



# Conceptualizing the moderating effects between work from home and individual performance – Developing a conceptual framework using the self-determination theory

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## Abstract

The working systems of organizations/institutions have undergone continuous transformations over the years for various reasons. Researchers have continually strived to find effective solutions/appropriate work systems to sustain an individual's performance in spite of the challenging working/business environment. The global pandemic Covid-19 prompted a rethinking of organizational work practices across sectors. Work from home (WFH) became a key component of continuing the organization's working system. This paper specifies the following six factors that may moderate the effectiveness of a work-from-home setting on individual performance such as dedication, disposition, determination, configuration, collaboration, and coordination. The paper uses self-determination theory (SDT) to develop a conceptual framework for WFH-individual performance, which specifies dedication, disposition, and determination as intrinsic motivators, while configuration, collaboration, and coordination as extrinsic motivators. Moreover, it provides implications and future research directions for theory development and practice.

**Keywords** Working from home · Moderating factors · Individual performance · Conceptual framework · Self-determination theory · Qualitative

In today's volatile, uncertain, complex, and ambiguous (VUCA) business climate/working environment, the performance of a company relies mainly on its ability to acclimatize to the turbulent business/working environment, make strategies to deal with the changes, and determine how to implement the changes (Rimita et al., 2020). Previously, the business environment had changed on most occasions' consequent to economic turbulence, climate change, political instability, firm's competitiveness, strategic decisions, social cause, and many other factors (Chertkovskaya & Paulsson, 2021). As a result of changes in the business/working environment for any causes, workers' mobility and office settings did not change preferably (Hassanain, 2010). The global pandemic of Covid-19 prompted organizations of all sizes/types for redesigning

their working systems (Amis & Janz, 2020). Literature on work culture suggests that organizations restructure their working systems to address challenges (Correll et al., 2014). Organizations redefine their working systems in order to sustain their operations and ensure their employees' safety. The WFH emerged as an alternative option for performing organizational activities (Vyas & Butakhieo, 2021).

The performance outcome differs reasonably between WFH and working at the workplace (WAW) (Gibbs et al., 2021). These differences occur due to decreased collaboration, coordination, and communication with superiors, subordinates, and coworkers while working from home (Gibbs et al., 2021). Literature on performance management systems in the workplace is extensive. However, in light of the introduction of WFH, what are the factors that organizations should specify that may moderate an individual's performance while working from home? To address the above research gap, the paper conceptualizes the moderating effects between WFH and individual performance. This conceptual paper aims to specify the key intrinsic and extrinsic motivation factors of individuals that may moderate the relationship between WFH and individual performance.

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To show the relationship between WFH and individual performance, we propose a conceptual framework that presents the specified factors as moderating variables.

Telework, telecommuting, virtual work, home-based teleworking, mobile teleworking, and remote work are all examples of official activities carried out from locations other than traditional office spaces. Over the years, researchers defined the concept of teleworking in many dimensions. Teleworking comprises several formats, i.e., work from home, teleworking from remote offices, mobile telework, etc. A little research has been conducted to show the moderating effect of teleworkers' level of accountability and level of manager's supervision over teleworkers' in defining the relationship between telework, work-life balance, and performance (Solís, 2017). Several organizations adopt the flexible work setup for their employees and WFH is one of the main telework options as flexible working arrangements. Research shows that telework factors such as collaboration, coordination, and configuration (home as a working place), etc., impact the productivity/performance of individuals and ultimately overall organizational outcomes (Nakrošienė et al., 2019). We propose these factors as moderating variables between WFH and individual performance. This paper mainly focuses on explaining specified moderating variables and how they moderate the WFH setting-individual performance relationship.

## Literature review

Several works of literature argued the factors of WFH settings in the context of its outcome, advantages and disadvantages (Nakrošienė et al., 2019). Research reveals that individuals who execute work from home can have higher performance/productivity due to lesser engagement in physical office meetings, more autonomy and flexi time, more work freedom and increased work life balance, no interruption and more empowerment etc. (Patanjali & Bhatta, 2022). On the other hand, some researchers presented an opposing argument. The WFH setting reduces organizational visibility, teamwork and management support, and interpersonal interaction, and is unconnected from organizational core values, goals, ethos, and culture (Nakrošienė et al., 2019). Research suggests that this isolation may lead to less professional development and career growth opportunities. Some researchers suggested that WFH setting is as an initiative to balance life obligations, performance, and associated factors. The WFH concept was primarily discussed in terms of its advantages and disadvantages in the literature. To the best of our knowledge, scholars have not paid much attention to how to maintain individual performance in the context of WFH.

Employee performance depends on several factors. Many theories and research papers in the management literature discuss various performance measurement systems (Boyle, 2013). Previous literature, however, reveals that negotiation between superiors and subordinates happens on goal setting, performance metrics, and key performance indicators in the context of face-to-face discussions and joint agreements in a four-wall enclosed physical office environment. Working from home became an alternative option for organizations to run office activities remotely using disruptive technology post-pandemic (Kaushik & Guleria, 2020). Thus, WFH has proven to be a future-oriented organizational working system using technology applications. In addition to technology applications, behavioral and environmental factors play a crucial role in determining employee performance (Kaushik & Guleria, 2020). Several researchers argue that these factors contribute significantly to predicting an individual's performance, which in turn predicts a firm's performance (Diamantidis & Chatzoglou, 2019). Behavioral, environmental, and family atmospheres are more critical than technology applications in order to determine an individual's performance in the WFH system. (Ruppanner & Huffman, 2014). WFH affects behavioral factors such as employee motivation, commitment to shared goals, and mutual trust (Nakrošienė et al., 2019). Overstay at home can increase mental boredom, lethargy, and anxiety (Xiao et al., 2021). Technological factors like high-speed internet, communication tools (Vaara & Langley, 2021), and office-like arrangements (i.e., laptop/computer, printers, scanner, etc.) play critical factors to make WFH more viable (Rigotti et al., 2021). Environmental factors include a proper arrangement of workspace at home, avoiding distractions, work-life balance, and maintaining social interaction are also key characteristics of WFH for which an individual has to manage in WFH setup (Rigotti et al., 2021). Diamantidis and Chatzoglou (2019) suggests that face-to-face continuous observance and monitoring system makes an individual more inclined towards work accomplishments and improves a sense of commitment, culture, and competence through interaction with others at the workplace. Renkema et al. (2017) proposed a concept of integration and evaluation of various levels in organizations. Specifically, they explained that effective measurement and management of multilevel analysis would lead to optimum results. WFH is an emerging research area to identify the critical factors for unbiased, objective, and unambiguous individual performance measurement. This paper attempts to highlight certain behavioral and environmental factors that could be critical to deciding an individual's performance in WFH settings.

Individual performance contributes substantially to broad organizational performance. It is imperative to manage and

measure the performance of individuals with objectivity (Boyle, 2013). Research shows that evaluating individual performance in the physical workplace through face-to-face conversation between reporting manager and subordinate makes it more rational and logical (Boyle, 2013). Diamantidis and Chatzoglou (2019) recommended that a reporting manager observes an individual's behavioral traits consistently in the physical workplace and subsequently discusses, suggests, and communicates their developmental needs. A constant face-to-face dialogue between reporting manager and subordinate helps improve the subordinate's dedication, disposition, and determination (Diamantidis & Chatzoglou, 2019), configuration, collaboration, and coordination (Kaushik & Guleria, 2020). Perlow and Kelly (2014) suggests that all these factors contribute significantly to improving an individual's efficiency and positive behavioral traits that make an individual effective, productive, and proactive in the workplace. This paper is an attempt to argue that do these factors have similar importance in WFH-individual performance? Further, if significant how does it integrate to improve an individual's performance for inclusive firm performance? This paper presents a conceptual model using these factors as moderating variables to link WFH-individual performance. Moreover, this paper presents WFH as a future working arrangement and how WFH-individual performance would be significant to achieving overall organizational goals?

As a result of the Covid-19 pandemic, numerous papers were published on the pros and cons of remote working/working from home. Researchers and practitioners have deliberated several factors of remote working/working from home, including how to maintain employee productivity/performance. An attempt is made in this paper to conceptualize the effects of moderating variables on WFH-individual performance in a broader context. For an individual to achieve higher performance, even while working from home, dedication, disposition, and determination are essential (Gagné & Deci, 2005). These three factors belong to a person's characteristics usually appear in an individual committed to performing. On the other hand, organizational characteristics are similarly essential to ensure individual performance. The presence of collaboration and coordination among the coworkers enhances work engagement, which leads to higher individual performance (Osifo, 2013).

Moreover, the ergonomically configured office settings enhance employees' health and well-being to ensure the systematic advancement in work settings, which energizes the execution of work to meet the targets on time (Meijer et al., 2009). Building such synergy is easier in a physical workplace and group working environment. However, this is an area of research for academicians and practitioners that how these variables act in the WFH—individual performance relationship. In our conceptual model, we propose

these variables as moderating variables to moderate the relationship between WFH settings and individual performance. Several authors have taken these variables as moderating variables in other areas of study like business research, employee engagement, and behavioral studies (Farooq & Vij, 2017; Jain et al., 2013). In future empirical research, it would be interesting to investigate the moderating effects of specified moderating variables on WFH-individual performance relationships. We propose a conceptual framework that how these variables function in the WFH-individual performance relationship.

## Methodology

We primarily reviewed existing literature that highlights the impact of individual characteristics and group dynamics on work performance. Moreover, the design of the conceptual model is based on the self-determination theory that how an individual's characteristics/behavior influence job performance in a work from home setup. The outbreak of the Covid-19 pandemic led organizations to rethink/redesign their working systems. As a result, working from home became a popular option for a remote working system and it was adopted by several organizations for the execution of official works using technology applications (Kaushik & Guleria, 2020). WFH will remain an option for the remote working system in the future for several organizations. While adopting the WFH culture, an individual's performance matters to sustain the overall organizational performance. Researchers have mainly focused on studying an individual's contribution to organizational performance when working in physical office arrangements (Markman, 2009). A collective working environment enables coworkers to easily coordinate and collaborate, which boosts an individual's performance (Audrey & Patrice, 2012). Several factors influence an individual performance while working in a physical office setup (Audrey & Patrice, 2012). However, researchers have given more attention to the following six factors, i.e., dedication (Bakker & Demerouti, 2008), disposition (Alvarez, 2017), determination (Gagné & Deci, 2005), configuration (Haapakangas et al., 2018), collaboration (Markman, 2009) and coordination (Okhuysen & Bechky, 2009) that encourages an individual to give his/her optimum efforts for increasing performance. Some researchers have also interrelated these factors with the characteristics of self-determination theory (Deci et al., 2017; Gagné & Deci, 2005). They recommend that these six factors enhance an individual commitment towards the fulfillment of timely completion of jobs that ultimately makes a big impact on the overall improvement of organizational performance. In other words, these factors act as moderating variables between individual performance (dependent variable) and working environment (independent

variable) (Farooq & Vij, 2017). Research has shown that these factors directly or indirectly affect the positive relationship between individual performance and physical workplace design (Osborne & Hammoud, 2017; Osifo, 2013). This conceptual paper introduces propositions to address the relationship between WFH and individual performance by hypothesizing moderating effects of specified moderating variables. Literature suggests that the role of the moderating variable is critical in determining the direction and/or strength of the relationship between the independent and dependent variables (Glavin & Schieman, 2012). In this paper, we present WFH as an independent variable and individual performance as a dependent variable.

A moderator variable determines the direction and/or strength of the relationship between independent and dependent variables that affect, strengthen, and assess the causal relationships among variables/constructs (Farooq & Vij, 2017). In other words, moderating effects occur when moderating variables influence the relationship between independent and dependent variables (Farooq & Vij, 2017). Depending on the type of moderating variable, such variables may either be categorical or situational independent variables (Farooq & Vij, 2017). This paper also hypothesizes the role of moderating variables between WFH and individual performance. Even in the physical workplace, certain characteristics of moderating variables are evident to determine performance (Wu & Zumbo, 2008). However, WFH is altogether a different setup of working system, and the role of moderating variables becomes critical to sustaining the performance of an employee. This paper hypothesizes the role of six key moderating variables that may be significant factors to determine the relationship between WFH and individual performance.

The type of moderators can either be qualitative or quantitative. In this paper, we present three of the study moderating variables (i.e., dedication, disposition, and determination) in the qualitative category and the other three (i.e., configuration, collaboration, and coordination) in a quantitative category. We posit these moderating variables as qualitative and quantitative for further empirical research to prove their theoretical relevance, statistical significance, and practical acceptance between the predictor variable (work from home) and a criterion variable (individual performance). In a correlation analysis model, specified moderating variables play critical functions to determine the relationship between WFH setting and individual performance. The study of moderating variables has conceptual importance in the theory-building of WFH settings. Moreover, specified moderating variables have strategic and statistical importance in the association between WFH settings and individual performance.

SDT is a theory of motivation that mainly relates to the manifestation of an individual behavior either from within

or influenced by an external factor in a particular context (Ryan & Deci, 2017). Researchers have expanded the use of SDT in several areas of study like work motivation (Ryan et al., 2018), organizational psychology (Deci et al., 2017), social psychology (Soenens & Vansteenkiste, 2005), performance management (Kuvaas, 2008) and so on. Several authors defined SDT, but Deci and Ryan's work in the areas of SDT theory conceptualization, enlargement, and its application is exemplary. This paper attempts to apply SDT in proposing a conceptual framework that connects the WFH-individual performance relationship. Many researchers have used SDT to predict an individual's performance in physical working environments (Landry and Whillans, 2018; Deci et al., 2017). Despite its importance, SDT has received less research attention in the context of WFH and individual performance. It is an ideal time to introduce SDT to the context of WFH, which is an emerging scope for the future of the working system. By using SDT in the WFH context, we have attempted to identify likely intrinsic and extrinsic motivators that may serve as moderating variables between WFH and individual performance.

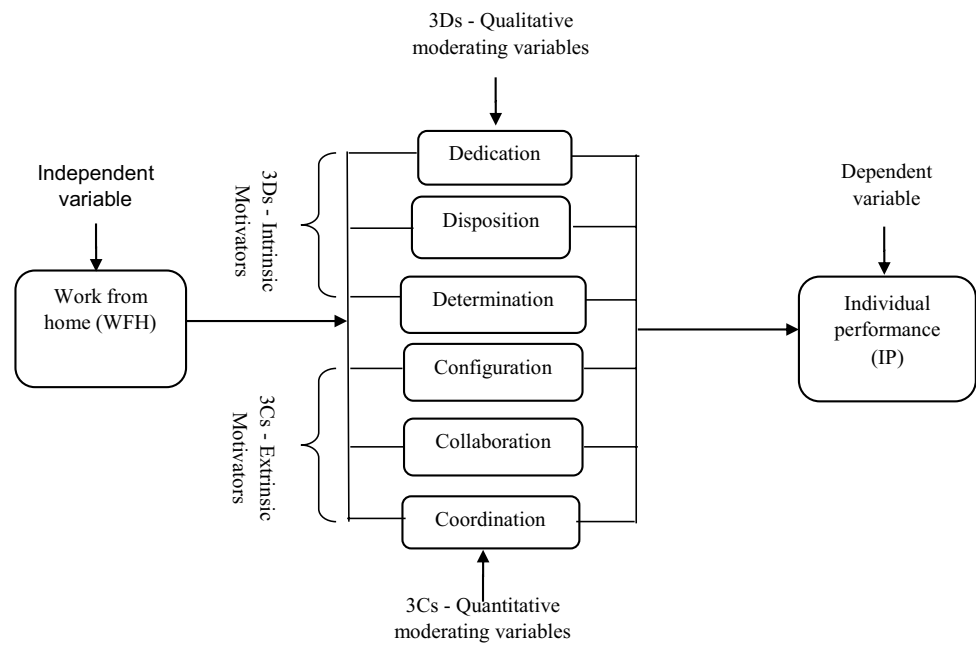
While applying SDT in practice, researchers have identified several factors as intrinsic and extrinsic motivators based on areas of study. Similarly, this paper considers three factors (i.e., dedication, disposition & determination) as intrinsic motivators and the other three (i.e., configuration, collaboration & coordination) as extrinsic motivators. In the proposed conceptual model, these factors have been hypothesized as moderating variables between WFH-individual performance. In this paper, we discuss how to make WFH settings more like an organizational workplace environment, where well-designed and ergonomic office infrastructure maximizes individual performance. In this paper, moderator variables are those that theoretically exert a positive influence between WFH settings and the performance of individuals working from home, much like HPWS examines aspects of the physical workplace environment to optimize productivity levels.

## Developing conceptual framework

We propose a conceptual model of the relationship between independent, dependent, and moderating variables as depicted below:

Figure 1 shows six specified moderating variables that strengthen the relationship between WFH settings and individual performance. This model attempts to outline the moderating variables of how it affects the direction and/or relationship between WFH settings and individual performance. The arrangement of a systematized synergy of specified moderating variables by both key stakeholders,

**Fig. 1** A proposed conceptual framework linking independent variable (WFH), moderating variables (3Cs & 3Ds), and dependent variable (IP). The model hypothesizes that the strength of the relationship between an independent variable and a dependent variable depends on the effects of the moderating variables.



i.e., employee and employer, can prove WFH settings as performance-driven, result-oriented, and HPWS in the future of working culture. Previous research largely focused on the contribution of specified moderating variables to enhance an individual's performance in the conventional workplace (Bakker & van Woerkom, 2017). In the physical workplace, an individual gets a conducive work environment and cooperation of colleagues to portray the characteristics of six specified moderating variables. The working conditions of WFH are comparatively different from the working environment of the physical office setup. The proposed conceptual framework intends to conceptualize the WFH-individual performance and how these six factors moderate the relationship? It has been empirically and statistically proven that these moderating variables have a strong impact to enhance an individual performance that augments collective organizational performance significantly (Deci et al., 2017; Diamantidis & Chatzoglou, 2019). The WFH setting is an emerging research area for researchers that how WFH could be more beneficial for diverse organizations? This paper specifically focuses to identify the moderating factors that influence an individual's performance as shown in the proposed conceptual framework. Individual performance matters in the broader context of organizational outcomes. Dedication, disposition, and determination is an autonomous intrinsic motivator that comes from within and self-driven (Weinstein & Ryan, 2010). On the other hand, configuration, collaboration, and coordination is an extrinsic controlled motivator that influences an individual through external interventions (Ryan & Deci, 2017).

## Literature review of moderating variables

### Dedication

Dedication is one of the prominent decisive factors to predict the success of the work. It is directly associated with the characteristics of an individual. In other words, showing dedication in work indicates the type of personality an individual has in a workplace environment. Arora and Adhikari (2013) associated the dedication of employees to work engagement. They suggest that if employees have higher dedication towards work, they will have a higher engagement at the workplace, increasing their performance. Work engagement has mainly three dimensions, i.e., dedication, vigor, and absorption. Of these three dimensions, the definition of dedication is theoretically too broad. Dedication refers to an employee's firm connection, involvement, and engagement with their work and having a sense of responsibility, relevance, passion, and challenge to execute the given task (Bakker & Demerouti, 2008). Dedication can be described as a strong emotional attachment, involvement, and acquaintance with one's work. Yongxing et al. (2017) defines dedication as a sign of firm willingness or willpower to engage oneself in an activity or work with a sense of responsibility, significance, ownership, and passion. In other words, it can be defined as a strong positive mindset aiming to finish the organizational activities in an appropriate and timely manner.

Several scholarly articles narrated the impact of the character of dedication on significant results in personal and professional aspects (Yongxing et al., 2017). Dedication is the most preferred behavioral outcome. An organization



expects its employees to perform tasks for continuous performance improvement. A spirit of dedication, however, is more of an intrinsic motivation factor present in people that is manifested in extrinsic behaviors. Yongxing et al. (2017) explained that a character of dedication grows in an individual while working in a group or a workplace by manifesting other colleagues' dedication towards work. In a physical office environment, supervisor-subordinate interact frequently, and the supervisor can influence subordinate's dedication through continuous monitoring, mentoring and counselling (Tunk & Kumar, 2022). Individuals who work from home may have multiple responsibilities outside of official work, and therefore, it is imperative that they manage their choices and cognition prudently while managing their responsibilities. Thus, a lack of face-to-face interaction between supervisors and subordinates may lead to subordinates varying levels of dedication. The majority of research focused on the demonstration of workforce dedication in the context of a physical office arrangement (Yongxing et al., 2017). This paper explores the degree of dedication shown by employees while working from home.

Proposition 1: WFH and individual performance are significantly moderated by employee dedication.

## Disposition

Disposition is an exhibition of the intrinsic characteristic of a person (Choi, 2009). Disposition refers to the usual tendency of one's state of mind, psychological or emotional outlook or temperament, characteristics, traits, beliefs, and attitude to specific situations (Alvarez, 2017). Many scholarly articles defined the meaning of disposition in a broader context, but this paper presents disposition as a state of an individual's temperament, particularly in the organizational context. Employee satisfaction is one of the critical areas where researchers have given more attention to study the dispositional effect. Job satisfaction has a direct link with employees' emotions and cognition. The outcome of this relationship is driven by the affective dispositional model. The affective dispositional theory posits that disposition comprises two outcomes—positive affectivity and negative affectivity (Watson & Slack, 1993). If employees enjoy their work and have high satisfaction, passion, vigor, and enjoyable engagement at the workplace signify a positive dispositional effect. On the other hand, the appearance of lowness, lethargy, anxiety, stress, tension, and unpleasant involvement in an employee's behavior illustrates the negative dispositional effect.

Several researchers have studied the impact of the dispositional effect on an individual's job satisfaction, motivation, and engagement with organizational work. Positive affectivity creates a positive disposition that leads to an employee's

job satisfaction (Watson & Slack, 1993). Researchers also correlated job satisfaction with employee performance. In other words, dispositional effects contribute a critical significance in determining workforce productivity. A well-arranged physical office environment is positively significant to the workforce's positive dispositional effect and vice versa. Literature suggests that the outcome of the dispositional effect varies from individual to individual and from situation to situation based on the circumstances. Several factors influence an individual's mood. This paper refers to disposition as how employees respond to work-from-home situational factors. WFH situational factors may include family engagement, work-family conflict, absence of colleagues, and office environment.

Proposition 2: Individual performance and WFH are significantly moderated by employee disposition.

## Determination

The concept of determination has broadly been defined, deliberated, and discussed in organizational behavior, industrial psychology, and organizational performance literature. This paper conceptualizes determination as one of the moderating variables between WFH settings and individual performance. Several authors expanded the scope of self-determination theory (SDT) to define the determination of an employee in the organizational context (Gagné & Deci, 2005). Bakker and van Woerkom (2017) defined self-determination as an employee's inherent motivation, willingness, drive, proactiveness, and initiative towards work intending to perform efficiently and appropriately. Behavioral outcomes are the result of an individual's internal and cognitive characteristics. The flow at work is another indicator that reveals the behavioral approach of a determined employee (Bakker & van Woerkom, 2017). A sense of emotional attachment, commitment, and excitement is generated through it, leading individuals to become more engaged and involved in their work. An individual who is determined creates intrinsic motivation to assimilate into various responsibilities as a means of expressing their passion for work.

Several researchers argued the significance of determination in organizational psychology and management literature. Many psychological authors linked the self-determination approach with employees' imagination, innovation, employee learning and development, self-respect, and overall well-being (Gagné & Deci, 2005). Empirical research reveals that in a physical office environment, a subordinate's self-determination is reinforced by the manager's interactive orientation and face-to-face supervision, which is directly related to the perception, motivation, and satisfaction level of a subordinate.

Proposition 3: Individual performance and WFH are significantly moderated by employee determination.

## Configuration

Configuration in this paper refers to the overall physical office settings and arrangement. In corporate culture, having state-of-the-art office infrastructure plays a crucial role in making the office atmosphere productive, supportive, and cooperative (Haapakangas et al., 2018). An office is a place where the secretarial/clerical/administrative functions are executed. An office setting has multiple elements that need to firm up for the effective execution of organizational operations and business. The proper office configuration creates a positive workplace environment.

Several authors described the significance of planned office configuration in the office management literature (Blok et al., 2012; Haapakangas et al., 2018). Kamarulzaman et al. (2011) theoretically hypothesized a significant relationship between employee performance and factors of the physical office settings. These factors include office layout, amenities, systems, and infrastructure. Some researchers extended the scope of Herzberg's two-factor motivation theory (1959) in studying the arrangement of physical office settings. They argued that working conditions are hygiene factors that affect the degree of motivation level of employees in organizations. The hygienic working conditions mean that office design requires proper setup of equipment, ergonomic sitting arrangement, safe and clean office environment. The study shows that making such a workplace leads to higher employee performance. Employees spend a larger portion of their time on office campuses, the workplace arrangement and atmosphere affect their well-being, which directly affects employees' contribution and overall productivity (Kamarulzaman et al., 2011). Several authors have shown theoretically and empirically that if employees are more pleased with the arrangement of physical office settings, they perform better, and organizations yield more (Kamarulzaman et al., 2011). It is evident from the literature review that proper office design, arrangement, adjustment, and formation of the workplace environment provide a meaningful contribution to the enhancement of employee performance.

Proposition 4: The configuration of the workplace significantly moderates WFH and individual performance.

## Collaboration

Evan Rosen (2007)'s best-selling book, *The Culture of Collaboration*, outlined collaboration as a process of people working together towards a common goal while sharing physical spaces or virtual ones. The online Oxford English

dictionary defines collaboration as the process of working jointly on an activity or a project. In an organizational context, the term collaboration has strategic significance in team building, group dynamics, and business development. In other words, collaboration is an association of various groups of employees, functional verticals, and hierarchies working together to achieve a common goal. Several types of collaboration exist in organizations that are identified by their features, purpose, and nature of work (Bennett & Gadlin, 2012). Collaborative culture builds a conducive work environment and helps organizations achieve their intended objectives.

Office environments with a collaborative approach play an instrumental role in safeguarding individual performance. As reported in several studies, a collaborative approach, practices, processes, policies, plans, and strategies enabled multiple organizations to foster a culture of collaboration, which ultimately contributed to increased individual productivity, as well as profitability for the organization as a whole (Kouzes & Posner, 2007; Rosen, 2007). According to Kouzes and Posner (2007), collaborative approaches require five methods (i.e., modeling the way, inspiring a shared vision, challenging the process, empowering others to act, and encouraging the heart). They emphasized that these five ingredients play a critical stimulus to set up a culture of collaboration, innovation, and integration, which help organizations work in synergy with one another. Collaborative processes help organizations promote a shared vision. The sharing of organizational vision at the workplace produces team spirit among the workforce, which is more feasible in physical office settings (Markman, 2009). From a literature review, it can be concluded that collaboration has significant moderating effects on the relationship between a physical office setting and individual performance. However, it would be interesting to investigate the role of collaboration as a moderating variable between WFH and individual performance in future empirical research.

Proposition 5: Collaboration between coworkers significantly moderates WFH and individual performance.

## Coordination

Coordination is one of the central processes that connect one another at the various organizational level to strengthen the flow of work smoothly and incessantly (Hilbolling et al., 2022). It is the communication channel, intervention, and interaction that assimilates a shared set of interdependent organizational functions (Okhuysen & Bechky, 2009). Malone and Crowston (1994, p.90) defined coordination as the “*management of dependencies among independent activities*”. The organizational working culture is a vivid example of the coordination theory developed by Malone

and Crowston (1994). Each vertical has a set of autonomous activities in organizations, but every vertical is interconnected to achieve the results. The coordination theory conceptualized by Malone and Crowston (1994) contributed to the extension of theoretical applications in various disciplines/fields and suggested that coordination is the core process to summarize works/activities executed by different verticals/departments. They considered coordination as a stimulus that controls the interdependent connections/associations/relationships between various activities/works/departments with joint objectives. They further explained that coordination is machinery that wheels the dependent relationships between different activities effectively and efficiently. Coordination acts as a catalyst in an organizational context. In the proposed conceptual framework, coordination denotes uninterrupted communication of an individual working from home with reporting managers /supervisors and other members of a unit/team.

Several authors described the significance of coordination in a physical office setting. Crowston et al. (2004) explained that in a traditional office setting, different team members carry the understanding of needs between the tasks, and they attempt to coordinate their work so that it goes on smoothly. However, scholars define dependencies and coordination systems between the tasks in standard terms (Crowston et al., 2004). Literature does not describe the differences between dependencies and associated interruptions or how the coordination system addresses those interruptions. This gap led researchers and practitioners to look for a useful alternative system to solve it in a given condition. Research suggests that each group has a unique set of activities and related dependencies, it is challenging to uniform it and/or how the information communication and technology (ICT) can be used to moderate a process between the various tasks. Malone and Crowston's (1994) coordination theory development described a new concept of dealing with such interruptions. The emergence of coordination theory brought a new revolution to deal with complicated, strangled, and intertwined tasks within multiple functions/verticals in organizations (Crowston et al., 2004). Apart from internal solutions, coordination helps organizations make things feasible to deal with external agents such as stakeholders, suppliers, contractors, and other associated entities. The proper coordination channel application drives effective solutions to remove obstacles, resistances, and hindrances to execute organizational activities internally and externally. As evident from previous research, coordination is a critical factor in executing organizational activities. Accordingly, this paper shows that coordination plays an instrumental role in the WFH setting-individual performance relationship and proper coordination between the manager and a person working from home would help to ensure the smooth execution of tasks.

Proposition 6: Coordination among teammates and colleagues significantly moderates WFH and individual performance.

## Discussion

It is evident from the literature review that specified moderating variables have been proven both theoretically and empirically to play an instrumental role in predicting individual performance. Multiple studies have shown the phenomenon of the moderating effects of specified variables on employee performance and physical office settings. In the wake of the global pandemic of Covid-19, it is evident that a large number of organizations are allowing their employees to work from home, and WFH has become an appropriate alternative for future working systems to perform organizational activities. As a result, it is imperative for organizations to specify those factors that moderate individual performance while working from home. Several studies have shown that all specified moderating variables have a certain level of moderating effects on individual performance and physical office settings. To optimize individual performance while working from home, it is posited that the moderating behavior of specified moderating variables needs to be positively controlled. A physical office setting provides a more convenient working environment for creating synergy because all team members/supervisors typically work together under the same roof (Wohlers & Hertel, 2018). In the WFH setting, all team members/supervisors/subordinates work from home or in remote locations. A combination of specified moderating variables will strengthen the relationship between WFH and individual performance in such a context. Thus, an individual working from home remains engaged with colleagues, supervisors, and other team members. As a result, employees will remain motivated to complete their assigned tasks and targets while working from home regardless of home-based nuisances and distractions. A further empirical study is called for in this paper to explain the moderating effect of moderating variables in WFH-individual performance.

The moderating effects of moderating variables vary and it depends on individual, group, and organizational work settings (Solís, 2017). Furthermore, some moderating variables have a higher influence over group members, and consequently, no interruption from other team members produces the phenomenon of moderating effects in the work-performance relationship (Solís, 2017). In contrast, face-to-face interaction between supervisors and subordinates sort out things easily and solve problems aptly (Solís, 2017). In a physical office setting, the behavior of the specified moderating variable is ideally controlled collectively. Empirical research on the moderating effects of specified moderating



variables shows that they all moderate work-performance differently (Farooq & Vij, 2017). As well, we hypothesize that individual specified moderating variable has specific moderating effects on the WFH-individual performance relationship. Further, the moderating effects of each specified moderating variable may vary depending on the frequency and nature of telecommunications, online interactions, and real-time availability from both supervisors and subordinates (Allen et al., 2015; Tunk & Kumar, 2022).

When employees work in physical office settings, they work with the team and other coworkers, creating an environment of collaboration. As a result, work becomes fun, exciting, and more enjoyable (Gorgievski et al., 2010). The presence of other coworkers increases an employee's physical, emotional, and cognitive engagement at work, and his/her dedication inevitably increases to meet targets. Moreover, the absence of such a workplace environment in WFH settings may hinder professional performance and distract the individual's dedication. Employees' tendency towards adaptability to organizational changes depends on various workplace environmental factors (Tunk & Kumar, 2022). These factors contribute to an employee's personality development, which drives their disposition in a work-performance relationship (Tunk & Kumar, 2022). In physical office settings, the affective dispositional theory helps an individual observe his/her job importance and its characteristics, whether it is more desirable or unwanted in organizational perspectives (Woods et al., 2013). Moreover, it is logical to perceive developmental opportunities, including having a sense of performance motive, self-assessment, and positive predispositions, leading to cumulative outcomes over professional and career development (Woods et al., 2013). Generally, two types of affective disposition, i.e., positive affectivity (PA) and negative affectivity (NA) influence an individual's job satisfaction level in the workplace. The positive affectivity symbolizes high interest in work engagement and negative affectivity indicates employee burnout wherein individuals appear stressed physically and emotionally. Many factors make employees encounter such situations (Moen et al., 2013). As evident from the previous research, the dispositional effect influences the job satisfaction of an individual in a traditional office set up and it has a bigger impact on his/her performance. Moreover, the working environment and conditions in WFH are different from physical office design and this paper argues that how disposition impacts an individual's job satisfaction in WFH settings because it has direct relations with individual performance.

Several researchers used the self-determination theory (SDT) to understand workforce motivation and their psychological beliefs, which drive employees' self-determination and initiative towards displaying a commitment to perform (Landry & Whillans, 2018; Deci et al., 2017). SDT suggests that an individual's intrinsic motivation is influenced by

various professional development activities initiated around them. If an individual feels comfortable with these activities and perceives them as a source of well-being and happiness and finds it exciting to achieve aspirations, goals, and ambitions, his/her intrinsic motivation increases in association with those activities. Deci et al. (2017) suggests that intrinsic motivation directs employees' determination for higher performance, contribution, and involvement at work in the conventional workplace. The ability to identify the factors that increase employees' intrinsic motivation to display determination while working from home is an essential factor to sustain individual performance. It would be an interesting area of further research for scholars and practitioners to study the factors that drive an individual's determination towards performance in WFH settings. More specifically, the application of self-determination theory in WFH settings has yet to be empirically investigated. In this paper, a conceptual framework is proposed to explain how a self-deterministic approach might moderate the relationship between the WFH setting and individual performance in the context of other engagements at home. Continuous coordination and collaboration by reporting managers and other coworkers make an individual more engaged toward assigned tasks and targets (Diamantidis & Chatzoglou, 2019; Lammi, 2021). Empirically, the degree of engagement of an individual in a WFH setting is an area of continuous study for researchers and practitioners that how WFH could be made more engaged, fun and performance-based.

Similarly, the configuration of a favorable physical office design contributes to an employee's performance (Kamarulzaman et al., 2011). A conducive office design includes appropriate sitting arrangements, office space, lighting, building outlook, and IT/ITes infrastructure (Kamarulzaman et al., 2011). These factors encourage the workforce to do more at the workplace, ultimately increasing individual performance. Vischer's (1989) research proved that the arrangement of a conducive working environment resulted in 5–15% growth in employee performance. They further showed that the availability of basic amenities motivates employees to focus more on work. However, in WFH settings, an individual's home is a workplace, and it is up to him/her to make the home similar to the conventional workplace environment for upholding performance. The collaborative work culture drives employees' performance through team synergy, continuous interaction, and face-to-face communication (Peter & Marshall, 2015). While working from home, it is imperative that the reporting manager/supervisor creates a synergistic and collaborative work culture among the team members. This will enable the team to achieve high performance even though its members are far apart. The process of coordination across verticals/departments is one of the critical functions in organizations. Systematic coordination makes the process smoother and ensures every critical

network, system, and stakeholder's availability and accessibility to get things done appropriately. The identification of critical factors associated with WFH can aid organizations in identifying bottlenecks and how to resolve them before adopting and implementing WFH. This can prevent interruptions in communication during WFH settings. Coordination between team members plays a significant role in maintaining continuous connections and optimizing individual performance in WFH settings.

## Theoretical implications

This conceptual paper possesses specific theoretical implications that deserve further research. In this paper, we highlight only the key moderating variables that may influence the WFH-individual performance relationship, which implies limitations in the applicability of the proposed conceptual model. However, it is necessary to identify, summarize, and measure latent variables associated with WFH in order to understand how they affect both WFH and individual performance relationship. To address these inferences, researchers would benefit from future research into the WFH-individual performance relationship. Technology applications can also be used in WFH settings to control specified moderating variables, just as they are controlled in physical offices. Nevertheless, these assumptions can only be modified by empirical research and further practical investigation of our conceptual model by researchers in a subsequent study.

Research shows that in remote working cultures, the 3Cs (configuration, collaboration, & coordination) are relevant to communicating goal setting, performance measures, and evaluation systems between superiors and subordinates (Bennet & Gadlin, 2013; Crowston et al, 2004). Working from home is a remote working concept, and the 3Cs have a direct relationship with interpersonal communication regardless of other commitments at home. Specifically, these research findings led us to focus on only the three quantitative moderating variables (3Cs) which are presented in our proposed conceptual framework. Further, the 3Ds (dedication, disposition & determination) are decisive factors for an individual to pursue desired targets, tasks, and goals (Alvarez, 2017; Bakker & Woerkm, 2017). In particular, these three variables play an influential role in an individual's performance in WFH settings. The individual working from home is solely responsible for executing tasks despite several constraints, and demonstrating a commitment to achieving goals requires strong 3Ds. The paper highlights the 3Cs and 3Ds linking individual performance and WFH settings and offers future research directions for the investigation of the proposed conceptual framework in more detail.

## Conclusion

While the WFH may be an example of the future work culture, researchers and management practitioners can explore how the characteristics of specified moderating variables moderate individual performance in the WFH setting. Several scholarly articles posit that technology disruption has led modern work culture to the next level. It is evident that technological advancement revolutionized the work culture and changed the concept of work and business practices from manual to digital, and local to global. However, the specified moderating variable may play a significant role in moderating the individual performance-WFH setting. Virtual and remote working cultures are becoming increasingly popular in several organizations. It would be interesting to examine empirically how moderating variables influence the relationship between WFH and individual performance. Besides, we also hypothesize how the specified moderating variables affect the supervisor-subordinate relationship in WFH settings. The feasibility of WFH in diverse organizations remains an emerging field of study/research for practitioners, researchers, and academicians despite advances in technology applications.

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## References

- Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, 16(2), 40–68.
- Alvarez, M. (2017). Are character traits dispositions? *Royal Institute of Philosophy Supplement*, 80(7), 69–86.
- Amis, J., & Janz, B. (2020). Leading change in response to COVID-19. *Journal of Applied Behavioral Science*, 56(3), 272–278.

- Arora, R., & Adhikari, B. (2013). A study on personality as a predictor of dedication component of work engagement. *International Journal of Development and Social Research*, 2(1), 53–60.
- Audrey, C. V., & Patrice, R. (2012). Adaptive performance: A new scale to measure individual performance in organizations. *Canadian Journal of Administrative Sciences*, 29(3), 280–293.
- Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, 13(3), 209–223.
- Bakker, A. B., & van Woerkom, M. (2017). Flow at work: A self-determination perspective. *Occupational Health Science*, 1(1–2), 47–65.
- Bennett, L. M., & Gadlin, H. (2012). Collaboration and Team Science: From theory to practice. *Journal of Investigative Medicine*, 60(5), 768–775.
- Blok, M. M., Groenesteijn, L., Schelvis, R., & Vink, P. (2012). New ways of working: Does flexibility in time and location of work change work behavior and affect business outcomes?. *Work: A Journal of Prevention Assessment & Rehabilitation*, 41(supplement 1), 5075–5080.
- Boyle, I. (2013). Individual performance management: A review of current practices. *Asia-Pacific Management and Business Application*, 1(3), 157–170.
- Chertkovskaya, E., & Paulsson, A. (2021). Countering corporate violence: Degrowth, ecosocialism, and organizing beyond the destructive forces of capitalism. *Organization*, 28(3), 405–425.
- Choi, S. (2009). The conditional analysis of dispositions and the intrinsic dispositions thesis. *Philosophy and Phenomenological Research*, 78(3), 568–590.
- Correll, S. J., Kelly, E. L., O'Connor, L. T., & Williams, J. C. (2014). Redesigning, redefining work. *Work and Occupations*, 41(1), 3–17.
- Crowston, K., Rubleske, J., & Howison, J. (2004). Coordination theory: A ten-year retrospective. In P., Zhang & D., Galletta (Eds). *Human-computer interaction in management information systems* (pp. 120–138). M E Sharpe.
- Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of the science. *Annual Review of Organizational Psychology and Organizational Behavior*, 4(1), 19–43.
- Diamantidis, A. D., & Chatzoglou, P. (2019). Factors affecting employee performance: An empirical approach. *International Journal of Productivity and Performance Management*, 68(1), 171–193.
- Farooq, R., & Vij, S. (2017). Moderating variables in business research. *The IUP Journal of Business Strategy*, 14(4), 34–54.
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(40), 331–362.
- Gibbs, M., Mengel, F., & Siemroth, C. (2021). *Work from home & productivity: Evidence from personnel & analytics data on IT professionals* (Working Paper No. 2021–56). Becker Friedman Institute. [https://bfi.uchicago.edu/wp-content/uploads/2021/05/BFI\\_WP\\_2021-56.pdf](https://bfi.uchicago.edu/wp-content/uploads/2021/05/BFI_WP_2021-56.pdf). Accessed 3 Aug 2022.
- Glavin, P., & Schieman, S. (2012). Work-family role blurring and work-family conflict: The moderating influence of job resources and job demands. *Work and Occupations*, 39(1), 71–98.
- Gorgievski, M. J., Bakker, A. B., & Schaufeli, W. B. (2010). Work engagement and workaholism: Comparing the self-employed and salaried employees. *Journal of Positive Psychology*, 5(1), 83–96.
- Haapakangas, A., Hallman, D. M., Mathiassen, S. E., & Jahncke, H. (2018). Self-rated productivity and employee well-being in activity-based offices: The role of environmental perceptions and workspace use. *Building and Environment*, 145, 115–124.
- Hassanain, M. A. (2010). Analysis of factors influencing office workplace planning and design in corporate facilities. *Journal of Building Appraisal*, 6(4), 183–197.
- Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The motivation to work*. Wiley.
- Hilbolling, S., Deken, F., Berends, H., & Tuertscher, P. (2022). Process-based temporal coordination in multiparty collaboration for societal challenges. *Strategic Organization*, 20(1), 135–163. <https://doi.org/10.25384/SAGE.e.5341042.v1>
- Jain, A. K., Giga, S. I., & Cooper, C. L. (2013). Perceived organizational support as a moderator in the relationship between organizational stressors and organizational citizenship behaviors. *International Journal of Organizational Analysis*, 21(3), 313–334.
- Kamarulzaman, N., Saleh, A. A., Hashim, S. Z., Hashim, H., & Abdul-Ghani, A. A. (2011). An overview of the influence of physical office environments towards employee. *Procedia Engineering*, 20, 262–268.
- Kaushik, M., & Guleria, N. (2020). The impact of pandemic Covid -19 in workplace. *European Journal of Business and Management*, 12(15), 9–18.
- Kouzes, J., & Posner, B. (2007). *The leadership challenge*. Jossey-Bass.
- Kuvaas, B. (2008). A test of hypotheses derived from self-determination theory among public sector employees. *Employee Relations*, 31(1), 39–56.
- Lammi, I. J. (2021). Automating to control: The unexpected consequences of modern automated work delivery in practice. *Organization*, 28(1), 115–131.
- Landry, A. T., & Whillans, A. (2018). The power of workplace rewards: Using self-determination theory to understand why reward satisfaction matters for workers around the world. *Compensation & Benefits Review*, 50(3), 1–26.
- Malone, T. W., & Crowston, K. (1994). The interdisciplinary study of coordination. *ACM Computing Surveys*, 26(1), 87–119.
- Markman, K. M. (2009). So what shall we talk about? Openings and closings in chat-based virtual meetings. *Journal of Business Communication*, 46(1), 150–170.
- Meijer, E. M., Frings-Dresen, M. H. W., & Sluiter, J. K. (2009). Effects of office innovation on office workers' health and performance. *Ergonomics*, 52(9), 1027–1038.
- Moen, P., Lam, J., Ammons, S., & Kelly, E. L. (2013). Time work by overworked professionals: Strategies in response to the stress of higher status. *Work and Occupations*, 40(2), 79–114.
- Nakrošienė, A., Bučiūnienė, I., & Goštautaitė, B. (2019). Working from home: Characteristics and outcomes of telework. *International Journal of Manpower*, 40(1), 87–101.
- Okhuysen, G. A., & Bechky, B. A. (2009). Coordination in organizations: An integrative perspective. *The Academy of Management Annals*, 3(1), 463–502.
- Osborne, S., & Hammoud, M. S. (2017). Effective employee engagement in the workplace. *International Journal of Applied Management and Technology*, 16(1), 50–67.
- Osifo, O. C. (2013). The effects of coordination on organizational performance: An intra and inter perspective. *Asian Journal of Business and Management*, 1(4), 149–162.
- Patanjali, S., & Bhatta, N. M. K. (2022). Work from home during the pandemic: The impact of organizational factors on the productivity of employees in the IT industry. *Vision - the Journal of Business Perspective*, 1–13. <https://doi.org/10.1177/09722629221074137>
- Perlow, L. A., & Kelly, E. L. (2014). Toward a model of work redesign for better work and better life. *Work and Occupations*, 41(1), 111–134.
- Peter, C. W., & Marshall, B. (2015). The hype and reality of social media use for work collaboration and team communication. *International Journal of Business Communication*, 52(3), 273–293.
- Rigotti, T., Yang, L. Q., Jiang, Z., Newman, A., De Cuyper, N., & Sekiguchi, T. (2021). Work-related psychosocial risk factors and coping resources during the Covid-19 crisis. *Applied Psychology*, 70(1), 3–15.

- Rimita, K., Hoon, S. N., & Levasseur, R. (2020). Leader readiness in a volatile, uncertain, complex, and ambiguous business environment. *Journal of Social Change*, 12(1), 10–18.
- Rosen, E. (2007). *The culture of collaboration: Maximizing time, talent, and tools to create value in a global economy*. Red Ape Publishing.
- Ruppanner, L., & Huffman, M. L. (2014). Blurred boundaries: Gender and work–family interference in cross-national context. *Work and Occupations*, 41(2), 210–236.
- Ryan, R. M., Soenens, B., & Vansteenkiste, M. (2018). Reflections on self-determination theory as an organizing framework for personality psychology: Interfaces, integrations, issues, and unfinished business. *Journal of Personality*, 87(1), 115–145.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press.
- Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, 34(6), 589–604.
- Solís, M. (2017). Moderators of telework effects on the work-family conflict and on worker performance. *European Journal of Management and Business Economics*, 26(1), 21–34.
- Tunk, N., & Kumar, A. A. (2022). Work from home - A new virtual reality. *Current Psychology*. <https://doi.org/10.1007/s12144-021-02660-0>
- Vaara, E., & Langley, A. (2021). Communicative perspectives on strategic organization. *Strategic Organization*, 19(4), 541–552.
- Vischer, J. C. (1989). *Environmental quality in offices*. Van Nostrand Reinhold.
- Vyas, L., & Butakhieo, N. (2021). The impact of working from home during COVID-19 on work and life domains: An exploratory study on Hong Kong. *Policy Design and Practice*, 4(1), 59–76.
- Watson, D., & Slack, A. K. (1993). General factors of affective temperament and their relation to job satisfaction over time. *Organizational Behavior and Human Decision Processes*, 54(2), 181–202.
- Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, 98(2), 222–244.
- Wohlers, C., & Hertel, G. (2018). Longitudinal effects of activity-based flexible office design on teamwork. *Frontiers in Psychology*, 9, 1–16.
- Woods, S. A., Lievens, F., De Fruyt, F., & Wille, B. (2013). Personality across working life: The longitudinal and reciprocal influences of personality on work. *Journal of Organizational Behavior*, 34(S1), 7–25.
- Wu, A. D., & Zumbo, B. D. (2008). Understanding and using mediators and moderators. *Social Indicators Research*, 87(3), 367–392.
- Xiao, Y., Becerik-Gerber, B., Lucas, G., & Roll, S. C. (2021). Impacts of working from home during Covid-19 pandemic on physical and mental well-being of office workstation users. *Journal of Occupational and Environmental Medicine*, 63(3), 181–190.
- Yongxing, G., Hongfei, D., Baoguo, X., & Lei, M. (2017). Work engagement and job performance: The moderating role of perceived organizational support. *Annals of Psychology*, 33(3), 708–713.

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