

Introduction

'Place your order now and get it delivered the same day'

To increase efficiency and meet customers' demands, logistics warehouses implement technologies that may have harmful consequences for employees:

- They experience disadvantageous body postures during manual tasks (high physical workload).
- Their exact steps are tracked, and they are pressured to pick more orders at a higher rate (high workspace).
- High physical workload and workspace seem to be related to employee exhaustion.

Providing control on the job (autonomy) and the organisational (participation) level could prevent employee exhaustion.

Methodology

- General and daily survey for 5 consecutive workdays

 71 warehouse employees from 3 Dutch companies

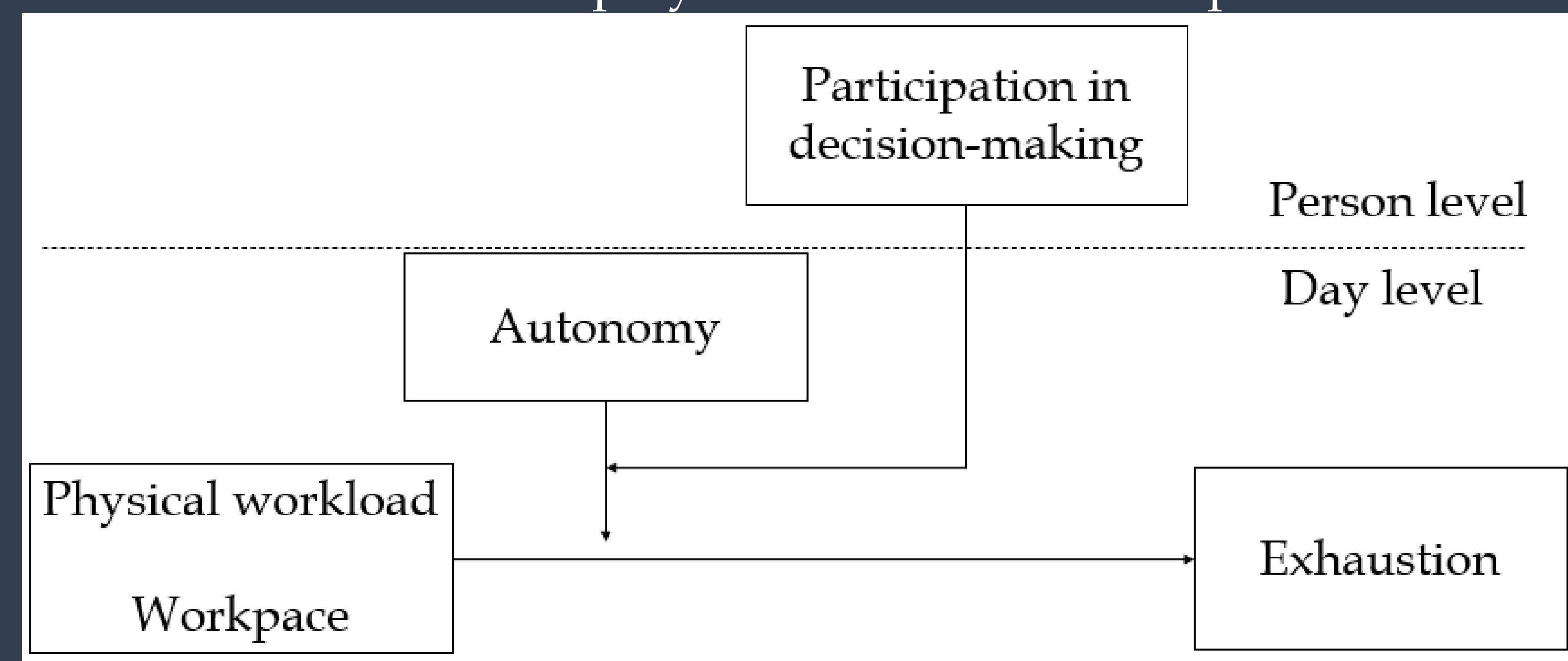


Figure 1. Conceptual model

Diary study results

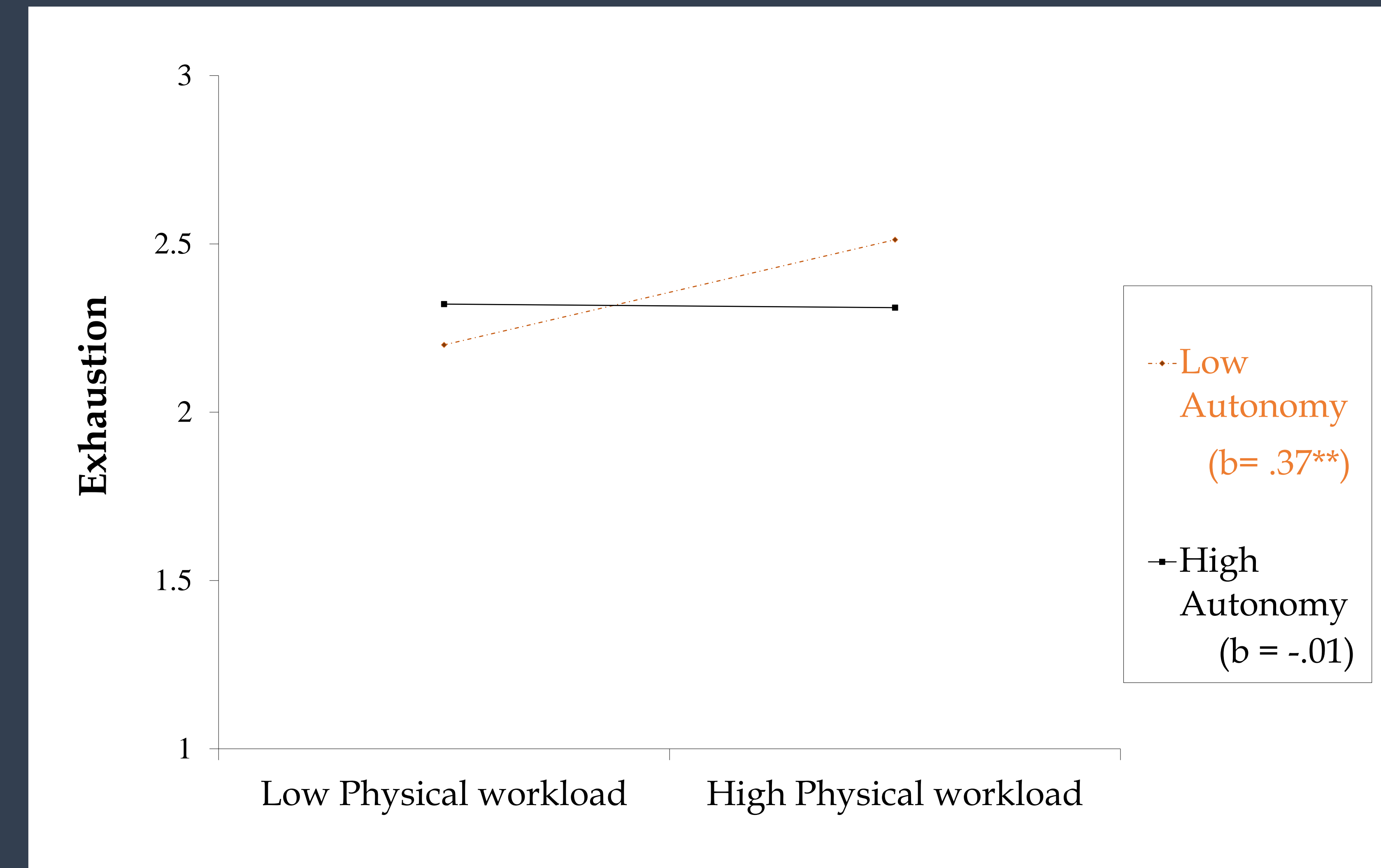


Figure 2. Two-way interaction between day-level physical workload and day-level autonomy on day-level exhaustion

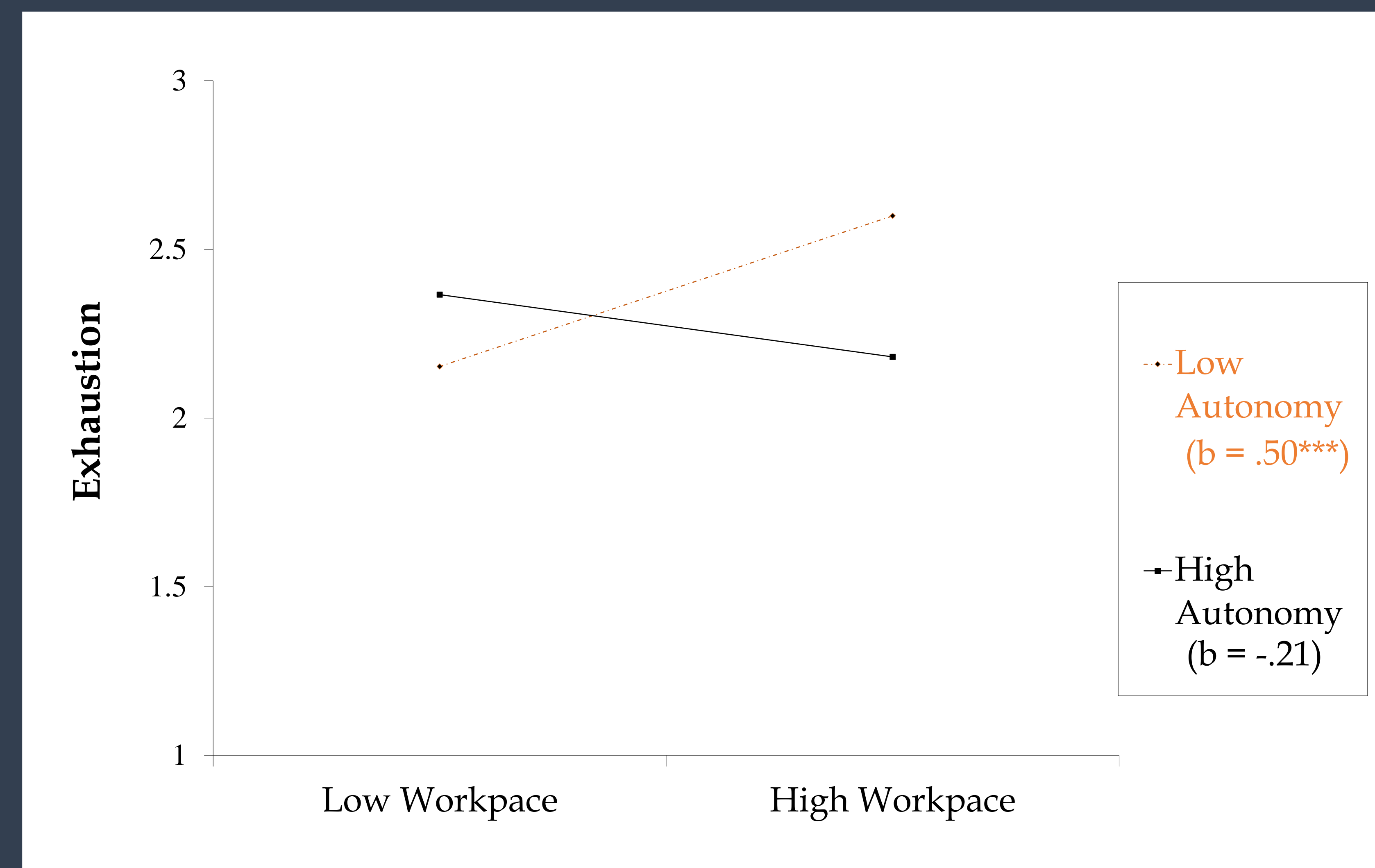


Figure 3. Two-way interaction between day-level workspace and day-level autonomy on day-level exhaustion

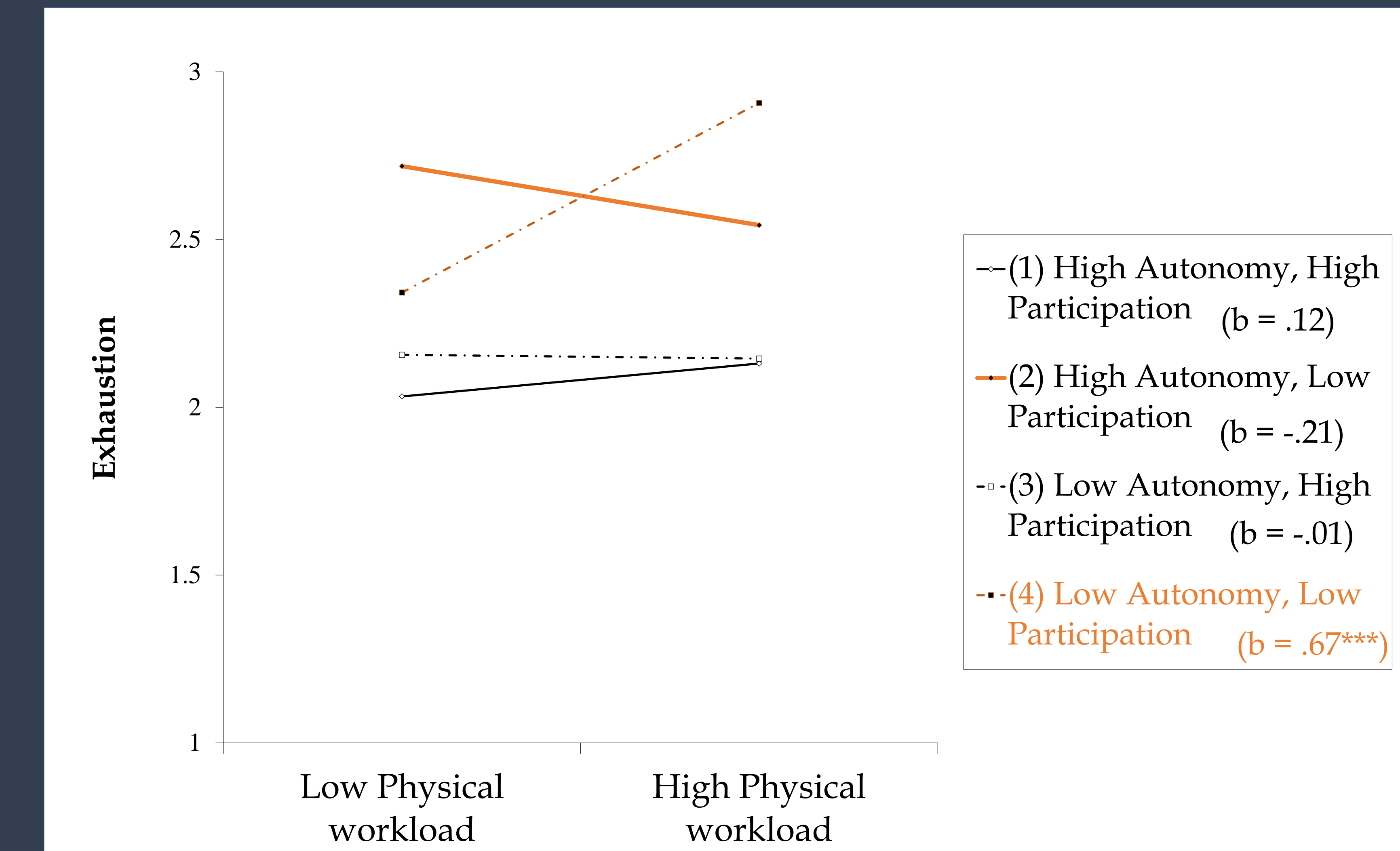


Figure 4. Three-way interaction between day-level physical workload, day-level autonomy, and person-level participation on day-level exhaustion



Figure 5. Three-way interaction between day-level workspace, day-level autonomy and person-level participation on day-level exhaustion

Introduction

- Concerns on how to develop, implement and use technologies in a responsible and ethical manner.
- 2 approaches:
 - Top-down approach:** introducing technologies is a form of social experimentation.
 - They often have unexpected consequences which will only be learned after their implementation.
 - Therefore, technologies come with possible harms, benefits and moral obligations.
 - Bottom-up approach:** whether and under what conditions can technologies be given a responsible place.
 - 3 stages:
 - Describe technologies and their context;
 - Describe who is involved, what the possible effects are and what values are at stake;
 - Describe the possibilities and translate these values into concrete actions for e.g., technology itself, environment and users.

Interview study results

Employee voice in technology implementation
 Operators get informed and their opinions are asked sometimes. However, they are not directly involved in the technology development process.

Privacy
 Operators' tasks can all be monitored and tracked by supervisors.

Technical complexity
 'One size fits all' is not applicable to technologies and high demand for more skilled people.

Economic
 Lower error-ratio, reliable, efficient and reduce costs. However, less output during technical breakdowns.

Opportunities for development
 Technologies mostly automate boring and repetitive tasks, and push (senior) operators to develop their skills. However, jobs are getting standardised.

Societal
 More job opportunities for older people and people with a disability.


Job autonomy
 Less room for operators to decide which tasks they want to perform and in what order due to precise work instructions.

Job (in)security
 Although most operators are not afraid of losing their jobs, there are some who have doubts about the relevance of their roles in the future.

Health
 Decreases ergonomic and physical demands. However, some technologies can be physically dangerous for operators.

Methodology

- semi-structured interviews of 1-1,5 hours

 23 engineers, technology advisors and warehouse employees from 4 Dutch companies shared their perception on developing, implementing, and using technologies

Take home message

We advocate for ethical and human-centred design, implementation and use of technologies in the workplace.

It is essential that employees have autonomy over their daily tasks and are allowed to participate in decision making on organisational level.