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### Flexibility in use

Hoendervanger, Jan Gerard; De Been, Iris; Van Yperen, Nico W.; Mobach, Mark P.; Albers, Casper J.

*Published in:*  
Journal of Corporate Real Estate

*DOI:*  
[10.1108/JCRE-10-2015-0033](https://doi.org/10.1108/JCRE-10-2015-0033)

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*  
Publisher's PDF, also known as Version of record

*Publication date:*  
2016

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Hoendervanger, J. G., De Been, I., Van Yperen, N. W., Mobach, M. P., & Albers, C. J. (2016). Flexibility in use: Switching behaviour and satisfaction in activity-based work environments. *Journal of Corporate Real Estate*, 18(1), 48-62. <https://doi.org/10.1108/JCRE-10-2015-0033>

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# Flexibility in use Switching behaviour and satisfaction in activity-based work environments

Jan Gerard Hoendervanger

*Knowledge Centre NoorderRuimte, Hanze University of Applied Sciences,  
Groningen, The Netherlands*

Iris De Been

*Center for People and Buildings, Delft, The Netherlands*

Nico W. Van Yperen

*Department of Psychology, University of Groningen, Groningen,  
The Netherlands*

Mark P. Mobach

*Knowledge Centre NoorderRuimte, Hanze University of Applied Sciences,  
Groningen, The Netherlands, and*

Casper J. Albers

*Department of Psychometrics and Statistics, University of Groningen,  
Groningen, The Netherlands*

## Abstract

**Purpose** – Despite their growing popularity among organisations, satisfaction with activity-based work (ABW) environments is found to be below expectations. Research also suggests that workers typically do not switch frequently, or not at all, between different activity settings. Hence, the purpose of this study is to answer two main questions: Is switching behaviour related to satisfaction with ABW environments? Which factors may explain switching behaviour?

**Design/methodology/approach** – Questionnaire data provided by users of ABW environments ( $n = 3,189$ ) were used to carry out ANOVA and logistic regression analyses.

**Findings** – Satisfaction ratings of the 4 per cent of the respondents who switched several times a day appeared to be significantly above average. Switching frequency was found to be positively related to heterogeneity of the activity profile, share of communication work and external mobility.

**Practical implications** – Our findings suggest that satisfaction with ABW environments might be enhanced by stimulating workers to switch more frequently. However, as strong objections against switching were observed and switching frequently does not seem to be compatible with all work patterns, this will presumably not work for everyone. Many workers are likely to be more satisfied if provided with an assigned (multifunctional) workstation.



The authors would like to thank Theo van der Voordt for his initial suggestion to undertake this study and his comments on a preliminary draft of this paper and the Center for People and Buildings for making available their database. A PhD grant awarded by the Netherlands Organisation for Scientific Research (NWO) enabled Jan Gerard Hoendervanger to work on this study.

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**Originality/value** – In a large representative sample, clear evidence was found for relationships between behavioural aspects and appreciation of ABW environments that had not been studied previously.

**Keywords** Satisfaction, Work environment, Activity-based working, Switching behaviour

**Paper type** Research paper

## 1. Introduction

Knowledge work, in general, is becoming more autonomous and interactive (Duffy and Powell, 1997; Davenport, 2005), with workers switching more frequently between different activities, co-workers, tools and locations (Mark *et al.*, 2005; Van Yperen *et al.*, 2014). This development is reflected in the design of contemporary work environments, that are more and more based on the activity-based working (ABW) concept (Vos and Van der Voordt, 2001; Cushman & Wakefield, 2013). In these ABW environments, workers are assumed to work flexibly, using different types of non-assigned activity settings (Veldhoen, 2008; Jones Lang Lasalle, 2012). The term “activity setting” covers different types of workstations, rooms and areas within the work environment, each designed to support a specific type of work activity, for example places for collaboration, concentration, communication, creativity, confidentiality and contemplation (Harris, 2015). The basic assumption underlying the ABW concept is that it enables workers to use the most appropriate activity setting at all times, by switching between different activity settings whenever they switch between different types of work activities (Van Koetsveld and Kamperman, 2011).

So far, empirical research regarding ABW environments has produced two important findings. First, satisfaction with ABW environments appears to be below expectations, with concentration, privacy and the loss of an assigned workstation as major issues (Van der Voordt, 2004; Bodin Danielsson and Bodin, 2009; De Been and Beijer, 2014). Second, workers typically do not seem to switch frequently, or not at all, between different activity settings (Qu *et al.*, 2010; Appel-Meulenbroek *et al.*, 2011). This finding corresponds with lots of anecdotal evidence and qualitative case studies (Vos and Van der Voordt, 2001), indicating that many workers are using the same workplace every day and that they tend to use it for different types of activities.

The combination of these findings raises a question that has not been studied before: is there a connection between switching behaviour and satisfaction with ABW environments? Understanding why actual switching behaviour deviates from the assumption underlying the ABW concept, might provide corporate real estate (CRE) practitioners and academics with starting points for optimising user satisfaction, either by adjusting behavioural patterns to the concept or by adjusting the concept to behavioural patterns. Optimising satisfaction with the physical work environment is important for organisations, as it has found to be directly related to job satisfaction and indirectly to other organisational outcomes such as commitment, intent to leave and absenteeism (Carlopio, 1996; Veitch *et al.*, 2007; Rashid and Zimring, 2008). Hence, the purpose of the current study was to answer two main questions:

- (1) Is switching behaviour related to satisfaction with ABW environments?
- (2) Which factors may explain switching behaviour?

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## 2. Relationship between switching behaviour and satisfaction with ABW environments

The basic assumption underlying the ABW concept leads to an expected *positive* relationship between switching frequency and satisfaction with ABW environments, as it implies that workers need to switch between different activity settings to benefit from the ABW concept. However, based on previous research, we could rather expect a *negative* relationship. Several drawbacks associated with switching between different activity settings were reported, including the fact that workstations cannot be personalised (Bodin Danielsson and Bodin, 2009) and that time is lost in installation, acclimatisation and lugging things around (Van der Voordt, 2004). Also, it was found that workers who are forced to switch frequently, while colleagues claim a workstation for themselves, may experience a sense of marginalisation (Hirst, 2011). Hence, in the first study on this issue, we explored the relationship between switching frequency (i.e. how often does a worker report to usually switch between different activity settings) and satisfaction with the ABW environment (i.e. satisfaction with the office concept, productivity support and pleasantness).

## 3. Factors that may explain switching behaviour

Searching for factors that may explain why switching behaviour seems to deviate strongly from the basic assumption underlying the ABW concept, the following work-pattern-related variables were examined:

- heterogeneity of the activity profile;
- share of concentration work;
- share of communication work; and
- external mobility.

According to the basic assumption underlying the ABW concept, we may expect a positive correlation between the heterogeneity of workers' activity profiles – i.e. the extent to which the total working time is spread out over different types of work activities – and their switching frequencies. Within the activity profiles, the share of concentration work and the share of communication work may also be associated with switching frequencies, as the environmental requirements for conducting these specific activity types have found to be incompatible (Stone and Luchetti, 1985; De Been and Beijer, 2014). The degree of external mobility may be related to switching behaviour, because workers who divide their working time between different locations (office, home and other locations) are more likely to adopt a more flexible work style, also within the office (Greene and Myerson, 2011).

In addition to these work-pattern-related variables, we explored the reasons for workers' (non-)switching behaviour. Besides work-pattern-related factors, these reasons may be associated with other types of factors, such as social ties and norms, practical drawbacks of switching and place attachment.

## 4. Method

### 4.1 Sample

The data that were used for this study were gathered by the Dutch Center for People and Buildings, using a standardised online tool for post-occupancy evaluation: work environment diagnostic instrument (WODI) (Maarleveld *et al.*, 2009). For this study, we

selected cases in which an ABW concept was fully implemented. Respondents who stated to have an assigned workplace (as an exception within the ABW environment) were filtered out, because their behaviour and experience will differ from respondents who are using non-assigned workplaces. The resulting selection includes data reported by 3,189 respondents, working at 7 different organisations and 18 different locations. Table I summarises descriptive information about the dataset.

#### 4.2 Procedure

In all case studies, the same procedure was used. All users of the regarding office environment were invited per email to participate in the research. The email provided a link, which directed them to the introduction page of the online questionnaire. On the introduction page, general information was given about the purpose of the research, how to fill out the questionnaire and the anonymity of the data. After one week, users received a reminder email in case they had not yet filled out the questionnaire. The minimum response time was two weeks. On average, it took respondents about 15 minutes to complete the questionnaire.

#### 4.3 Measures

WODI is basically designed to measure employee satisfaction concerning a broad range of aspects of their work environment. The questions are based on extensive literature research and the tool is thoroughly tested in several pilot studies (Maarleveld *et al.*, 2009).

*Switching behaviour* was measured in terms of switching frequency through the question “How frequently do you usually switch between workplaces?”, using an ordinal seven-point scale, ranging from (1) “never” to (7) “multiple times a day”.

*4.3.1 Satisfaction with the ABW environment.* Respondents were asked to rate their overall satisfaction with the office concept, the productivity support provided by the work environment and the pleasantness of the work environment on ten-point scales ranging from 1 “lowest grade” to 10 “highest grade”.

##### 4.3.2 Explanatory factors

- (1) *Heterogeneity of the activity profile* was assessed with the following item: “What percentage of your time at the office do you spend at the following activities?” which resulted in a series of nine percentages with a sum of 100 per cent for each individual respondent. As it is a measure for the degree of dispersion within any series of values, the standard deviation of this series of percentages is used as a measure of homogeneity of the activity profile. The homogeneity score can range from zero (in case of nine equal percentages i.e. of 11.1 per cent per activity) to 33.3 per cent (in case of 100 per cent allocated to one single activity). Next, the homogeneity score was transformed into a heterogeneity score by reversing the scale: each value was subtracted from the maximum value (33.3 per cent).
- (2) As a measure for the *share of concentration work*, we added up the percentages for two types of activities: “deskwork that requires concentration” and “reading (longer than 30 minutes)”.
- (3) As a measure for the *share of communication work*, we added up the percentages for three types of activities: “scheduled meetings”, “unscheduled meetings” and “telephone calls”.
- (4) In response to another item, the respondents indicated the percentage of their working time they spend at specified locations, including the main office

**Table I.** Descriptive information about the cases included in this study; activity settings in *italics* were not included in the calculation of the sharing ratio

Organisation	Organisation type	Location	Population size (n)	Sample size (n)	Sharing ratio (workstations per full-time equivalent (FTE))	Provided types of activity settings	Measurement period
A	Semi-public organisation	Schiedam, NL	533	287	±0.96	1-, 2-, 3- and 4-person rooms/open spaces/half-open spaces/concentration spaces/team spaces/ <i>open and enclosed meeting spaces/meeting area/ coffee corners/bride</i>	November 2012
B	Higher educational organisation	Two locations in Utrecht, NL	360	104	±0.75	1-, 2-, 3-, 4-, 5-, 6-, 7- and 8-person rooms/open spaces/concentration spaces/ <i>canteen flex space/project space/enclosed meeting spaces</i>	November-December 2012
C	Public organisation	Seven locations, NL	544	243	N/A	Open spaces/concentration spaces/team workspaces/ <i>open and enclosed meeting spaces/cafe/workplaces/short-term touch-down space/meeting area</i>	March 2013
D	Higher educational organisation	Wageningen, NL	120	68	±0.75	Bench workplace/open workplace/coupe workplace/concentration spaces/lounge workstations/study/lounge/ <i>pantry</i> /enclosed meeting spaces/ <i>WIJ corner</i>	June 2013
E	Commercial organisation	Geneva, CH	93	67	±0.90	1- and 2-person rooms/team rooms (3-6persons)/concentration spaces/open spaces/lounge workstations/ <i>open and enclosed meeting spaces/relaxing space</i>	September 2013
F	Public organisation	Doetinchem, NL	367	198	0.76	1- and 2-person enclosed spaces/6-person enclosed spaces/open spaces/half-open spaces/lounge workstations/ <i>meeting spaces/pantry</i>	October-November 2013
G	Commercial organisation	Five locations in Brussels, BE	4,278	2,222	±0.85	Open spaces/concentration spaces/small enclosed rooms/lounge workstations/ <i>half-open meeting spaces/enclosed meeting rooms</i>	December 2013-January 2014
Total dataset			6,295	3,189			November 2012-January 2014

building. The percentage of the time they did not work at the main office building represents their degree of *external mobility*.

- (5) From a list of eleven different reasons, the respondents were asked to indicate their *reasons to switch* and
- (6) from a list of ten different reasons, their *reasons not to switch*.

The lists of reasons (not) to switch, as shown in Table II, were derived from literature research and interviews and tested to match perceptions of users of ABW environments.

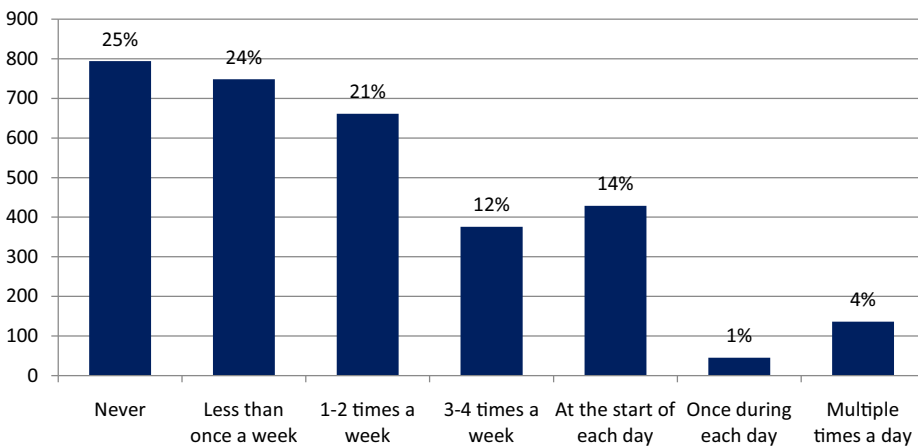
## 5. Results

### 5.1 Descriptive statistics

The distribution of switching frequency is shown in Figure 1. Only 4 per cent of the respondents reported to switch multiple times during an average working day. Almost half of the population (48 per cent) reported to switch never or less than once a week.

Pre-defined reasons to switch	Pre-defined reasons not to switch
Because another workplace is more suitable for my activities	Necessity to move stuff
To sit near a certain support space (e.g. printer, pantry, etc.)	Someone else might take the workplace
To sit near colleagues	Hard to find for colleagues
To sit on the same floor as my team/department	No better place available
Because I find another place more comfortable	I always use the same place
Because my favourite place is occupied by someone else	IT supplies fall short
Because there is too much noise	Then I would be too far from my unit
Because I am bothered by the indoor climate	Necessity to readjust furniture
Just for a change	Another reason
Another reason	There is no reason not to change workplaces
There is no reason to change workplaces	

**Table II.**  
Pre-defined reasons (not) to switch



**Figure 1.**  
Distribution of respondents over switching frequency groups ( $n = 3,189$ )



Descriptive statistics for the continuous variables are summarised in Table III. The substantially smaller sample size for satisfaction with productivity support is due to the fact that the concerning question was not included in all of the cases.

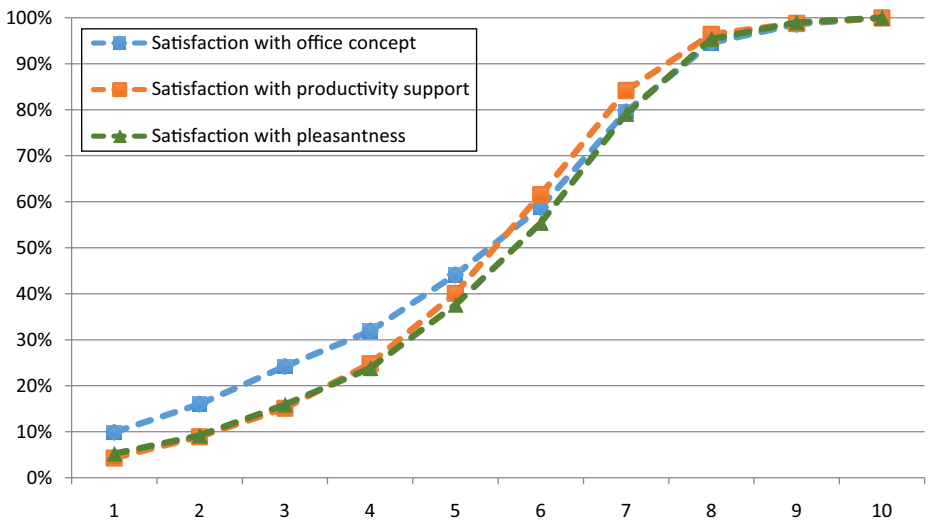
The distribution of the overall appreciation of the office concept, productivity support and pleasantness, scored on a ten-point scale rating from 1 (lowest score) to 10 (highest score), is shown in Figure 2. This figure shows that around 40 per cent of all respondents rated the items with a 5 or lower, which means they can be regarded as dissatisfied according to the grading system that is commonly used in schools in The Netherlands, in which a (rounded) 6 defines the distinction between “pass” and “fail”.

*5.2 Relationship between switching behaviour and satisfaction with ABW environments*

To examine the link between switching behaviour and satisfaction in more detail, we conducted a two-way ANOVA, followed by analysis of deviation contrasts. In addition to switching frequency, the variable location was included in the two-way ANOVA as a random factor, to control for possible systematic differences between data collected at different locations. The results of the ANOVA, as summarised in Table IV, indicate that the relationship between switching frequency and satisfaction with the work

**Table III.**  
Descriptive statistics

Variable	<i>n</i>	Minimum	Maximum	Mean	SD
Satisfaction with office concept	3,113	1	10	5.42	2.38
Satisfaction with productivity support	939	1	10	5.66	1.98
Satisfaction with pleasantness	3,156	1	10	5.79	2.08
Heterogeneity of activity profile	3,189	0.0	31.1	17.78	6.32
Share of concentration work	3,189	0	100	21.66	18.92
Share of communication work	3,189	0	100	26.12	17.95
External mobility	3,189	0	100	23.40	23.78



**Figure 2.**  
Distribution of three satisfaction ratings in cumulative percentages of respondents



environment is, in general terms, non-significant, whereas the location appeared to be significantly ( $p < 0.01$ ) related to satisfaction with the work environment.

To examine the relationship between switching frequency and satisfaction with the work environment more closely, the ANOVA was followed-up by an analysis of deviation contrasts (Baguley, 2012, Chapter 15). In this procedure, the average satisfaction ratings of the switching frequency groups were compared with the average satisfaction ratings of the entire sample. The results are summarised in Table V. Respondents who switched several times a day appeared to be significantly ( $p < 0.05$ ) more satisfied than average with regard to the office concept and productivity support; they rated their satisfaction around 0.7 point above average.

### 5.3 Factors that may explain switching behaviour

To examine which work-pattern-related factors could, in combination, explain switching behaviour, a multinomial logistic regression analysis was conducted (Baguley, 2012, Section 17.4). For this purpose, three aggregated switching frequency groups were created:

- (1) never or less than once a week;
- (2) once until five times a week; and
- (3) once or multiple times a day.

The variable location was included in the logistic regression model to control for possible systematic differences between data collected at different locations.

Independent variable	Satisfaction with office concept	Satisfaction with productivity support	Satisfaction with pleasantness
Switching frequency	$F(6, 1164) = 2.05$ $p = 0.06$	$F(6, 203) = 1.51$ $p = 0.18$	$F(6, 1101) = 1.69$ $p = 0.12$
Location	$F(18, 560) = 10.61$ $p = 0.00$	$F(13, 150) = 7.38$ $p = 0.00$	$F(18, 539) = 8.59$ $p = 0.00$
Switching frequency $\times$ location	$F(89, 3016) = 1.12$ $p = 0.20$	$F(60, 876) = 1.79$ $p = 0.00$	$F(90, 3058) = 1.24$ $p = 0.065$

**Table IV.**  
Results of the  
two-way ANOVA

Switching frequency	Satisfaction with office concept	Satisfaction with productivity support	Satisfaction with pleasantness
Never	-0.15	-0.04	-0.05
Less than once a week	-0.10	-0.04	0.18
1-2 times a week	0.11	-0.11	0.01
3-4 times a week	0.26	0.55	0.25
At the start of each day	0.24	-0.31	-0.11
Once during each day	-0.82	-0.74	-0.68
Multiple times a day	0.68*	0.70*	0.40

**Table V.**  
Differences between  
means of switching  
frequency groups  
and overall means of  
the total sample  
regarding  
satisfaction with the  
work environment

**Notes:**  $p$ -values resulting from default;  $t$ -tests after performing deviation contrasts; \*significant at  $p < 0.05$

Subsequent switching frequency groups were compared with each other. The results are summarised in Table VI. Due to the relatively small number of observations in the third switching frequency group, the model that compares Groups 2 and 3 suffers from some computational instability and the results should be interpreted with some caution.

Regarding the heterogeneity of the activity profile, the comparison between switching frequency Groups 1 and 2 revealed a significant ( $p < 0.01$ ) positive relationship, indicating that workers will be more likely to switch once until five times a week than less than once a week when they divide their time at the office more evenly over different activities. When comparing switching frequency between Groups 2 and 3 however, no significant relationship between these variables was found. Share of concentration work appeared not to be significantly related to switching frequency. In both comparisons, switching frequency appeared to be significantly ( $p \leq 0.01$ ) positively related to share of communication work and external mobility. This means that workers will switch more frequently when they:

- spend more office time on meetings; and/or
- spend less working time at the office.

For each switching frequency group and for the whole sample a top three ranking of reasons (not) to switch was extracted from the dataset (Table VII). For all groups, contact with colleagues appeared to be an important reason (not) to switch: “to sit near colleagues” and “then I would be far from my unit” are included in almost every top three. All groups recognised the “necessity to move stuff” as an important reason for not switching. Non-switchers mostly saw no reason to do so, whereas the most-frequent switchers mostly saw no reason *not* to do so. The reason “because another workplace is more suitable for my activities” was selected more often as respondents switch more frequently. This is the number one reason for respondents who switch at least once during each day and it was selected by 90 per cent of the respondents who switch multiple times a day. The reason “because my favourite place is occupied by someone else” appeared to be the most important reason to switch for respondents who switch less than once a week.

## 6. Discussion

### 6.1 Interpretation and explanation of the results

Consistent with previous research, we found that around 40 per cent of the people were not satisfied with their ABW environment. We also replicated previous findings that

Independent variable	Switching frequency Group 2 versus 1		Switching frequency Group 3 versus 2	
	Significance	Odds ratio	Significance	Odds ratio
Heterogeneity of activity profile	0.00	1.023	0.26	0.982
Share of concentration work	0.61	1.001	0.81	1.001
Share of communication work	0.01	1.006	0.00	1.045
External mobility	0.00	1.007	0.00	1.012

**Table VI.**  
Results of logistic  
regression analysis

**Notes:** Three categories of switching frequencies as dependent variable (< once a week/once-five times a week/ $\geq$  once a day);  $p$ -values computed using Wald’s test

Switching frequency	Total sample	Never	Less than once a week	1-2 times a week	3-4 times a week	At the start of each day	Once during each day	Multiple times a day
<i>Reasons to switch</i>								
To sit near colleagues	1 (46%)	3 (23%)	2 (38%)	1 (52%)	1 (54%)	1 (59%)	3 (40%)	2 (43%)
Because my favourite place is occupied by someone else	2 (35%)		1 (44%)	2 (41%)	3 (35%)	2 (35%)		
Because there is too much noise	3 (32%)	2 (26%)	3 (31%)				2 (47%)	3 (33%)
Because another workplace is more suitable for my activities				3 (35%)	2 (39%)	3 (33%)	1 (56%)	1 (90%)
There is no reason to change workplaces		1 (44%)						
<i>Reasons not to switch</i>								
Necessity to move stuff	1 (38%)	3 (28%)	1 (37%)	1 (43%)	1 (44%)	1 (47%)	1 (49%)	2 (30%)
Then I would be far from my unit	2 (32%)	2 (29%)	3 (37%)	2 (34%)	2 (30%)		3 (24%)	3 (21%)
Necessity to readjust furniture	3 (30%)			3 (32%)	3 (28%)	3 (29%)		
I always use the same place		1 (44%)	2 (37%)					
There is no reason not to change workplaces						2 (29%)	2 (32%)	1 (43%)

Activity-based work environments

**Table VII.**  
Top 3 rankings of reasons (not) to switch per switching frequency group, with percentages of respondents who selected these reasons (multiple reasons could be selected)

workers typically do not switch frequently, or not at all, between different activity settings (Qu *et al.*, 2010; Appel-Meulenbroek *et al.*, 2011). The added value of our research is that we observed a positive relationship between switching frequency and satisfaction with the ABW environment, suggesting that known drawbacks of switching (Van der Voordt, 2004; Hirst, 2011) can be outweighed by its benefits. Remarkably, this only seems to apply to workers who say to switch multiple times a day, suggesting that switching frequently might be a prerequisite for benefiting optimally from the ABW concept. However, as strong objections against switching were observed and switching frequently does not seem to be compatible with all work patterns, this will presumably not work for everyone. Our findings seem to indicate that the ABW concept fits the needs of only a small minority of the workers in our sample.

Heterogeneity of the activity profile, share of communication work and external mobility were identified as factors that may explain switching behaviour. However, with regard to the basic assumption underlying the ABW concept, the relationship with the heterogeneity of the activity profile appeared to be surprisingly weak. This may be partially explained by the fact that major reasons to switch appeared to be not activity-related. Also, it might be very difficult to divide the working time into separate activity blocks when having a very heterogeneous activity profile, resulting in a multitasking work style (Mark *et al.*, 2005) that requires a single (preferably multifunctional) workstation. The link between share of communication work and switching frequency may be explained by the fact that:

- meetings usually require activity settings that are obviously different from regular workstations;
- the selection of a place for a meeting usually derives from a collective decision; and
- this selection is sometimes made in advance for reasons of scheduling.

The finding that high external mobility goes hand in hand with high switching frequency, may indicate that these workers are less prone to place attachment (Lewicka, 2011).

Furthermore, we revealed that besides activity-related reasons, social ties and norms, practical drawbacks of switching and place attachment are important reasons (not) to switch. The overall most important reason to switch has a primarily social nature (“to sit near colleagues”). The overall second-most important reason has to do with place attachment (“because my favourite place is occupied by someone else”). These findings are consistent with an empirical study that demonstrated that behavioural patterns are not only related to activities and functional aspects of workplaces, but also to environmental and user characteristics (Kleijn *et al.*, 2012). We further demonstrated an important distinction between positive reasons (e.g. “because another workplace is more suitable for my activities”) and negative reasons (e.g. “because there is too much noise”) for switching between activity settings that may be associated with higher/lower levels of satisfaction with the work environment. Workers who switched multiple times a day selected positive reasons mostly, whereas workers who switched less than once a week selected negative reasons mostly.

### *6.2 Limitations and perspectives for further research*

Although the opening part of the WODI questionnaire we used clearly suggests that the term “workplace” should be understood in a broad sense, including all types of activity settings, we cannot completely rule out the possibility that some respondents may have

answered the question about switching frequency with only desk workstations in mind. This means that, in reality, the switching frequencies might be somewhat higher than our findings suggest. This limitation might also partly explain why such a remarkably high percentage of the participants (48 per cent) indicated to switch never or less than once a week. In future research focussing on ABW environments, the concept “activity setting” should be carefully defined and explained to avoid misinterpretations.

If more specific information would have been recorded about the context in which the switching behaviour took place, the interpretation of results could have been further elaborated. Most importantly, this regards the amounts of different types of activity settings and the occupancy rates of these activity settings, as these factors determine the range of choice that is offered. Also, data on scheduled meetings might have been useful to verify plausibility of reported switching frequencies, as each scheduled meeting usually implies switching to a meeting room or area. Analysis of satisfaction with the work environment through single-item scores provides limited reliability; however, the three items that were used in this study appeared to be highly correlated. More importantly, this study revealed the dominant influence of locational factors on satisfaction with the work environment in relation to other relevant factors. This underlines the importance of including these factors (e.g. implementation process, organisational culture, interior design, occupancy rates) in future research.

Questionnaire data regarding behavioural patterns and experiences have a limited reliability by nature, as they are based on retrospective recall of experiences (Shiffman *et al.*, 2008). This is especially important as behavioural patterns within the work environment probably fall, at least partly, into a category known as unconscious automated behaviour (Aarts and Dijksterhuis, 2000). This makes it very difficult for respondents to estimate accurately and in detail how often they switch between activity settings or what percentages of their working time they spend on different locations and different activities. At the same time, higher levels of reliability and detail are needed to analyse how specific activity settings are exactly used and experienced: by whom, how often, how long and for which types of activities. This type of data would provide a basis for more specific diagnoses regarding the low levels of satisfaction with ABW environments that were found. For this reason, in future research, alternative methods for data collection (e.g. direct observations, experience sampling, diaries) should be considered.

Switching frequencies and satisfaction ratings appear to differ strongly among workers. This variance can only be partly explained by the factors included in this study. Therefore, further research should include a broader range of independent variables, including situational factors (e.g. satisfaction with the organisation, implementation process, organisational culture, interior design and occupancy rates) and personal factors (e.g. job demands, skills, physical and mental abilities, age, gender, education level and psychological needs and abilities).

### *6.3 Implications for theory and practice*

As satisfaction with ABW environments is found to be below expectations, their effectiveness in terms of impact on job satisfaction and wider organisational outcomes is questionable, at least as a one-size-fits-all solution. This insight reinforces the need for further research that should enable more in-depth diagnoses regarding causes of dissatisfaction. We believe that the relationship between workspace, behaviour and

satisfaction should be a central item on the research agenda. It may be the *interaction* between workers – all with their specific individual needs, perceptions and behaviours – and their work environment that determines whether satisfaction with the work environment and associated organisational outcomes are promoted or harmed. Advanced knowledge about this interaction may contribute to the person-environment fit theory (Edwards *et al.*, 1998), which so far does not seem to recognise the influence of physical aspects of the work environment.

When implementing an ABW concept, CRE practitioners and workspace designers should be aware of the fact that place does not simply follow activity. A more realistic approach would be to assume that workers need to see strong reasons for themselves to switch between different activity settings. This implies that the distinction between different types of activity settings should be meaningful and recognisable, and that switching between them should be supported by providing necessary facilities and diminishing (practical) hindrances in the work environment. Activity settings that will be used for concentration work deserve special attention to avoid complaints about distractions and lack of privacy.

Our findings suggest that the ABW concept does not fit the individual needs of all workers. Some workers are satisfied because they switch quite frequently, whereas others may be better off with an assigned (multifunctional) workstation. We recommend managers, employees and CRE practitioners to pay more attention to assessing, discussing and facilitating individual needs and preferences, as it does not seem possible to provide a one-size-fits-all solution, even if this solution provides flexibility in use.

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### About the authors

Jan Gerard Hoendervanger is a Researcher and Lecturer at Hanze University of Applied Sciences, Groningen. His PhD research project "The psychology of activity-based working" is aimed at understanding and optimising how activity-based work environments are being used. For details,



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see [www.linkedin.com/in/jangerardhoendervanger](http://www.linkedin.com/in/jangerardhoendervanger). Jan Gerard Hoendervanger is the corresponding author and can be contacted at: [j.g.hoendervanger@pl.hanze.nl](mailto:j.g.hoendervanger@pl.hanze.nl)

Iris de Been is a Researcher at the Center for People and Buildings (CFPB) in Delft with a background in cognitive and environmental psychology. Her research focuses on the evaluation of (office) buildings from a user's perspective. For further information, see [www.cfpb.nl](http://www.cfpb.nl)

Nico W. Van Yperen is a Professor of psychology at the University of Groningen, The Netherlands. His research interests are achievement motivation, work stress, blended working and talent development. For details, see [www.rug.nl/staff/n.van.yperen](http://www.rug.nl/staff/n.van.yperen)

Mark P. Mobach is Professor of facility management at Hanze University of Applied Sciences, Groningen and The Hague University of Applied Sciences, The Netherlands. Since 2013, he is the Leading Professor at "NoorderRuimte", a Hanze Centre of Research and Innovation for Built Environment. For details, see [nl.linkedin.com/pub/mark-mobach/5/16b/99](http://nl.linkedin.com/pub/mark-mobach/5/16b/99)

Casper J. Albers is an Associate Professor in psychometrics and statistics at the University of Groningen. His main research concerns the development of novel statistical techniques and their application to psychological research. For details, see [www.casperalbers.nl](http://www.casperalbers.nl)

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