

**The relationship between New Ways of Working and Work-Related Basic Needs
Satisfaction through Work-Family Balance as a mediator**

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Abstract

This thesis contributes to the multitude of implications surrounding the relationship between New Ways of Working and Work-related basic needs satisfaction. This research will contribute to the previously studied research by examining the relationship more in-depth, by utilizing a longitudinal design and implementing Work-family balance as a potential mediator. As New Ways of Working has become more prevalent within workplaces, it is important to understand the implications this work style has on the satisfaction of one's basic needs. This research used data collected by IDEWE, of 485 employees working at various organizations and living in Belgium. Multiple Hayes (2013) regression analyses were conducted, in order to assess to what extent NWW influenced the satisfaction of one's Work-related basic needs across time and to what extent a possible indirect effect is mediated by Work-family balance. The results of this study found partial support for the formulated hypotheses. The results found that New Ways of Working was negatively related to the need for relatedness and positively related with Work-family balance. However, there was no evidence of a relationship found between New Ways of Working and the satisfaction of the need for autonomy or competence. No evidence was also found for a relationship between Work-family balance and the satisfaction of the need for autonomy, relatedness, or competence. Lastly, no significant effect was found for a mediation effect between New Ways of Working on Work-related basic needs satisfaction, through Work-family balance.

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1. Introduction

1.1 General Introduction

The modern world has blurred the image of what a traditional workplace looks like (Blok et al., 2012). Due to advancements in technology and more specifically the Covid-19 pandemic, New Ways Working have become increasingly more prevalent for organizations forced to utilize these types of flexible work arrangements. NWW gives workers the ability to choose when and where they work, by utilizing Information Communication Technologies (ICT) in order to be available anywhere and anytime (Nijp et al., 2016). Many studies have examined the effects NWW has on organizations and the employees within them, however most prior studies focused primarily on the outcomes of general employee satisfaction (Blok et al., 2012), organizational performance (Ruostela et al., 2015), and work engagement (Gerards et al., 2018). Although these outcomes are important for organizations to consider, the impact of NWW on employee motivation is less clear.

Motivation is an important concept to consider for organizations and their employees. Based on Deci and Ryan's (2000) Self-determination theory, we introduce work-related basic needs satisfaction as a possible motivational outcome of NWW. According to Self-Determination theory (Deci and Ryan, 2000), individuals have innate basic needs that may explain one's motivation and overall well-being. The basic needs of autonomy, relatedness, and competence have been discussed as being useful in exploring the motivational potential of organizational factors (Van den Broeck et al., 2010). Therefore, work-related basic needs satisfaction is the implementation of basic psychological needs satisfaction in the workplace. NWW may be able fulfill employees need for autonomy in a work-related setting by allowing

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greater flexibility in creating their work day and fulfill competence by increasing worker's productivity (Ruostela and Lonnqvist, 2013). Consequently, NWW may inhibit the need for relatedness, by blurring the boundaries between work and family and reducing the quality of one's relationships with coworkers or family (Demerouti et al., 2014). Despite the association between NWW and Basic Needs Satisfaction, there may be additional factors to explain this relationship.

It is still unclear why NWW might affect Basic psychological need satisfaction (BNS) and if so, through which mechanisms. This study will further examine the relationship between NWW and BNS through Work-Family Balance (WFB; Frone, 2003) as a mediator. WFB has previously been conceptualized as work demands meeting family demands, and family resources demands work demands, in that one's participation is effective in each domain (Voydanoff, 2005). WFB may be useful in helping to explain how NWW may effect Work-Related Needs Satisfaction. Previous literature suggests that flexible work times and locations impacts levels of WFB positively (Hill et al., 2001), which may enhance that the need for autonomy being met. Additionally, WFB was found to be instrumental in predicting employee's quality of work and job performance (Smith, 2010), indicating competence may be satisfied. Also previous research suggested that lower organizational support combined with lower levels of WFB (Fatima et al., 2012), may be a significant predictor in the need for relatedness being thwarted. Although previous studies have focused on WFB and different motivational outcomes (Gopalan & Pattusamy, 2020; Rahman et al., 2020), little research has done this through the context of NWW.

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Therefore, the purpose of this paper is to explain the influence of New Ways of Working (NWW) on Work-Related Basic Needs Satisfaction, through Work-Family Balance (WFB). This leads us to following research question: Is the relationship between New Ways of Working and Work-Related Basic Needs Satisfaction mediated by Work-Family Balance? This paper wants to contribute to the burgeoning literature on NWW and BNS. Firstly, most previous studies have studied NWW through a cross-sectional design (Gorgievski et al, 2010; Peters et al., 2014; Brunia et al., 2016; Palvalin, 2016; Schmoll and Süß 2019). This study will utilize a longitudinal design in order to reduce common method variance and enhance casual inferences (Rindfleisch et al., 2008), by examining the effects of NWW across two separate time points.

2. Theoretical Background

2.1 New Ways of Working

With the advancements of technology, many organizations are increasingly looking toward implementing forms of New Ways of Working (NWW) in their workplace (Blok et al., 2012). This type of working has become especially beneficial throughout the COVID-19 pandemic, with organizations adopting this strategy and looking to continue utilizing this style of working into the future. New Ways of Working are non-traditional work practices that utilize adaptable work locations and communication technologies (ICT) (Laihonen et. al, 2012). NWW differ from a traditional workplace setting in that they may have distinct work locations, may use smartphones or videoconference for work, and have variable working schedules (Renard et al., 2021; Van Steenbergen et al., 2018). NWW is advantageous for organizations, as it has shifted how they operate on a daily basis, by creating more possibilities to complete one's work. This shift is seen mainly through physical place and location, as workers no longer need to be

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anchored to one specific office or location (Ruostela et al., 2012). Because of the advancement of ICT, one's work location can be at home, during a commute, at a café, or even on vacation.

Although NWW allows for companies to function more creatively and efficiently, there has also been a shift in how companies must adapt in order to properly implement NWW. There are many extraneous circumstances for organizations to consider including its physical, virtual, and social environments (Ruostela and Lonnqvist, 2013). These dimensions are all interdependent, as organizations must accompany their physical environment, by providing employees with the proper tools and equipment to accompany their office space. They must also consider how to virtually set them up with the proper internet connection and software in order for them to work on a daily basis (Ruostella and Lonnqvist, 2013). Therefore, the most effective implementation of NWW takes into account all three facets of physical workspace, proper ICT connection, and effective culture to buy into NWW (Ruostella & Lonnqvist, 2013).

2.2 Work-Related Basic Needs Satisfaction

Basic needs satisfaction has been a highly examined topic in psychological research (Freud, 1920; Maslow, 1954). Self-Determination Theory (Ryan and Deci, 2000) has since expanded on this research, narrowing satisfaction into three specific categories: autonomy, relatedness, and competence. SDT argues that these needs are innate and universal, and that human nature has a deeper psychological structure (Tooby & Cosmides, 1992). The need for autonomy refers to individual having a sense of choice over their own activities (Gerdenitsch, 2017). Relatedness refers to individuals need to experience interpersonal connection or belongingness to a group (Gerdenitsch, 2017). Competence then refers to individual feelings their methods or activities are effective in interacting with their environment (Van den Broeck et al.,

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2010). These three basic factors generalize to people's need for satisfaction in general and across different life-domains. However, because the current study wants to explore consequences of the work environment, BNS will be examined through a work or organizational context.

There are certain consequences that may come as a result of meeting one's work-related needs satisfaction. Previous literature suggests positive relationships of work-related need satisfaction scores to job satisfaction, lower burnout, decreased turnover, and even higher performance (Gagne' & Deci, 2005). Specifically, the need for autonomy has shown specific benefits in a work-related context, with positive effects on employee's overall performance, productivity, and job-satisfaction (Baltes et al. 1999). In terms of the need for competence, employees will feel a higher sense of well-being and seek to engage more in the workplace once the need for competence is met (Deci, Olafsen, and Ryan 2017). Concerning the need for relatedness in the workplace, an individual may experience increases in social support or overall well-being, due to their need being fulfilled (Baruch-Feldman et al. 2002). However, it is suggested individuals maintain constant face-to-face interaction either physically or virtually in order for the need for relatedness to be consistently met (Gerdenitsch, 2017).

2.3 Work-Family Balance

Work-Family Balance (Frone, 2003) is a concept very much relevant in the lives of individuals on an everyday basis. Previously, the most widely used meaning of WFB, is a lack of conflict or interference between an individual's work and family roles (Frone, 2003). However, research has questioned if WFB is strictly just lack of conflict or its own distinct entity (Grzywacz and Carlson, 2007; Grzywacz and Carlson, 2009). Therefore, WFB has more recently been defined as the accomplishment of role-related expectations between an individual and their

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partner in both the work and family domains (Grzywacz and Carlson, 2009). This definition is in line with Role Theory (Marks and MacDermid, 1996), in that positive role balance is to be fully engaged and to approach every role with attentiveness. Additionally, role balance is positioned across multiple roles and not just specific to one role (Marks and MacDermid, 1996). This idea links to WFB, in that balance must be instilled across both the work and family domains.

3. Framework & Propositions

3.1 Conceptual Framework

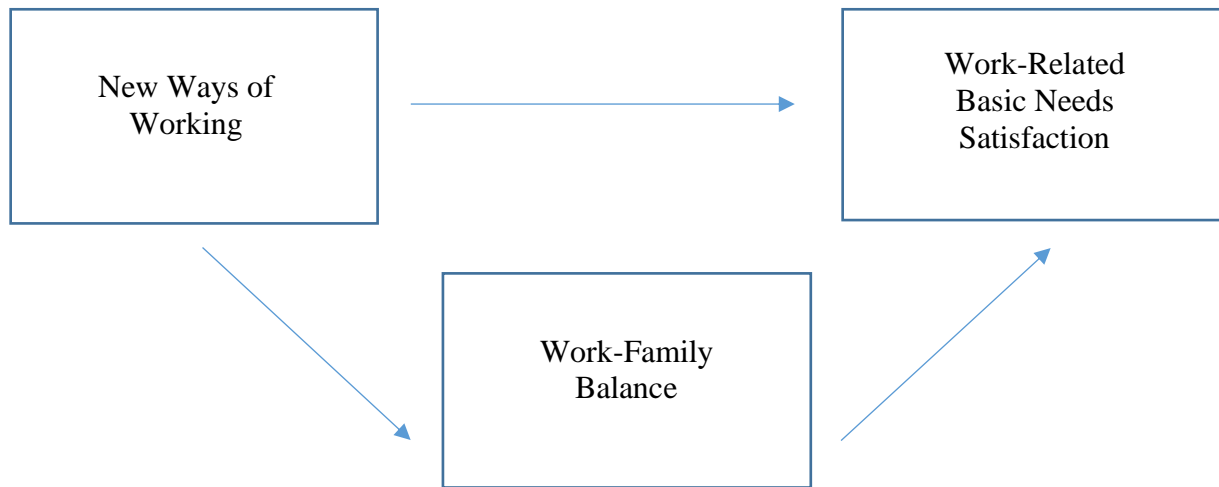


Figure 1. Conceptual Framework

3.2 NWW and Work-Related Basic Need Satisfaction

Deci and Ryan (2000) state that working environment characteristics may be a driving factor in the fulfillment or thwarting of one's basic needs. By nature, New Ways of Working shapes the way in which an organizations environment must function, in turn effecting employees basic need satisfaction. Firstly, flexible work arrangements such as NWW, can increase the need for autonomy in the workplace (Van Steenbergen et. al., 2018). By allowing

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flexibility in when and where employees work, the need for autonomy can be more highly satisfied. Because employees are operating away from direct supervision, they have a greater sense of autonomy over the planning and organization of general work-related activities (Standen et al., 1999). Overall, the flexibility in work location, timing, and execution of work tasks NWW allows, creates an autonomous work environment for employees (Perry et al., 2018).

In the context of NWW, its relationship with the need for competence has not been closely studied to our knowledge. However, a recent study has found the satisfaction of the need for competence is higher in teleworkers than office workers (Brunelle & Fortin, 2021). Further, because competence relates to employee's feelings toward their capabilities and effectiveness, NWW can indirectly relate to the need for competence through performance. Previous studies suggest that non-traditional or flexible work arrangements are positively related to productivity and performance (McCloskey & Igbaria, 2003; Morgan, 2004). Also, because the flexibility of NWW allows employees to reduce travel time and experience less workplace disruptions, productivity may be enhanced (Morgan, 2004). Overall, NWW provides employees with the necessary support in order to feel competent in their respective job.

Finally, there is previous research to suggest NWW may have a negative association with the need for relatedness. The need for relatedness may not be satisfied due to reduced face-to-face interactions with fellow coworkers, which may weaken social bonds (Golden, 2006). This idea is also supported by media richness theory, suggesting that texts or emails are not as rich as face-to-face interactions (Sharma et al., 1981). Because NWW almost exclusively utilizes video interaction, emails, and instant messaging, the quality in relationships between coworkers may be diminished. Communication through technologies tend to be more formal or professional,

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which may also add negative qualities to the relationship between NWW and the need for relatedness (Brunelle, 2013). This reasoning leads us to formulate the following hypothesis:

Hypothesis 1: New ways of working relates positively to Autonomy(H1a) and Competence (H1c), but negatively to Relatedness (H1b)

3.3 NWW and Work-Family Balance

As an increasing number of people utilize NWW, the balance between one's work and family is affected. First, NWW has been argued to benefit WFB because it allows employees the opportunity of more control over their respective workdays (Demerouti et al., 2014). A flexible work schedule allows an employee to schedule activities around work in a more suitable fashion (Par-asuraman & Greenhaus 2002). For example, employees with children are more easily able to schedule meetings, calls, or tasks around picking up their child from school. Additionally, using electronic communication enables employees to stay in touch with work affairs, while attending to responsibilities of one's family (Ten Brummelhuis et al. 2012).

Further, although NWW may be beneficial for some people's WFB, there are also clear disadvantages associated with their relationship. Building on Role theory, it is suggested forms of NWW may increase role hierarchy, leading to negative role balance (Marks and MacDermid, 1996). A study by Fedáková and Ištoňová (2017) echoes this sentiment, as NWW was found to contribute to the boundaries of work and family being blurred. When roles are blurred between the two domains, it becomes more difficult for individuals to focus solely on either their work or family. This blurring may be enhanced due to the increased use of ICT's while working from a flexible work arrangement (Katz and Aarhus 2002). By constantly using ICT's to attend to work responsibilities, this may lead employees to never fully stop working and interfere with one's

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family. Because work may never stop, employees are shown to experience greater levels of stress due to the unstructured nature of their work schedule (Tausig and Fenwick 2001).

Although there are arguments supporting both sides, the summation of positive factors due to the flexible nature of NWW, leads to the hypothesis:

Hypothesis 2: New ways of working relates positively to work-family balance over time.

3.4 Work-Family Balance and Work-Related Basic Needs Satisfaction

An employee's level of WFB may have an impact on one's work-related BNS. Although little previous research, it is argued there is a positive relationship between WFB and the specific factors of BNS (Wu and Yan, 2012). In regards to the need for autonomy, WFB relates positively with autonomous support, such as giving employees the opportunity to control over their work schedules (Greenhaus et al., 2012). High levels of WFB was also seen to relate positively to increased satisfaction for the need of autonomy, due to workers having control in order to properly balance the demands of both their work and family roles. Similarly, WFB relates positively to social support from both work and family (Wu and Yan, 2012), suggesting a positive relationship with the need for relatedness. Having social support and good relationships with co-workers, helps employees feel more confident in their ability to balance their roles. Additionally, the concept that supportive spouses or partners enhances an employee's ability to balance work and family (Haddock et al., 2006), helps further argue that WFB may help satisfy the need for relatedness. However, specifically to the need for competence, the relationship between WFB and the satisfaction of this need has not been directly studied. Therefore, by looking at performance as closely related to competence, it is shown that increased performance can be derived from proper WFB (Knaflič, et al. 2010). Higher levels of WFB in an employee's

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life also related positively to enhanced productivity in the workplace (Tomazevic et al., 2014), in which more competent employees tend to be more productive. This reasoning leads us to formulate the hypothesis:

Hypothesis 3: Work-family balance relates positively to autonomy (H3a), relatedness(H3b), and competence (H3c)

3.5 Mediating Effect of WFB on NWW and Work-Related Needs Satisfaction

There is no previous literature specifically looking at WFB as a mediator between NWW and Work-related needs satisfaction. However, given our theorized relationship between NWW and BNS, we can presume that the level of WFB can help further explain the link between the two, in that the satisfaction of basic needs will be met accordingly. A recent study (Qiu and Dauth, 2021) found significant evidence of WFB as a mediator, to help explain the relationship between virtual work intensity and job satisfaction. That is, appropriate levels of virtual work intensity positively impact WFB, which is also positively related to job satisfaction. Thus, it can be inferred that WFB may have a similar relationship between NWW and the satisfaction of work-related basic needs. This leads us to the hypothesis:

Hypothesis 4: The relationship between new ways of working and autonomy (H4a), relatedness (H4b), and competence (H4c) is mediated by work-family balance.

4. Methods

4.1.1 Research Strategy

The main strategy that will be used in this research will be a quantitative study with a longitudinal design. The study will use data from IDEWE, an external service for prevention and protection at work, whom used a three-month time lag across data points, from June 2021-

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September 2021. All variables in the study were measured at both time points, tested for lagged relationships, and evolutions across time in order to reduce common method variance.

4.1.2 Procedures

This thesis is associated with Tilburg University and IDEWE, a Belgian-based External Service for Prevention and Protection at Work, with support from the University of Leuven. News of the study was spread by newsletter, social media, and IDEWE's web page in order to gain more volunteers. Participants whom were part of the pre-existing research panel ($n=519$), were allowed to participate in a contest at the end of the first survey, where a voucher was sent to each of the five winners. Additionally, the survey was designed and distributed to participants via the statistical software Socrates, where the survey could be completed on both mobile phones and laptops. The survey included an informed consent section stating results were only for the purpose of the study, fully anonymous, and no data will be saved for any future purposes. It included 95 items, had a set order of questions, and took around 15 minutes to complete.

The study aimed to examine adult workers in Belgium, as 2085 participants initially agreed to the studies general terms and conditions. The data set was cleaned to verify there were no minors in the participant list, remove persons outside of Belgium ($n=4$), remove persons without paid employment ($n=105$), and only invite those who agreed to being invited at T2 ($n=1060$). The majority of invitations were then properly delivered via email at T1 ($N=992$). Another invitation and reminder were delivered, as 949 individuals proceeded with inputting data at T2.

4.2 Sample

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After T1 and T2 survey data was merged, 61.2% of participants were found to have agreed to the general conditions (n=581). Wave 1 consisted of pooled and recruited participants, however 55% of them participated at Wave 2. Further data cleaning was performed on the dataset to account for incorrect quality check answers and missing items from both times. After merging the clean Time 1 (T1) and Time 2 (T2) data, the sample consisted of 485 participants. All participants were at least 18 years old and was an employee in Belgium. Of the participants 25.5% were male and 74.5% were female. Participants age ranged from 25 to 64 years (M=47.56, SD=9.33). The education level ranged from primary to master level (M=4.13, SD=.800), 78.5% of participants held either a bachelor's (41.6%) or master's degree (36.9%).

Table 1

Social Demographics for IDEWE Sample (N=485)

	<i>Frequency</i>	<i>Percentage</i>
Gender		
Female	359	74.5
Male	123	25.5
Education		
Primary	2	0.4
First 3 Years of High School	8	1.6
Last 3 Years of High School	94	19.4
Bachelor's Degree	202	41.6

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Master's Degree	179	36.9
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4.3 Measures

From the survey by IDEWE consisting of 96 questions, this thesis will use 20 items based on theories and previous scales described in the theoretical background. All items of the current study were measured using a 5-point Likert scale ranging from (1) “strongly disagree” to (5) “strongly agree”. To verify the items used in the survey, a construct reliability test was performed. This was done by examining the Cronbach’s Alpha for each construct at both Time 1 (T1) and Time 2 (T2). Although there are different opinions regarding proper reliability levels, it is generally assumed that a construct must have at least a minimum score of $\alpha=.7$ (Taber, 2018).

New Ways of Working: NWW was measured with the 5-item New Ways of Working Scale of Van Steenbergen (2018). This scale is intended to measure to what extent employees adhered to the new ways of working. A sample item is “I use information technology (e.g. smartphone, laptop), so I can work at any chosen location or time.” The Cronbach alphas were .82 (T1) and .85 (T2), respectively.

Work-Related Basic Needs Satisfaction: Work-related basic needs satisfaction was measured with 9 items chosen from the 15- item Work-related Basic Need Satisfaction scale of Van den Broeck (2010). 9 items were chosen (3 items per dimension) to measure each work-related basic need: autonomy, relatedness, and competence. The 9 items chosen for the current study were selected by highest factor loadings and official translations were used. A sample item used to measure autonomy is “The tasks I have to do at work are in line with what I really want to do.” The reliability coefficients for autonomy were .71 (T1) and .86 (T2), respectively. A sample item used to measure relatedness is “Some people I work with are close friends of mine.” The

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reliability coefficients for relatedness were .845 (T1) and .85 (T2), respectively. A sample item used to measure competence is “I really master my tasks at my job.” The Cronbach alphas for competence were .89 (T1) and .90 (T2), respectively.

Work-Family Balance: Work-family balance was measured with 5 items of the highest factor loading from the 6-item work-family balance scale of Grzywacz and Carlson (2009). This scale is intended to measure the extent to which individuals meet role-related expectations of both work and family. A sample item used to measure work-family balance is “I can meet the expectations of important people at work and in my family life.” The Cronbach alphas were .896 (T1) and .888 (T2), respectively.

Control Variables: The current study controlled for specific demographic variables that may covary with New Ways of Working (Berneth & Aguinis, 2016). As discussed previously, because New ways of working may blur the boundaries between work and non-work, therefore the current study controlled for gender and age (Other=0; Female=1) (Chelsey, 2005; Becker et. al., 2022). The current study also took into consideration level of education (Other=0; University degree=1), as a variable that may have a systemic relationship with work-related basic needs satisfaction (Berneth & Aguinis, 2016; Becker et. al., 2022).

Factor Analysis: After all constructs were checked for reliability, a Kaiser-Meyer-Olkin (KMO) Test was run on the items per each scale, to test the sampling adequacy for exploratory factor analysis. A varimax rotation and keiser normalization was used to determine validity, and it is generally assumed that a valid score must exceed .60 (Kaiser, 1974). The items indicate the sampling in the current study was adequate for each measure, as KMO= .741 for NWW, .683 for

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Work-related basic needs satisfaction, and .861 for WFB, respectively. Bartlett's Test of Sphericity had a significant value ($p < .001$) for all constructs.

5 Results

5.1 Analyses

All analysis was carried out using SPSS statistical software version 26. To get an overview of the data, it was first examined through descriptive statistics and frequency tables. The data was then further checked for any normality of distribution. Due to the longitudinal nature of the study, a Kolmogorov-Smirnov test was conducted to check for normality across two time points. The data was found to be normally distributed at the .05 cut-off value (Conover, 1999) for both T1 and T2 (Table 2).

Table 1

Social Demographics for IDEWE Sample (N=485)

	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>K-S Test</i>
Gender	1.74	0.436	-1.127	-0.734	.463
Age	47.56	9.339	-0.457	-0.642	.094
Education	4.13	0.807	-0.620	0.009	.229
NWW T1	13.7060	3.97002	-0.637	-0.117	.97
NWW T2	13.5373	4.23356	-0.460	-0.437	.87
WFB T1	15.4986	2.72095	-.814	1.177	.185
WFB T2	15.3834	2.60080	-.484	.394	.192
Need for Autonomy T1	7.1574	1.04456	0.262	0.807	.102

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Need for Autonomy T2	7.0632	1.01984	0.059	1.218	.106
Need for Relatedness T1	3.4876	1.37151	0.466	-0.131	.181
Need for Relatedness T2	3.5000	1.34380	0.446	-0.076	.196
Need for Competence T1	9.6357	1.43010	-0.378	0.224	.233
Need for Competence T2	9.6186	1.42311	-0.319	0.309	.258

5.2 Multiple Hierarchal Regression

To analyze Hypothesis 1, 3, and 4, a four-stage multiple hierarchal regression was conducted three separate times to account for the satisfaction of each work-related basic need at Time 2. First, the collinearity statistics (VIF) were measured and deemed to be within the acceptable limits of below 2.5 (Johnston, et. al., 2018). At stage one, the control variables of age, sex (Male=0; Female=1), and level of education were added to the regression model to account for situational effect. Next, in order to investigate the changes in each dimension between T1 and T2, the outcome of a work-related basic needs satisfaction (T1) was added at stage 2. Then at stage 3, NWW was added at T1. Finally, at stage four, due to its more immediate influence (Rahman et al., 2017) the mediator of WFB was added at T1 to complete the model.

In testing Hypothesis 1a, autonomy was inserted at T1 to account for lag (Table 2). Results revealed this explained 25% of the variation in the satisfaction for the need of autonomy(T2), as the relationship was positive and significant, ($\beta=.488$, $p < .001$). Adding NWW at T1 explained an additional .6% of variation in autonomy, as this relationship was negative and not significant, $\beta= -.021$, $p > .05$. Therefore, Hypothesis 1a was not supported. Finally, dimensions of WFB at T1 were added to the regression model (H3a) and explained an

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additional .5% of the variation in autonomy. The relationship was also negative and not significant ($\beta = -.027$, $p > .05$), therefore Hypothesis 3a was rejected.

Table 3

Summary of Hierarchical Regression Analysis for Variables predicting the Need for Autonomy(T2)

<i>Variable</i>	β	<i>t</i>	<i>SE</i>	<i>R</i>	<i>R</i> ²	ΔR ²
Step 1				0.108	0.012	0.012
Age	.003	0.53	0.006			
Gender	0.119	0.117	1.018			
Education	-0.114	-1.767	0.065			
Step 2						
Age	0.003	0.603	0.005			
Gender	0.099	0.981	0.101			
Education	-0.04	-0.703	0.056			
Need for Autonomy T1	0.488	11.714	0.042	0.509	0.259	0.248
Step 3						
Age	0.002	0.417	0.005			
Gender	0.076	0.753	0.102			
Education	-0.011	0.058	-0.186			
Need for Autonomy T1	0.475	11.279	0.042			
NWW T1	-0.021	-1.808	0.012	0.515	0.265	0.006
Step 4						
Age	0.002	0.501	0.005			

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Gender	0.071	0.705	0.101			
Education	-0.013	-0.216	0.058			
Need for Autonomy T1	0.472	11.227	0.042			
NWW T1	-0.019	-1.582	0.012			
WFB T1	-0.027	-1.725	0.016	0.52	0.271	0.005

In testing Hypothesis 1b, relatedness was inserted at T1 to account for the lagged relationship (see Figure 3). This explained 46% of variation in relatedness(T2) and the relationship was found to be positive and significant ($\beta = .658, p < .001$). Adding NWW at T1 explained an additional .6% of variation in relatedness, and this relationship was negative and significant, $\beta = -.028, p < .05$. This evidence was in line with Hypothesis 1b. Dimensions of WFB at T1 were then added to the regression model (H3b) and explained an additional .7% of the variation in relatedness. This relationship was negative and significant ($\beta = -.042, p < .05$), therefore Hypothesis 3b was not supported.

Table 4

Summary of Hierarchal Regression Analysis for Variables predicting the Need for

Relatedness(T2)

<i>Variable</i>	β	<i>t</i>	<i>SE</i>	<i>R</i>	<i>R2</i>	ΔR^2
Step 1				0.07	0.005	0.005
Age	0.001	0.138	0.007			
Gender	-0.062	-0.4	0.155			
Education	-0.11	-1.285	0.086			
Step 2						
Age	0.002	0.305	0.005			
Gender	-0.149	-1.304	0.114			
Education	-0.078	-1.226	0.063			

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Step 3	Need for Relatedness T1	0.658	18.583	0.035	0.678	0.46	0.455
	Age	0	0.086	0.005			
	Gender	-0.179	-1.56	0.115			
	Education	-0.037	-0.568	0.066			
Step 4	Need for Relatedness T1	0.651	0.669	0.035			
	NWW T1	-0.028	-2.139	0.013	0.683	0.466	0.006
	Age	0.001	0.198	0.005			
	Gender	-0.185	-1.626	0.114			
	Education	-0.04	-0.607	0.065			
	Need for Relatedness T1	0.64	18.004	0.036			
	NWW T1	-0.024	-1.846	0.013			
WFB T1	-0.042	0.018	-0.086	0.688	0.473	0.007	

In testing Hypothesis 1c, competence was inserted at T1 to account for lag. This explained 47% of the variance in competence(T2) and the relationship was significant and positive ($\beta = .700$, $p < .001$). Adding NWW at T1 to the regression model explained an additional 0% of variation in competence and the relationship was negative and not significant, $\beta = -.005$, $p > .05$. This evidence was not in line with Hypothesis 1c. Dimensions of WFB at T1 were then added to the regression model (H3c) which explained an additional .4% of the variation in competence. The relationship was also positive and not significant ($\beta = .035$, $p > .05$), therefore Hypothesis 3c was rejected.

Table 5

Summary of Hierarchical Regression Analysis for Variables predicting the Need for Competence(T2)

<i>Variable</i>	β	<i>t</i>	<i>SE</i>	<i>R</i>	<i>R2</i>	ΔR^2
Step 1				0.121	0.015	0.015
Age	0.017	2.198	0.008			
Gender	-0.06	-0.364	0.165			

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Step 2	Education	-0.025	-0.269	0.091	0.699	0.489	0.474
	Age	0.005	0.801	0.006			
	Gender	-0.134	-1.129	0.119			
	Education	0.07	1.056	0.066			
Step 3	Need for Competence T1	0.7	19.506	0.036	0.699	0.489	0
	Age	0.004	0.758	0.006			
	Gender	-0.14	-1.168	0.12			
	Education	0.077	1.124	0.069			
Step 4	Need for Competence T1	0.699	19.468	0.036	0.702	0.493	0.004
	NWW T1	-0.055	-0.396	0.014			
	Age	0.004	-1.098	0.006			
	Gender	-0.131	-1.098	0.12			
	Education	0.076	1.113	0.069			
	Need for Competence T1	0.676	17.67	0.038			
	NWW T1	-0.009	-0.662	0.014			
WFB T1	0.035	1.77	0.02				

To analyze Hypothesis 2, a two-stage multiple hierarchal regression was conducted to account for work-family balance at T1. As done for the four-stage model, the collinearity statistics (Tolerance and VIF) were measured and deemed to be acceptable at all levels. At stage one, the control variables of age, sex (Other=0; Female=1), and level of education were added to the regression model to account for situational effect. Then at stage two, NWW at T1 was added to account for the lagged relationship between the two variables. It was observed that NWW explained 2% of the variance of WFB, as this relationship was positive and significant ($\beta = .099$, $p < .05$), therefore Hypothesis 2 was supported.

Table 6

Summary of Hierarchal Regression Analysis for Variables predicting Work-Family Balance (T1)

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<i>Variable</i>	β	<i>t</i>	<i>SE</i>	<i>R</i>	<i>R</i> ²	ΔR ²
Step 1				0.066	0.004	0.004
Age	0.011	12.587	0.015			
Gender	-0.289	-0.917	0.315			
Education	0.088	0.505	0.175			
Step 2				0.149	0.022	0.018
Age	0.015	0.992	0.015			
Gender	-0.181	-0.029	0.315			
Education	-0.054	-0.016	0.181			
NWW T1	0.099	0.142	0.036			

5.3 Mediation Model Testing

To observe potential mediation effects of WFB (T1), SPSS Process Macro v4 model 4 of Hayes (2013) was used. The indirect effect of NWW(T1) on autonomy(T2) through WFB(T1) was observed and found not to be statistically significant (Effect=-.0026, 95% C.I. [-.0069, .0004]). Next, the indirect effect of NWW(T1) on relatedness(T2) through WFB(T1) was observed and also found not to be statistically significant (Effect=-.0038, 95% C.I. [-.0093, -.0002]). Finally, the indirect effect of NWW(T1) on competence(T2) through WFB(T1) was observed and found not to be statistically significant (Effect=.0038, 95% C.I. [-.0006, .0097]). Therefore, Hypothesis 4a, 4b, and 4c were rejected.

6 Discussion

The current study represents a theory-driven investigation on how New Ways of Working is associated with Work-related basic needs satisfaction across time. This study contributed to previous literature on the effects of NWW on Work-related basic needs satisfaction, by utilizing a longitudinal design that measured variables across two separate time points. This is an

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important contribution because most previous studies designs on the relationship were cross-sectional (Blok et al., 2012; Gerdenitsch, 2017). This study raised the research question of whether the relationship between NWW and Work-related basic needs satisfaction was mediated through Work-Family Balance over time. This study was built on the Self-Determination Theory (Ryan and Deci, 2000) as a theoretical framework and the notion that the satisfaction of basic needs is innate. The framework used perceived levels of NWW and WFB as influencing factors on the satisfaction of one's work-related basic needs.

Based on the results of this study, no relationship was found between New Ways of Working (T1) and the needs for autonomy (T2) and competence (T2). This suggests that there is no evidence that the use of NWW increases the satisfaction of one's need for autonomy or competence. The evidence is not in line with Hypothesis 1a or 1c, which assumed the flexibility NWW offers, will in turn increases the satisfaction of one's need for autonomy and also competence (Van Steenbergen et. al., 2018; Brunelle & Fortin, 2021). Therefore, Hypothesis 1a and 1c were not supported. This may be due to the nature of NWW and the various new programs that are necessary to work online. Because many companies are utilizing new software's in order to track employee progress or actions, their need for autonomy may be thwarted. Also due to these new online resources, employees may have been overwhelmed by trying to master the multitude of programs, that their need for competence may not be met. However, the findings were in line with Hypothesis 1b, which based off of media-richness theory (Sharma et al., 1981), stated that the online interactions NWW inherently provides, would decrease one's need for relatedness. This hypothesis assumed that because individuals would have reduced face-to-face interaction with fellow employees, relationships would not be as well

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built, which would result in weaker relationships (Golden, 2006). Findings indicated the results were in line with the hypothesized relationship, therefore hypothesis 1b was supported. This may be due to the fact that because employees are not interacting with fellow coworkers face-to-face at a physical office location, online interactions through NWW may not be enough to satisfy one's need for relatedness.

This study found a significant positive relationship between New Ways of Working (T1) and Work-family balance (T1). This suggest that there is evidence that NWW has a positive association with the balance between an individual's work and family responsibilities. This was in line with Hypothesis 2, which based off of Demetrouti et al. (2014), stated that the flexibility NWW provides would give employees more control over their workdays, in turn helping them balance family responsibilities. The hypothesis also assumed that due to the capabilities of electronic communication, individuals can attend to work affairs while simultaneously attending to family affairs (Ten Brummelhuis et al., 2012). The evidence helps these claims, as Hypothesis 2 was supported. The flexibility and multitude of options that NWW allows individuals in shaping their workdays, can be a significant factor in how employees are able to balance between their work and family lives.

This study did not find a significant positive relationship between Work-Family Balance (T1) and the need for autonomy, relatedness, and competence at T2. This suggests there is no evidence that a proper balance between one's work and family life increases the satisfaction of one's work-related basic needs. The evidence is not in line with hypothesis 3a, 3b, or 3c, which based off the previous findings of Wu and Yan (2012), stated that WFB has a positive association with the factors of basic needs satisfaction. Their findings showed that when

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individuals are capable of balancing demands from both their work and family, they see their needs of autonomy, relatedness, and competence fulfilled. However, this study was not in line with this previous research. Therefore, hypothesis 3a, 3b, and 3c were not supported. As previously discussed there was little research observing the relationship between WFB and work-related basic needs satisfaction. It was assumed that because employees are capable of balancing work and family responsibilities, they experience more control over their work (Greenhaus et al., 2012) and feelings of increased social support (Wu and Yan, 2012). Although the relationship between WFB and competence was not directly examined before, the assumption was also made that the closely related variable of performance was enhanced from proper WFB (Knaflič, et al. 2010). Nonetheless, this study suggests that satisfactory levels of WFB may not be a factor in whether one's work-related basic needs are satisfied. This may come from the findings that other factors such as working hours, gender, or marital status may have more of an influence on the satisfaction of one's needs than solely WFB (Rahman, 2017).

The research of this study did not find statistically significant support for the mediating effect of Work-family balance (T1) on the relationship between New Ways of Working (T1) and the need for autonomy, relatedness, and competence at T2. Hypothesis 4a, 4b, and 4c expected the association between the use of NWW and work-related basic needs satisfaction to be mediated by the level of balance between one's work and family. This was not in line with previous indirect research of Qiu and Dauth (2021), whom found evidence of WFB as a mediator between virtual work intensity and job satisfaction. The direct effect of NWW (T1) to WFB (T1), combined with the direct effect of WFB to the need for autonomy (T2), relatedness (T2), and competence (T2) was less than the direct effect of NWW(T1) to the satisfaction of each

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work-related basic need at T2. Because of this, hypothesis 4a, 4b, and 4c was not supported. This may be may be due to the 3-month time lag not being enough time to properly measure a mediation effect.

6.1 Limitations

There are several limitations that must be acknowledged regarding the present study. Firstly, the longitudinal nature of the study must be discussed. Although the survey was designed to measure results across the minimum 3-month time lag between June 2021 to September 2021 (Ployhart et al., 2010), the lag might not have been long enough to find the strongest effects between variables. Previous research suggests that an interval of at least two years may be the optimal time period to measure the longitudinal effects of stressors at work (Dormann & Zapf, 2002). The survey was also fairly long, which was consisted of 96 items in total. This may have been a factor in excluding nearly 50% of respondent's data during data cleaning, due to participants incorrectly answering the attention check item or leaving other items unanswered. Additionally, the sample consisted exclusively of workers in Belgium which may make the study difficult to generalize to other populations. Work conditions in Belgium such as working hours, task complexity, or career perspectives, may be different from other regions or workplaces (Vandenbrande et al., 2012), therefore the results may be only applicable to Belgium employees. Finally, because the survey utilized self-report measures, the results may have been effected by common method variance (Podsakoff et al., 2003). This limitation refers to participants potentially answering with bias, which may have affected the validity of results.

7 Future Research

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This study offers contributions to previous studies concerning employees Work-related basic needs satisfaction with New ways of working as a possible influencing factor. Although the evidence from this research suggests that NWW has no influence on the satisfaction of an individual's work-related basic needs, as previously discussed, it might be that participants of the study were already well-adjusted to conditions of the Covid-19 pandemic. Because NWW has become so much more prevalent in the workplace throughout the years for organizations (Blok et al., 2012), most workers today already have previous experience utilizing these new forms of working. Therefore, NWW may not be as impactful of an influencing factor in the future as online or hybrid work has become the new norm. However, results did suggest NWW may thwart the satisfaction of one's need for relatedness due to reduced face-to-face interactions (Golden, 2006). This may be important to consider for future research, as technological improvements could potentially enhance the nature of virtual meetings between employees, in turn strengthening social bonds. Additionally, the longitudinal design of this study may be valuable to consider for future research on this topic. Although results were measured across two time points, future studies could utilize a longer time of one year to provide stronger effects of work characteristics on one's satisfaction (De Lange et al., 2004). Future research may also consider conducting a study with a larger population that spans across different cultures, countries, or continents in order to improve generalizability.

7.1 Practical Implications

There are several practical implications for workers and facets of the workplace that stem from the research of this study. Firstly, because the current study found significance for a negative relationship between NWW and the satisfaction of the need for relatedness, managers

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and organizations must be aware of satisfying this need among their employees whom are utilizing NWW. Managers can help satisfy their employees need for relatedness by having routine virtual check-ins or one-on-one meetings (Parfyonova, 2009), whereas organizations themselves can implement virtual happy hours, coffee breaks, or activities (Nijp et al., 2016). Additionally, because the research of the current study found a significant positive relationship between NWW and WFB, future employees with families may want to look exclusively for remote or hybrid work, in order to maintain a proper balance between their work and family responsibilities. Organizations may also look to offer support programs to those employees whom have high family responsibilities, with increased opportunities for them to utilize NWW. Finally, this study offers implications to Belgium organizations that want to focus on helping employees satisfy work-related basic needs or create proper WFB in their lives.

7.2 Conclusion

The aim of this study was to examine the mediating role of Work-family balance on the relationship between New ways of working and Work-related basic needs satisfaction. This was done in order to help address the gaps in longitudinal research concerning NWW and its effects Work-related basic needs satisfaction (Peters et al., 2014; Brunia et al., 2016). This study will contribute to the increasing amount of literature on NWW, WFB, and Work-related basic needs satisfaction, because each relationship was viewed through a longitudinal lense over the Covid-19 pandemic. The expectation was that NWW would have either help satisfy or thwart one's work-related basic needs, with through WFB as a direct influencing factor. The study tried answering the following research question as presented in the introduction: *Is the relationship*

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between New Ways of Working and Work-Related Basic Needs Satisfaction mediated by Work-Family Balance?

In order to answer the research question, multiple hypotheses were formulated based on previous theory. First, it was hypothesized New ways of working would have a positive effect on one's need for autonomy and competence over time, but a negative effect on their need for relatedness. It was also hypothesized that NWW would have a positive association with Work-family balance across time. Then it was hypothesized that WFB would also have a positive association with the satisfaction each work-related basic need. The final hypothesis wanted to examine the mediating effect of WFB across time, which argued that it would mediate the relationship between NWW and Work-related basic need satisfaction.

The results indicate that NWW does not have a significant positive influence on one's need for autonomy or competence, but does have a significant negative influence on one's need for relatedness. Therefore, it can be concluded that the virtual nature NWW inherently offers, influences the thwarting of one's need for relatedness. The results also indicate that NWW has a significant positive influence on WFB. This concludes that NWW can benefit employees in helping them balance responsibilities of both their work and family. Additionally, there was found to be no positive relationship between WFB and employees Work-related basic needs satisfaction. Finally, there was also no significant effects of WFB as a mediating factor in the relationship between NWW and the need for autonomy, relatedness, or competence.

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