To what extent the physical environment influences well-being at work

Bart van Roekel   Master thesis presentation   17-10-2017

A quantitative and qualitative study to investigate which perceived elements of a workplace influence the well-being of its occupants.

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Introduction

We shape our buildings, thereafter they shape us
(Winston Churchill, 1944).

Employees spend at least a quarter to a third of their waking
life at work (Harter, Schmidt & Keyes, 2003).

The subjective experience of the environment affects the well-
being of human beings, not the objective environment
conditions (Gaillard, 2003).

There is a difference between workplaces that are simply not
harmful for occupants' well-being (the absence of 'bad') and
workplaces that positively influence well-being (Dilani,
2009).

The objective of this study is to help improve the well-being
of office workplace occupants by investigating to what extent
well-being at work is influenced by the perceived elements of
a workplace.

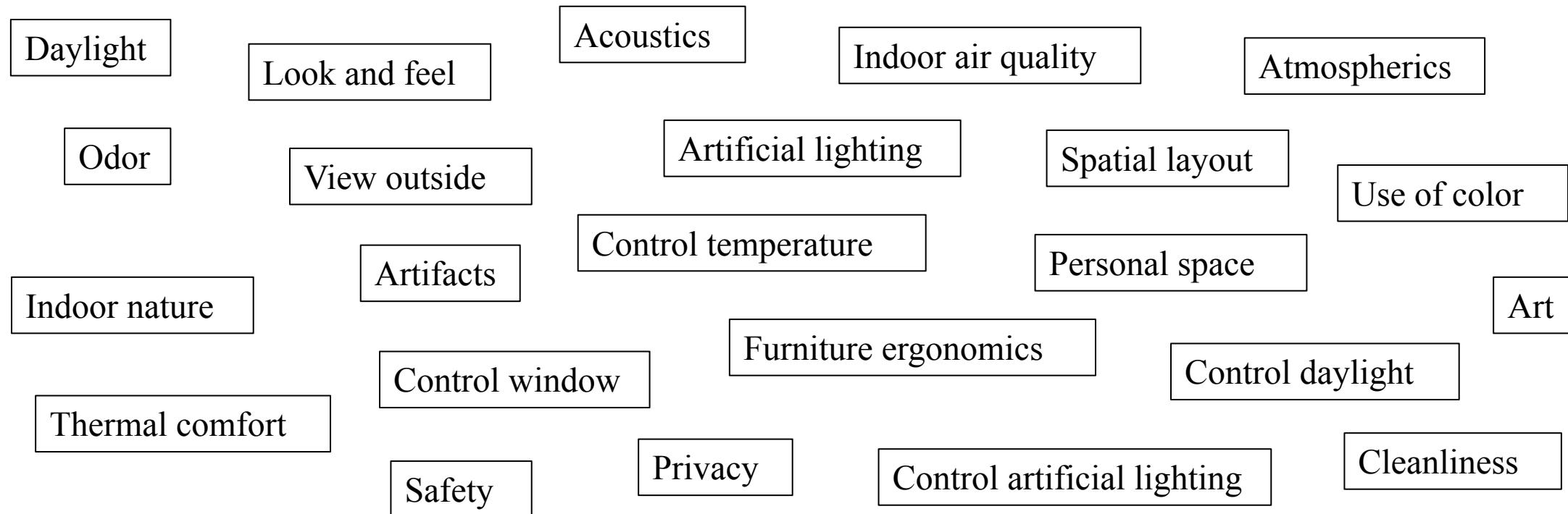# Introduction

Main research question
To what extent is well-being at work influenced by the perceived elements of a workplace?

Literature - workplace

A workplace constitutes of multiple physical elements, which can be categorized into (1) fixed elements, (2) semi-fixed elements and (3) ambient conditions (Rapoport, 1982).

In total, found literature defined 23 elements of a workplace.

Daylight

Acoustics

Look and feel

Indoor air quality

Atmospherics

Odor

Artificial lighting

Spatial layout

View outside

Use of color

Control temperature

Personal space

Artifacts

Indoor nature

Art

Furniture ergonomics

Control window

Control daylight

Thermal comfort

Privacy

Control artificial lighting

Cleanliness

Safety

Literature - workplace

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This study includes multiple moderators:
1. Type of workplace;
2. Personal characteristics.
   a. Age
   b. Gender
   c. Education
   d. Personality *(OCEAN-model)*

#	Type of workplace		Description
1	Cell office		Single room
2	Shared room office		2 to 3 people share a single room
3	Open plan offices	Small open plan	4 to 9 persons per room
4		Medium-sized open plan	10 to 24 persons per room
5		Large open plan	more than 24 persons per room
6	Flex office		No individual workstation
7	Combi office		Employees spend more than 20% of their time at workstations other than their 'own' team-based work

Types of workplaces according to Danielsson and Bodin (2008)

Literature - well-being

Well-being

Well-being concerns the presence of positive feelings about one's life (Page & Vella-Brodrick, 2009).

Well-being at work

Well-being at work is that part of an employee's overall well-being that they perceive to be determined primarily by work and can be influenced by workplace interventions (Juniper, 2010).

Well-being at work - questionnaire

Instructions:
Please indicate for each of the 5 statements which is closest to how you have been feeling over the past 2 weeks at work.

Over the past 2 weeks…		All of the time	Most of the time	More than half the time	Less than half the time	Some of the time	At no time
1	… I have felt cheerful and in good spirits at work	5	4	3	2	1	0
2	… I have felt calm and relaxed at work	5	4	3	2	1	0
3	… I have felt active and vigorous at work	5	4	3	2	1	0
4	… I woke up fresh and rested before going to work	5	4	3	2	1	0
5	… my daily working life has been filled with things that interest me	5	4	3	2	1	0

Literature - theoretical framework
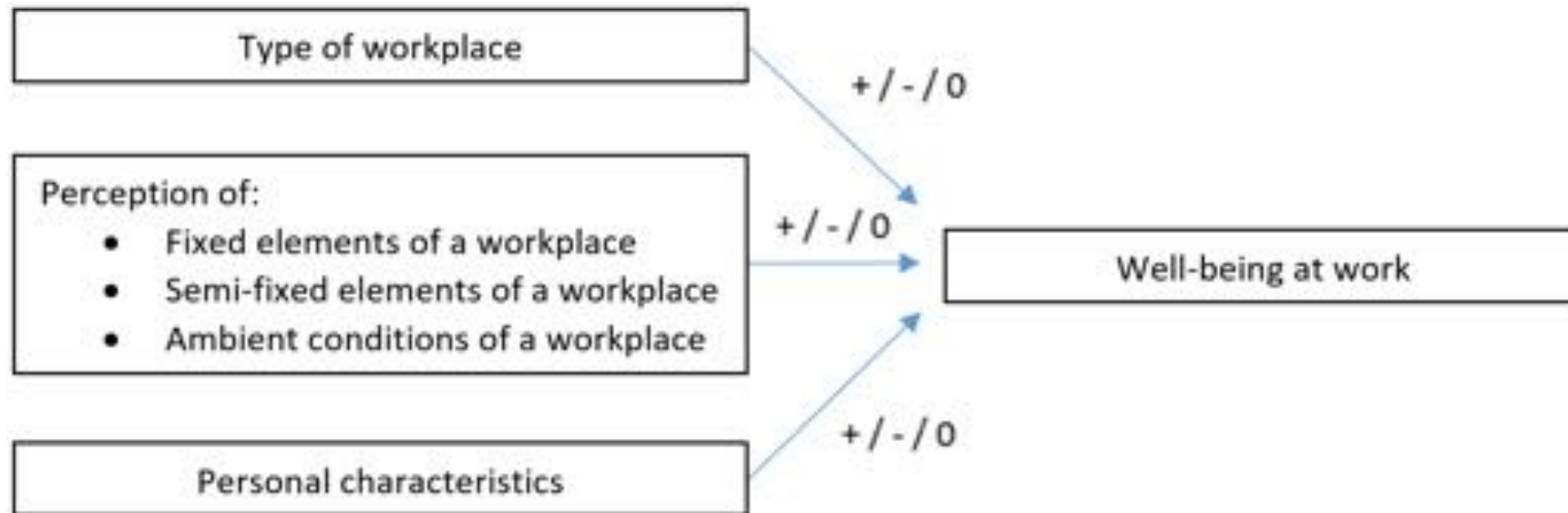
Methodology

Quantitative survey
- Gender, age, level of education and personality of respondent
- Type of workplace of respondent
- Perception of the 23 workplace elements of respondent
- Assessment well-being at work of respondent

25% of the population returned a valid survey (n=322).

Qualitative interviews
- To validate or invalidate the quantitative results and to gain more in-depth knowledge on how to improve occupants' well-being at work.

100% of the interviewees were willing to participate (n=6).

Quantitative results

Element of a workplace	Emotional comfort	Personalization	Indoor climate	Lighting	Window view
Look and feel	,721				
Use of color	,698				
Atmospherics	,669				
Spatial layout	,664				
Furniture ergonomics	,663				
Odor	,631				
Safety	,625				
Cleanliness					
Privacy		,655			
Art		,636			
Personal space		,632			
Indoor nature		,592			
Acoustics		,528			
Artifacts					
Thermal comfort			,870		
Indoor air quality			,795		
Control of temperature			,760		
Control of daylight				,790	
Daylight				,715	
Artificial lighting				,666	
Control of artificial lighting				,580	
View outside					,664
Control of window					,622

Explorative factor analysis identified patterns between the 23 elements of a workplace.

Five components are created on the basis of similar patterns.

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Quantitative results

Model	Adjusted R Square	Adjusted R Square change	p
Gender	-.004	-.004	.652
Age	.003	.007	.117
Education	-.001	-.004	.773
Type of workplace	.007	.008	.265
Personality	.133	.126	.000
Factor solution	.425	.292	.000

Well-being at work is for 29.2% influenced by the perceived elements of a workplace.

The explained variance of this study accounts up to 41.8% by including the workplace occupants' personality into the study.

Quantitative results

Variables	Unstandard. B	Sig.	
Constant	16.822	.000	
Openness	.067	.581	
Conscientiousness	.012	.909	
Extraversion	0.155	.073	Personality
Agreeableness	-.159	.201	
Neuroticism	-.517	.000	
Emotional comfort	1.411	.000	
Personalization	1.550	.000	
Indoor climate	.483	.019	Factor solution
Lighting	.571	.003	
Window view	.569	.011	

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Personality explains 12.6% of the variance:
- Extraversion
- Neuroticism

The components 'personalization' and 'emotional comfort' are able to improve occupants' level of well-being at work the most.

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Qualitative results

Features that are ranked to have the most influence on well-being at work:

- Opportunity for interpersonal contact
- Equity

#	Component	#1	#2	#3	#4	#5	#6	Total
1	Emotional comfort	1	5	1	1	1	3	12
2	Personalization	3	1	2	2	3	2	13
3	Lighting	2	2	4	4	2	1	15
4	Indoor climate	4	4	3	3	4	4	22
5	Window view	5	3	5	5	5	5	28

"It makes me happy when I work in a modern environment with nice atmospherics" (#1, 2017)

"My personal place is good, because I have the ability to close myself apart from the rest" (#5 ,2017)

Conclusion

This study shows that the subjective perception of a workplace contributes to occupants' well-being at work explaining for 29.2% of its variance.

#	Quantitative results	B values	Qualitative results	Rank score
1	Personalization	1.411	Emotional comfort	12
2	Emotional comfort	1.550	Personalization	13
3	Lighting	.483	Lighting	15
4	Window view	.571	Indoor climate	22
5	Indoor climate	.569	Window view	28

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Thank you

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