

## Leader-based Intervention in Construction contractors safety priority

Participants in project:

- |  |  |
|--|--|
| <p>The National Research Centre for the Working Environment:</p> <ul style="list-style-type: none"> <li>• Johnny Dyreborg</li> <li>• Pete Kines</li> <li>• Betina H. Pedersen</li> <li>• Harald Hannerz</li> <li>• Karen Winding</li> <li>• Søren Spangenberg</li> </ul> | <p>Technion - Israel Institute of Technology</p> <ul style="list-style-type: none"> <li>• Dov Zohar</li> </ul> <p>COWI Consult:</p> <ul style="list-style-type: none"> <li>• Igor Zorko (Independent safety measures)</li> </ul> |
|--|--|

30th ICOH Conference  
CANCUN 2012



**Johnny Dyreborg**  
Seniorresearcher, ph.d.

[jdy@ncrwe.dk](mailto:jdy@ncrwe.dk)  
[www.ncrwe.dk](http://www.ncrwe.dk)

## Previous research

Previous research in the field has shown:

- Increased communication about safety in the daily interactions between leader and worker, has a clear and positive effect on the level of on safety climate and on-site safety
  - Zohar et al (1980, 2000, 2003, 2010), Kines et al (2010)
- Safety level (index) is a proximal indicator for on-site accidents
  - Heikki Laitinen and Keijo Päivärinta (2010), Heikki Laitinen et al (1999)
- Increased interaction about safety does not weaken the focus on production and quality
  - Kines, Andersen, Spangenberg, Mikkelsen, Dyreborg, Zohar (2010). *Improving construction site safety through leader-based safety communication*. *J Safety Research*, 41(5), 399-406.

**Johnny Dyreborg**  
Seniorresearcher, ph.d.



## THEORETICAL BACKGROUND

### 1. Interactions:

A safety norm acquires meaning and structure through social interactions. These interactions allow collective constructs to emerge and to be sustained. It is this interaction that exerts influence on organizational members. (e.g., a safety norm)

We can study interactions (Experience sampling method)

**Johnny Dyreborg**,  
Seniorresearcher, ph.d.



## LBS intervention

### Leader-member interactions

- Daily leader-member interaction is the root of safety leadership
- The content of daily exchanges reveal:
  - True priority of competing demands (safety vs. Speed)
  - Which behaviors are better rewarded (positive feedback)
  - Walk-the-talk test (correspondence between what leaders say, and what they do)

**Johnny Dyreborg**,  
Seniorresearcher, ph.d.



## LBS intervention

### Basic Principles

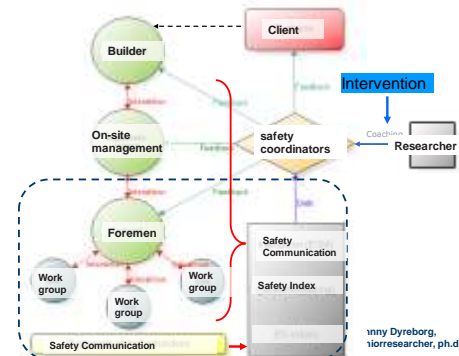
- When (frontline) management by word and in practice show that safety has high priority (= change interactions)
- Then the level of unsafe behavior will decrease
- (and eventually the number of accidents will be reduced)

**Intervention Goal:** Increase the frequency of safety oriented exchanges across management levels and between leaders and workers.

**Johnny Dyreborg**,  
Seniorresearcher, ph.d.



## Project design and organizational structure



**Johnny Dyreborg**,  
Seniorresearcher, ph.d.



## What does European Laws say?

Directive 92/57/EEC - temporary or mobile construction sites

### Safety Coordinator

- The client or project supervisor nominates person(s) responsible for the coordination of health and safety at sites where several firms are present. (The client remains responsible for safety and health.)
- The client or project supervisor also ensures that, before work starts at the site, a health and safety plan is drawn up and a safety and health coordinator is appointed.

## Objective

- Objective is to test a leader-based safety intervention for construction sites.
- The intervention consists of encouraging **safety coordinators** to provide feedback on work safety to the client and line management.
- The intention is to increase communication and interactions regarding safety within the line management and between the client and the senior management.
- It is hypothesised that this, in turn, will lead to increased communication and interaction about safety between management and coworkers as well as an increased on-site safety level.

## LBS intervention design

### Measures:

- *Safety related social interaction between managers and workers* (communication index)
- *Safety and behavior on site* (safety index)

### Increase safety related social interaction:

- We coach safety coordinator

### Evaluation:

- Repeat measures (and expect improvements)

## Safety Measures

- Safety communication

$$\text{Safety Talks Index} = \frac{n(\text{safety exchanges})}{N(\text{all exchanges})}$$

- Safety observation

$$\text{Safety Walks Index} = \frac{n(\text{safe observations})}{N(\text{all observations})}$$

## Random Talks (communication)



Construction worker

Researcher

## Safety Communications (on site)

Competing aspects of work	Priority provided
• Productivity/schedule	no -- little -- moderate -- <b>high</b>
• Quality -----	no -- little -- moderate -- <b>high</b>
• Worksafety -----	no -- little -- moderate -- high
• Welfare/ well being ---	no -- little -- moderate -- high
• Others	<b>no</b> -- little -- moderate -- high

Johnny Dyreborg,  
Seniorresearcher, ph.d.



## Safety Level (index)

Punkt	Correct	I alt	Not Correct	Total
Work habits	//// /	9	//// /	7
Scaffoldings	//// /	14	//// /	5
Machines etc	//// /	5	//// /	1
Fall protection	//// /	8	//// /	13
Light, electr.	//// /	10	//// /	2
Order & tidiness	//// /	23	//// /	14
	I alt	69	I alt	42
$\text{TR-index} = \frac{\text{Korrekt}}{\text{Korrekt} + \text{Ikke korrekt}} \times 100 = \frac{69}{69 + 42} \times 100 = 62\%$				

TR index: Heikki Laitinen et al (1999)

Johnny Dyreborg,  
Seniorresearcher, ph.d.



## Before launch the protocol was published in the journal "Injury Prevention"



### Protocol for a mixed-methods study on leader-based interventions in construction contractors' safety commitments

Betina Holbæk Pedersen, Johnny Dyreborg, Pete Kines, et al.  
Inj Prev 2010 16: 1-7  
DOI: 10.1136/ip.2009.025403

Updated information and services can be found at:  
<http://injury prevention.bmj.com/content/16/1/1>

**References**  
This article cites 10 articles, 1 of which can be accessed free at:  
<http://injury prevention.bmj.com/content/16/1/1.full.html#ref-list-1>

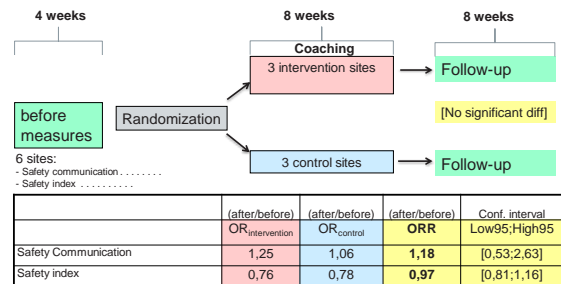
**Email alerting service**  
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Johnny Dyreborg,  
Seniorresearcher, ph.d.



## Design, method and result

Design: Group-randomized and double-blinded intervention



Johnny Dyreborg,  
Seniorresearcher, ph.d.



## Conclusion

Could we encourage the **safety coordinators** to provide feedback on work safety to the client and line management, and thus to increase leader-worker on-site safety communications? NO!!

1. Safety coordinators have difficulties in separating their role as safety coordinator and their role as being member of the local management.
2. One safety coordinator who where not part of the local management, but directly employed by the client, seems to obtain better results..
3. The study questions the (independent) role of the safety coordinator.

Johnny Dyreborg,  
Seniorresearcher, ph.d.



## Thank you

[www.nrcwe.dk](http://www.nrcwe.dk)  
[jd@nrcwe.dk](mailto:jd@nrcwe.dk)

### Publicering:

Kines, Andersen, Spangenberg, Mikkelsen, Dyreborg, Zohar (2010). Improving construction site safety through leader-based safety communication. *J Safety Research*, 41(5), 399-406.

Betina Holbæk Pedersen, Johnny Dyreborg, Pete Kines, et al. Protocol for a mixed-methods study on leader-based interventions in construction contractors' safety commitments. *Inj Prev* 2010 16: 1-7

Johnny Dyreborg,  
Seniorresearcher, ph.d.

