

# New ways of working and work engagement

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**New Ways of Working and  
Work Engagement**

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## **New Ways of Working and Work Engagement.**

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### **Abstract**

This article investigates whether New Ways of Working (NWW) are related to employee work engagement in the Netherlands. We test our hypotheses using a sample of 656 employees from 14 industry sectors and 12 occupational fields. Our study reveals that three facets of NWW positively affect work engagement: “manage your own work,” “unlimited access and connectivity,” and “open workplace.” The effects of “open workplace” and “unlimited access and connectivity” on work engagement appear to be fully mediated by the combination of social interaction and transformational leadership. Managing your own work is however not mediated by social interaction or transformational leadership. As such, it is the only facet of NWW that directly affects work engagement. Our results hold important practical implications for organizations that consider implementing NWW. To maximize the positive impact of NWW on work engagement, while keeping the cost of introducing NWW to a minimum, firms should take

account of the abilities and preferences of their line managers with respect to transformational leadership. Depending on these, a limited or more comprehensive set of NWW facets may be most efficient at promoting work engagement.

Keywords: work engagement, new ways of working, social interaction, transformational leadership

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## 1. Introduction

Enabled by rapid advances in information and communications technology, human resource management practices associated with New Ways of Working (NWW) are a recent phenomenon in work organizations. NWW allows employees to flexibly organize their work. However, there are few studies on the effects of NWW on employee outcomes (Blok, Groenesteijn, Schelvis & Vink, 2012; Demerouti, Derks, Ten Brummelhuis & Bakker, 2014; Peters, Poutsma, Van der Heijden, Bakker & Bruijn, 2014), and little is known about the impact of NWW on employee work engagement.

To our knowledge, Ten Brummelhuis, Bakker, Hetland, and Keulemans (2012) is the only study that analyzes the relation between NWW and work engagement. Ten Brummelhuis et al. (2012) conclude that NWW has the potential to boost work engagement by increasing employee process control and facilitating more efficient communication among colleagues. However, their study is based on employees in a single firm, which leads these authors to recommend future research to study the generalizability of the relationship between NWW and work engagement.

With the present paper, we answer their call and add to the literature on NWW in several ways. First, we examine the impact of several aspects of NWW on work engagement of employees from 14 industry sectors and 12 occupational fields. We build on Peters et al. (2014), who investigate the impact of NWW on “work-related flow” (absorption in work, work enjoyment, and intrinsic work motivation) in a few specific job categories across multiple organizations. This makes our paper the first to study the effects of NWW on work engagement using a sample of an entire country’s (The Netherlands) working population.

Second, we use a comprehensive definition of NWW, including five individual facets. We estimate a model in which these five facets are aggregated into one, as well as models that distinguish the individual facets. Building on the current literature, we distinguish the following five facets of NWW: (1) time and location independent working (“any time, anywhere”), (2) management on output (“manage your own work”), (3) free accessibility and use of knowledge and ideas (“unlimited access and connectivity”), (4) flexibility in working relations (“my size fits me”), and (5) freely accessible open workplaces (“open workplace”) (Baane, Houtkamp & Knotter, 2010; Bijl, 2009; Graham, 2004; Halford, 2005). These facets are constructed from various underlying items (see Appendix A). Current studies in the work engagement literature

include only single facets or less comprehensive definitions of NWW, such as flexible time and place, new media technologies (Deci, Ryan, Gagné, Leone, Usunov & Kornazheva, 2001; Ten Brummelhuis et al., 2012), and increased levels of autonomy (Bakker & Bal, 2010; Bakker, Albrecht & Leiter, 2011a; Mauno, Kinnunen & Ruokolainen, 2007; Salavona & Agut, 2005). Using our comprehensive definition of NWW, we are able to disentangle in which positive or negative direction the various facets of NWW contribute to the overall effect of NWW on work engagement.

Third, building on De Leede and Kraijenbrink (2014), we take account of two potential mediators between (facets of) NWW and work engagement: social interaction at work and the extent to which managers exhibit transformational leadership. Although De Leede and Kraijenbrink (2014) acknowledge that leadership needs to be taken into account when studying the effects of NWW, and some authors even incorporate it into their analyses (e.g., Peters et al., 2014), who include “supporting leadership”), we are the first to consider “transformational leadership” as a mediator between NWW and work engagement.

Our results hold important practical implications for organizations that consider implementing NWW. To maximize the positive impact of NWW on work engagement, while keeping the cost of introducing NWW to a minimum, firms should take account of the abilities and preferences of their line managers. Depending on these, a limited or more comprehensive set of NWW facets may be most efficient at promoting work engagement.

This paper proceeds as follows. Section 2 briefly discusses the literature on work engagement and the literature on the five facets of NWW we identify, along with social interaction at work and transformational leadership. From this literature, we derive our empirical model and hypotheses. Section 3 describes our data and variables of interest. In Section 4, we present our estimation results. Section 5 concludes by discussing our main outcomes.

## **2. Literature**

### **Work engagement**

Schaufeli, Salanova, González-Romá and Bakker (2002, p. 74) characterize engaged employees as having a “positive, fulfilling, work-related state of mind characterized by vigor, dedication,

and absorption.” Employee engagement has been shown to relate positively to various outcomes relevant for organizational performance as well as employee well-being. Various studies show that organizations are more likely to exceed their industry’s average revenue growth, employee retention, and customer loyalty if their employees are more engaged (e.g., Harter, Schmidt & Hayes, 2002; Markos & Sridevi, 2010). In addition, work engagement is positively related to organizational commitment (Yalabik, Rossenberg, Kinnie and Swart, forthcoming) and, more generally, to positive organizational behavior (e.g., Bakker & Schaufeli, 2008; Bakker, Albrecht & Leiter, 2011b). Finally, work engagement is positively associated with employee well-being (Demerouti, Bakker, de Jonge, Janssen & Schaufeli, 2001; Hakanen & Schaufeli, 2012; Rothbard, 2001; Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002).

Baumruk (2006) sheds more light on the underlying mechanisms by which work engagement affects organizational outcomes. This author identifies three different ways in which engaged employees improve organizational performance. These general behaviors are referred to as “say, stay, and strive.” If employees are engaged, they will advocate the organization to co-workers, and promote the organization to potential employees and customers (“say”). Moreover, the desire to be a member of the organization will connect engaged employees despite job offers from other firms (“stay”). Furthermore, engaged employees will contribute to the success of the business by exerting extra time, effort, and initiative (“strive”).

Despite a vast body of literature on the consequences of work engagement (see Bakker, Schaufeli, Leiter and Taris, 2008, for an overview) there is little empirical research investigating the determinants of work engagement. Moreover, the relation between human resource management practices and work engagement has only recently gained attention (Truss, Shantz, Soane, Alfes & Delbridge, 2013). Saks (2006) finds that employee engagement is enhanced by jobs that offer challenging work and variety, that allow for use of a variety of skills and personal discretion, and that afford the opportunity to meaningfully contribute. Furthermore, this author finds that procedural justice contributes to increased employee engagement; “procedural justice” refers to “the perceived fairness of means and processes used to determine the amount of distribution and resources” (Saks, 2006, p. 606). As shown in the next subsection, NWW includes several of these job characteristics and it fosters procedural justice.

## NWW

Several authors note that the scientific literature on NWW remains scarce (e.g., Blok, Groenesteijn, Van Den Berg & Vink, 2011; De Leede & Kraijenbrink, 2014; Ten Brummelhuis et al., 2012). Most studies on NWW originate from general business literature and use a variety of definitions and measurements of NWW. For instance, Bijl (2009), considers NWW as practices that center the organization around its employees, providing them, within certain boundaries, with the freedom to determine how, where, and when they work, and to decide which resources they use and with whom they work. According to this definition, NWW can be considered “new,” as it centers on employees, while traditional HR practices focus on facilitating the production process. We use a more comprehensive definition derived from multiple studies. Our definition of NWW includes five facets: (1) time- and location-independent working, (2) management on output, (3) free accessibility and use of knowledge and ideas, (4) flexibility in working relations, and (5) freely accessible, open workplaces.

The first NWW facet refers to working independent of time and place, which we refer to as: “any time, anywhere” (Baane et al., 2010). Halford (2005) illustrates this facet by quoting several phrases from an employee of a large UK-based financial services company: “Sometimes you think, ‘Oh I really need to get this done, I’ll go home’ ..... ‘so it’s nice in a way that you have got somewhere you can go and work in quiet.’” (p. 26).

The second NWW facet refers to management on output or performance rather than management of how employees conduct their work. Baane et al. (2010, p. 42) refer to this NWW facet as “manage your own work.” The third facet refers to free access and use of organizational knowledge, experience, and ideas. Following Baane et al. (2010), we label this facet “unlimited access and connectivity.” The fourth NWW facet is based on what Reynaarde Talent Development (2013) describes as a shift from “one size fits all” to “my size fits me.” This refers to practices that allow employees to accommodate their working life in such a way that it fits with their current private situation. The fifth NWW facet is derived from studies that emphasize the interplay between the physical and mental environments. Graham (2004) argues that employee behavior to some extent always depends on physical elements of the workplace. Organizations with NWW facets often refurbish offices into freely accessible, open workplaces. These freely accessible workplaces are intended to minimize physical and mental distance via

stimulating encounters and cooperation among colleagues.<sup>1</sup> Following Halford (2005), we label this fifth facet of NWW the “open workplace.”

According to Ten Brummelhuis et al. (2012), NWW has the potential to boost work engagement by (1) increasing employee process control, and (2) fostering efficient communication among colleagues. Moreover, several studies show that increased worker autonomy leads to higher levels of work engagement (Bakker & Bal, 2010; Mauno, Kinnunen & Ruokolainen, 2007; Salanova & Agut, 2005). Likewise, Bakker et al. (2011b) propose that employees who manage their own work increase their job challenges and job resources, and subsequently remain more engaged.

Although it appears that most studies expect mainly positive impacts of NWW on work engagement, the question remains whether certain elements of NWW, such as the ability to work at any time and anywhere, resulting in always being electronically connected, may reduce work engagement (De Leede & Kraijenbrink, 2014). This potential negative consequence of NWW is anecdotally underlined by recent policy changes in several German firms, such as Volkswagen and Deutsche Telekom, that place restrictions on after-hours e-mail and phone connectivity, to protect workers from burnout. Although we acknowledge this potentially negative impact of NWW on work engagement, in sum, we must conclude that the vast majority of relevant literature expects NWW relates positively to the work engagement. Therefore, our first “default” hypothesis is:

*Hypothesis 1. All five facets of NWW are positively related to work engagement.*

### **Social interaction at work**

Social interaction at work refers to mutual trust, personal networks, and communities (Prusak, 2001). A supportive social environment is beneficial for organizations, as it fosters valuable resource collaboration, leading to positive work attitudes (Bakker, Demerouti, & Verbeke, 2004). Social interaction is likely to be affected by NWW. One of the facets that is likely to affect social interaction is “any time, anywhere,” although the expected sign of the effect is not

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<sup>1</sup> De Souza e Silva (2006) takes a slightly different viewpoint, arguing that there is no longer a distinction between digital and physical space. Therefore, it is not necessary to refurbish offices into open workplaces, since IT solutions already foster encounters between colleagues.

unambiguously clear from the literature. Gajendran and Harrison (2007) find a positive correlation between telecommuting and the quality of the employee–supervisor relationship, but these authors do not find a relation between telecommuting and the quality of co-worker relationships. Similarly, Duxbury and Neufeld (1999) find no decrease in effective communication on the part of employees who switched to working partially outside the office. However, several other studies show negative effects from working outside the office on social interaction at work (Cooper & Kurland, 2002; Morganson, Major, Oborn, Verive & Heelan, 2010). Working outside the office increases the potential of social isolation, which, in turn, increases the potential of burnout (Kilgore & Griffin, 1998; Miller, Brownell, & Smith, 1999; Rosenberg, O’Shea & O’Shea, 1998). Finally, De Leede and Kraijenbrink (2014), studying a Dutch insurance firm, find that social cohesion, which is related to social interaction, mediates the relation between NWW and self-assessed productivity of employees. Based on these studies, we hypothesize that social interaction at work mediates the relationship between NWW facets and work engagement, as follows:

*Hypothesis 2. Social interaction mediates the relationship between NWW and work engagement.*

### **Transformational leadership**

Managers face various challenges when working with facets of NWW. According to De Leede and Kraijenbrink (2014), a big challenge for managers is the switch from direct supervision to managing based on output, which is a key consequence of NWW, since managers simply no longer see their employees on a daily basis. Moreover, when employees work in the office, they manage their own work in an open workplace; this also requires managing based on output. This requires transformational leadership that elevates workers’ concerns for achievement (Bass, 1999). De Leede and Kraijenbrink (2014) include a four-item scale on “result-oriented leadership” in their analysis, but are unable to use it as a mediator due to a low Cronbach’s alpha. In their study on the relation between NWW and work-related flow, Peters et al. (2014) also take into account the role of leadership. These authors include a five-item scale measuring “supporting leadership.” However, they do not test for a mediating role of this leadership measure; rather, they consider it an element of NWW.

Since there are also studies showing that transformational leadership is positively related to work engagement (Babcock-Roberson & Strickland, 2010; Bakker et al., 2011b; Breevaart, Bakker, Hetland, Demerouti, Olsen, & Espevik, 2014; Rowden, 2000; Zhu, Avolio, & Walumbwa, 2009), we expect transformational leadership to be a mediator between NWW and work engagement.

*Hypothesis 3. Transformational leadership mediates the relationship between NWW and work engagement.*

Figure 1 gives an overview of the hypothesized relationships between NWW facets and work engagement.

Insert Figure 1 about here

### **3. Data and Measurements**

For our empirical analysis, we use survey data from a representative panel of Dutch households collected by RMI (a full-service market research company).<sup>2</sup> Our questionnaire (See Appendix A) was sent to 15,491 panel members in June 2013. The survey resulted in 901 responses (a 5.8% response rate). To focus on employees, we exclude entrepreneurs from our sample, resulting in a data set of 703 employees. Further, we exclude 47 employees for which we could not construct the fifth facet “open workplace,” as they reported that they do not work in a building (e.g., truck, taxi, and train drivers, postal deliverers). Appendix B shows the demographic characteristics of the final sample of 656 employees. Partly due to the fact that those who do not work in a building are excluded, females and workers with higher education are over-represented in the final sample.

To measure work engagement, we use the nine-statement version of the “Utrecht work engagement scale” (Schaufeli & Bakker, 2003). Respondents were asked to rate the nine statements on a seven-point scale, ranging from “never” to “always.” All items are listed in Appendix A.

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<sup>2</sup> See [www.het-internet-panel.nl](http://www.het-internet-panel.nl)

To measure the extent to which employees work with NWW, we developed a set of 10 items that together cover the five NWW facets.<sup>3</sup> All items on this scale are rated on a five-point scale ranging from “not at all” to “to a very high degree.” An overview of all items used to measure the five facets of NWW is presented in Appendix A.

We measure social interaction at work by four statements derived from Van Veldhoven & Meijman (1994) and Golden (2006). Example statements include “Communication by means of face-to-face contact is important to maintain a good working relationship,” and “I find working with my colleagues pleasant.” All statements are rated on a five-point scale, ranging from “not at all” to “to a very high degree.”

Transformational leadership is measured on both emotional quotient and spiritual quotient, using a set of items derived from Bass (1991), Robbins & Judge (2007) and Bijl (2009). Managers who use emotional quotient practices focus on asking questions, and display increased awareness of others. Examples of statements we use are: “my supervisor provides guidance when I need it,” and “my supervisor considers the individual.” Transformational leadership based on spiritual quotient provides inspirational motivation to employees. Example statements for transformational leadership based on spiritual quotient are: “my supervisor inspires and motivates employees,” and “my supervisor gives a clear image of his strategic vision.” All these statements are rated on a five-point scale, ranging from “not at all” to “to a very high degree.” A full list of statements used is presented in Appendix A.

Table 1 shows the correlation between our variables and the Cronbach’s alpha coefficients for all constructs included in our analysis. NWW as an aggregate variable including all 10 items, the separate items of NWW, work engagement and transformational leadership, all show an internal consistency that is approximately at the preferred level of 0.80.<sup>4</sup> The internal consistency of social interaction at work shows an alpha of 0.74, which is still an acceptable value (Peterson, 1994). We standardized these variables to a mean of zero and standard deviation of 1.

Insert Table 1 about here

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<sup>3</sup> Some items are based on the Maastricht Autonomy Questionnaire (MAQ), developed by De Jonge, Landeweerd, and Van Breukelen (1994).

<sup>4</sup> Facets 2 and 4 refer to only one item.

## 4. Results

We first test a multiple mediation model in which we take the aggregate NWW variable as the independent variable. We apply the Preacher and Hayes (2008) bootstrap method for multiple mediators and control variables. We estimate the model with various control variables, such as age, gender, education level, sector of industry, and occupational field. Figure 2 summarizes our findings within the framework of the model we analyze. The figure shows that NWW has a significant, positive effect on work engagement (panel A, which shows the total effect ( $c$ )). Panel B presents a decomposition of the total effect into the direct effect ( $c'$ ) of NWW on work engagement and the indirect effects ( $a_i \cdot b_i$ ), which run through social interaction and transformation leadership. Panel B shows that social interaction and transformational leadership both positively mediate the relationship between NWW and work engagement, and that there remains a positive direct effect of NWW on work engagement, which indicates that there is only partial mediation. All findings are significant at the 1% level.

Appendix C presents bootstrap results and shows the coefficients of the indirect effects as well as the standard errors, Z-values, and confidence intervals. The indirect effect (0.26) is much larger than the direct effect (0.17, see Figure 2B), and the part of the total effect ( $c$ ) that is mediated is well over half (total indirect effect 0.26 / total effect 0.43 = 0.60).

Insert Figure 2 about here

Next, we test several models that simultaneously take into account the five separate facets of NWW as well as social interaction and transformational leadership. For consistency, we apply the same set of control variables to all estimations. We use ordinary least squares to estimate our models, since the dependent variables social interaction, transformational leadership, and work engagement are standardized constructs based on several underlying items, the dependent variables therefore take a continuous form. Following Alfes, Shantz, Truss and Soane (2013), we test for mediation using the steps outlined by Baron and Kenny (1986). Table 2 presents our estimation results. Columns 1 and 2 test whether the NWW facets are correlated with the mediators “social interaction” and “transformational leadership,” respectively. The table shows that the NWW facets “unlimited access and connectivity” and “open workplace” are correlated

with both mediators. Further, the facet “any time, anywhere” is correlated with “transformational leadership.” These highly significant correlations between the independent variable(s) and the mediators prove the first necessary condition for mediation.

Columns 3, 4, and 5 provide evidence for the next two conditions to establish mediation, and they provide evidence on Hypothesis 1. Columns 3 and 4 show that both mediators are significantly related to work engagement, whereas Column 5 shows that three of the five NWW facets are significantly related to work engagement. This holds for the NWW facets “unlimited access and connectivity” and “open workplace” (which are also related to the two mediating variables), as well as for the facet “manage your own work.” Hence, three out of five facets of NWW are positively related to work engagement, providing partial support for Hypothesis 1, which predicts a positive relation for all five facets.

In the final step toward establishing mediation, we estimate three models, which simultaneously include one or both of the mediators and all independent variables. Column 6 shows the estimation results when including social interaction as a mediating variable; its inclusion renders the coefficients of the NWW facets “unlimited access and connectivity” and “open workplace” insignificant. This shows that social interaction fully mediates these two NWW facets. However, the NWW facet “manage your own work” remains highly significant and positively related to work engagement. Taken together, these results partly support Hypothesis 2, which predicts a mediating role for social interaction between NWW facets and work engagement.

Column 7 includes the mediator “transformational leadership.” Its presence lowers both the significance and size of the coefficient of “unlimited access and connectivity,” indicating partial mediation. Further, it renders the coefficient of “open workplace” insignificant, establishing full mediation on this variable. However, the coefficient for “manage your own work” remains highly significant. Together, these results provide partial support for Hypothesis 3, which predicts a mediating role between the NWW facets and work engagement.

Column 8 shows the estimation results when including both mediators. Both mediators remain highly significant. The only NWW facet to remain highly significant is “manage your own work”; moreover, the coefficient of this facet of NWW is hardly affected when including the mediators.

Insert Table 2 about here

## 5. Conclusions and Discussion

We investigate whether NWW is related to employee work engagement. We contribute to the current literature on NWW in three ways. First, we study this relationship for a sample of a country's working population, comprising 14 sectors of industry and 12 occupational fields. This makes our paper one of the first studies on NWW that is generalizable beyond the single-firm level. Second, we use a comprehensive definition of NWW, including five different facets, and estimate a model in which these five facets of NWW are aggregated into one variable, as well as models that focus on the impact of individual NWW facets on work engagement. Third, we analyze whether social interaction at work, as well as the extent to which managers exhibit transformational leadership, are potential mediators between (facets of) NWW and work engagement.

Our analysis shows that, while controlling for age, gender, education, sector of industry, and occupational field, NWW as an aggregate concept is positively related to work engagement of employees in The Netherlands. This relationship is partially mediated by both social interaction and transformational leadership. Indirect effects account for 60% of the total effect, emphasizing the importance of social interaction and transformational leadership as conduits.

Our subsequent analysis, which focuses on the five separate facets of NWW, reveals that three facets of NWW positively affect work engagement: “manage your own work,” “unlimited access and connectivity,” and “open workplace,” while the facets “any time, anywhere” and “my size fits me” are not significantly related to work engagement.

The positive relation between “open workplace” and work engagement appears to be fully mediated by social interaction in the workplace and transformational leadership. This suggests that an open workplace in itself does not promote employee engagement; rather, it is social interaction and transformational leadership, which an open workplace stimulates, that fosters work engagement. The effects of “unlimited access and connectivity” on work engagement are also fully mediated by social interaction, and partially by transformational leadership. The implications are akin to those for an open workplace. We conclude that social interaction and transformational leadership are important determinants of work engagement, whereas “unlimited access and connectivity” and “open workplaces” are effective ways of enhancing these

determinants. Our analysis further shows that the NWW facet “manage your own work” is not mediated by social interaction or transformational leadership; as such, it is the only facet that directly affects work engagement.

### **Practical implications**

Our finding that “manage your own work” is the only NWW facet that directly impacts employee work engagement, without being mediated, indicates that providing workers with more autonomy is a very effective way to increase their engagement. Complementary measures are not required to contribute to worker engagement. This finding is important for HR decision makers, as it shows that they do not need to implement a full suite of NWW facets to increase employee work engagement. When organizations consider implementing a more comprehensive suite of NWW facets, including creation of open workplaces and unlimited access and connectivity, our results show that such action would increase work engagement only if the organization is willing and able to foster transformational leadership and social interaction. These two practices fully mediate the effects of open workplaces and unlimited access and connectivity on employee work engagement, which suggests that transformational leadership and social interaction are necessary conduits for open workplaces and unlimited access and connectivity to make a difference.

On one end of the spectrum, there may be organizations where line managers are not able or willing to move toward a more transformational leadership style. Such organizations may benefit little from implementing a more comprehensive suite of NWW facets. However, even these organizations may still benefit from implementing the facet “manage your own work,” since increased autonomy of workers directly affects work engagement without the need for supportive actions. On the other end of the spectrum, there may be organizations that foster social interaction in the workplace and in which line managers are both able and willing to adopt a more transformational leadership style, or they may already apply this management style. In such organizations, implementing a more comprehensive suite of NWW facets will probably have a larger impact on work engagement compared to implementing only “manage your own work,” since through the mediating effects of increased transformational leadership and social interaction, open workplaces and unlimited access and connectivity further improve work engagement.

Since most changes to organizations' working methods and habits, such as a move from a traditional way of working to NWW, are costly, time consuming, and may require substantial periods of adjustment, understanding the managerial abilities and preferences of line managers is important for HR decision makers considering implementing NWW. Thus, to maximize the positive impact of NWW on work engagement, while keeping the cost of introducing NWW to a minimum, firms should take account of the abilities and preferences of their line managers. Depending on these, a more limited or comprehensive set of NWW facets may be most efficient at promoting work engagement.

### **Limitations and suggestions for further research**

The results of this study indicate several limiting factors that provide nuance to our findings and lead to recommendations for further research. First, by using cross-sectional data, we are not able to control for unobserved heterogeneity. Estimates of fixed-effects models on panel data could identify causal relationships. Second, our findings build on a data set on the Dutch working population. Cultural differences between working populations of different countries may restrict the external validity of our findings. Future research should, then, attempt to analyze the effects of NWW in an international setting, taking account of different cultural dimensions (e.g., those identified in the Hofstede cultural dimensions theory (Hofstede, 1980)). Third, our data set includes no information on the stage of implementation of the various NWW facets in the organization where the respondent is employed. Therefore, we cannot distinguish between employees who are used to working with particular NWW facets for several years and those who just started to work with particular facets, for example. Future research should account for the stages of implementation of the various NWW facets, either at the firm level or that of individual workers, by distinguishing between organizations that just introduced particular facets of NWW and similar firms that introduced NWW longer ago, or by distinguishing between workers who have recently begun working according to NWW as opposed to similar workers in similar organizations who have been working according to NWW for some time.

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Figure 1. Overview of our hypothesized relationships between NWW facets and work engagement.

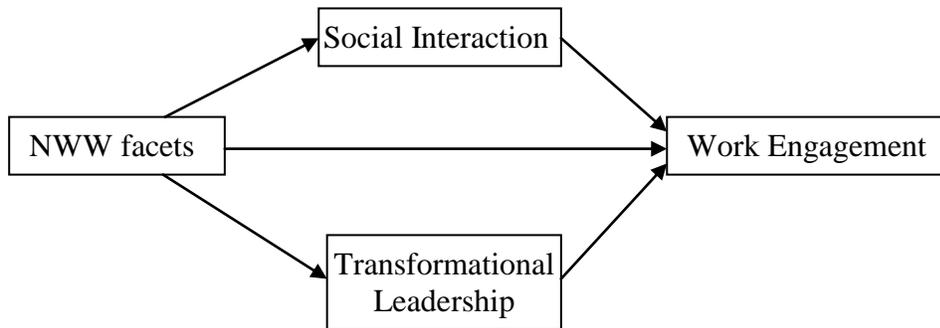
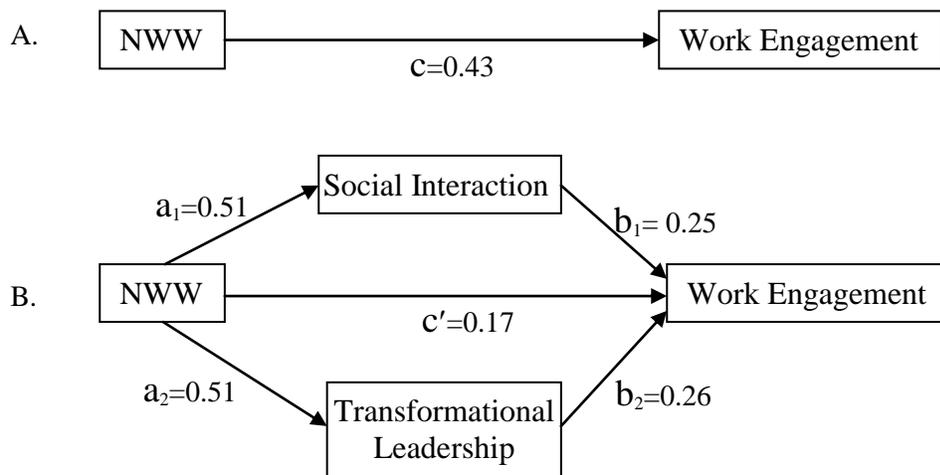


Figure 2. Multiple mediation framework for NWW on Work Engagement. Unstandardized regression coefficients of (A) Total effect and (B) Direct ( $c'$ ) and indirect effects ( $a_i b_i$ ).



Note: (A) Total effect  $c = \Sigma(a_i b_i) + c'$ ; (B) P-values of coefficients are all significant at the 1% level.

Table 1. Internal consistencies and correlations between the variables ( $N = 656$ )

	1	2	3	4	5	6	7	8	9
1. Work engagement	(.94)								
2. New Ways of Working (aggregate)	.33	(.86)							
3. NWW Facet 1: Anytime, anywhere	.19	.71	(.79)						
4. NWW Facet 2: Manage your own work	.30	.66	.55						
5. NWW Facet 3: Unlimited access and connectivity	.29	.85	.35	.44	(.76)				
6. NWW Facet 4: My size fits me	.20	.73	.71	.50	.43				
7. NWW Facet 5: Open workplace	.25	.70	.24	.32	.60	.29	(.77)		
8. Social Interaction	.44	.46	.17	.22	.51	.24	.40	(.74)	
9. Transformational leadership	.45	.45	.30	.28	.37	.31	.39	.54	(.92)
Cronbach's alphas on the diagonal									

All correlations are significant at  $P < .001$

Table 2. OLS estimates of individual facets of NWW, social interaction, transformational leadership and work engagement

	Social	Transformational	Work Engagement			Work Engagement		
	Interaction	Leadership	3	4	5	6	7	8
Anytime, anywhere	0.019 (0.054)	0.189*** (0.057)			0.079 (0.059)	0.072 (0.055)	0.010 (0.055)	0.025 (0.054)
Manage your own work	-0.028 (0.043)	0.023 (0.046)			0.170*** (0.047)	0.181*** (0.044)	0.162*** (0.044)	0.172*** (0.043)
Unlimited access and connectivity	0.445*** (0.048)	0.165*** (0.051)			0.181*** (0.052)	0.011 (0.052)	0.121** (0.049)	0.020 (0.051)
My size fits me	0.050 (0.046)	0.070 (0.049)			0.022 (0.050)	0.003 (0.047)	-0.004 (0.047)	-0.010 (0.045)
Open workplace	0.152*** (0.042)	0.245*** (0.044)			0.128*** (0.045)	0.069 (0.043)	0.039 (0.044)	0.024 (0.042)
Social Interaction			0.471*** (0.036)			0.383*** (0.041)		0.268*** (0.044)
Transformational leadership				0.467*** (0.035)			0.364*** (0.039)	0.256*** (0.042)
Age: 18-34				Reference				
Age: 35-49	0.115 (0.098)	-0.157 (0.104)	0.080 (0.103)	0.180* (0.103)	0.123 (0.107)	0.082 (0.100)	0.184* (0.100)	0.136 (0.098)
Age: 50-67	-0.043 (0.100)	-0.015 (0.105)	0.396*** (0.104)	0.358*** (0.103)	0.391*** (0.108)	0.407*** (0.101)	0.396*** (0.101)	0.406*** (0.098)
Gender: 1 if female	-0.006 (0.076)	0.069 (0.081)	0.046 (0.080)	0.014 (0.079)	0.086 (0.083)	0.088 (0.078)	0.061 (0.078)	0.070 (0.076)
Education: Primary and lower (vocational) level				Reference				
Education: Intermediate level vocational education (MBO)	-0.147 (0.113)	-0.048 (0.119)	0.156 (0.119)	0.111 (0.118)	0.093 (0.123)	0.149 (0.115)	0.111 (0.115)	0.145 (0.112)
Education: High school	0.006 (0.129)	-0.220 (0.136)	-0.048 (0.135)	0.071 (0.134)	-0.052 (0.140)	-0.054 (0.131)	0.028 (0.131)	-0.003 (0.128)
Education: Higher vocational/Bachelor level	-0.097 (0.119)	-0.141 (0.126)	-0.030 (0.124)	-0.010 (0.123)	-0.143 (0.129)	-0.106 (0.121)	-0.091 (0.121)	-0.081 (0.118)
Education: University: Master level	-0.282** (0.142)	-0.179 (0.150)	0.012 (0.147)	-0.035 (0.147)	-0.228 (0.154)	-0.120 (0.145)	-0.163 (0.145)	-0.107 (0.141)
Sector dummies	Yes							
Occupation dummies	Yes							
Constant	-0.225 (0.371)	-0.024 (0.393)	0.291 (0.320)	0.133 (0.319)	-0.396 (0.403)	-0.309 (0.378)	-0.387 (0.377)	-0.329 (0.367)
N	656	656	656	656	656	656	656	656
R-squared	0.33	0.26	0.26	0.27	0.22	0.32	0.32	0.36

Standard errors in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1

## Appendix A - Questionnaire

Variabele	Statements	
<b>Work engagement</b>		
	At my work, I feel bursting with energy	(1) never - (7) Always
	At my job, I feel strong and vigorous	(1) never - (7) Always
	I am enthusiastic about my job	(1) never - (7) Always
	My job inspires me	(1) never - (7) Always
	When I get up in the morning, I feel like going to work	(1) never - (7) Always
	I feel happy when I am working intensely	(1) never - (7) Always
	I am proud on the work that I do	(1) never - (7) Always
	I am immersed in my work	(1) never - (7) Always
	I get carried away when I'm working	(1) never - (7) Always
<b>New Ways of Working</b>		
Facet 1: Anytime, anywhere	I am able to set my own working hours	(1) not at all - (5) To a high degree
	I am able to determine where I work	(1) not at all - (5) To a high degree
Facet 2: Manage your own work	I am able to determine the way I work	(1) not at all - (5) To a high degree
Facet 3: Unlimited access and connectivity	I can access all necessary information on my computer, smartphone, and/or tablet	(1) not at all - (5) To a high degree
	I am able to reach colleagues within the team quickly	(1) not at all - (5) To a high degree
	I am able to reach managers quickly	(1) not at all - (5) To a high degree
Facet 4: My size fits me	I am able to reach colleagues outside the team quickly	(1) not at all - (5) To a high degree
	I have the ability to adapt my working scheme to my phase of life and ambitions.	(1) not at all - (5) To a high degree
Facet 5: Open workplace	the building is arranged so that colleagues are easily accessible	(1) not at all - (5) To a high degree
	The building is arranged so that managers are easily accessible	(1) not at all - (5) To a high degree
<b>Social interaction</b>		
	I find working with my colleagues pleasant	(1) not at all - (5) To a high degree
	When facing problems I quickly receive help from colleagues	(1) not at all - (5) To a high degree
	When facing problems I quickly receive help from my manager	(1) not at all - (5) To a high degree
	'Communication by means of face-to-face contact is important to maintain a good working relationship'	(1) not at all - (5) To a high degree
<b>Transformational leadership</b>		
	My supervisor gives a clear image of his strategic vision.	(1) not at all - (5) To a high degree
	My supervisor exhibits desirable behaviour within the organisation.	(1) not at all - (5) To a high degree
	My supervisor acts as a role model within te organisation.	(1) not at all - (5) To a high degree
	My supervisor provides guidance when I need it.	(1) not at all - (5) To a high degree
	My supervisor inspires and motivates employees.	(1) not at all - (5) To a high degree
	My supervisor stimulates the intellect of employees.	(1) not at all - (5) To a high degree
	My supervisor considers the individual.	(1) not at all - (5) To a high degree
	My supervisor stimulates the development of employees.	(1) not at all - (5) To a high degree
	My supervisor allows employees to foster working relationships.	(1) not at all - (5) To a high degree
	My supervisor works overtime.	(1) not at all - (5) To a high degree
	My supervisor contacts me outside office hours.	(1) not at all - (5) To a high degree
	My supervisor rewards outcomes rather than the way I work.	(1) not at all - (5) To a high degree

**Appendix B – Characteristics of sample (N=656)**

<b>Grouping variable</b>	<b>Category</b>	<b>Respondents (N)</b>	<b>Percentage (%)</b>
Gender	Male	303	46.2
	Female	353	53.8
Age	18 - 34	116	17.7
	35 - 49	249	37.9
	50 - 67	291	44.4
Education	Primary school an lower (vocational) level	87	13.3
	Intermediate vocational education (MBO)	181	27.6
	High school	90	13.7
	Higher vocational education/bachelor level	210	32.0
	University education(Master level)	88	13.4
Occupational field	Pedagogical	63	9.6
	Creative	11	1.7
	Agricultural	1	0.2
	Technical and industrial	68	10.4
	Transport	24	3.7
	Medical and paramedical	50	7.6
	Economic-administrative	158	24.1
	ICT	57	8.7
	Socio-cultural	21	3.2
	Caring and service	60	9.2
	Public order and safety	18	2.7
	Other	125	19.1
Sector of Industry	Agriculture, forestry and fisheries	4	0.6
	Construction	15	2.3
	Industry	72	11.0
	Retail	36	5.5
	Financial services	52	7.9
	Wholesale	31	4.7
	Hospitality	10	1.5
	Personal services	18	2.7
	Transport	44	6.7
	Commercial services	137	20.9
	Healthcare	104	15.9
	Education	83	12.7
	Social services	32	4.9
	Other	18	2.7

**Appendix C** – Mediation of the effect of NWW on work engagement through social interaction and transformational leadership.

	Coefficient	SE	Z	95% Conf. Interval		
				Lower	Upper	
Indirect effects:						
Social Interaction ( $a_1b_1$ )	0.1263	0.0257	4.92	0.0764	0.1772	(P)
				0.0815	0.1824	(BC)
				0.0818	0.1838	(BCa)
Transf. Lead. ( $a_2b_2$ )	0.1316	0.0244	5.40	0.0834	0.1777	(P)
				0.0868	0.1810	(BC)
				0.0871	0.1816	(BCa)
Total indirect	0.2579	0.0316	8.16	0.1930	0.3181	(P)
				0.1993	0.3255	(BC)
				0.2013	0.3286	(BCa)

Note: P, percentile; BC, bias corrected; BCa, bias corrected and accelerated; 5,000 bootstrap samples