The relationship between group dynamics and health in Swedish manufacturing industry

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  - 31 management teams in manufactureing industry
  - 132 production teams in manufacturing industry
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Earlier research on Groups and Health

Most studies on Group development and different correlates fokus on group performance.

For instance, teams that has reached higher stages of development according to GDQ has for instance shown:

– To have higher performing students in schools (Wheelan & Kesselring, 2005)

– To have more surviving patients in intensive care units (Wheelan, Burchill & Tillin, 2003)

Earlier research on Groups and Health

Our basic assumption is that the work group, and how it cooperate, is an important work condition for individual members.

In the present study we have chosen to investigate four health-related aspects that are influenced by work conditions; ***work satisfaction***, ***emotional exhaustion, Perceived stress*** and ***Feelings of mastery***.

Earlier research on Groups and Health

- The link between team work and health is a neglected one in research. To our knowledge, the only research is on team climate and health, using Team Climate Inventory, TCI, (Anderson & West, 1996) has been made by Kivimäki and colleagues (Kivimäki et al., 2001; Kivimäki et a., 2007) regarding team work and health among health care workers. ***The quality of the team work seems to be of great importance in this research.***

- TCI has a focus on innovativeness in teams. However, the model describes ***support for innovation*** as one of four factors, the other three, ***vision***, ***participatory safety*** and ***task orientation***, has a great overlap with characteristics of effective team work in general. In that sense, TCI has also an overlap with scale 4 in GDQ, which describes stage IV, or effective teamwork. Thus, links between team work and health found by means of TCI could probably be replicated by means of GDQ.

Hypotheses

Work satisfaction is an aspect of employee well-being (Wright & Cropanzano, 2000) and is to some extend with regard to work conditions corresponding to characteristics of more or less developed groups. For instance, Robertson (Roberson, 1990) found a relation between goal clarity, which is an aspect of effective team work, and work satisfaction. Parker et.al (Parker et al., 2003), found in their meta-analytic review a positive correlation of 0,48 between a general appreciation of one's work group and work satisfaction. The link between Team climate, as an aggregated concept like it's used in TCI, and work satisfaction has also been shown in earlier research (Gil, Alcover, & Peiró, 2005; Proudfoot et al., 2007). On the basis of this literature, we formulated our first hypothesis.

Hypothesis 1: Group development and work satisfaction is positive correlated, the more mature group work, the more group members are satisfied with their work in general.

Emotional exhaustion and **perceived stress**, the key component of burnout, was for a long time used as a concept specific to the human services. However, highly similar patterns with regard to antecedents to exhaustion has been showed when comparing trades such as human services, industry, and transport (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Burke and Greenglass(Burke & Greenglass, 1995) found in a longitudinal study of predictors of burnout among human service workers that both the role stressor conflict and ambiguity and social support were predictors of emotional exhaustions. A lack of feedback is consistently related to burnout according to Maslach, Schaufeli and Leiter (Maslach, Schaufeli, & Leiter, 2001). A high participation in decision making is another key feature of mature groups. The opposite, low degrees of participation is associated with burnout (Maslach et al., 2001). Similar results are shown regarding perceived stress.

Hypothesis 2 a: Group development and emotional exhaustion is negatively correlated, the more mature group work, the less signs of emotional exhaustion among group members.

Hypothesis 2 b: Group development and persceived stress is negatively correlated, the more mature group work, the less signs of emotional exhaustion among group members.

Feelings of mastery in the work is, as shown by Jacobsson et al (C. Jacobsson, Pousette, & Thylefors, 2001), correlated with prerequisites of mature groups. The condition of mastering one´s own work is positively correlated with colleague support, goal clarity and positive feedback and negatively correlated to co-ordination problems among co-workers.

Hypothesis 3: Group development and feelings of mastery is positively correlated, the more mature work group, the more feelings of mastery in work among group members.

Measures

Group Development

Group Development Questionnaire, GDQ, (Wheelan & Hochberger, 1996) was used for assessing group development or maturity of the groups. On the basis of the IMGD, the 60-item GDQ contains four scales that correspond to the first four stages of group development. Each scale contains 15 items and each item has a Lickert type response scale from 1 to 5, were 1 is never true of this group and 5 is always true of this group. Therefore, the minimum score on each scale is 15 and the maximum score is 75. This study was conducted with the Swedish translation of GDQ, GDQ SE3, which is the third revised version. Psychometrical properties (Cronbach´s alpha) for GDQ SE3 scale I is 0.77, for scale II, III and IV the values are 0.90, 0.81 and 0.87 respectively (C. Jacobsson & Persson, 2011).

Emotional exhaustion and **Perceived Stress**

Emotional exhaustion was measured by means of Copenhagen Burnout Inventory, Subscale Personal Burnout (Kristensen, Borritz, Villadsen, & Christensen, 2005). However, after having a response-psychological test panel using the scale it was reduced from 6 to 5 items (C Jacobsson & Pousette, 2012). Sample items are “How often do you feel tired?” and “How often are you emotionally exhausted?”, the scale goes from 1 (never) to 5 (always) and Cronbach’s alpha was 0,88.

Perceived stress was measured by a single item starting with a definition of the phenomena (being restless, tense, nervous etc.), following by a question if the respondend felt any of this. the scale goes from 1 (not at all) to 5 (very much).

Work satisfaction

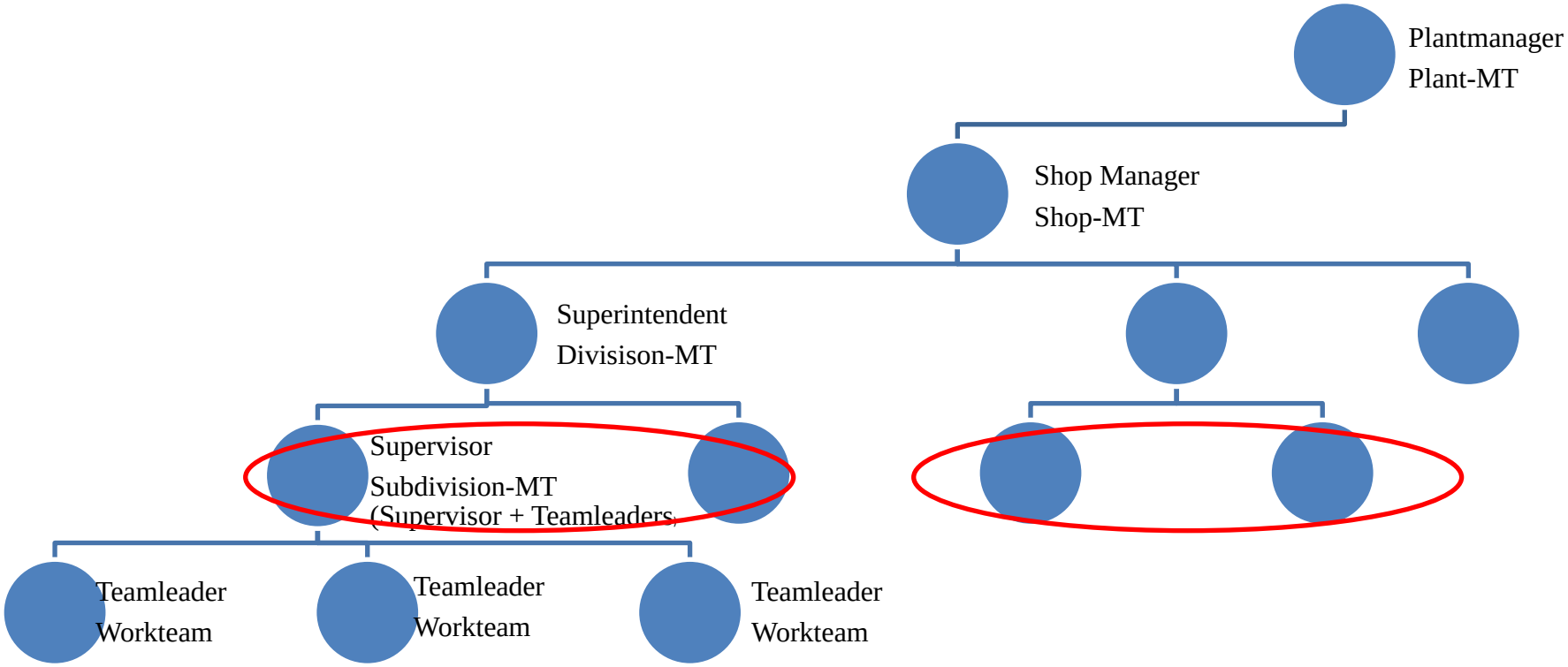
Work satisfaction was measured with a three-item scale of overall job satisfaction (Wanous & Lawler, 1972), used in an earlier study by Jacobsson and Pousette (2012). Sample items are “based on an overall assessment, how satisfied are you with your current work situation” and “How well do your company meet your expectations for how you want it in your work?”. The scale goes from 1 (not at all) to 10 (to the highest degree), Cronbach’s alpha was 0,91.

Feelings of Mastery

Feelings of mastery was measured by a three item scale on how well participants could handle problems that occurred in their work (C. Jacobsson et al., 2001). The items were: How often does the following happen: (a) I feel that I am mastering my work situation; (b) I feel that I am engaged in my work; (c) It’s easy for me to overcome obstacles that occurs in my work. Cronbach’s alpha was 0.70.

The Context

The organization



What happened during the project?

Januari 2012

- Unit production 50/hour

August 2011

- 500 new employees
- Unit production 54/hour

August 2012

- Unit production 50/hour
- Notice of unemployment 300 employees

October 2012

- Unit production 44/hour
- 300 employees has left the shop
- Stop days

The Study

- 163 teams (177), n=1596
  - 31 (34) Management teams n=160
  - 132 (143) Production teams n=1436

- Assessment with GDQ (The Group Development Questionnaire)

- 13 additional questions concerning
  - Stress (2)
  - Exhaustion (5)
  - Work Satisfaction(3)
  - Feeling of Mastery (3)

- GDQ data was compared to
  - Stress
  - Exhaustion
  - Work Satisfaction
  - Feeling of Mastery

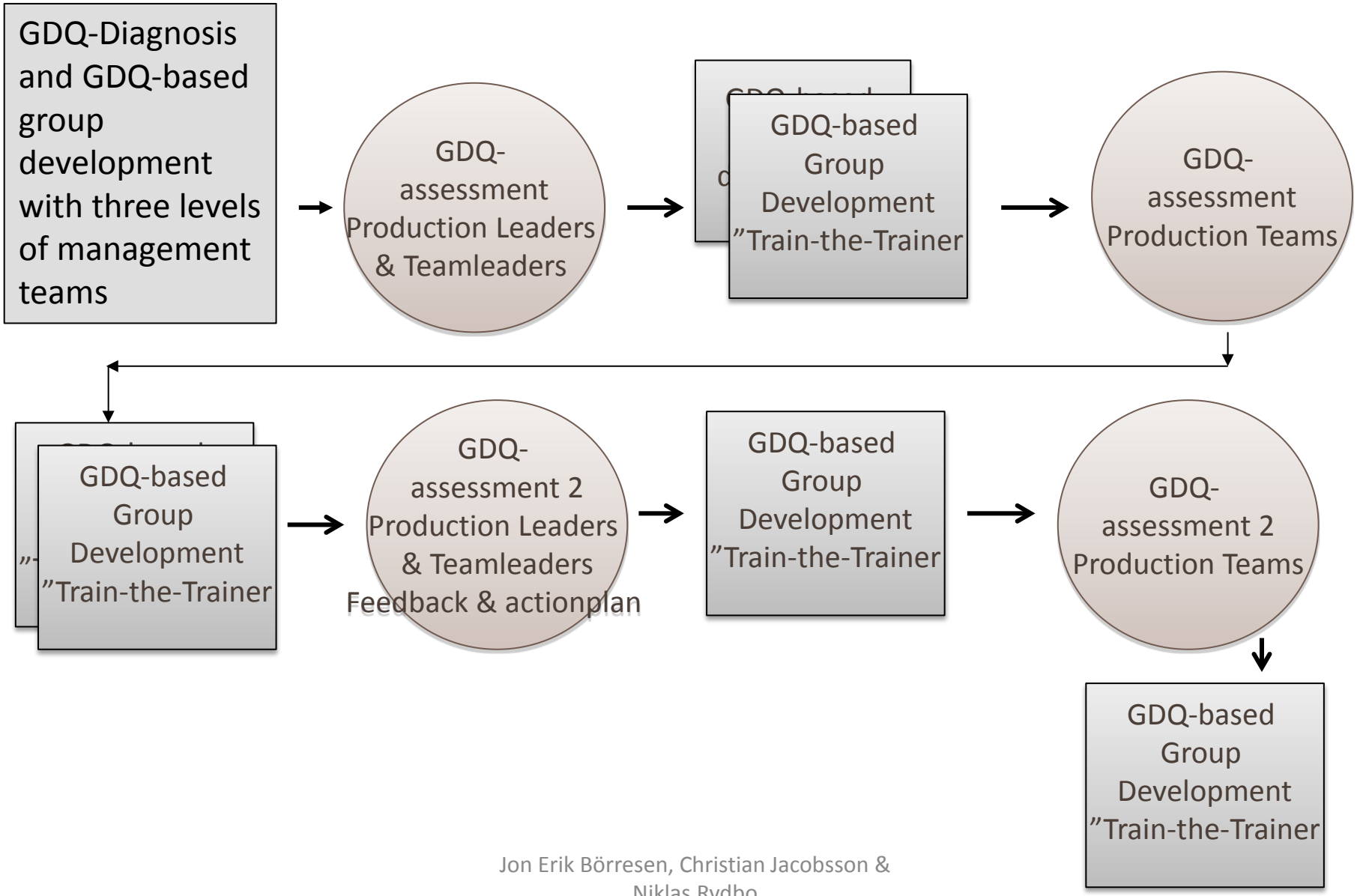
2. The Project ”Long lasting worklife”

- A project finansed by ESF, European Uninion and the Plant
- Running time, May 2011 to december 2012
- 184 groups in Swedish manifacturing industry.
- Aprox. 1700 managers and employees
- 2 psychologists consulting 41 management teams on different levels in the organization.
- One external experts consulting the psychologists.

Goal of the project

To reduce short time sick-leave in the plant

The design of the project



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- The Consultation Process

- All the management groups had a budget of 9 hours of consultation each, plus a GDQ-measurement before and in the end of the project. The amount of meetings during the project was 6 and meeting time was 1,5 hours. Four groups meet at the same time, in the same room with together with 2 consultants.

- The consultation started with a GDQ-survey with a GDQ-survey follow up after 5 months. At the start the management team was invíted to take part in identifiyng it´s own growth needs and make an action plan.

- After 2 months, the 136 production teams were measured with a GDQ-survey. The consultation ended with a production team GDQ-survey

- During the process, management team was invíted to take part in the GDQ-results of the production team, identifiyng their growth needs and make an action plan in how to support the production teams in their growth.

- Further on, process consultation was given with the purpose to support and streghten the management teams' ability to cooperate effectively

- Examples of focal areas was team-development, goal-setting, leadership issues and feedback

The Consultation Process

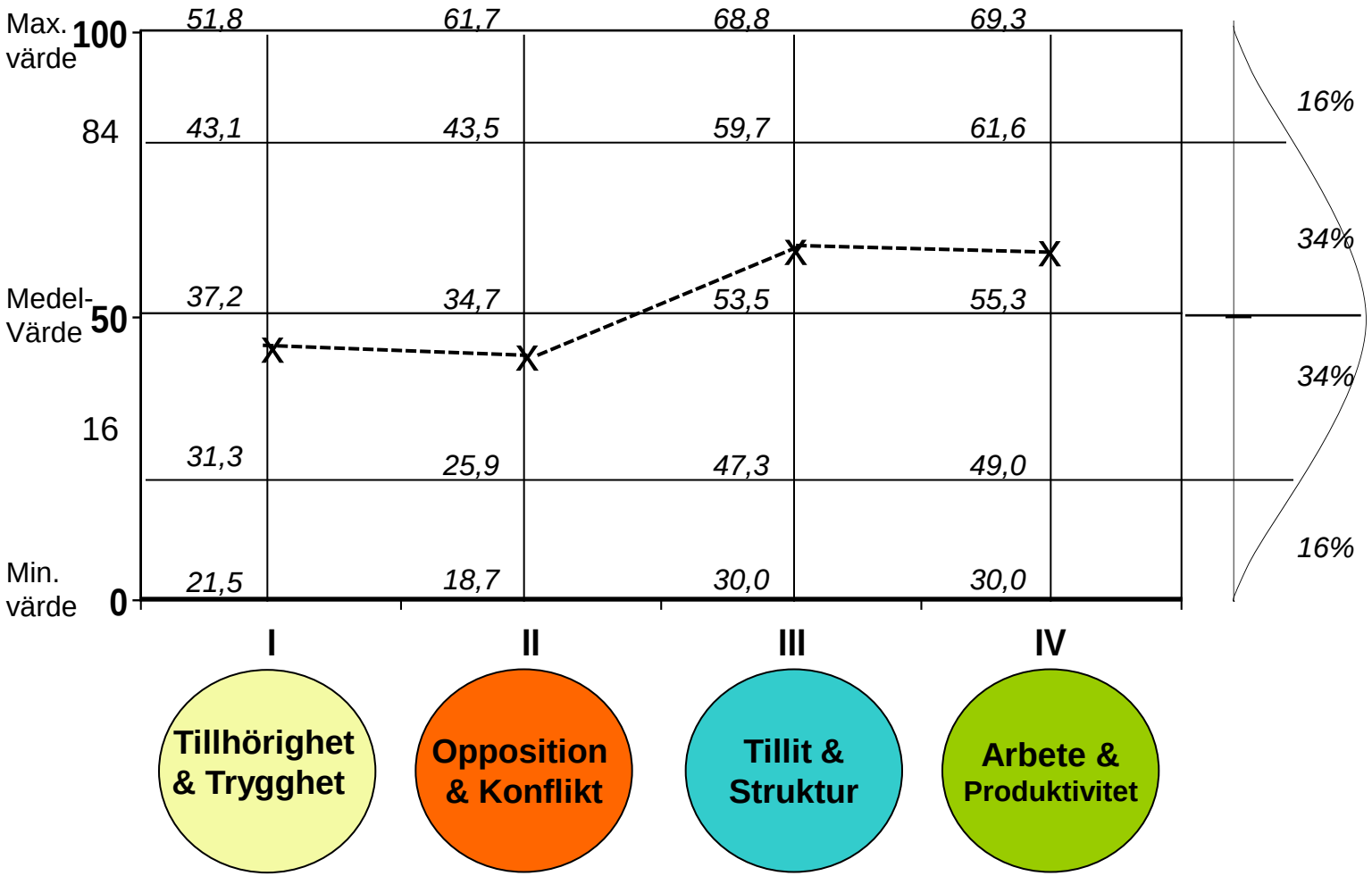
Aggregated GDQ- data first measurement. Subdivision-MT 31 Groups

GDQ-scale	Mätning 1
GDQ I	36,7
GDQ II	32,2
GDQ III	55,4
GDQ IV	57,1

Aggregated data, 31 groups

Grupp: Subdivision MT, 31 Groups

Normerade skalor för I – IV: Procent av grupper i svenska normdata (SE 3, N = 357grupper) som ligger under respektive medelvärde (skalan = 15 – 75) (Jacobsson, C) - 20 dec, 2011



Group Development and Health

Group level correlations between GDQ I – IV and Health related aspects, 31 Management Groups

GDQ	Dependency & Inclusion	Counterde-pendency & Fight	Trust & Structure	Work & Productivity
Work Satisfaction	**-,312***	**-,472****	**,711****	**,701****
Percieved Stress	,196	,190	-,153	-,229
Burnout/ Emotional Exhaustion	,188	**,334***	-,244[1]	-,240[1]
Feelings of mastery	-,217	**-,422****	,339*	,383*

**. $P \leq 0.01$ (1-tailed)
*. $P \leq 0.05$ (1-tailed)
[1] Correlations has a tendency at the 0.10 level (1-tailed)

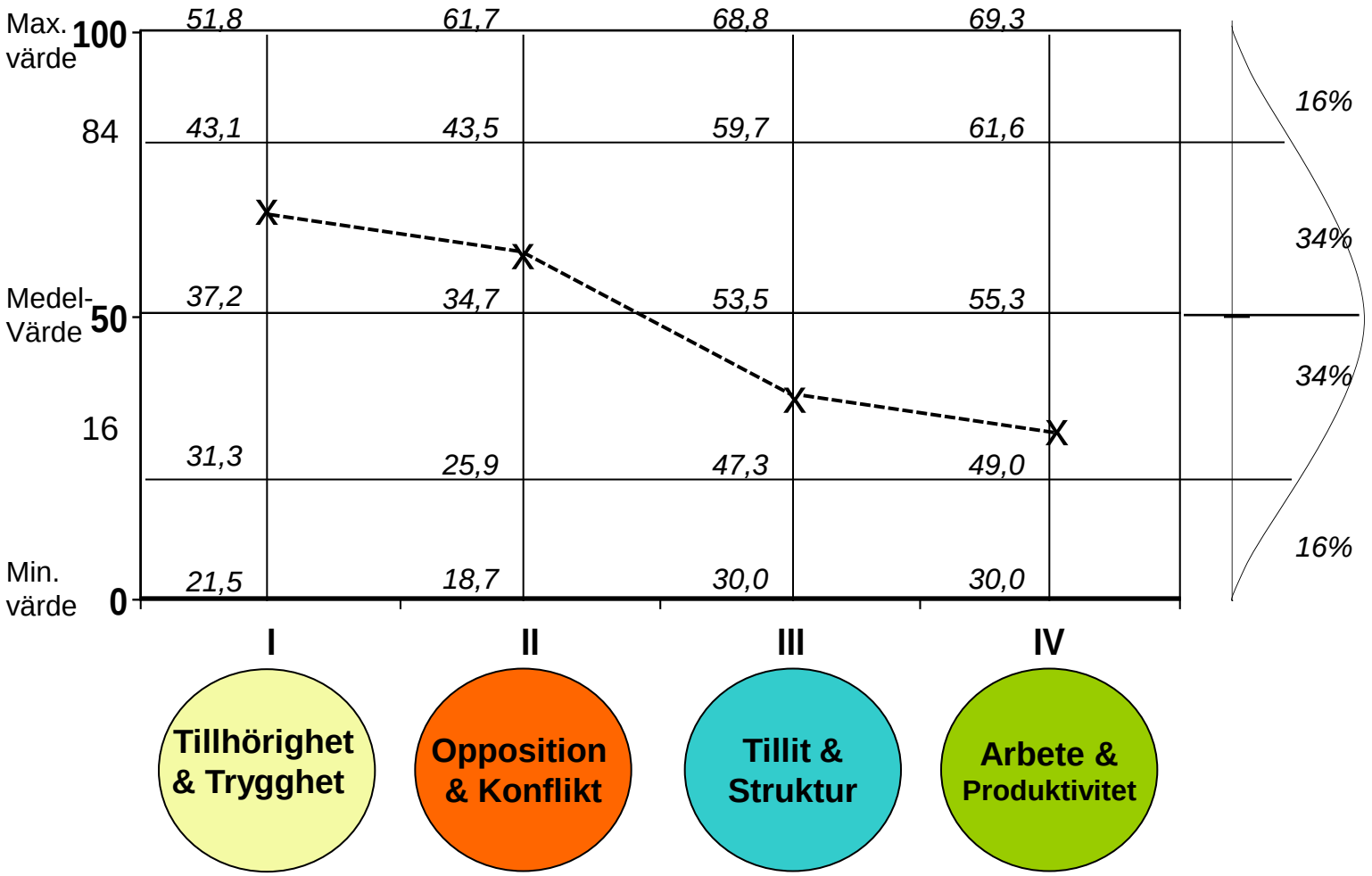
Aggregated GDQ- data first measurement. Produktion. 136 Groups

GDQ-scale	Mätning 1
GDQ I	41,4
GDQ II	37,5
GDQ III	50,7
GDQ IV	51,5

Aggregated data, 136 groups

Grupp: Production , 136 Groups

Normerade skalor för I – IV: Procent av grupper i svenska normdata (SE 3, N = 357grupper) som ligger under respektive medelvärde (skalan = 15 – 75) (Jacobsson, C) - 20 dec, 2011



Group Development and Health

Group level correlations between GDQ I – IV and Health related aspects, 136 Production Groups

GDQ	Dependency & Inclusion	Counterde-pendency & Fight	Trust & Structure	Work & Productivity
Work Satisfaction	-,246**	-,346**	,577**	,638**
Percieved Stress	,224**	,298**	-,328**	-,388**
Burnout/ Emotional Exhaustion	,233**	,366**	-,525**	-,591**
Feelings of mastery	-,258**	-,330**	,529**	,598**

**. $P \leq 0.01$ (2-tailed)
*. $P \leq 0.05$ (2-tailed)

Aggregated GDQ- data. Subdivision-MT GDQ-1 & GDQ 2. 31 Groups (6 months)

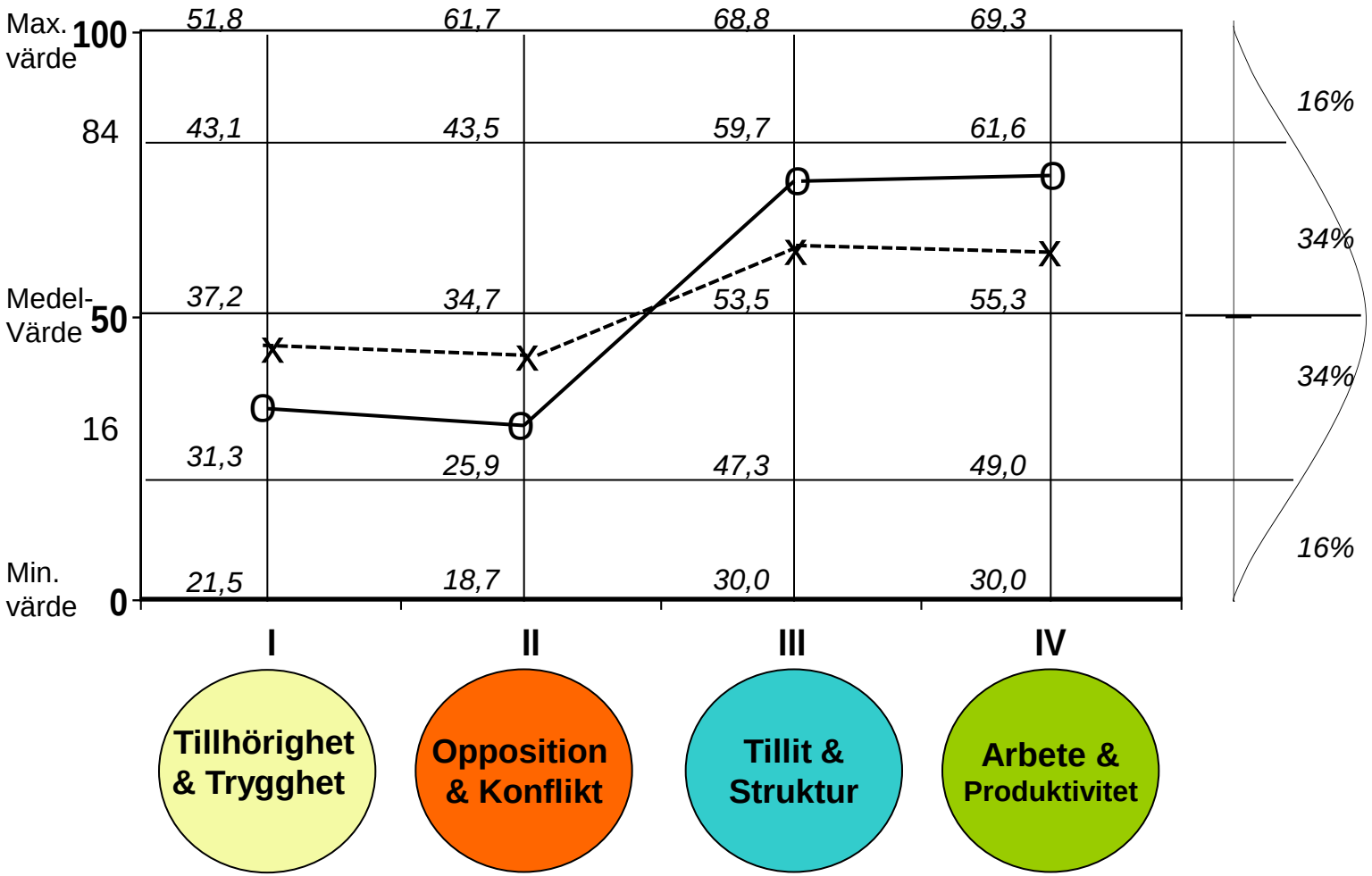
	Measurement 1	Measurement 2	Results
GDQ I	36,7	34	-2,7**
GDQ II	32,2	28,3	-3,9**
GDQ III	55,4	58,0	+ 2,6**
GDQ IV	57,2	59,8	+ 2,6**

** $P \leq 0.01$
* $P \leq 0.05$

Aggregated data, 31 groups

Grupp: Subdivision MT, 31 Groups

Normerade skalor för I – IV: Procent av grupper i svenska normdata (SE 3, N = 357grupper) som ligger under respektive medelvärde (skalan = 15 – 75) (Jacobsson, C) - 20 dec, 2011



Results

- Among the 31 management teams, the following results was observed when comparing GDQ stages before and after team development:
  - 8 teams moved in the wrong direction
  - 23 teams did develop

Aggregated health-data. Subdivision-MT GDQ-1 & GDQ 2. 31 Groups

	Measurement 1	Measurement 2	Results
Stress	2,3	2,0	-0,3*
Utmattning	2,5	2,3	-0,2**
Arbetstillfredställelse	6,5	6,3	-0,2
Arbetsbemästring	5,8	5,6	-0,2

**. $P \leq 0.01$
*. $P \leq 0.05$

Aggregated GDQ- data. Production GDQ-1 & GDQ 2. 132 Groups (4 months)

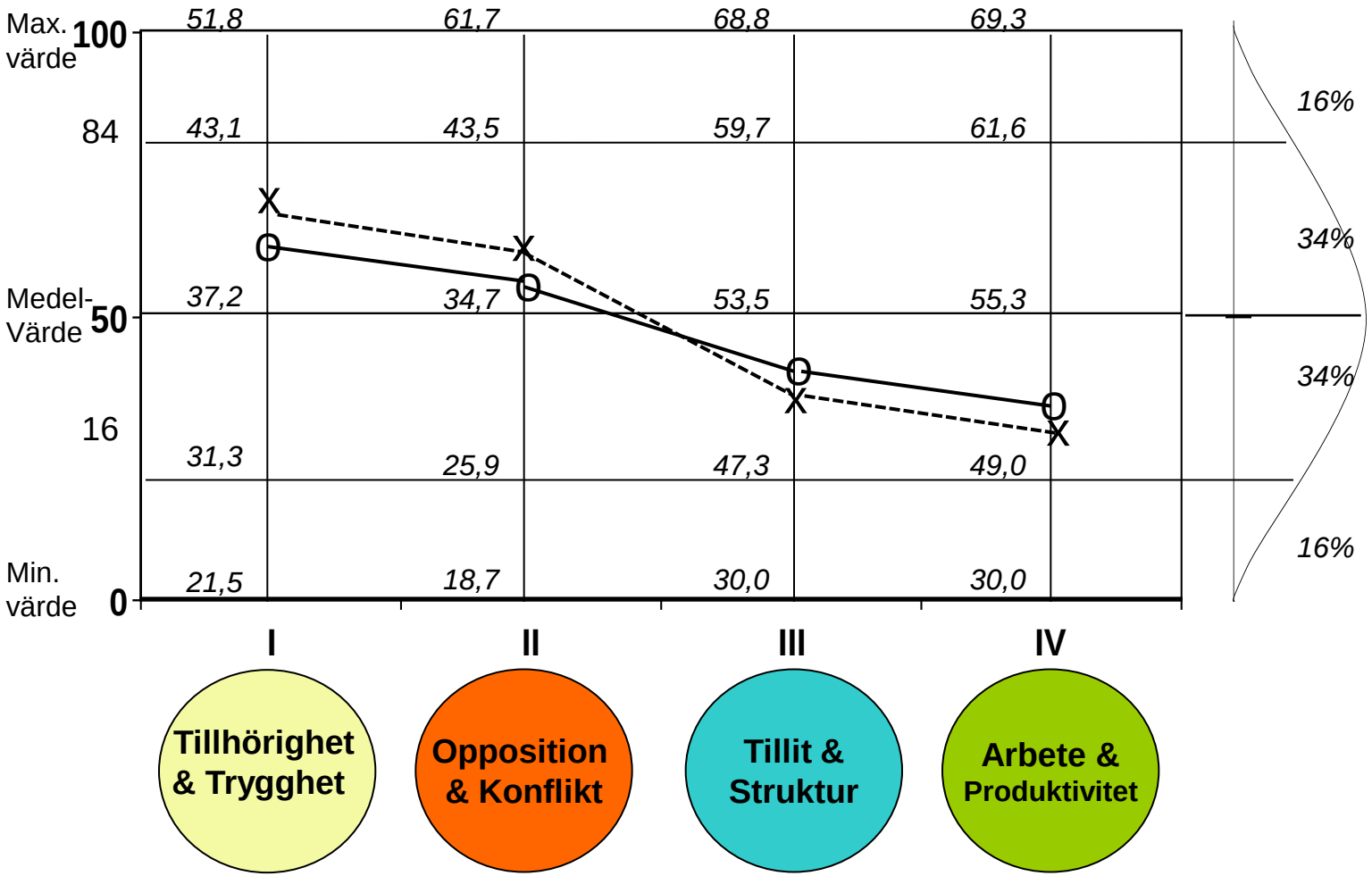
	Measurement 1	Measurement 2	Results
GDQ I	41,4	40,2	-1, 2**
GDQ II	37,6	36,2	-1,4**
GDQ III	50,7	51,5	+ 0,8*
GDQ IV	51,6	52,4	+ 0,8[1]

**. $P \leq 0.01$
*. $P \leq 0.05$
[1] Tendency at the 0.10 level

Aggregated data, 136 groups

Grupp: Production , 136 Groups

Normerade skalor för I – IV: Procent av grupper i svenska normdata (SE 3, N = 357grupper) som ligger under respektive medelvärde (skalan = 15 – 75) (Jacobsson, C) - 20 dec, 2011



Results

- Among the 136 teams, the following results was observed when comparing GDQ stages before and after team development:
  - 2 teams did not develop as intended, they were in the same stage as before. Together with the 3 stage IV teams, it was 10 teams.
  - 56 teams moved in the wrong direction
  - 74 teams did develop

Aggregated health-data. Production. GDQ-1 & GDQ 2. 127 Groups

	Mätning 1	Mätning 2	Resultat
Stress	2,4	2,4	0
Utmattning	2,7	2,6	-0,1**
Arbetstillfredställelse	5,3	5,7	0,4**
Arbetsbemästring	5,2	5,3	0,1**

**. $P \leq 0.01$
*. $P \leq 0.05$

The production work groups that developed. n=71

	Mätning 1	Mätning 2	Resultat
GDQ I	41,8	40,0	-1,8**
GDQ II	38,7	35,1	-3,6**
GDQ III	49,5	52,8	+ 3,3**
GDQ IV	50,0	53,8	+ 3,8**
Stress	2,4	2,3	-0,1[1]
Utmattning	2,8	2,6	-0,2**
Arbetstillfredställelse	5,1	5,8	-0,7**
Arbetsbemästring	5,1	5,4	-0,3**

** $P \leq 0.01$
* $P \leq 0.05$
[1] Correlations has a tendency at the 0.10 level

The production work groups went backvard. N=64

	Mätning 1	Mätning 2	Resultat
GDQ I	41,0	40,4	-0,6
GDQ II	36,1	37,5	1,4*
GDQ III	53,0	50,3	- 2,7**
GDQ IV	54,2	51,0	- 3,2**
Stress	2,3	2,5	0,2*
Utmattning	2,6	2,7	0,1
Arbetstillfredställelse	5,6	5,6	0
Arbetsbemästring	5,3	5,2	0,1

** $P \leq 0.01$
* $P \leq 0.05$

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