meaning that a non-participative or absent leader creates frustration among the employees. One could see that the discrepancy was exceptionally high in this dimension at hotel 3 in the Swedish sample. The discrepancy between ideal and practice was high in all dimensions at this hotel. The question of whether one leadership quality is more important than the other was not possible to answer by this study.

According to this study, a ”worst case scenario” regarding leadership and work environment (where employees would have the worst health) would be a situation of high quantitative demands, conflicting demands put upon you by different people, and a manager who mostly does not participate in work activities, but when he/she does, instructs the employee in an authoritarian way, and is dishonest and moody.

The “dream” situation would be working at a place where the sense of community is high, there is good support from colleagues and managers, the employee knows what his/her work tasks and responsibilities are, feels that the work he/she does is meaningful, and knows what is going to happen at the work place in the near future. The manager is very team oriented, works and communicates frequently with group members, is good at satisfying employees with diverse interests, and is just and trustworthy.

It was generally striking that there were such large differences between countries regarding work environment and leadership, with Sweden coming out as a “winner” by having a good work situation – democratic leaders, a large degree of say concerning the job, good social support, low insecurity and so on – but this only being reflected in differences in reported behavioural stress. Swedes were even less “vital” than
employees in Poland and Italy. We did not, in the hotel industry, find the same
differences in self reported health, that are apparent in other studies comparing these
countries.

The only “risk factor” for developing ill health that was the highest in Sweden, was
quantitative demands. When looking at associations with ill health, this was also one of
the most harmful factors. This might explain some of the lack of differences in health
between countries.

This was a cross-sectional study where no claims on explaining causal relationships were
made. Neither was the sampling representative of employees in general in Sweden,
Poland, Italy, and Germany. The German sample is most likely not representative for
hotel employees in general because the recruitment was made through the unions. The
claim of the study is limited to comparisons of leadership and work environment in the
hotel industry between four European countries. In addition to these comparisons,
associations between reported leadership, working environment, and health were
estimated.

References

Press.
Brodbeck, F., Frese, M., Åkerblom, S., Audia, G., Bakacsi, G., Bendova, H. et al
Journal of Occupational and Organizational Psychology, 73, 1-29.
metabolic syndrome: prospective study. BMJ, 4;332(7540), 521-5.
Corrigan, P., Diwan, S., Campion, J., & Rashid, F. (2002). Transformational leadership
De Smet, P., Sans, S., Dramaix, M., Boulenguez, C., de Backer, G., & Ferrario, M.
(2005). Gender and regional differences in perceived job stress across Europe. The


Ec.europa.eu/eurostat.


### Appendix

**Table 2.** Cronbach’s Alpha for GLOBE leadership indices in this study. Pearson correlations between leadership dimensions and health (general health, mental health, and vitality) and stress (behavioural stress, somatic stress, and cognitive stress).

<table>
<thead>
<tr>
<th>Leadership Indices</th>
<th>Cronbach's Alpha</th>
<th>Pearson correlations with health</th>
<th>Pearson correlations with stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autocratic a</td>
<td>.743</td>
<td>-</td>
<td>.097**</td>
</tr>
<tr>
<td>Malevolent a</td>
<td>.818</td>
<td>-.225**</td>
<td>.198**</td>
</tr>
<tr>
<td>Self centered a</td>
<td>.846</td>
<td>-.215**</td>
<td>.242**</td>
</tr>
<tr>
<td>Self centered b</td>
<td>.809</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Administratively competent a</td>
<td>.816</td>
<td>.126**</td>
<td>-.193**</td>
</tr>
<tr>
<td>Diplomatic a</td>
<td>.751</td>
<td>-</td>
<td>-.150**</td>
</tr>
<tr>
<td>Inspirational a</td>
<td>.789</td>
<td>.130**</td>
<td>-.183**</td>
</tr>
<tr>
<td>Integrity a</td>
<td>.853</td>
<td>.199**</td>
<td>-.175**</td>
</tr>
<tr>
<td>Team I a</td>
<td>.818</td>
<td>.211**</td>
<td>-.200**</td>
</tr>
<tr>
<td>Team II a</td>
<td>.806</td>
<td>.108**</td>
<td>-.156**</td>
</tr>
<tr>
<td>Visionary a</td>
<td>.814</td>
<td>.126**</td>
<td>-.174**</td>
</tr>
<tr>
<td>Autonomous a</td>
<td>.497</td>
<td>.106**</td>
<td>-.188**</td>
</tr>
<tr>
<td>Conflict Inducer a</td>
<td>.611</td>
<td>.211**</td>
<td>-.200**</td>
</tr>
<tr>
<td>Decisive a</td>
<td>.269</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Face Saver a</td>
<td>.672</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Humane orientation a</td>
<td>.742</td>
<td>.211**</td>
<td>-.200**</td>
</tr>
<tr>
<td>Modesty a</td>
<td>.767</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Non participative a</td>
<td>.682</td>
<td>.108**</td>
<td>-.156**</td>
</tr>
<tr>
<td>Performance oriented a</td>
<td>.491</td>
<td>.126**</td>
<td>-.174**</td>
</tr>
<tr>
<td>Procedural a</td>
<td>.635</td>
<td>.106**</td>
<td>-.188**</td>
</tr>
<tr>
<td>Self Sacrificial a</td>
<td>.611</td>
<td>.211**</td>
<td>-.200**</td>
</tr>
<tr>
<td>Status consciousness a</td>
<td>.681</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Performance oriented b</td>
<td>.739</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Procedural b</td>
<td>.672</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Self Sacrificial b</td>
<td>.767</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Status consciousness b</td>
<td>.491</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 3. Cronbach’s Alpha for indices from Copenhagen Psychosocial Questionnaire. Pearson correlations between work environment factors and health (general health, mental health, and vitality) and stress (behavioural stress, somatic stress, and cognitive stress).

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>Pearson correlations with health</th>
<th>Pearson correlations with stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative demands</td>
<td>0.503 **</td>
<td>-0.311**</td>
</tr>
<tr>
<td>Cognitive demands</td>
<td>0.689 **</td>
<td>-</td>
</tr>
<tr>
<td>Emotional demands</td>
<td>0.780 **</td>
<td>-</td>
</tr>
<tr>
<td>Demands for hiding emotions</td>
<td>0.563 **</td>
<td>-0.166**</td>
</tr>
<tr>
<td>Sensorial demands</td>
<td>0.547 **</td>
<td>-</td>
</tr>
<tr>
<td>Influence</td>
<td>0.751 **</td>
<td>0.200**</td>
</tr>
<tr>
<td>Development</td>
<td>0.661 **</td>
<td>0.273**</td>
</tr>
<tr>
<td>Freedom</td>
<td>0.659 **</td>
<td>0.165**</td>
</tr>
<tr>
<td>Meaning</td>
<td>0.704 **</td>
<td>0.362**</td>
</tr>
<tr>
<td>Commitment</td>
<td>0.602 **</td>
<td>0.276**</td>
</tr>
<tr>
<td>Predictability</td>
<td>0.716 **</td>
<td>0.361**</td>
</tr>
<tr>
<td>Role clarity</td>
<td>0.706 **</td>
<td>0.318**</td>
</tr>
<tr>
<td>Role conflicts</td>
<td>0.745 **</td>
<td>-0.293**</td>
</tr>
<tr>
<td>Social support</td>
<td>0.793 **</td>
<td>0.310**</td>
</tr>
<tr>
<td>Feedback</td>
<td>0.737 **</td>
<td>0.165**</td>
</tr>
<tr>
<td>Social relations</td>
<td>0.367 *</td>
<td>0.093*</td>
</tr>
<tr>
<td>Sense of community</td>
<td>0.805 **</td>
<td>0.401**</td>
</tr>
<tr>
<td>Insecurity at work</td>
<td>0.744 **</td>
<td>-0.217**</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.833 **</td>
<td>0.388**</td>
</tr>
<tr>
<td>General Health</td>
<td>0.708</td>
<td></td>
</tr>
<tr>
<td>Mental Health</td>
<td>0.793</td>
<td></td>
</tr>
<tr>
<td>Vitality</td>
<td>0.802</td>
<td></td>
</tr>
<tr>
<td>Behavioural stress</td>
<td>0.885</td>
<td></td>
</tr>
<tr>
<td>Somatic stress</td>
<td>0.673</td>
<td></td>
</tr>
<tr>
<td>Cognitive stress</td>
<td>0.883</td>
<td></td>
</tr>
</tbody>
</table>

* = Correlation significant at the 0.05 level (2-tailed), ** = Correlation significant at the 0.01 level (2-tailed), - = Non significant
Table 5. Means indices GLOBE and Copenhagen Psychosocial Questionnaire for each country separately and all together.

<table>
<thead>
<tr>
<th></th>
<th>Sweden</th>
<th>Poland</th>
<th>Italy</th>
<th>Germany</th>
<th>All included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autocratic a</td>
<td>2.52</td>
<td>2.57</td>
<td>3.66</td>
<td>2.13</td>
<td>2.68</td>
</tr>
<tr>
<td>Autocratic b</td>
<td>2.53</td>
<td>3.05</td>
<td>3.79</td>
<td>3.71</td>
<td>3.08</td>
</tr>
<tr>
<td>Malevolent a</td>
<td>1.58</td>
<td>1.79</td>
<td>2.20</td>
<td>1.63</td>
<td>1.77</td>
</tr>
<tr>
<td>Malevolent b</td>
<td>1.83</td>
<td>2.39</td>
<td>2.82</td>
<td>2.80</td>
<td>2.32</td>
</tr>
<tr>
<td>Self centred a</td>
<td>2.16</td>
<td>2.33</td>
<td>2.53</td>
<td>2.28</td>
<td>2.30</td>
</tr>
<tr>
<td>Self centred b</td>
<td>2.64</td>
<td>2.57</td>
<td>2.95</td>
<td>3.30</td>
<td>2.74</td>
</tr>
<tr>
<td>Administratively</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administratively</td>
<td>5.99</td>
<td>6.11</td>
<td>5.91</td>
<td>5.91</td>
<td>6.01</td>
</tr>
<tr>
<td>Competent a</td>
<td>4.92</td>
<td>5.1</td>
<td>5.2</td>
<td>4.46</td>
<td>4.97</td>
</tr>
<tr>
<td>Competent b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diplomatic a</td>
<td>5.98</td>
<td>6.02</td>
<td>5.64</td>
<td>6.00</td>
<td>5.94</td>
</tr>
<tr>
<td>Diplomatic b</td>
<td>5.25</td>
<td>5.17</td>
<td>4.79</td>
<td>4.59</td>
<td>5.06</td>
</tr>
<tr>
<td>Inspirational a</td>
<td>6.17</td>
<td>6.82</td>
<td>6.10</td>
<td>5.85</td>
<td>5.99</td>
</tr>
<tr>
<td>Inspirational b</td>
<td>4.96</td>
<td>4.81</td>
<td>4.84</td>
<td>4.10</td>
<td>4.78</td>
</tr>
<tr>
<td>Integrity a</td>
<td>6.34</td>
<td>5.82</td>
<td>6.05</td>
<td>6.16</td>
<td>6.08</td>
</tr>
<tr>
<td>Integrity b</td>
<td>5.53</td>
<td>5.09</td>
<td>5.11</td>
<td>4.49</td>
<td>5.17</td>
</tr>
<tr>
<td>Team I a</td>
<td>5.95</td>
<td>5.90</td>
<td>5.82</td>
<td>5.67</td>
<td>5.88</td>
</tr>
<tr>
<td>Team I b</td>
<td>5.28</td>
<td>4.99</td>
<td>5.08</td>
<td>4.29</td>
<td>5.02</td>
</tr>
<tr>
<td>Team II a</td>
<td>6.14</td>
<td>6.15</td>
<td>6.02</td>
<td>5.97</td>
<td>6.10</td>
</tr>
<tr>
<td>Team II b</td>
<td>5.25</td>
<td>5.20</td>
<td>5.15</td>
<td>4.67</td>
<td>5.14</td>
</tr>
<tr>
<td>Visionary a</td>
<td>5.91</td>
<td>5.93</td>
<td>5.83</td>
<td>5.87</td>
<td>5.90</td>
</tr>
<tr>
<td>Visionary b</td>
<td>5.31</td>
<td>5.07</td>
<td>4.93</td>
<td>4.84</td>
<td>5.04</td>
</tr>
<tr>
<td>Quantitative demands</td>
<td>3.01</td>
<td>2.67</td>
<td>2.64</td>
<td>2.73</td>
<td>2.79</td>
</tr>
<tr>
<td>Cognitive demands</td>
<td>3.73</td>
<td>3.65</td>
<td>3.56</td>
<td>3.69</td>
<td>3.67</td>
</tr>
<tr>
<td>Emotional demands</td>
<td>2.65</td>
<td>3.54</td>
<td>3.31</td>
<td>2.99</td>
<td>3.13</td>
</tr>
<tr>
<td>Demands for hiding</td>
<td>2.77</td>
<td>3.05</td>
<td>2.83</td>
<td>3.17</td>
<td>2.93</td>
</tr>
<tr>
<td>demands</td>
<td>3.73</td>
<td>3.85</td>
<td>4.21</td>
<td>4.18</td>
<td>3.91</td>
</tr>
<tr>
<td>Influence</td>
<td>3.27</td>
<td>2.74</td>
<td>2.99</td>
<td>2.88</td>
<td>2.98</td>
</tr>
<tr>
<td>Development</td>
<td>3.79</td>
<td>3.63</td>
<td>3.51</td>
<td>3.71</td>
<td>3.67</td>
</tr>
<tr>
<td>Freedom</td>
<td>3.30</td>
<td>2.92</td>
<td>2.98</td>
<td>3.08</td>
<td>3.08</td>
</tr>
<tr>
<td>Meaning</td>
<td>3.91</td>
<td>4.03</td>
<td>3.92</td>
<td>3.96</td>
<td>3.96</td>
</tr>
<tr>
<td>Commitment</td>
<td>3.23</td>
<td>3.35</td>
<td>3.36</td>
<td>3.33</td>
<td>3.31</td>
</tr>
<tr>
<td>Predictability</td>
<td>3.45</td>
<td>3.62</td>
<td>3.27</td>
<td>3.20</td>
<td>3.45</td>
</tr>
<tr>
<td>Role clarity</td>
<td>3.93</td>
<td>4.06</td>
<td>3.75</td>
<td>4.10</td>
<td>3.97</td>
</tr>
<tr>
<td>Role conflicts</td>
<td>2.65</td>
<td>2.44</td>
<td>2.70</td>
<td>2.83</td>
<td>2.60</td>
</tr>
<tr>
<td>Social support</td>
<td>3.73</td>
<td>3.53</td>
<td>3.55</td>
<td>3.36</td>
<td>3.58</td>
</tr>
<tr>
<td>Feedback</td>
<td>3.10</td>
<td>3.01</td>
<td>2.03</td>
<td>2.87</td>
<td>2.85</td>
</tr>
<tr>
<td>Social relations</td>
<td>4.19</td>
<td>3.74</td>
<td>3.84</td>
<td>3.68</td>
<td>3.90</td>
</tr>
<tr>
<td>Sense of community</td>
<td>4.21</td>
<td>4.25</td>
<td>4.07</td>
<td>3.96</td>
<td>4.17</td>
</tr>
<tr>
<td>Insecurity at</td>
<td>1.18</td>
<td>1.48</td>
<td>1.39</td>
<td>1.33</td>
<td>1.34</td>
</tr>
</tbody>
</table>

48
<table>
<thead>
<tr>
<th>work</th>
<th>Job satisfaction</th>
<th>2.84</th>
<th>2.90</th>
<th>2.81</th>
<th>2.83</th>
<th>2.86</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Health</td>
<td>3.97</td>
<td>3.83</td>
<td>3.86</td>
<td>3.87</td>
<td>3.89</td>
</tr>
<tr>
<td></td>
<td>Mental Health</td>
<td>4.60</td>
<td>4.58</td>
<td>4.41</td>
<td>4.35</td>
<td>4.53</td>
</tr>
<tr>
<td></td>
<td>Vitality</td>
<td>3.91</td>
<td>4.18</td>
<td>4.13</td>
<td>3.90</td>
<td>4.05</td>
</tr>
<tr>
<td></td>
<td>Behavioural stress</td>
<td>1.89</td>
<td>1.99</td>
<td>2.20</td>
<td>2.13</td>
<td>2.01</td>
</tr>
<tr>
<td></td>
<td>Somatic stress</td>
<td>1.83</td>
<td>1.68</td>
<td>1.86</td>
<td>1.75</td>
<td>1.77</td>
</tr>
<tr>
<td></td>
<td>Cognitive stress</td>
<td>1.90</td>
<td>1.80</td>
<td>1.94</td>
<td>1.88</td>
<td>1.87</td>
</tr>
</tbody>
</table>

**Table 6.** Standardised beta coefficients and level of significance in stepwise linear regression models with all countries included. Variables tested: Autocratic leadership, visionary leadership, self centred leadership, collaborative team orientation, integrity, and iso-strain.

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Iso-strain</th>
<th>Autocratic</th>
<th>Self-centered</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health</td>
<td>Model I</td>
<td>-.272**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>-.235**</td>
<td>-0.095*</td>
</tr>
<tr>
<td>Mental health</td>
<td>Model I</td>
<td>-.366**</td>
<td>-.141**</td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>-.319**</td>
<td></td>
</tr>
<tr>
<td>Vitality</td>
<td>Model I</td>
<td>-.362**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>.343**</td>
<td>.135**</td>
</tr>
<tr>
<td>Somatic stress</td>
<td>Model I</td>
<td>.280**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>.246**</td>
<td>.101*</td>
</tr>
<tr>
<td>Cognitive stress</td>
<td>Model I</td>
<td>.266**</td>
<td></td>
</tr>
</tbody>
</table>

* = Significant at the 0.05 level (2-tailed)

** = Significant at the 0.01 level (2-tailed)

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Iso-strain</th>
<th>Autocratic</th>
<th>Self-centered</th>
<th>Visionary</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health</td>
<td>Model I</td>
<td>-.276**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>Model I</td>
<td>-.437**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitality</td>
<td>Model I</td>
<td>-.365**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioural stress</td>
<td>Model I</td>
<td>.403**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>.344**</td>
<td>.157*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model III</td>
<td>.422**</td>
<td>.187**</td>
<td>.174*</td>
</tr>
<tr>
<td>Somatic stress</td>
<td>Model I</td>
<td>.343**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive stress</td>
<td>Model I</td>
<td>.327**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = Significant at the 0.05 level (2-tailed)

** = Significant at the 0.01 level (2-tailed)
Table 8. Standardised beta coefficients and level of significance in stepwise linear regression models for Poland. Variables tested: Iso-strain, autocratic leadership, and team integrator.

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Iso-strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health</td>
<td>Model I</td>
</tr>
<tr>
<td>Mental health</td>
<td>Model I</td>
</tr>
<tr>
<td>Vitality</td>
<td>Model I</td>
</tr>
<tr>
<td>Behavioural stress</td>
<td>Model I</td>
</tr>
<tr>
<td>Somatic stress</td>
<td>Model I</td>
</tr>
<tr>
<td>Cognitive stress</td>
<td>Model I</td>
</tr>
</tbody>
</table>

* = Significant at the 0.05 level (2-tailed)
** = Significant at the 0.01 level (2-tailed)

Table 9. Standardised beta coefficients and level of significance in stepwise linear regression models for Italy. Variables tested: Iso-strain, integrity, malevolent leadership, and self-centred leadership.

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Malevolent</th>
<th>Integrity</th>
<th>Iso-strain</th>
<th>Self-centered</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health</td>
<td>Model I</td>
<td>-.239*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>Model I</td>
<td>-.376**</td>
<td>Model II</td>
<td>-.357**</td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>.200*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitality</td>
<td>Model I</td>
<td>-.343**</td>
<td></td>
<td>.245*</td>
</tr>
<tr>
<td>Behavioural stress</td>
<td>Model I</td>
<td></td>
<td></td>
<td>.293**</td>
</tr>
<tr>
<td>Somatic stress</td>
<td>Model I</td>
<td>327**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive stress</td>
<td>Model I</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = Significant at the 0.05 level (2-tailed)
** = Significant at the 0.01 level (2-tailed)

Table 10. Standardised beta coefficients and level of significance in stepwise linear regression models for Germany. Variables tested: Iso-strain, autocratic leadership, visionary leadership, and integrity.

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Iso-strain</th>
<th>Autocratic</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health</td>
<td>Model I</td>
<td>-.449**</td>
</tr>
<tr>
<td>Mental health</td>
<td>Model I</td>
<td>-.567**</td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>-.483**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.221*</td>
</tr>
<tr>
<td>Vitality</td>
<td>Model I</td>
<td>-.583**</td>
</tr>
<tr>
<td>Behavioural stress</td>
<td>Model I</td>
<td>.667**</td>
</tr>
<tr>
<td></td>
<td>Model II</td>
<td>.536**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.260*</td>
</tr>
<tr>
<td>Somatic stress</td>
<td>Model I</td>
<td>.557**</td>
</tr>
<tr>
<td>Cognitive stress</td>
<td>Model I</td>
<td>.595**</td>
</tr>
</tbody>
</table>

* = Significant at the 0.05 level (2-tailed)
** = Significant at the 0.01 level (2-tailed)
Stress Research Institute

Stress Research Institute is a national knowledge center focusing on stress and health. The Institute is part of the Faculty of Social Sciences at Stockholm University. The research is based on an interdisciplinary basis with a combination of different scientific methods. The aim is to study how individuals and groups are affected by their social environment with particular focus on stress reactions and health factors. The Institute was formerly called IPM, National Institute for Psychosocial Medicine, but was integrated on 1 October 2007 into Stockholm University under the name Stress Research Institute.

Contact details

E-mail: info@stressforskning.su.se
Website: www.stressresearch.su.se
Phone: +468 16 20 00, Fax: +468-5537 8900
Visitors/delivery: Frescati hagväg 16A, 104 05 Stockholm
Postal address: Stockholms universitet, SE-106 91 Stockholm