

Vertical development in the age of work-from-home

Vertical
development
and WFH

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Abstract

Purpose – This study explores the work practices of managers who increased working from home during the pandemic to determine what, if any, impact there was on the conditions for vertical leadership development.

Design/methodology/approach – The project utilized a survey approach. Each of the participants completed an anonymous online questionnaire using Google Forms. The questionnaire included four sections. The first section included informed consent and required participants to agree before completing the questionnaire. Participants provided general demographic information in the second section, including gender, age, race, job title, company size, average project team size and industry. The third section asked if there had been any change in their work location following the pandemic. The last section asked participants about their work practices.

Findings – This study demonstrates that managers continued to be engaged in vertical leadership development activities while working from home. It also suggests that managers faced challenges working from home following the COVID-19 pandemic, which were prime vertical leadership development opportunities.

Originality/value – To capitalize on these opportunities, organizations can more intentionally support the development of their remote staff.

Keywords COVID-19, Work-from-home, Remote work, Leadership development, Vertical leadership development

Paper type Research paper

While the technology enabling work-from-home (WFH) has existed for decades, it has yet to be the norm for most organizations. In 2010, the Census reported that only 10% of the United States workforce worked from home at least one day a week (Bloom, Liang, Roberts, & Ying, 2015). However, this changed dramatically with the COVID-19 pandemic. Almost overnight, entire organizations shifted their operations and working from home became the norm. In 2020, a national representative sample of the US employed population showed that roughly 50% were now working from home (Brynjolfsson *et al.*, 2020). While this shift was due to the COVID-19 pandemic, it appears it will continue long after it (Wong, 2020). Many companies have embraced the shift to WFH. For example, PwC, one of the world's largest professional services firms, announced that all of its USA client service employees would be able to work virtually from anywhere in the United States of America (DiNapoli, 2021). Microsoft and Twitter also announced permanent shifts to work at home (Tiwari, 2022). Other companies are keen to have employees return to the office. However, a 2021 Gallup survey reported that nine out of ten remote workers want to maintain some level of remote work post-pandemic (Saad & Wigert, 2021). The barriers to working from home have been broken, and according

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to an NPR story, while organizations may want their employees back in the office, employees are saying no thanks (Hsu, 2022). A survey of over 200 HR leaders suggests that over 40% of workers are likely to remain remote some of the time post-pandemic (Gartner, 2020).

Since the explosion of WFH, researchers have increased their attention to studying it. New studies have examined the impact of WFH on productivity (Stropoli, 2021), psychological effects (Autin, Blustein, Ali, & Garriott, 2020) and team dynamics and collaboration (Yang *et al.*, 2021). While these studies continue to support the positive impact of WFH on productivity, they also document several concerns relating to communication, knowledge sharing and problem-solving.

Yang *et al.*'s (2021) study documented that teams working remotely during the pandemic became more siloed, making it harder for employees to acquire and share new information. While technological advances provide reasonable in-person communication substitutes, workers rely more on asynchronous communication channels (Yang *et al.*, 2021). More informal serendipitous water-cooler or hallway conversations are not easily replicated in mediated environments. The result is a loss of knowledge-sharing crucial to innovation, problem-solving and employee growth and development (Choudhury, 2020).

The literature suggests that the professional isolation stemming from sustained WFH will impact employee development (Cooper & Kurland, 2002); however, studies have yet to explore the impact on leadership development. Developing leaders is essential given organizational life's increasingly volatile, uncertain, ambiguous and complex nature. As such, this research aims to better understand the impacts of WFH on leadership development. The article begins by outlining WFH's many benefits and challenges and defining the necessity for and conditions of vertical leadership development for today's managers. It then presents the study's findings, which examined managers' leadership development behaviors before and after increasing WFH. It concludes by discussing how these findings support a more intentional approach to leadership development, harnessing the opportunities for vertical development brought on by WFH.

Literature review

What is work-from-home?

There have been many labels, definitions and conceptualizations to identify and explain the phenomenon of working from home (Allen, Golden, & Shockley, 2015). Identifying labels have included telecommuting, telework, remote work, flexible working arrangements, WFH and, most recently, working from anywhere (Allen *et al.*, 2015; Choudhury, 2020; Pearce, 2009). With varying labels come varying definitions and conceptualizations. Many of these conceptualizations involve technology to provide flexibility and options in the work domain (Pearce, 2009; Shockley & Allen, 2010) that reduce or even eliminate the work commute (Mokhtarian, 1991). See Allen *et al.* (2015) for a sample of various labels and definitions of working outside the workplace. For our study, we use Bloom's *et al.* (2015) designation of WFH but define it as working primarily outside the corporate office or domain.

The move toward WFH arguably began in the 1970s to offset surging gas prices during the OPEC crisis. WFH policies emerged to relieve traffic congestion and lower energy consumption (Allen *et al.*, 2015; Choudhury, 2020). With the passage of the Americans with Disabilities Act in 1990, organizations became more interested in WFH to provide accommodations for disabled workers. As technology advanced with the emergence of personal computers, laptops, the internet, Wi-Fi, email, small printers and smartphones, working from home became a real possibility for a broad population of workers (Choudhury, 2020).

The COVID-19 pandemic has created a mass acceleration toward WFH. As pressure increased to find commuting alternatives, coupled with technological advances, more

organizations began to see WFH as a viable alternative. However, organizations have implemented WFH in different ways, including working from home full-time, once or twice a week or on an as-needed basis for employees during adverse weather conditions or to attend to family obligations. What the COVID-19 pandemic has done is flip the logic from working from home when necessary to WFH unless it is necessary to come to the conventional workplace. As cloud computing and mobile technology advance, WFH has become work from anywhere (Choudhury, 2020). It will likely continue beyond the pandemic and expand to finding workplaces in libraries, coffee shops and even beaches. The success of the mass WFH experiment caused by the COVID-19 pandemic has made organizations more comfortable with the idea that being productive does not necessarily mean being located in a shared work domain.

Benefits of work-from-home programs

Organizations moved to WFH arrangements out of necessity during the COVID-19 pandemic. However, the benefits of working from home were identified and documented long before this crisis. These benefits included increased productivity, increased employer attractiveness, decreased operating costs, increased operationality during a crisis and more substantial contributions to green initiatives (Pearce, 2009). An early study of WFH programs conducted at IBM showed that those employees assigned to WFH, either partially or entirely, reported greater productivity, higher morale and longer working hours (Hill, Miller, Weiner, & Colihan, 1998). A survey of 156 Spanish companies showed that firm performance was positively related to adopting WFH programs (Martínez-Sánchez, Pérez-Pérez, Vela-Jiménez, & de-Luis-Carnicer, 2008). American Express reported that WFH employees handled 26% more calls and produced 43% more business than traditional employees (Pearce, 2009).

In perhaps the most seminal study of WFH programs, Bloom *et al.*'s (2015) experiment of working from home at a Chinese travel agency showed a 13% performance increase that included working more minutes and making more calls per minute per shift. Employees also took fewer breaks per shift and recorded less sick time. WFH employees at this travel agency also reported greater job satisfaction and experienced less turnover. Due to this WFH experiment, the Chinese travel agency implemented WFH across the entire company. Over half of the employees switched to working from home, and the company reported a 22% increase in performance (Bloom *et al.*, 2015).

WFH programs have also been shown to cut organizational costs. AT&T and Cisco used WFH programs to reduce office space, translating into savings measured in millions of dollars (Pearce, 2009). There is also evidence to suggest that organizations offering WFH enjoy a more robust financial performance. Organizations listed in Working Mothers magazine's 100 Best Companies for Working Mothers found that those with more extensive participation in WFH programs showed a positive relationship to their actual operating income (Meyer, Mukerjee, & Sestero, 2001).

Drawbacks of work-from-home

While these studies demonstrate the positive impact of working from home on economic performance and employee satisfaction, several concerns and limitations remain. These are mainly related to an organization's informal and sometimes hidden processes, such as communication, knowledge-sharing and problem-solving. The office has always provided opportunities for both formal and informal communication (Choudhury, 2020). While online tools such as Zoom and Microsoft Teams have provided a reasonable substitute for formal communication, the more informal "water cooler" or "lunchroom" conversations prove much more difficult. It also becomes more difficult to literally and figuratively stop at someone's

desk to ask questions or get advice. This informal knowledge and idea-sharing become crucial to innovation, problem-solving, and employee development (Choudhury, 2020).

Professional isolation has also been shown to occur with WFH programs (Allen *et al.*, 2015; Choudhury, 2020). Cooper and Kurland (2002) reported a link between professional isolation and employee development activities. The extent of professional isolation experienced depends on how such development activities are valued by organizations and whether those working from home miss those activities. Such a combination has been shown to hinder professional development (Cooper & Kurland, 2002). These drawbacks challenge an organization's effort to develop its employees, particularly its leaders.

Leadership development

Leadership development is needed in today's volatile, uncertain, complex and ambiguous (VUCA) environment (Iordanoglou, 2018; Moldoveanu & Narayandas, 2019). Organizations are becoming more diverse and team-oriented and decision-making has become decentralized, faster and more complex (Petrie, 2011; Rodriguez & Rodriguez, 2015). Accelerating globalization, sociocultural and demographic change and digital transformation require new and more complex ways of thinking and behaving (Iordanoglou, 2018; Vincent, Ward, & Denson, 2015). The pace of change also continues to increase, requiring leaders to be more adaptable and agile (Joiner & Josephs, 2006; Jones, Chesley, & Egan, 2020). The result is that employees at all levels, not just the C-suite, must be equipped with new leadership capacities (Iordanoglou, 2018; MIT Sloan Management Review, 2020; Moldoveanu & Narayandas, 2019).

Technical leadership skills and abilities are essential to success in a leadership role. However, today's leaders also need highly developed cognitive, social and relational capabilities to lead through influence in rapidly changing, highly networked and collaborative environments (Day, 2000). To be successful, today's leaders require self-awareness and learning capabilities (Avolio & Hannah, 2008; Chesley, Egan, & Jones, 2019; Shavkun & Dybchinska, 2020), heightened social and emotional capacity (Day, 2000; Inglis & Steele, 2005), more complex ways of thinking (Brown, 2012; Inglis & Steele, 2005; Petrie, 2011), perspective-taking and self-reflection (Avolio & Hannah, 2008; Chesley *et al.*, 2019; Jones *et al.*, 2020) and the ability to work across boundaries (Chima & Gutman, 2020). Research has demonstrated that few leaders are successfully prepared with the development complexity needed to lead in today's VUCA world (Ghemawat, 2012; Kegan & Lahey, 2009; Leslie, 2015). Leaders are, as Kegan (1994) states, "in over our heads" and need help closing the gap between the demands of leadership and their developmental levels (Jones *et al.*, 2020).

Unfortunately, the type of development leaders need is not easily obtained through short-skill development training programs (Allen & Wergin, 2009; Day, 2000). These horizontal leadership programs may be good at preparing leaders to succeed with well-defined tasks and outcomes (Chesley *et al.*, 2019). However, they are not as effective when advancing a leader's ability to think and act in more strategic ways (Brown, 2012; Petrie, 2014). The challenges facing the modern leader are more adaptive than technical. However, it is difficult, if not impossible, to train individuals to think or interact in new ways (Shavkun & Dybchinska, 2020). Adaptive challenges require development at the core of a leader's identity and how they make sense of themselves and the world around them (Helsing & Howell, 2013). For this, vertical development is necessary. Where horizontal development seeks to build new skills, vertical development seeks to create newly expanded, more nuanced perspectives (Allen & Wergin, 2009; Brown, 2012; Petrie, 2011). Vertical development refers to the advancement in a person's thinking capacity.

Constructive-developmental theory

Vertical leadership development is grounded in adult development theories, which posit that psychosocial development continues beyond adolescence (Erickson, 1978; Jung, 1971; Levinson, 1986). More specifically, vertical leadership development is informed by constructive-developmental theory. First suggested by Kegan (1982), the constructive-developmental theory is a stage theory of adult development focused on how adults develop meaning and meaning-making processes throughout their lifespans. Extending the seminal work of Piaget (1972), constructive developmental theory suggests that developmental growth continues into adulthood. It includes how individuals construct and interpret experiences to make sense of themselves and the world (McCauley, Drath, Palus, O'Connor, & Baker, 2006). Constructive development theory also suggests discernible patterns of meaning-making (stages) through which individuals progress as they develop more complex and comprehensive ways of understanding.

Constructive-developmental theorists have a variety of ways of describing the stages of development. However, there is agreement that three broad developmental stages can describe adults' meaning-making (McCauley *et al.*, 2006). In the early stages of development (dependent order), individuals have a sense of self primarily shaped by others' expectations. Individuals in this stage look for approval, mutual respect and belonging as they make sense of the world around them. As people's sense of self develops (independent order), they rely more on their values and standards. These self-authored values provide perspective to consider and discern from the opinions and thoughts of others in their meaning-making. Peak development occurs when an individual can reflexively think (interdependent order). Individuals at this level of development can see themselves as objects of reflection. They have insight into the limits of their worldviews, appreciate others' perspectives and understand that they are a construct of the interaction between the two. Moreover, they continuously use these perspectives to shape and transform their thinking and actions.

Applying constructive-developmental theory to leadership, Eigel and Kuhnert (2005) suggested that leaders progress through levels of leadership development. These leadership development levels (LDL) correspond with progression through the stages of adult development and reflect a leader's capacity to understand themselves, others, and the world (Harris & Kuhnert, 2008). Leaders at higher LDL are in an interdependent order of development. They can objectively analyze and synthesize information from various sources, including their own perspectives, to create their point of view (Harris & Kuhnert, 2008). With a confident sense of self, these leaders can tolerate disagreement and take responsibility for and solve problems that arise (Helsing & Howell, 2013). The result is that these leaders are capable of more transformational styles of leadership required by today's modern organizations (McCauley *et al.*, 2006).

Empirical evidence supports that as leaders mature in their cognitive development, their leadership behaviors also evolve (Barrett, 2018; Bartone, Snook, Forsythe, Lewis, & Bullis, 2007; Joiner & Josephs, 2006). Leaders at the highest levels of cognitive maturity have greater perspective, compassion and self-regulation. This maturity allows them to engage with others in the interest of a more extensive system, organization or community. The impact is that leaders with higher development levels are more effective in leading change, managing performance, cultivating talent and creating a compelling vision that inspires follower commitment (Harris & Kuhnert, 2008; Helsing & Howell, 2013). Unfortunately, studies indicate that most organizational leaders are not yet at this stage of development (Berger, 2012; Joiner & Josephs, 2006), making efforts to enhance the vertical development of leaders essential (Jones *et al.*, 2020; Petrie, 2011).

Vertical leadership development programs

Vertical learning transforms the underlying mindsets and ways of thinking, feeling and relating (Shavkun & Dybchinska, 2020). Vertical leadership development interventions place less emphasis on skill development and what leaders need to know and instead focus on advancing their mindsets and how they make sense of themselves and their environments (Brown, 2012; Jones *et al.*, 2020). To achieve this, vertical leadership development programs focus on awakening leaders' understanding of differences, examining existing paradigms and testing new perspectives (Shavkun & Dybchinska, 2020).

Petrie (2015) suggests three components for effective vertical development programs. The first is heat experience. Heat experiences ask leaders to stretch, take them out of their comfort zone or expose them to new and possibly disorienting situations. Manners and Durkin (2000) suggest that stage development is most often precipitated by such disequilibrating, emotionally and cognitively taxing experiences. These disorienting dilemmas are not easily solved with existing mental models and require leaders to seek new ways of thinking and making sense of the world (Mezirow, 2000). The heightened self-awareness and need to reconsider fundamental beliefs and assumptions in these experiences provide a catalyst for developing mental complexity (Avolio & Hannah, 2008).

Vertical development efforts also incorporate increased opportunities for interaction and collaboration with others that both challenge and support a leader's developmental movement. Exposure to different ideas is necessary to encourage development. However, changing ways of knowing can also be a difficult process. Those leaders who do not have sufficient support and safety to expose limiting assumptions and experiment with new meaning-making will be thwarted in their development efforts (Valcea, Hamdani, Buckley, & Novicevic, 2011).

Finally, vertical development occurs when leaders have the time and support to make sense of their experiences (Vincent *et al.*, 2015). Processes that involve reflective questioning, such as journaling or planning and after-action reviews of critical events, are all-powerful levers for elevating sensemaking (Pesut & Thompson, 2018; Petrie, 2015). Formative and developmental feedback, especially within a leader-follower dyad, can also enhance individuals' ability to make sense of their experiences (Pesut & Thompson, 2018; Valcea *et al.*, 2011). Social relationships, interaction with a coach or mentor and networking are essential support mechanisms in stage development (Day, 2000).

These types of relationships and processes are at risk in WFH environments. Research has demonstrated a link between WFH and employee development activities (Cooper & Kurland, 2002). However, how professional isolation stemming from WFH impacts leadership development, specifically the vertical development required for leaders in today's VUCA environments, has not yet been studied.

This study sheds light on the WFH environment's impact on vertical development. We explore how the shift to a WFH environment during the COVID-19 pandemic changed managers' development practices. Specifically, how WFH impacted their exposure to heat experiences, opportunities for interactions with people with diverse views and mechanisms for sensemaking.

Method

Measures

The project utilized a survey approach (Fink, 2003). Each of the participants completed an anonymous online questionnaire using Google Forms. The questionnaire included four sections. The first section included informed consent and required participants to agree before completing the questionnaire. Participants provided general demographic information in the second section, including gender, age, race, job title, company size, average project team

size and industry. The third section asked if there had been any change in their work location following the pandemic. The last section asked participants about their work practices.

The questions regarding work practices were based on the three dimensions (heat experiences, colliding perspectives and elevated sensemaking) in [Petrie's \(2015\)](#) vertical development model. To assess heat experiences, participants were asked to rate how often (never, rarely, occasionally or frequently) they faced novel problems or challenges pre-pandemic and during the pandemic. To assess colliding perspectives, the participants were also asked to rate how often (never, rarely, occasionally or frequently) they encountered people with different worldviews, opinions, backgrounds or training in their work pre-pandemic and during the pandemic. Finally, the participants were asked in a typical week how often (never, 1–2 times, 3–4 times or more than 4 times) they engaged in sensemaking practices pre-pandemic and during the pandemic. The practices included journaling, planning, reading or listening to development books, articles or podcasts, seeking feedback, and engaging in retrospectives or after-action reviews of meetings, projects or other events. The participants were also asked to report the percentage of time spent on the activities in a given week pre-pandemic and during the pandemic.

Sample and procedure

A purposive sample was gathered in two stages. In the first stage, we collected data from 17 project managers. Project managers are individuals working in an organizational context whose primary responsibilities are to manage projects. They may or may not have direct reports, but employees report to them for the project duration. These study subjects were recruited using social media and personal networking. Participants were solicited through emails to personal contacts, LinkedIn and Facebook. Posts on these platforms described the purpose of the study and outlined the sample criteria. The study also used a snowball sampling technique. Eligible and noneligible participants and personal contacts shared the study information and encouraged others meeting the study criteria to complete the survey ([Neuman & Lawrence, 2000](#)).

The second stage collected data from 47 organizational managers. Organizational managers are individuals working in an organizational context who have control or administrative responsibilities for some or all of a firm. These study subjects were recruited through an email to 550 members of a local chamber of commerce. The chamber president sent the email on the researcher's behalf, describing the study and outlining the study criteria.

While a purposive sample is often used and is expedient, it can also present less diverse populations because of a lack of diversity in the researcher's networks. This was the case in this study. The final sample ($N = 64$) comprised 41% male and 58% female managers. One participant chose not to identify their gender identity. About 86% of the respondents were white, 6% were Asian, 5% were Hispanic and 3% were Black. There were a variety of industries represented in the final sample. These include financial services, higher education, biotech, insurance, information technology and nonprofits. About 52% of the respondents ($N = 64$) reported that they currently work remotely at least 50% of the time. About 67% of the respondents ($N = 64$) reported increasing their WFH following the COVID-19 pandemic.

Findings

Before analyzing the data, those participants who did not increase working from home ($N = 21$) were removed from the sample. The authors also recoded the data from nominal to interval-level data (see [Table 1](#)). The authors then conducted a series of paired t -tests on the remaining sample ($N = 43$). The series of t -tests compared the self-reported values before and

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Original value	Recoded value
Frequently	1
Never	2
Occasionally	3
Rarely	4
1-2 times	1
3-4 times	2
More than 4 times	3
Never	4
11-20%	1
5-10%	2
Less than 5%	3
More than 20%	4

Table 1.
Recoding from nominal to interval data

Source(s): Table by authors

Table 2.
Descriptive statistics for encountering different worldviews and facing novel programs

Sample	N	Mean	St. Dev.	SE mean
Encountering different worldviews – before	43	2.395	1.072	0.164
Encountering different worldviews – during	43	2.372	1.176	0.179
Novel problems – before	43	2.744	1.049	0.160
Novel problems –during	43	1.837	1.067	0.163

Source(s): Table by authors

Table 3.
Summary of paired *T*-test analysis for heat experiences and colliding perspectives (*N* = 43) before and during WFH

Vertical development condition	Mean	St. Dev.	SE mean	95% CI for μ -difference	<i>T</i> -value	<i>P</i> -value
Encountering different worldviews	0.023	1.785	0.181	(-0.341, 0.388)	0.13	0.898
Facing novel problems	0.907	1.250	0.191	(0.533, 1.292)	4.76	0.000

Source(s): Table by authors

Table 4.
Descriptive statistics for sensemaking activities

Sample	N	Mean	St. Dev.	SE mean
Journaling – before	43	3.651	0.870	0.133
Journaling – during	43	3.209	1.301	0.198
Planning – before	43	2.279	0.934	0.142
Planning – during	43	2.279	0.882	0.134
Engaging with professional development material – before	43	1.698	1.145	0.175
Engaging with professional development material – during	43	2.140	1.125	0.172
Feedback – before	43	2.000	1.291	0.197
Feedback – during	43	2.047	1.214	0.185
After action reviews – before	43	1.581	1.096	0.167
After action reviews – during	43	1.698	0.964	0.147

Source(s): Table by authors

during working from home of the three dimensions (heat experiences, colliding perspectives and elevated sensemaking) in Petrie’s (2015) vertical development model to identify potential differences across each measure. The results of each of these analyses are reported in Tables 2–5.

Heat experiences and colliding perspectives

The respondents did not report a statistically significant difference in their interactions with people with different worldviews, opinions, backgrounds or training in their work before or during working from home. However, a statistically significant increase in the frequency of facing novel problems or challenges (heat experiences) while working from home required respondents to look for new ways of thinking about and doing their work. The descriptive statistics for these categories before and during are reported in Table 2. The results of the *t*-tests, which support the increase in novel problems, are reported in Table 3.

Sensemaking

Paired *t*-tests were also used for each sensemaking activity to determine if there was a statistically significant mean difference in the frequency of reported sensemaking work practices before and during the pandemic. Table 4 provides the descriptive statistics for the sensemaking activities.

Table 5 reports the results of the paired *T*-test for each of the sensemaking practices. This data reflects a statistically significant change in two behaviors. There was an overall decrease in the frequency of journaling and an increase in reading or listening to professional development materials (books, podcasts, webinars, etc.) while working from home. The mean time spent journaling before working from home was 3.651 (SD = 0.870) and 3.209 (SD = 1.301) during working from home. The mean time spent reading or listening to professional development materials before working from home was 1.698 (SD = 1.1145) and 2.140 (SD = 1.125).

There was no statistically significant difference in participants’ time on sensemaking practices before and during the increased WFH. The average time spent weekly on leadership development before and after the pandemic remained between 5 and 10%. The mean time spent on sensemaking work practices pre-pandemic was 2.209 (SD = 0.773) and 2.279 (SD = 1.031) during the pandemic. The paired-sample *t*-test resulted in $t(4) = -0.43, p = 0.667$.

Discussion

This study attempted to identify how working from home, necessitated by the COVID-19 pandemic, impacted managers’ vertical development activities. Literature has provided much on the economic benefits of working from home but comparatively little on its impact on leadership development. This is a significant gap to address, given the recognized importance

Work practice	Mean	StDev	SE mean	95% CI for μ _difference	<i>T</i> -value	<i>P</i> -value
Journaling	0.442	1.053	0.161	(0.118, 0.766)	2.75	0.009
Planning	0.000	0.926	0.141	(-0.285, 0.285)	0.00	1.000
Engaging with professional development material	-0.442	1.161	0.177	(-0.799, -0.085)	-2.50	0.017
Feedback	-0.047	1.253	0.191	(-0.432, 0.339)	-0.24	0.809
After action reviews	-0.116	1.028	0.157	(-0.433, 0.200)	-0.74	0.463

Source(s): Table by authors

Table 5.
Summary of paired *T*-test analysis for sensemaking practices (*N* = 43) before and during WFH

of leadership, particularly in complex and fast-changing environments. To succeed, leaders need highly advanced ways of thinking and making sense of the world. Leadership in today's VUCA environments requires enhanced cognitive complexity developed through vertical leadership development practices.

The central theme of our findings is that increased working from home had a mixed impact on managers' vertical development. There was a significant increase in managers' experience of novel problems. Managers encountered diverse worldviews with the same frequency before and during the pandemic. Regarding sensemaking activities, managers reported increased engagement with professional development material, such as reading professional development books and listening to podcasts. At the same time, there was a significant decrease in journaling.

Increasing managers' experience of novel problems presents an apt opportunity for vertical leadership development. The literature suggests that cognitive development begins with experiences that challenge existing ways of knowing. The shift to working at home appears to have created the types of heat experiences that have the potential to spur development. It is unclear, however, if the other conditions for vertical leadership development occurred due to the shift to working from home. The managers reported encountering diverse worldviews with the same frequency and little change in sense-making activities. For managers to experience vertical development from the increased challenges, they would also need to make sense of these experiences in connection with others. Given the increase in novel problems, we would expect a resulting increase in sensemaking activities.

Limitations and recommendations for future research

As noted, this study is considered a preliminary examination of this topic. The findings and resulting conclusions should be considered in the context of the limited sample size gathered from the researchers' social media networks. Results could vary if more managers or a more diverse participant base were included. An additional limitation is that the study asked participants to retrospectively self-report their behaviors. This requires participants to remember accurately. With self-reported data, there is a potential bias in how participants report their past behaviors. In addition, measuring a construct using only one variable may not fully show the depth of the construct. Future research using additional scales that can be evaluated as continuous variables might allow for a deeper understanding of the dimensions of vertical leadership development.

However, this paper adds to the literature by examining the connection between WFH and leadership development. It also expands the discussion of the importance of vertical leadership development and how organizations can support it in a WFH environment. Given the patterns noted, further research is suggested to examine the effectiveness of vertical development practices in a remote environment. More studies that increase the size and diversity of the participants are indicated. In addition, studies that show how leaders experience novel problems and how to connect them to sensemaking activities would be instructive.

Implications for practice

Our research results raise several implications for practice. While there was little change in the vertical development activities of employees while working from home following the COVID-19 pandemic, there was a significant increase in the experience of novel problems. This provides an opportunity for vertical leadership development. Vertical leadership begins when leaders are challenged with experiences that take them outside their comfort zone. Experiences that challenge existing ways of thinking are prime opportunities for leaders to deepen their cognitive development and expand their leadership capacity. This can occur

when leaders experience novel problems. However, these experiences alone are insufficient to ensure this development occurs. Vertical leadership development requires new experiences in connection with supportive relationships and mechanisms to reflect on and intentionally deepen one's ways of thinking. Given this, organizations should take advantage of the increase in the experience of novel problems by becoming more intentional and structured in supporting employees through the novel challenges they face. For example, organizations can purposely expose leaders to diverse backgrounds and worldviews. Organizations can also ensure leaders' novel problems are connected to sensemaking activities.

There was also an increase in individual consumption of professional development material, which provides another opportunity for structured development. Organizations can do this by curating books and podcasts that might challenge a leader's perspective or exemplify organizational values. Organizations can also provide opportunities for leaders to gather remotely for book and podcast discussions. Journaling, an activity that showed a decrease while working at home, can be increased through intentional and structured development by providing material and templates for journaling to increase effectiveness when reflecting on work challenges.

Vertical development must connect leaders to other people and their work to succeed. Cooper and Kurland (2002) point out that working from home can lead to professional isolation unless development activities are valued and made available by organizations. Petrie (2014) identified that leadership development that spends too much time delivering content consumed by leaders in isolation with little connection to their work often fails. As the COVID-19 pandemic ends and people begin to gather, those organizations that continue WFH environments might consider using their physical locations as gathering spaces to facilitate these activities in a face-to-face setting. Organizations can coordinate video conferences on platforms such as Zoom to offer leaders a space to discuss these challenges with other leaders. Also, organizations can formalize or standardize remote after-action reviews. While managers did not report a change in the frequency of retrospectives, such as action-action reviews, while working from home, standardizing this activity may ensure informal feedback loops in a WFH environment. Organizations have always had an essential role in a leader's development, but their role appears even more critical in a WFH environment.

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