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The impact of working from home on employee creativity: A cross cultural comparison of Germany and China

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THE IMPACT OF WORKING FROM HOME ON EMPLOYEE CREATIVITY:

A CROSS CULTURAL COMPARISON OF GERMANY AND CHINA

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The Impact of Working from Home on Employee Creativity: A Cross Cultural

Comparison of German and China

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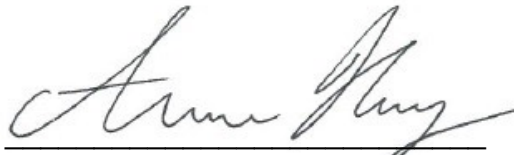
2023

I hereby declare that this dissertation is my original work and it has been written by me in its entirety.

I have duly acknowledged all the sources of information which have been used in this dissertation.

This dissertation has also not been submitted for any degree in any university previously.

Heng Cheng Ghee Andrew
05 May 2023

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ABSTRACT

The rise of work-from-home (WFH) arrangements has brought significant changes to how employees work and interact with each other. This dissertation aims to examines the potential impact of WFH arrangements on employee creativity and investigates whether this impact varies across high-context and low-context cultures, with a particular focus on how demographic characteristics such as gender, age, and education may affect this relationship. The study is conducted within a top 10 global automotive supplier with associates in China (high-context culture) and Germany (low-context culture). As individual creativity often arises from collaboration and interaction with others, I hypothesised that as WFH frequency increases, employees may be less likely to exchange ideas and perspectives effectively with others, impeding the formation of new creative insights. Furthermore, with the cultural differences in communication style, WFH arrangements could potentially diminish creativity more in high-context cultures than in low-context cultures due to the higher value placed on face-to-face interaction and non-verbal cues for communication and collaboration. The research aims to provide practical contributions to organisations seeking a comprehensive understanding of the impact of WFH arrangements on employee creativity across different cultures and demographics. The study's findings will also aid organisations in developing appropriate solutions to overcome the challenges that may arise in a WFH environment and facilitate effective collaboration and knowledge exchange among employees.

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1. INTRODUCTION

In recent years, the COVID-19 pandemic has forced organisations to embrace change at an unprecedented rate, with the adoption of work-from-home (WFH) arrangements being one of the most significant changes to working arrangements. WFH arrangements have brought about significant changes in how employees work and interact with each other. While video conferencing has been widely embraced as a solution for virtual communication, it may hinder the formulation of new creative insights. This is because the lack of face-to-face interactions can diminish the quality of employees exchange with their co-workers, thereby negatively impacting creativity.

In a typical WFH arrangement, conversations, group discussions, and meetings have moved almost entirely online, facilitated by tele or video conferencing tools. The lack of face-to-face interactions could diminish the quality of employees exchange have with their co-workers. For example, facial expression can help interpret the speaker's intention, movements of the lips and jaw can help to disambiguate speeches (Bruce, 1996). Without visual cues such as facial expressions and body language, the quality of exchanges between co-workers may be diminished, potentially negatively impacting creativity.

As our economy becomes increasingly knowledge-based, job requirements are becoming more complex, making creativity a crucial element of organisational success (N. Anderson et al., 2014). This is further supported by CEOs, who have identified creativity as a critical component for achieving organisational goals (IBM Global CEO study, 2010). An essential factor in promoting creativity is the amount and quality of knowledge and idea exchange among employees in the workplace (P. Paulus, 2000; P. B. Paulus & Yang, 2000). As a result, organisations continually seek ways to

enhance employee creativity to improve performance and competitiveness (Hou et al., 2011).

The exchange of information with others is a crucial factor that impacts individual creativity in an organisation (Amabile & Pratt, 2016; Csikszentmihalyi, 1990, 2014; Perry-Smith, 2006; Shin & Zhou, 2003). Since creativity is a systemic rather than a solo phenomenon (Hargadon & Bechky, 2006; P. B. Paulus & Yang, 2000; Runco & Albert, 1990; Sawyer, 2014; Shalley & Perry-Smith, 2008), the ability to integrate others' ideas can potentially help individuals gain new perspectives and enhance creativity outputs. At the same time, studies have shown that face-to-face interactions are more spontaneous and less formal, enabling more exchanges (Cook & Lalljee, 1972; Isaacs et al., 1997). Conflicting findings suggest that the number of face-to-face and video conferencing exchanges with colleagues is similar (Argyle et al., 1971; Sellen, 1995). However, one possible difference between face-to-face and video conferencing is the detraction from non-verbal cues such as direct eye contact and physical closeness, which are crucial for ensuring quality exchanges that help individuals formulate new ideas. Therefore, it is crucial to explore the impact of video conferencing on work-from-home arrangements and creativity to identify ways to maximise the exchange of information in a virtual setting.

The impact of WFH arrangements on creativity performance in organisations has received limited attention in the literature to date, despite its prevalence in modern workplaces. As creativity is viewed as a systemic rather than a solo phenomenon, the lack of non-verbal cues during virtual meetings could potentially hinder the exchange of information and limit creativity outputs. Additionally, since culture influences communication habits and information exchange (E. T. Hall, 1976), cultural differences in WFH communication could affect creativity outputs differently across cultures. This

study aims to explore the impact of WFH on creativity performance and compare the effects across different cultural contexts, bridging communication and creativity literature.

1.1. Research Problem

In the context of work-from-home (WFH) arrangements, virtual or video conferencing interactions have been found to hinder relationship building and trust among employees when compared to face-to-face interactions (Cascio, 2000; Powell et al., 2004). These virtual interactions also tend to be less effective in promoting group cooperation and knowledge exchange (Peterson & Roseth, 2016; Roseth et al., 2011; Saltarelli & Roseth, 2014), likely due to the lack of non-verbal cues, which can lead to misinterpretations and misunderstandings (Bergiel et al., 2008; Dewar, 2006; Karpova et al., 2009). As a result, WFH arrangements that rely heavily on virtual interactions, the lack of face-to-face interactions are likely to result in less effective communication and impede the exchange of knowledge and creativity outputs.

Previous research have also found that WFH arrangements have a negative impact on relationship formation and trust among employees, hindering group cooperation and effective communication compared to face-to-face interactions (Cascio, 2000; Peterson & Roseth, 2016; Powell et al., 2004; Roseth et al., 2011; Saltarelli & Roseth, 2014). However, the extent to which WFH arrangements affect employee creativity may differ across countries and cultures, as culture shapes communication and information exchange practices (E. T. Hall, 1976). High-low context culture typically refer to the way how members in a given culture relate to one another, social bonds, responsibility, commitment and the way they communicate (E. T. Hall, 1976). High-context cultures rely heavily on non-verbal cues, context, and

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relationships, while low-context cultures rely more on explicit and direct communication (E. T. Hall, 1976).

In a high-context culture, where communication tends to rely on non-verbal cues and relationships, WFH can be challenging. Without face-to-face interaction, it can be difficult to establish collaboration and creativity. Given that virtual platforms are not conducive for exchanging and observing of non-verbal cues (Cheshin et al., 2011; Guye-Vuillème et al., 1999), communication on these platforms may present greater challenges in high-context cultures, and to individuals who tend to rely more on non-verbal cues as well as contextual information and internalised values. Furthermore, as demographic differences can potentially affect creativity (Milliken & Martins, 1996), this can indirectly have a more considerable negative impact on employee creativity, making it harder for individuals to work together with others. Despite the growing interest in remote work, there has been limited research on the impact of WFH arrangements on employee creativity, particularly in relation to cultural factors.

1.2.   Purpose of the Study

The main objective of this study is to explore the association between the frequency of WFH and individual creative performance while comparing the effects between two different cultural contexts. Additionally, this research aims to investigate the potential moderating influence of demographic characteristics, including gender, age, and education, on the relationship between WFH frequency and creative performance. By examining these factors, this study aims to understand how WFH arrangements affect employee creativity comprehensively.

This study aims to examine the impact of WFH on employee creativity, an essential outcome for organisational success, while previous studies have mainly

focused on the effects of WFH on outcomes such as burnout (Montgomery et al., 2003; Peeters et al., 2005), conflict (Hill et al., 2010), and productivity (Baker et al., 2007; Bloom, 2014). As WFH practices developed amid the COVID-19 pandemic to persist post-pandemic and become more common and increasingly a preferred mode of working (Forbes, 2020; McKinsey, 2021), understanding the potential impact of WFH on employee creativity is crucial for organisations to identify strategies for fostering collaboration and creativity in WFH.

Culture is a significant factor that affects how people communicate and exchange information. While a growing body of research explores the influence of culture on creativity, there is still a lack of theoretical exposition and empirical evidence on how cultural differences impact creativity in a WFH setting. To fill this research gap, this study will compare the responses and creative performance of individuals from two distinct cultures, China and Germany, which exhibit clear differences in communication patterns. By doing so, this dissertation aims to contribute to the theoretical understanding of how cultural differences affect responses to WFH, which has yet to be thoroughly investigated.

1.3. Contribution

This study contributes to the existing literature on WFH by examining how demographic differences can moderate the impact of WFH on individual creativity. To operationalise creativity, the study draws on the *System Model of Creativity* (Csikszentmihalyi, 2014), which proposes that creativity is a result of the interaction between the individual, the domain, and the field. In the context of WFH, the field component becomes particularly important as it encompasses the social and cultural context, norms and standards that exist within a particular domain that help to shape the creativity process and outcome. It includes the knowledge, skills, and attitudes that

practitioners in that field value, as well as the rules and conventions that guide creative expression and evaluation. When employees WFH, they may miss out on the social interactions and learning opportunities that arise from being part of a particular social and cultural context. They may be unable to learn from others, share knowledge, or receive feedback that is critical to their creative development. As a result, they may find it challenging to develop new ideas or approaches that are outside the existing norms and practices. While virtual conferencing can be seen as a potential solution, previous research suggests that WFH can limit the exchange and observation of non-verbal cues (Cheshin et al., 2011; Guye-Vuillème et al., 1999) and significantly impact interaction with others. This dissertation posits that the greater the frequency of WFH, the stronger the negative effect on creativity.

In addition to examining the impact of WFH on creativity, this dissertation also explores the role of high-low context culture – the degree to which society communicates influences the effectiveness of WFH communication and creativity (E. T. Hall, 1976). High-context cultures rely heavily on contextual information and non-verbal cues in communication, while low-context cultures emphasize explicit and direct communication. This dissertation selects two of the top 10 global economies, China and Germany, to examine the impact of WFH on creativity in high-context and low-context cultures, respectively.

The practical contribution of this study lies in providing policymakers in organisations with a comprehensive understanding of the impact of WFH arrangements on employee creativity. The results would provide practical contributions by offering policymakers in organisations to gain a more comprehensive understanding of the impact of WFH arrangements on employee creativity. A more

precise understanding of the issues or problems will help organisations develop appropriate WFH solutions.

2. LITERATURE REVIEW

2.1. Individual Creativity

Creativity is a complex and multidimensional construct that has been extensively studied in the field of creativity research. There is a general consensus among creativity researchers that creativity involves the production of ideas or products both novel and useful, and appropriate to the task or problem at hand. According to Amabile et al., (1996), creativity involves the production of novel and useful ideas appropriate to the task at hand. Besemer & O'Quin, (1999) define creativity as the ability to generate unique and appropriate ideas or solutions to problems. Mumford & Gustafson, (1988) define creativity as the ability to produce both novel and valuable work, while Runco & Jaeger, (2012) define creativity as the production of something that is both original and useful. Additionally, in the organisational context, creativity refers to the ability of individuals or teams to generate novel and useful ideas, products, services, procedures, or processes within a complex social system (Woodman et al., 1993). There is broad agreement that creativity is an essential component of human innovation and progress, and the ability to generate novel, unconventional, useful and feasible to implement idea plays a crucial role in helping individuals and organisations adapt to changing environments and solve complex problems.

The System Model of Creativity proposed by (Csikszentmihalyi, 1990, 2014) provides a useful framework for understanding the factors that promote creativity (Figure 1: System Model of Creativity (Csikszentmihalyi, 2014). This model

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emphasises the significance of three key domains - domain, field, and individual - in shaping creative outcomes. By taking into account these three domains, the model offers a comprehensive perspective on the complex and dynamic nature of creativity.

The *domain* refers to the rules, codes, and practices within a particular cultural or professional context that shapes the ideas that are considered acceptable or valuable. This might include industry-specific conventions or organisational norms in the work context. To promote creativity in this domain, individuals may need to challenge established norms or find new ways to combine existing practices in novel ways. In the WFH context, individuals may need to navigate new cultural norms around remote work and find ways to collaborate and communicate effectively with colleagues in different locations or time zones.

The *field* refers to the social and cultural context in which creativity occurs, including factors such as societal norms, cultural values, and the availability of resources and support. In the traditional workplace, the field might encompass the organisational culture, professional networks, and opportunities for recognition and advancement. In the WFH context, the field may be more diffuse, including online and offline practice communities, social media networks, and other forms of virtual collaboration. As such, it may be important for individuals to actively seek out and participate in these communities to remain connected and engaged in their work.

Finally, the *individual* domain encompasses personal factors such as judgment, personality, and motivation that shape an individual's creative output. Csikszentmihalyi notes that individuals must have the personality to break the rules and challenge established practices, but also notes the importance of recognition and appreciation from peers to maintain intrinsic motivation. In the context of WFH, individuals may face unique challenges to motivation, such as increased isolation or difficulty in establishing

boundaries between work and home life. However, the flexibility and autonomy offered by WFH may also allow individuals to better align their work with their personal values and interests, promoting creativity.

Overall, the System Model of Creativity provides a useful framework for understanding the complex interplay of factors that shape creativity in the WFH context. By attending to the ways in which domain, field, and individual factors interact in this context, researchers and practitioners can develop strategies for promoting creativity and innovation in WFH environments. Supported by organisation research (Hirst et al., 2009; Perry-Smith, 2006; Pirola-Merlo & Mann, 2004; Taggar, 2002), interactions among people will help trigger new ideas (King & Anderson, 1990), and increases the likelihood of developing more and better ideas (West, 1990).

Figure 1: System Model of Creativity (Csikszentmihalyi, 2014)
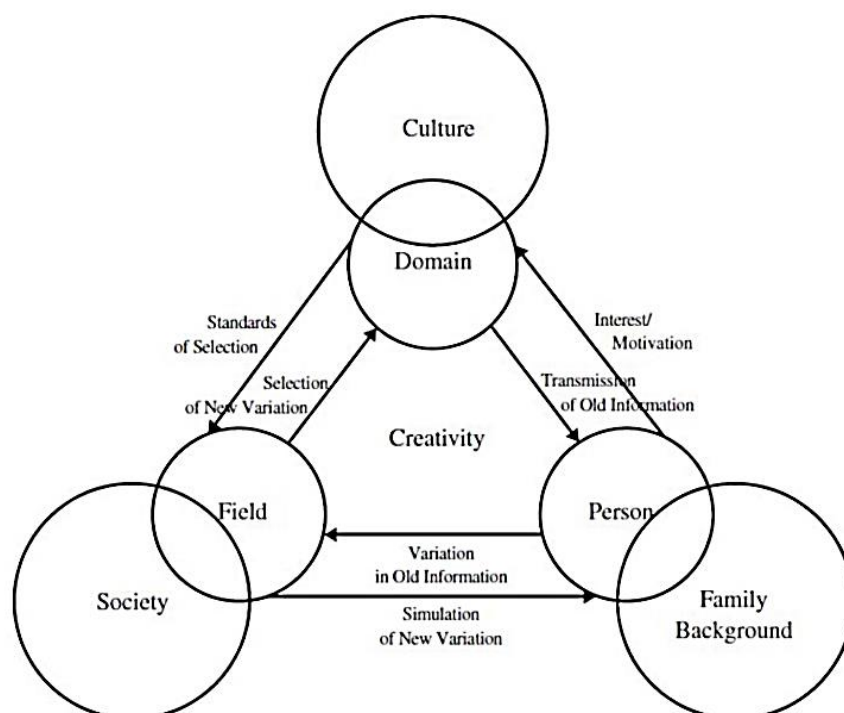
2.2.   Impact of High-Low Contextual Culture

The concept of high-low context culture typically refers to the way members in a given culture relate to one another, information is conveyed through contextual cues, such as body language and tone of voice (E. T. Hall, 1976). High-low context cultures appear to be a continuum and cannot be categorised as exclusively high or low context but higher or lower than others when compared (E. T. Hall, 1976). In high-context cultures, such as many Asian and Middle Eastern cultures, much of the meaning is conveyed through contextual cues and shared understanding of non-verbal cues (Gudykunst, 1993; Gudykunst & Nishida, 1986). There is an emphasis on preserving relationships and maintaining harmony, which leads to a preference for indirect communication. The intimate relationship between people and well-structured social norms and hierarchies serve as the overall context for communication. Individuals with high-context cultures rely more on using physical context or internalizing the meaning from the person and use lesser information contained in the words or sentences when communicating (E. T. Hall, 1976). In other words, there is greater confidence placed in the non-verbal aspect of communication than in verbal aspects for conveying meaning. Communication is complemented with gestures, body language, proximity, and behaviour, ensuring information is communicated through physical context.

On the other hand, in low-context cultures, such as many Western cultures, there is greater cultural diversity and heterogeneity, and individuals are likely to use less non-verbal skills to transmit messages, emphasizing direct and explicit information exchange (Gudykunst, 1993, p. 193; Gudykunst & Nishida, 1986; Okabe, 1983). There is less reliance on contextual cues, and communication tends to be more formal and structured. In these cultures, there is a greater emphasis on individualism and efficiency, which leads to a preference for direct communication. Communication

is fast and efficient, and most of the information is vested in words and sentences rather than non-verbal aspects (E. T. Hall, 1976). Messages tend to be more "context-free" and deal with much less surrounding environment or the status of the speaker and the audience (Keegan, 2011).

China and Germany are often regarded as having higher and lower context cultures, respectively (Djurssa, 1994; E. T. Hall, 1976; D. Kim et al., 1998; Würtz, 2005). Chinese people tend to communicate less openly and directly, putting more weight on non-verbal aspects. In comparison, German people value direct, explicit information exchange and put less weight on non-verbal aspects of communication. However, it is essential to note that no culture is entirely high-context or low-context, and individuals within a culture may vary in communication style.

2.3. Work From Home and Communication

The trend towards working-from-home (WFH) has gained momentum in recent years, driven by advances in information and communication technology (ICT) that enable individuals to work remotely. WFH is defined as a work arrangement that involves using ICT tools and working in an alternative location rather than in a conventional office environment (Maruyama et al., 2009). The alternative working locations are not limited to home but can include other remote workplaces with broadband connections and electronic media for communication (Ellison, 2004; Gajendran & Harrison, 2007).

The versatility and benefits of WFH for both organisations and employees have led to increased enthusiasm among practitioners. WFH provides employees with several benefits, such as achieving a better work-life balance, planning their work hours flexibly, saving time by avoiding a daily commute, and enjoying a greater sense of autonomy in their work. For organisations, it can leverage the flexibility of WFH to

hire qualified workers from anywhere in the world and extend the organisation's working hours, enabling work across different time zones and boosting international competitiveness (Lee, 2021). Additionally, WFH was found to reduce managers' control over their subordinates (Lilian, 2014). Hence allowing employees to WFH can benefit organisations, including cost savings on office space and other resources, increased employee productivity, improved job satisfaction, and reduced absenteeism (Gajendran & Harrison, 2007). With WFH, organisations can reduce overhead costs associated with maintaining a physical office space, such as rent, utilities, and maintenance.

However, employees who work from home also face potential drawbacks. WFH reduces socialisation among peers and managers (Daim et al., 2012; Mann et al., 2000; Olson, 1981; Shamir & Salomon, 1985). Communication is critical to how an organisation functions (Belanger et al., 2001; DeSanctis & Monge, 1998) and is often cited as critical to the success of WFH (Sias et al., 2012). Employees engaged in WFH practices, will experience a reduction of face-to-face interactions, diminishing the informal transfer of organisational culture, social cues, and information necessary to interpret the context (Hackman & Oldham, 1976). The reduction of face-to-face interactions leads to confusion and miscommunication among employees (Raišienė et al., 2020)

While WFH employees can communicate with co-workers via phone, email, instant messaging, and video conferencing (Sias et al., 2012), these methods are less efficient in transferring aspects of the message, such as tone of voice and non-verbal cues. Although MS Team, Zoom and phone calls can facilitate some degree of tone and non-verbal cues, these methods are still argued to be less effective than in-person communication (Cakula & Pratt, 2021; Standaert et al., 2016). As a result, WFH

individuals are likely to receive less and lower quality feedback from colleagues (Gajendran & Harrison, 2007; Grant et al., 2011; Shamir & Salomon, 1985), and the use of information and communication technology (ICT) significantly increases the technostress experienced by employees (Raišienė et al., 2020).

It is also important to note that high-context and low-context cultures can affect communication in WFH. High-context cultures, such as Japan, Korea, and China, place a high value on non-verbal cues and indirect communication, while low-context cultures, such as the United States and Germany, rely more on verbal communication (E. T. Hall, 1976). These cultural differences can cause misunderstandings and communication breakdowns in a WFH setting, particularly when colleagues are from different cultural backgrounds.

In conclusion, while WFH provides several advantages to organisations and employees, it can lead to reduced socialisation and communication breakdowns. Non-verbal cues are critical in communication and often lost in a WFH setting, leading to lower quality feedback and increased technostress. Moreover, cultural differences in communication styles must be considered, particularly in a WFH setting with a diverse workforce.

3.   THEORETICAL FRAMEWORK

3.1.   Conceptual framework

The conceptual framework in Figure 2 proposes the relationships among WFH frequency, creativity performance, and demographic factors as a moderator. The high-low context culture is used as a lens to unpack the 3-way interaction by examining the effects of WFH frequency and creativity performance on culture.

The study aims to examine the relationship between WFH and individual creativity, considering the unique context of remote work. The study will also explore

how demographic factors such as gender, age, and education moderate this relationship. Additionally, the study will investigate the impact of high-low contextual culture on the relationship between WFH and creativity performance. Individuals from different cultural backgrounds communicate and engage with concepts differently. Therefore, the dissertation aims to compare the relationship between WFH and creativity, and the moderating effects of demographic factors across high and low-contextual cultures.

Figure 2: Conceptual model of the hypothesised interaction effect between WFH Frequency and Creativity Performance
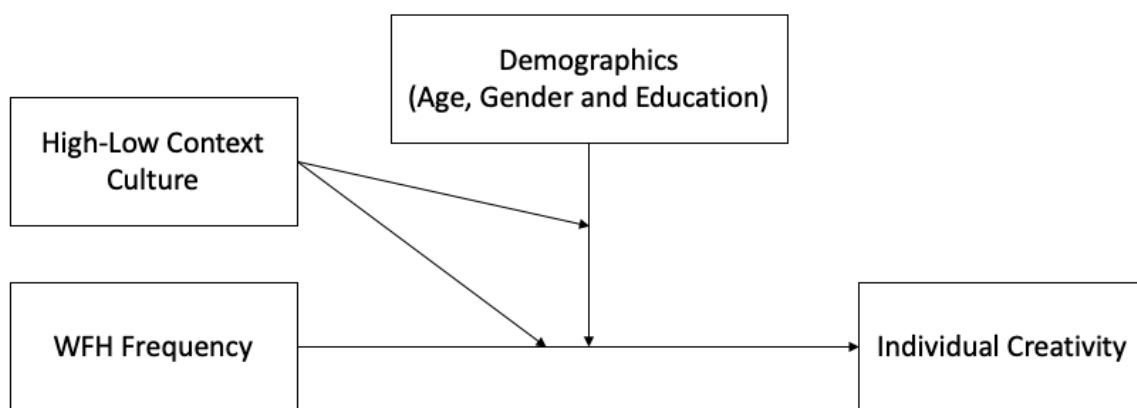
3.2. Research Questions

Building on previous research on creativity, this dissertation aims to investigate the impact of WFH on individual creativity, and examine whether this impact varies across different cultural contexts and demographic factors such as gender, age, and education. My overall research question is as follows:

RQ: Does WFH affect individual creativity across different cultures, and how do demographics (gender, age and education) moderate the effects of WFH?

Specifically, this dissertation attempts to answer the following questions:

1. To what extent does WFH frequency affects an employee's creativity?

2. How does the level of individual creativity when working from home differ between high and low-context cultures?

3. To what extent do demographic factors such as gender, age, and education moderate the impact of WFH on individual creativity?

By addressing these questions, this dissertation aims to provide insights into the potential effects of WFH on individual creativity, as well as the role of cultural and demographic factors in shaping these effects.

3.3. Research Model

The proposed research model aims to examine the relationship between Work-from-Home (WFH) as the independent variable (IV) and individual creativity as the dependent variable (DV), with demographic factors (gender, age, and education) and culture serving as the moderating variables. The dichotomy of Germany and China will be used to compare the differences between low versus high context cultures.

The research model further suggests that the impact of WFH frequency on individual creativity is greater for those in high-context cultures than those in low-context cultures. Additionally, the research model predicts that demographic factors (gender, age, and education) moderate the relationship between WFH frequency and individual creativity.

Specifically, the model proposes that females may experience a greater impact of WFH frequency on creativity compared to males and that older individuals may experience a greater impact of WFH frequency on creativity than younger individuals. The model also suggests that those with lower education may experience a greater impact of WFH frequency on creativity.

In summary, the proposed research model aims to investigate the impact of WFH on individual creativity, taking into account the moderating effects of demographic factors and comparing high-low context culture. The research will be conducted quantitatively through a survey questionnaire. The data will be analysed using statistical methods such as regression analysis to test the hypotheses and research questions.

4. HYPOTHESES

4.1. Work From Home and Creativity

Creativity is not a solo endeavour, and its often viewed as a collaborative effort involving the integration of different perspectives, insights, and abilities (Brown et al., 1998; Hargadon & Bechky, 2006; Taggar, 2001). Communication plays a critical role in organisational functioning (Belanger et al., 2001; DeSanctis & Monge, 1998) and is frequently cited as essential for successful WFH arrangements (Belanger et al., 2001; DeSanctis & Monge, 1998; Sias et al., 2012). Verbal and non-verbal cues are both crucial components of effective communication, allowing for the sharing of richer information and a better understanding of ambiguous messages (Dennis & Kinney, 1998). In particular, non-verbal cues are the most commonly used form of communication tool for interpreting and communicating effectively with others (Bergiel et al., 2008; Dewar, 2006; J. A. Hall & Gunnery, 2013).

Although video conferencing can facilitate some non-verbal cues, such as eye contact, body movement, and hand gestures (Standaert et al., 2016), it has been argued that interactions conducted via video conferencing tools hinder relationship formation (Cascio, 2000; Powell et al., 2004) and are ineffective in fostering cooperation (Karpova et al., 2009; Peterson & Roseth, 2016; Roseth et al., 2011; Saltarelli & Roseth, 2014) and message accuracy (O'Malley et al., 1996). Employees

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may easily misinterpret facts or incorrectly assume others' intended meaning and emotions (Bergiel et al., 2008; Dewar, 2006). Thus, in WFH arrangements where collaboration is almost always virtual, the lack of face-to-face interactions and informal conversations will likely impede the exchange of knowledge and idea exchanges.

In sum, face-to-face interaction is the richest medium for communication compared to other forms of computer-mediated communication channels (Johnson & Lederer, 2005). Although video conferencing tools may compensate for some non-verbal cues present in face-to-face interaction, employees are more likely to misinterpret or have greater difficulty understanding other people's perspectives, hindering the formulation of new ideas (Bergiel et al., 2008; Dewar, 2006). As a result, employees with greater WFH frequency will rely more on virtual than face-to-face interactions. They are less likely to embrace other people's perspectives and exchange knowledge and ideas effectively with others, potentially hindering their ability to generate new creative ideas and insights.

H1: Higher Work from Home frequency has a greater negative impact on employee creativity

4.2. Effects of Culture on Work From Home and Creativity

Cultural differences can significantly impact how individuals interpret and respond to communication techniques (E. T. Hall, 1976; Podrug, 2011; Schneider & De Meyer, 1991). The high-low context concept summarises how individuals within a culture communicate and respond to each other (E. T. Hall, 1976). In high-context cultures, individuals prefer indirect communication methods, and the message's intended meaning may not be communicated directly (E. T. Hall, 1989). The

message's intended meaning may not be communicated directly, so the receiver must "read between the lines" to relate to the context. Therefore, non-verbal cues such as body gestures and proximity are necessary for the listener to interpret the message's meaning (Li et al., 2007). In contrast, individuals tend communicate directly in low-context cultures, and the intended meaning of words and sentences is more context-free (Onkvisit & Shaw, 1999). This means that the words used have limited association with how they are said and the environment in which they are said. There is less physical association with the situational context. Direct confrontational communication approaches are preferred in low-context cultures to ensure that the message is received by the intended recipient (Choe, 2002). Face-to-face conversations and non-verbal cues are less critical in low-context cultures.

China and Germany are often regarded as having higher and lower context cultures respectively (Djurssa, 1994; E. T. Hall, 1976; D. Kim et al., 1998; Würtz, 2005). Employees in higher-context cultures are more likely to be indirect, convey less information through direct or explicit verbal cues, and rely more on non-verbal cues and contextual information (Gudykunst, 1997; E. T. Hall, 1976). A reduction of face-to-face interactions might affect the ability to convey social context cues about the intended messages, generating less interaction and reciprocity for each other to develop new ideas (Lowry et al., 2006).

Given that virtual platforms are not conducive for exchanging and observing of non-verbal cues (Cheshin et al., 2011; Guye-Vuillème et al., 1999). Communication via these platforms may present greater challenges in high-context cultures. Therefore, this paper infers that the negative impact of working from home on creativity might be stronger for Chinese employees than their German counterparts.

H2: The negative impact of WFH on creativity is greater for Chinese than German Employees

4.3. Effects of Demographics on Work from Home and Creativity

4.3.1. Effect of Gender on Work from Home and Creativity

The role of non-verbal cues in communication varies based on gender (Frances, 1979), impacting an individual's attitudes, beliefs, and communication styles (Gray, 1993; Tannen, 1991; Wood, 1994). Gendered communication differences are not only a product of communication but also influence communication ability and style, shaping individual attitudes and information transmission (Neculăesei, 2015). Gender norms dictate which communication behaviours are acceptable for men and considered inappropriate for women, transmitting values and norms about gender roles (Neculăesei, 2015; Newman, 2002). These norms are reinforced by societal expectations of gender subcultures, where men are expected to communicate more directly, dominantly, assertively, and result oriented. While women are expected to be indirect and to use language to create and maintain closeness (Ashmore et al., 1986; M. Kim & Bresnahan, 1996; Kirtley & Weaver, 1999; Tannen, 1991). When giving feedback, men should be more direct and consider less feeling, whereas women are expected to buffer praise at the beginning and are more concerned about the "face value" of the interactants to maintain harmony (Ng & Bradac, 1993).

The sociolinguistic subcultures embedded among women make them more expressive in non-verbal communication than men, relying on cues such as smiles, laughter, and hand gestures (Briton & Hall, 1995; Kramer, 1977). Men also exhibit non-verbal cues, but to a lesser degree (Frodi et al., 1977; Mulac et al., 2001). Women also tend to exhibit more non-verbal cues to express ideas, stand physically closer to

others, and use their body language more expressively in dyadic interactions (Ambady & Rosenthal, 1998).

While video conferencing can facilitate some use of non-verbal cues (Standaert et al., 2016), other elements such as physical touch and interpersonal distance that influence social connections and create relationships are not replicable (Standaert et al., 2021). Women may be reluctant to adopt a more direct communication style during WFH arrangements to facilitate knowledge exchange due to concerns about being perceived as less feminine, influential, and likable (Copeland et al., 1995; Ellyson et al., 1992; Sterling & Owen, 1982).

Given that women rely more on non-verbal cues in communication and have a higher preference for in-person knowledge exchange and idea sharing (Briton & Hall, 1995; Dennis et al., 1999; Frodi et al., 1977; Mulac et al., 2001; Standaert et al., 2021), The shift to WFH will reduce of face-to-face interaction and intensity of non-verbal cues. Hence, a higher frequency of WFH arrangement may disproportionately have a greater negative effect on women's creativity than on men's employees.

H3a: The negative impact of WFH on creativity is greater for women than for men employees.

I do not have any hypothesis about men and will explore the effect empirically.

4.3.2. Effect of High-low culture on Gender, Work from Home and Creativity

In high-context cultures like China, communication is often more indirect and relies heavily on non-verbal cues such as facial expressions and body language to convey meaning (E. T. Hall, 1976). This can be challenging in virtual collaborations, where non-verbal cues are limited or absent. Women in Chinese culture, who may be

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expected to adopt indirect communication styles to maintain closeness, may face greater difficulties communicating and expressing their creativity in virtual collaborations (Ting-Toomey & Kurogi, 1998).

In contrast, in low-context cultures like Germany, communication is typically more direct and relies less on non-verbal cues (E. T. Hall, 1976). This can make virtual collaborations more manageable and effective for women, as they may be more accustomed to expressing themselves directly and clearly. As a result, German women may experience greater communication effectiveness than Chinese women when working from home.

Furthermore, gender stereotypes may also play a role in how women from different cultures express their creativity in virtual collaborations. Research has shown that gender roles and expectations can vary significantly across cultures (Glick, 2006). In high-power distance cultures like China, gender stereotypes may be more rigidly institutionalized, and women may face greater pressure to conform to traditional gender roles (Hofstede, 1980). This can make it more difficult for women in Chinese culture to adopt a more direct communication style. In contrast, women in low-power distance cultures like Germany may face comparatively fewer challenges in breaking free from gender stereotypes and expressing their creativity freely (Hofstede, 1980). This is particularly relevant in virtual collaborations, where individuals may feel more empowered to express themselves and challenge traditional gender roles (Bapuji & Crossan, 2004).

Therefore, the impact of culture on virtual collaborations is complex and multifaceted, with communication styles and gender stereotypes playing important roles. While German women may experience a greater effect on creativity than

Chinese women when working from home, this is likely due to a combination of factors related to culture, communication, and gender expectations.

H3b: The negative impact of WFH on creativity is greater for Chinese women than for German women employees.

4.3.3.   Effect of Age on Work from Home and Creativity

Studies have shown that younger adults tend to be more comfortable with technology and computer-mediated communication than older adults (Marquié et al., 2002; Turner et al., 2007). Younger adults are digital natives, having grown up with technology and digital communication (Prensky, 2001). They are more likely to be comfortable with non-face-to-face interactions and have greater exposure to computer-mediated interpersonal communication (Park & Gursoy, 2012). This comfort with digital communication is likely due to their greater exposure to social networks and other online platforms (Walmsley, 2011), which require less reliance on traditional non-verbal cues for effective communication (Feiertag & Berge, 2008; Heng & Yazdanifard, 2013). This allows younger adults to be comfortable communicating even with a lack of face-to-face interaction.

On the other hand, older adults (non-digital natives born before 1980) may struggle with digital communication due to their lack of experience with technology and unfamiliarity with computer-mediated communication (Marquié et al., 2002; Turner et al., 2007). Older adults are also less likely to have grown up with technology and are often exposed to it later in life (Prensky, 2001). This lack of experience can lead to anxiety and fear when attempting to use new technology (Marquié et al., 2002; Turner et al., 2007). Moreover, the shift to video conferencing reduces the amount of non-

verbal cues used by older adults. Non-verbal cues, such as facial expressions and tone of voice, can help older adults better understand the intent and emotions of the speaker. However, the shift to video conferencing reduces the availability of these non-verbal cues, leading to more difficulty in interpreting and conveying information (Feiertag & Berge, 2008). This in turn may further hinder their communication ability (Venter, 2017).

In the context of WFH, the shift to digital communication can create challenges for older and younger employees. The unfamiliarity with digital technologies, the reduction in non-verbal cues, and the reliance on face-to-face interaction may lead to a greater struggle for older employees to adapt to the shift in communication methods, leading to more difficulty in expressing themselves. Younger employees, on the other hand, may be more comfortable with digital communication, and lesser reliance on non-verbal cues may experience fewer barriers to effective communication and collaboration when working from home. This may lead to younger employees being more effective in generating creative ideas thru better collaboration with others in a WFH setting than their older counterparts.

H4a: The negative impact of WFH on creativity is greater for older than younger employees.

4.3.4. The Effect of High-low Culture on Age, Work from Home and Creativity

In high-context cultures like China, where communication relies heavily on non-verbal cues, older Chinese employees may face greater challenges adapting to the shift to video conferencing and other digital communication tools. The lack of in-person interaction and non-verbal cues can result in difficulty expressing themselves. In

contrast, older Germans come from a low-context culture where communication relies more on verbal aspects, which could make them more adaptable to WFH. Older Germans may be more comfortable with digital communication, as they are used to expressing themselves verbally rather than relying on non-verbal cues.

Furthermore, the cultural values of collectivism and individualism also play a role in the impact on creativity (Goncalo & Staw, 2006). China is a collectivist society, meaning older Chinese individuals may rely more on face-to-face interaction and collaboration with others to generate new ideas. On the other hand, Germany is an individualistic society, where older Germans may be more comfortable working independently and generating ideas on their own (Hofstede, 1980).

Overall, older Chinese employees may experience a greater negative impact on their creativity when working from home compared to older Germans due to the high-context culture and reliance on non-verbal cues in China. The shift to WFH and digital communication may result in a communication gap, making it more difficult for older Chinese individuals to express themselves and collaborate effectively. In contrast, older Germans may be more adaptable to WFH due to their low-context culture and lesser reliance on non-verbal cues, resulting in less impact on their creativity.

H4b: The negative impact of WFH on creativity is greater for older Chinese than older German employees.

I do not have any hypothesis about younger employees and will explore the effect empirically.

4.3.5. Effect of Education on Work from Home and Creativity

The impact of education on technology adoption and communication effectiveness has been widely studied in various contexts (Noe & Kodwani, 2018; van Deursen et al., 2011; Veldhuijzen et al., 2007; Werner & DeSimone, 2006). Higher levels of education have been found to increase an individual's understanding and acceptance of new technology, leading to faster adoption rates (Dutton et al., 1987; Lleras-Muney & Lichtenberg, 2002; Rogers, 2010; F. Welch, 1970; Wozniak, 1987) Additionally, individuals with higher education tend to have a broader vocabulary, which allows them to articulate messages effectively directly through words, reducing the reliance on non-verbal cues (Hawkins & Bender, 2002)

In the context of WFH, the adoption of digital communication tools, such as video conferencing, plays a critical role in communication effectiveness (McKnight et al., 2016). Higher-educated employees are likely to be familiar with technology, and having a broader vocabulary, so they can communicate with greater confidence, even in the absence of non-verbal cues (Bhardwaj, 2016; Viera, 2017). In contrast, lower-educated individuals may struggle with the use of digital communication tools and rely more on non-verbal cues, which may result in communication gaps and hinder the generation of new ideas (Van Dijk, 2017).

Higher-educated individuals are associated with greater access to vocabulary, enabling more fluent verbal communication and reduced reliance on non-verbal cues. Furthermore, higher-educated employees may be better equipped with digital communication skills, leading to greater creativity when WFH. In contrast, lower-educated individuals may struggle with the lack of non-verbal cues, leading to greater communication gaps in collaboration and reduced creativity. Therefore, I hypothesized that education level moderates the effect of WFH on employee creativity.

H5a: The negative impact of WFH on creativity is greater for lower than higher-educated employees

4.3.6. Effect of High-low Culture on Education, Work from Home and Creativity

The cultural context of a country heavily influences its education system (E. T. Hall, 1973). In high-context cultures, such as China, the education system emphasizes formal teacher input and individual assessment, whereas in low-context cultures, such as Germany, group discussions and peer evaluations are emphasized (Entwistle, 2005; Maxwell et al., 2000). As a result, knowledge exchange and collaboration among peers are more prevalent in low-context culture education, particularly at higher education levels (Goldschmid & Goldschmid, 1976; Krych et al., 2005). However, lower education levels in high-context culture education may have less exposure to group discussion, leading to a lower degree of knowledge exchange among peers.

When considering the impact of culture and education on creativity in the context of remote work, I predicted that the effect of WFH frequency on employee creativity would be stronger for lower-educated employees in Chinese culture compared to lower-educated employees in German culture. This is due to the lesser exposure to group discussion and knowledge exchange among peers in lower education levels of high-context culture education, and the potential for greater reliance on non-verbal cues in communication.

H5b: The negative impact of WFH on creativity is greater for lower-educated Chinese employees than for German employees.

I do not have any hypothesis about higher-educated employees and will explore the effect empirically.

5.   RESEARCH DESIGN AND DATA COLLECTION

5.1.   Research Method

For this study, a quantitative research method would be utilised. Quantitative research is a systematic and objective approach that examines the relationship between two or more variables (Tsang, 2014; C. Welch et al., 2013). It is well-suited to exploring the relationship between WFH and creativity as it allows for the collection of numerical data that can be analysed statistically to uncover patterns and relationships between variables.

To ensure the validity and reliability of the data collected, several steps were taken before the survey was distributed. First, a professional translation agency was enlisted to translate the survey questionnaire into the local language for both the German and Chinese respondents. This was done to ensure that the survey questions were accurately translated and that the intended meaning of each question was preserved. Next, five senior executives from within the organisation in China and Germany who have extensive experience working in a WFH environment pre-tested the translated survey. This was done to evaluate the measurement items and ensure that the questions accurately measured the intended constructs. Lastly, two locals outside the organisation were asked to pre-test the survey to ensure the questions were understandable and relevant to the local context.

5.2. Sample and Data Collection

To investigate the hypotheses stated earlier, a web-based survey will be used to gather data from a random sample of employees from a single multinational corporation, a top 10 global automotive supplier. The survey was administered with the help of company country managing directors with experience managing employee surveys. Participants received an email in their respective local languages containing a link to the online survey, sent to their company email addresses. The survey will measure the frequency of WFH, age, gender, and education level of participants. Furthermore, participants will be asked about their computer self-efficacy, non-verbal cues behaviour, knowledge exchange in person preference and ideas exchange in person preference, and a problem statement to evaluate their creativity.

The survey was sent to more than 4,000 employees in China and Germany, and aim to collect at least 400 valid responses to ensure the reliability of the data. The collected data was analysed using SPSS statistical software, and inferential statistics will be used to test the hypotheses. The analysis will involve descriptive statistics to summarise the demographic information, and multiple regression analysis will be used to test the proposed model. The results will be used to evaluate the relationship between WFH frequency and employee creativity. The study will contribute to the existing literature on WFH and creativity, particularly in the context of high and low-context cultures, and may have implications for policymakers and managers looking to enhance employee creativity in a WFH environment.

5.3. Measures

5.3.1. Dependent Variable

Creativity: The dependent measure in this study is the creativity score of each respondent. Problem construction approach has been shown to be a reliable method

for predicting creativity and will be used to measure the respondent's creativity (Mumford et al., 1996).

Participants was asked to read through a four-paragraph problem case study related to the company and write a one-paragraph description of how they would solve the problem posed by using Artificial Intelligence (AI). Two judges, one from Germany and one from China, who are knowledgeable in AI technology, will rate each respondent's solution based on four dimensions: novelty, feasibility, unconventionality, and usefulness.

The judges will rate each dimension using a 5-point scale ranging from 1 (very low) to 5 (very high). The ratings from both judges for each dimension will be averaged, and the average score of the four dimensions will be used as the respondent's creativity score.

5.3.2. Independent Variable

Work From Home: WFH is believed to affect employee creativity. To measure the frequency of WFH, respondents will be asked to indicate the number of days they worked from home in an average week. This will be measured using a 6-point scale ranging from 0 to 5 days. This approach is expected to capture the extent of WFH and allow for quantitative analysis of the relationship between WFH and employee creativity.

5.3.3. Moderating Variables

Demographic factors have been suggested to affect creativity (Milliken & Martins, 1996), possibly due to the challenges they pose to effective collaboration (Knippenberg & Schippers, 2007). To explore the relationship between WFH and creativity in this study, the potential moderating effects of respondents' gender, age, and education will be examined. These demographic factors are expected to play a

role in shaping the relationship between WFH and creativity, and analysing their effects can provide a more nuanced understanding of how WFH impacts creativity across different groups of employees.

Gender: Respondents will be asked to self-identify their gender status as either female or male (0 = Female, 1 = Male). Previous research has suggested that women tend to use more indirect communication methods and rely on non-verbal cues to a greater extent than men (Briton & Hall, 1995; Frodi et al., 1977; Mulac et al., 2001). Given the shift towards virtual communication in the WFH context, it is possible that this indirect communication approach may be more negatively affected, potentially impacting creativity.

Age: The age of respondents will be collected as a numeric variable in years, where they will be asked to provide their current age. Previous research has suggested that older adults tend to rely more on face-to-face interactions (Venter, 2017), and may therefore experience greater challenges in adjusting to WFH arrangements. This study will examine the potential moderating effect of age on the relationship between WFH and creativity.

Education: Respondents' education level will be collected as a nominal variable for self-selection (1 = Primary School, 2 = High School, 3 = Diploma / Vocational, 4 = Bachelor Degree, 5 = Graduate Degree). Previous research has suggested that highly educated employees are more familiar with video conferencing tools in the workplace (Dutton et al., 1987; Rogers, 2010; Wozniak, 1987) and can communicate with greater confidence, even in the absence of non-verbal cues (Bhardwaj, 2016; Viera, 2017). As a result, they may be more comfortable with WFH arrangements and less negatively impacted than lower-educated employees.

5.3.4. WFH Related Variables

The effectiveness of WFH may also be influenced by various factors, such as the importance of individual reliance of non-verbal cues during communication, the effectiveness of knowledge exchange in person, the ability to express ideas in person, and the level of computer self-efficacy. These factors could also impact creativity as an outcome of WFH. Therefore, measuring these factors as potential moderators can provide a better understanding of the findings related to WFH efficacy and creativity.

Use of Non-Verbal Cues in Communication: The Non-verbal Immediacy Scales-Self Report (NIS-S) was used to assess the reliance on non-verbal cues, with respondents indicating their preferred mode of interaction with others using a 26-item self-assessment questionnaire (Richmond et al., 2003). The questionnaire asked respondents to rate how often they behave in certain ways while talking with others, using a 5-point Likert-type scale ranging from 1 (Never) to 5 (Very Often).

Scoring for NIS-S will be as follows:

Step 1: Start with a score of 78. Add the scores from the following items:

1, 2, 6, 10, 12, 13, 14, 16, 17, 19, 21, 22 and 25.

Step 2: Add the score for the remaining items:

3, 4, 5, 7, 8, 9, 11, 15, 18, 20, 23, 24 and 26.

Step 3: Step 1 minus Step 2

The use of non-verbal cues can affect an individual's level of engagement, understanding, and creativity in WFH setting when communicating. For example, suppose an individual heavily relies on non-verbal cues in communication. In that case, they may have difficulty adjusting to a WFH environment where these cues may not be as readily available. The lack of non-verbal cues can lead to decreased engagement and creativity in work tasks. It is found that communication style

preferences, including the use of non-verbal cues, can impact the effectiveness of virtual communication (T. L. Anderson & Emmers-Sommer, 2006). it is important to examine this variable in research on WFH and creativity to gain a better understanding of the relationship between these two variables.

Knowledge Exchange in Person: The study measured respondents' personal preferences toward knowledge exchange in person to assess their ability to share and leverage knowledge among others. This will be done using a four-item self-assessment questionnaire developed by Subramaniam & Youndt, (2005). The questionnaire asked respondents to indicate their engagement in knowledge exchanges during in-person meetings compared to virtual discussions. To compare face-to-face and virtual meetings, respondents will be asked to rate their preference for knowledge exchange in virtual discussions over face-to-face interactions on a 5-point Likert-type scale anchored by 1 (Strongly Disagree) and 5 (Strongly Agree).

According to a study by Gibson & Gibbs, (2006), personal preferences towards communication modes can affect the success of virtual teams, including their ability to collaborate and share knowledge effectively. Therefore, understanding personal preferences toward knowledge exchange in person can help ensure that individual communication preferences does not confound any observed effects of WFH on creativity.

Ideas Expression in Person: The measure of idea expression assesses how effectively individuals can express their opinions in virtual discussions compared to face-to-face. This will be evaluated through a self-assessment questionnaire using five items on a five-point scale (Warschauer, 1995). Respondents will be asked to rate their ability to express ideas in virtual discussions compared to face-to-face

discussions, with responses anchored by 1 (Strongly Disagree) and 5 (Strongly Agree).

The ability to express ideas effectively in virtual discussions can significantly impact creativity. In virtual discussions, individuals may rely heavily on non-verbal communication skills to convey their ideas, as non-verbal cues may be limited or non-existent. By examining this variable, this dissertation can better understand how WFH impacts the ability of individuals to express their ideas and contribute to creativity in virtual environments.

Video Conferencing Tool Efficacy: A self-assessment questionnaire consisting of 15 items was used to measure respondents' perceptions of computer self-efficacy and behavioural intention toward the use of video conferencing tools (Bui et al., 2020). The questionnaire asked respondents to provide feedback on various aspects related to the use of video conferencing tools, such as ease of use, perceived usefulness, and behavioural intention, using a 5-point Likert-type scale anchored by 1 (Strongly Disagree) and 5 (Strongly Agree).

In the context of WFH and creativity, computer self-efficacy may play a significant role in determining an individual's ability to use video conferencing tools and other digital technologies to collaborate with colleagues, access resources, and complete tasks remotely. Research has shown that individuals with higher levels of computer self-efficacy are more likely to use technology effectively and efficiently, improving work performance and creativity (Compeau & Higgins, 1995; Venkatesh & Morris, 2000). The inclusion of the measure of computer self-efficacy in this dissertation allows us to understand the effect of WFH on creativity independent of an individual's perceived ability to use digital technologies effectively.

5.3.5. Control Variables

Marital Status: The variable of marital status will be included as a control variable in the study. Respondents will be asked to indicate their marital status on a scale of 0 to 3, (0 = Single, 1 = Married, 2 = Living with partner, 3 = Others). Marital status can have a significant impact on an individual's work and family responsibilities, social support, and overall well-being, making it an important control variable to consider in studies related to WFH and creativity. For instance, married individuals tend to experience additional stress and demands related to their family responsibilities, including household chores, and spousal support, which can impact their ability to be creative at work.

Controlling for marital status in this dissertation related to WFH and creativity allows isolation on the impact of WFH on creativity independent of the potential influence of marital status. Without controlling for this variable, any differences in creativity levels between married and single individuals may be mistakenly attributed to WFH, when in fact these differences may be due to the additional demands and stressors associated with marital status.

Living with Young Children and Seniors: Living with young children and seniors (0 = none, 1 = yes) are included as a control variable. Living with young children and seniors can have a negative impact on employee creativity when working from home. This is because balancing work and family commitments can be challenging when living with young children and seniors, requiring additional resources and attention. For example, young children may require constant supervision and care, while seniors may require assistance with daily activities or medical care. This can make it difficult for employees to focus on work and dedicate sufficient time and energy to creative tasks. (Eagle et al., 1997; Van Dyne et al., 2002)

Controlling for the presence of young children and seniors in the household is important when studying the impact of WFH on creativity, as it allows us to isolate the impact of WFH on creativity independent of the potential influence of family responsibilities and to isolate any specific challenges that may mistakenly attribute to the differences faced by individuals with family responsibilities.

Perceived Culture Tightness: Culture tightness will be measured using a six-item self-assessment questionnaire based on Gelfand et al., (2011) study. The questionnaire will use a 6-point Likert-type scale anchored by 1 (Strongly Disagree) and 6 (Strongly Agree) to measure the degree to which the respondents of a particular perceive their society as having strong norms, rules, and expectations for behaviour, and a low tolerance for deviation from those norms. A culture is considered "tight" if there is a high degree of conformity and a low degree of tolerance for deviance, while a "loose" culture is characterized by more relaxed norms and greater acceptance of diversity.

Tight and loose cultures can impact communication style, which in turn may have an impact on WFH and creativity. In a tight culture, communication may be more formal and hierarchical, with less room for open discussion and debate. This can limit the exchange of diverse ideas and perspectives, which can stifle creativity. In contrast, in a loose culture, there may be a greater emphasis on open communication and collaboration, with more opportunities for people to share their ideas and perspectives. This can facilitate more creative thinking as people are exposed to a wider range of viewpoints and approaches. In a WFH setting, open communication may help foster a sense of community and maintain social connections between colleagues, promoting creativity. Controlling for cultural tightness allows us to examine the impact of WFH on

creativity across different cultural contexts and to gain a more nuanced understanding of how cultural norms and expectations may influence this relationship.

5.3.6. Other Variable

High-low Context Culture: To validate the categorisation of high- and low-context culture of China and Germany, a high-low context scale will be used. The scale includes aspects related to individual social orientation and communication, as proposed by D. Kim et al., (1998). It contains 7 items that measure the respondent's contextual culture on a 5-point Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

6. RESULTS AND DATA ANALYSIS

6.1. Participants

The survey was conducted over a four-month period, from September to December 2023. Out of the 410 valid responses, 202 (49%) respondents were from Germany and 208 (51%) respondents were from China. Detailed information about the respondents can be found in

Table 1: Respondents Demographics

Table 1: Respondents Demographics (N=410)

	China	Germany
Total Respondents	208 (41%)	202 (49%)
Gender		
Female	101 (25%)	101 (25%)
Male	107 (26%)	101 (25%)
Education		

High School	27 (7%)	24 (6%)
Diploma / Vocational	44 (11%)	35 (9%)
Bachelor Degree	107 (26%)	85 (21%)
Graduate Degree	30 (7%)	58 (14%)
Age		
21 – 30	64 (16%)	48 (12%)
31 – 40	61 (15%)	46 (11%)
41 – 50	43 (10%)	69 (17%)
51 – 60	40 (10%)	39 (10%)

6.2. Reliability

Cronbach's alpha was utilised to evaluate the scales' internal consistency, reliability, and homogeneity. Results of the analysis (Table 2) indicated that all scales had a score greater than 0.7, which suggests that the items comprising each research instrument were consistently measuring the same underlying construct. These findings support the reliability of the scales used and suggest that they are capable of producing consistent results, thereby increasing confidence in the research findings.

Overall, the use of Cronbach's alpha to assess the internal consistency and reliability of the scales strengthens the validity of the research instrument and enhances the credibility of the study findings. These results assure that the scales utilised in this study are reliable and produce consistent results, thus ensuring that the data collected can be used confidently to support the research objectives.

Table 2: Cronbach's Alpha on variables used

	Mean	SD	α

Expert-Rated Creativity	2.83	0.57	0.72
Verbal Cues	88.57	10.37	0.84
Knowledge Exchange in Person	3.55	0.80	0.84
Expressing Ideas in Person	3.13	0.81	0.77
Computer Self-Efficacy	3.68	0.64	0.85

6.3. Approach

SPSS was used to analyse the data using a general linear model (correlations and linear regression). The relationship of the variables was investigated by the gradual layering of the independent variable, moderators, control variables and WFH related variables.

Model 1: Relationship between the independent variable (WFH) and dependent variable (Expert-Rated Creativity). Analysing with moderators (H2, H3, H4 and H5) will also be added to the regression.

Model 2: Relationship between independent variable, moderators (when applicable), control, and dependent variables.

Model 3: Relationship between independent variable, moderators (when applicable), WFH related variables (e.g. non-verbal cues, knowledge exchange), control variables, and dependent variable.

6.4. Hypotheses

6.4.1. H1: Higher WFH Frequency has a greater negative impact on employee creativity.

Table 3 displays the descriptive statistics and correlation coefficients for the key variables in the research model. The results reveal a strong negative correlation between the independent variable (WFH) and the dependent variable (Expert-rated

Creativity). Moreover, the control variables, including Gender, Age, and Education, demonstrate a strong correlation with both WFH and Expert-rated Creativity. These findings suggest that the variables in the model are interrelated and could significantly impact the study's outcome. The strong negative correlation between WFH and Expert-rated Creativity implies that remote work may adversely affect employee creativity as assessed by experts. The significant correlations of control variables with both WFH and Expert-rated Creativity highlight their potential influence on the relationship between WFH and creativity.

Table 4, model 1 showed a significant negative relationship between Work from Home (WFH) frequency and creativity (β = -0.15, p = <0.001). When additional control variables were included in model 2, such as Culture Tightness, marital status, living with kids, living with old parents, years in company, and position in the company, the coefficients remained significant and unchanged (β = -0.15, r= -0.40**, t=--8.50, p = <0.001). This suggests that the negative effect of WFH frequency on creativity persists even when considering the influence of these variables.

Table 3: Descriptive Statistics and Correlations (Germany & China)

	N	Min	Max	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Days Working from home	410	0.00	5.00	2.37	1.51	1															
Expert-rated Creativity	410	1.13	4.63	2.83	0.57	-.40**	1														
Non-Verbal Cues	410	50.00	125.00	88.57	10.37	0.08	-.34**	1													
Knowledge Exchange In Person	410	1.25	5.00	3.60	0.81	0.02	-.16**	.19**	1												
Expressing Ideas in Person	410	1.00	5.00	3.09	0.79	.26**	-.58**	.22**	.25**	1											
Computer Self-Efficacy	410	1.27	5.00	3.76	0.58	-.21**	.34**	-0.05	0.03	-.21**	1										
Country	410	0.00	1.00	0.49	0.50	0.06	.36**	-.18**	-0.01	-.34**	-0.02	1									
Gender	410	0.00	1.00	0.51	0.50	-.22**	.39**	-.32**	-0.06	-.12*	.21**	-0.01	1								
Age	410	21.00	60.00	39.60	10.88	.28**	-.63**	.34**	.25**	.34**	-.35**	.11*	-.31**	1							
Education Level	410	2.00	5.00	3.77	0.93	-.45**	.62**	-.30**	-.15**	-.62**	.26**	.11*	.29**	-.51**	1						
Culture Tightness	407	2.67	6.00	4.48	0.64	0.03	-.15**	.23**	.23**	.18**	.22**	-.24**	-0.04	0.03	-0.08	1					
Marital Status	410	1.00	4.00	1.95	0.53	-0.06	0.02	0	-0.05	-0.09	0.02	-0.02	.11*	0.01	0.04	-0.02	1				
With Kids at Home	410	0.00	1.00	0.54	0.50	-0.01	-0.06	-.11*	0.07	0	0.08	-.10*	0.07	-0.05	0.07	0.05	.23**	1			
With Old Parents at home	410	0.00	1.00	0.35	0.48	.10*	-.16**	-0.04	0.07	0.01	0.01	-.14**	-0.04	0.05	-0.04	.17**	0.04	.16**	1		
Years in Company	410	0.00	45.00	13.04	9.25	0.03	-0.04	.16**	-0.06	0.03	-.15**	0.07	0.05	.25**	-0.06	0.06	0.09	-.22**	-0.03	1	
Position in Company	410	1.00	4.00	2.42	1.06	-0.06	-0.08	.13**	0.05	-0.01	.14**	-.22**	0.08	0.08	.10*	.18**	.13**	.13**	.13**	.14**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4: Effects of WFH on Expert-rated Creativity (Germany & China)

	Model 1 (WFH Only)		Model 2 (WFH & Control Variables)		Model 3 (WFH with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.15	<.001	-0.15	<.001	-0.06	<.001
Non-Verbal Cues					-0.01	<.001
Knowledge Exchange In Person					-0.12	<.001
Expressing Ideas in Person					-0.28	<.001
Computer Self-Efficacy					0.23	<.001
Control Variables						
Culture Tightness			-0.10	0.01	-0.02	0.39
Marital Status			0.02	0.66	-0.03	0.41
With Kids at Home			-0.06	0.27	-0.04	0.32
With Old Parents at home			-0.10	0.06	-0.12	0.004
Years in Company			0.00	0.51	0.00	0.58
Position in Company			-0.04	0.17	-0.03	0.08

In Model 3, the analysis reveals that four WFH related variables have a negative impact on creativity. Firstly, the findings indicate that employees who prefer to rely more on non-verbal cues experience a decline in creativity (β = -0.01, r= -0.34**, t=-5.22, p = <0.001). Furthermore, the study reveals that the interaction effect of Work from Home and Non-Verbal Cues (WFH X Non-Verbal Cue) is also significant and negatively predicts creativity (β = -0.003, t=-1.98, p = 0.05). These effects are depicted in Figure 3. For employees who prefer to rely on non-verbal cues during communication, WFH decreases creativity. For employees who rely less on non-verbal cues during communication, WFH increases creativity.

The second variable identified in Model 3 is employee preference for knowledge exchange in person versus remote work, which was found to have a significant negative impact on creativity. When working remotely, in-person interactions may be limited, and employees who prefer in-person exchanges may limit

Figure 3: Effects of WFH on Expert-Rated Creativity Based on Non-Verbal Cues
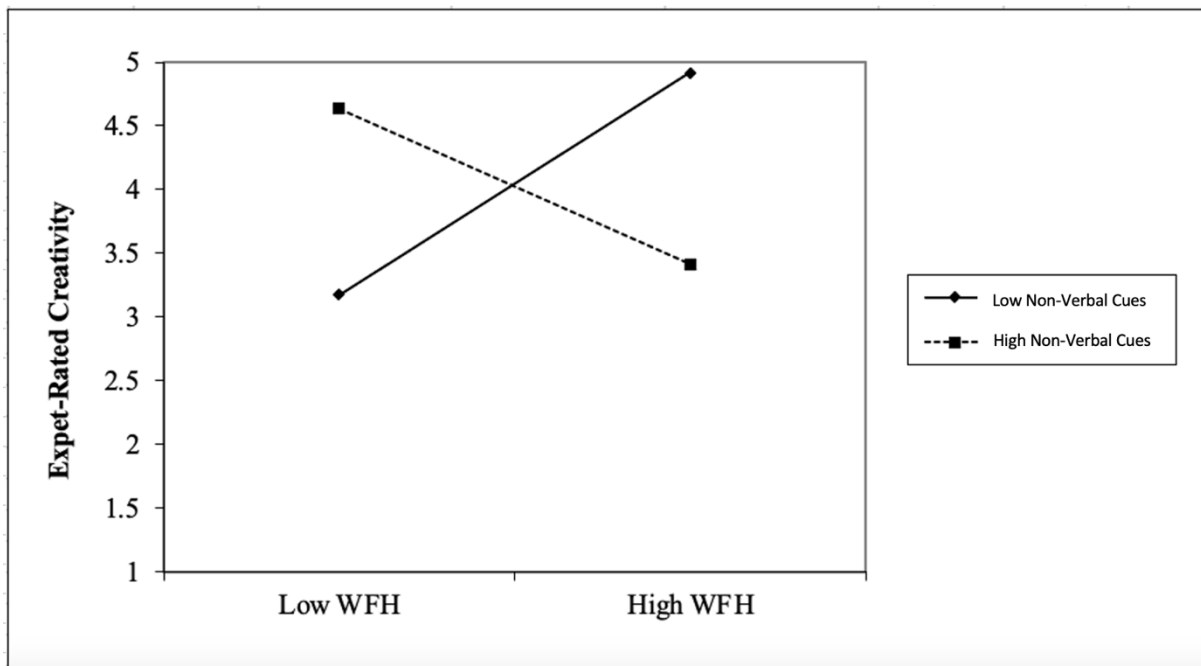
their interactions. The results suggest that employees who prefer knowledge exchange in person tend to have lower levels of creativity (β = -0.12, r= -0.16**, t=-4.55, p = <0.001). The relationship between Work from Home and Knowledge Exchange in person (WFH X Knowledge Exchange) on creativity is also found to have a level of significance, negatively predicting creativity (β = -0.04, t=-1.70, p = 0.09). These effects are depicted in Figure 4. For employees who prefer to rely on knowledge exchange in person during communication, WFH decreases creativity. For employees who rely less on knowledge exchange in person during communication, WFH increases creativity.

Figure 4: Effects of WFH on Expert-Rated Creativity Based on Knowledge Exchange in Person
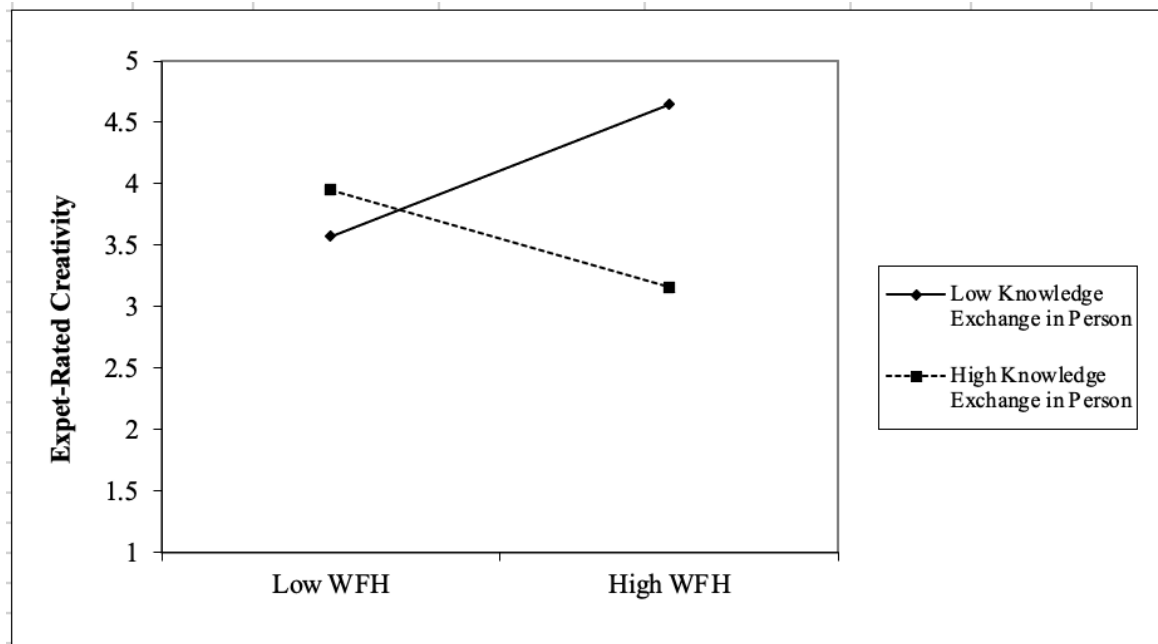
The third variable identified is "ideas expression in Person," which refers to an employee's preference for expressing their ideas and opinions clearly non remotely. Employees who prefer to express their ideas in person may find it challenging to do so when working remotely from home. The results suggest that this preference significant negative impacts creativity, as employees who prefer to express their ideas in person tend to have lower levels of creativity (β = -0.28, r= -0.58**, t=-10.27, p = <0.001). The interaction between Work from Home and expressing ideas in person (WFH X Expressing Idea) is also significant and negatively predicts creativity (β = -0.12, t=-6.26, p = <0.001). These effects are depicted in Figure 5. Regarding idea expression preferences, individuals who have a high preference to express their ideas in person during communication experience an increase in creativity with high WFH. However, for employees with a lower preference for ideas expression in person, higher levels of WFH may result in higher levels of creativity. Somehow it may seem counterintuitive that employees who prefer to express their ideas in person would have

an increase in creativity when working from home. One possible explanation for this counterintuitive result is that when employees WFH, they are less distracted by the social cues and norms of the office environment, which can sometimes stifle creativity. Without the pressure to conform to office norms or to interact with colleagues in a certain way, individuals may feel more free to explore unconventional ideas and take risks.

Figure 5: Effects of WFH on Expert-Rated Creativity Based on Ideas Expression in Person
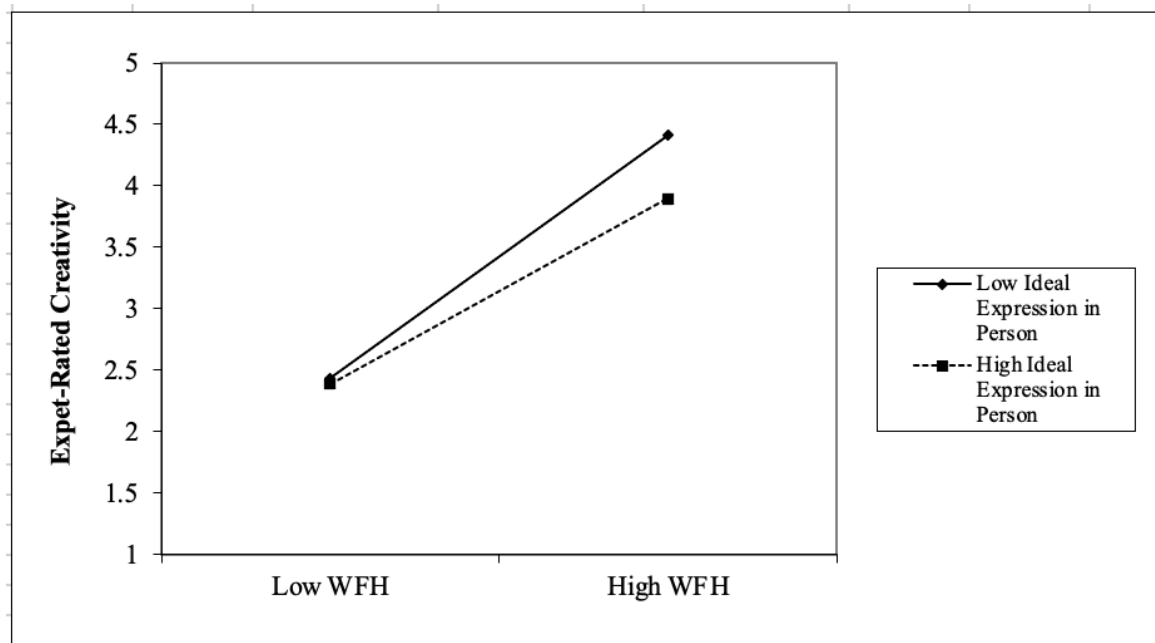
Lastly, employees with higher computer self-efficacy are able to utilize various digital tools and resources to facilitate discussions and generate and refine ideas, leading to greater creativity when working from home. The results indicate a positive relationship between computer self-efficacy and creativity ($\beta = 0.23$, r= -0.34**, t=7.05, p = <0.001). Furthermore, the interaction effect between Work from Home and Computer Self-Efficacy (WFH X Computer Efficacy) on creativity is significant and

positively predicts creativity (β = 0.11, t=-4.64, p = <0.001). These effects are depicted in

Figure 6. Employees with both low and high levels of computer self-efficacy experience a decrease in creativity with high WFH. However, employees with lower levels of computer self-efficacy experience a greater decrease in creativity compared to those with higher levels of computer self-efficacy.

Figure 6: Effects of WFH on Expert-Rated Creativity Based on Computer Self-Efficacy
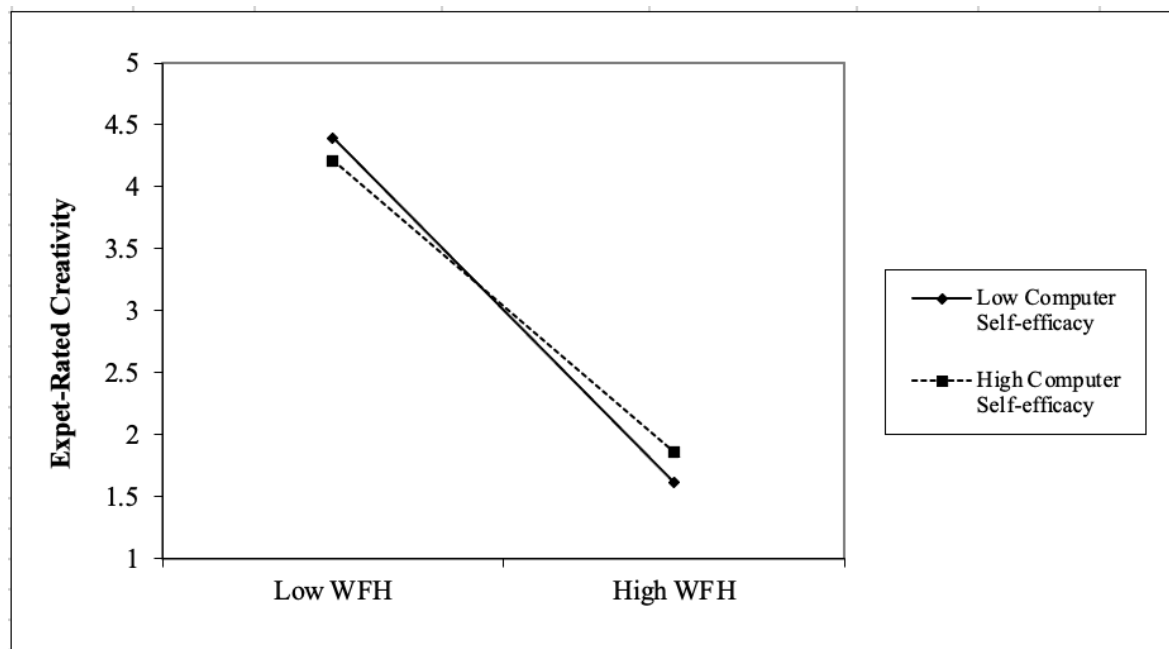
Regarding the control variables, it was found that living with old parents has a negative effect on creativity. This is likely due to the challenges that employees face in balancing their caregiving responsibilities with their work, which can lead to disruptions that negatively impact their ability to engage in creative work. The results indicate that employees living with old parents at home have lower levels of creativity (β = -0.12, r= -0.16**, t=-2.87, p = 0.004). Additionally, the relationship between working from home and living with old parents at home (WFH X Old Parents) is

significant and negatively predicts creativity (β = -0.70, t=-1.96, p = 0.05). These effects are depicted in Figure 7. This study found that both employees living and not living with old parents experience a decrease in creativity with high WFH. However, the decrease is more significant for those living with old parents.

Figure 7: Effects of WFH on Expert-Rated Creativity Based on Living with Old Parents
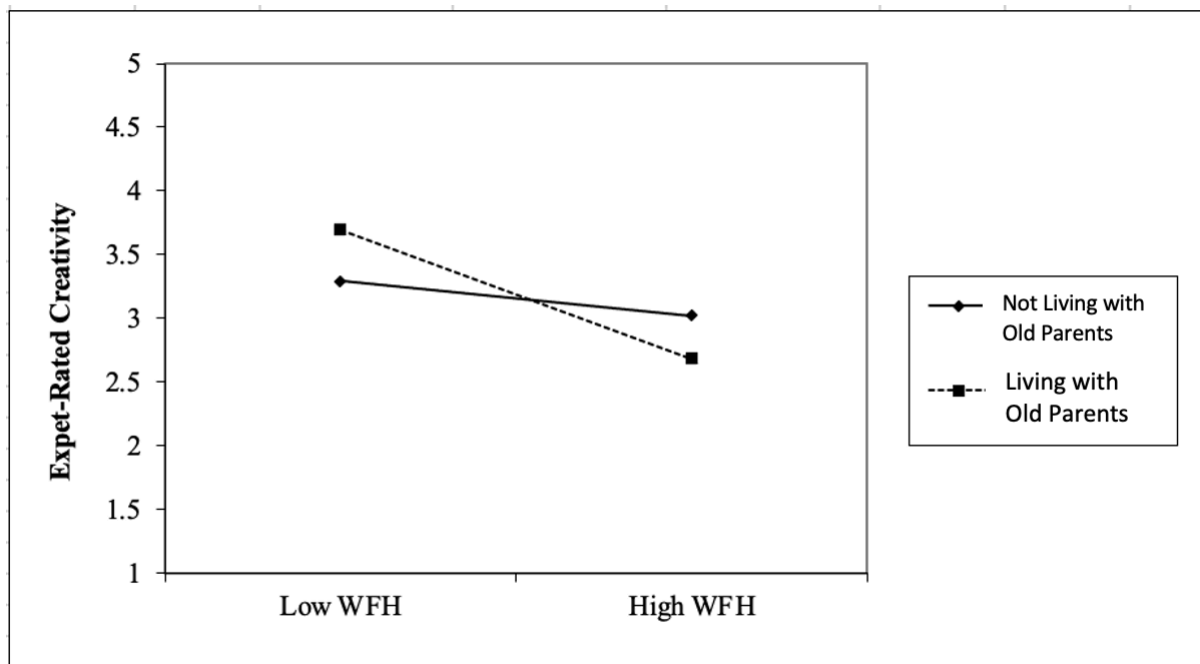
In summary, the results of Model 3 indicate that when controlling for WFH related variables such as non-verbal cues, knowledge exchange in person, expressing ideas in person, and computer self-efficacy, a higher frequency of working from home is associated with lower levels of creativity (β = -0.08, r= -0.40**, t=-5.77, p = <0.001). When controlling for these variables, the negative coefficients between WFH and creativity also suggest that increased WFH frequency can have a detrimental effect on creativity. These findings suggest that while WFH can provide numerous benefits, it may also pose challenges to creativity, particularly for employees who rely heavily on face-to-face interactions and express their ideas in person.

Thus, Hypothesis 1 is supported.

6.4.2. Hypothesis 2: The negative impact of WFH on creativity is greater for Chinese than German Employees.

A high-low context scale is used to re-examine and validate the categorisation of China and Germany's high- and low-context cultures. Table 5 presents the findings, indicating that China has a higher context culture compared to Germany (China Mean = 3.69, Germany Mean = 3.36), with a statistically significant difference between the two countries (t(408)=6.82, p = <0.001). Using the high-low context scale has enabled the assessment of the cultural dimensions of China and Germany, providing insights into their communication styles, behaviour, and values. The results support the notion of China as a high-context culture and Germany as a low-context culture, which contributes to understanding cross-cultural communication dynamics and practices.

Country	N	Min	Max	Mean	Std. Dev	t	df	2-tailed
China	208	1.57	5.00	3.69	0.48	6.82	408.00	<.001
Germany	202	2.00	5.00	3.36	0.51			

Table 5: Descriptive Statistics of Country and High-Low Context Culture

The descriptive statistics and correlations model for German Employees, as depicted in Table 6, reveals that WFH has a significant negative correlation with Expert-rated Creativity, the dependent variable. Moreover, the independent variable as well as the dependent variable and the moderators (Gender, Age, and Education level) display a strong correlation, respectively. Similarly, for Chinese Employees, as shown in Table 7, a strong negative correlation exists between WFH and Expert-rated Creativity. Additionally, the dependent variable exhibits a strong correlation with the

moderators (Gender, Age, and Education level). In simple terms, the findings suggest that there is a strong negative relationship between working from home (WFH) and expert-rated creativity for both German and Chinese employees. This implies that the more employees work from home, the lower their level of creativity, as assessed by experts. Additionally, the results indicate that gender, age, and education level have a significant influence on the relationship between WFH and creativity.

The negative effect of WFH on creativity is observed in both Germany (β = -0.14, r=0.35**, t=-5.22, p = <0.001) and China (β = -0.18, r=-0.55**, t=-9.36, p = <0.001). Model 1 in Table 8 reveals that Chinese employees is less creative than German employees (β = 0.20, r= -0.36**, t=2.82, p = <0.001), which is consistent with previous research on creativity in these two cultures. Furthermore, the results demonstrate that, for China, there is a greater negative impact on the relationship between WFH and creativity compared to Germany (β = 0.05, t=2.20, p = 0.03). The coefficients remained relatively unchanged after controlling for demographic and work-related factors in model 2 (β = 0.05, t=2.08, p = 0.04), while the addition of WFH related variables in model 3 slightly altered the coefficients of Country, WFH, and Creativity (β = 0.05, t=1.88, p = 0.06). These effects are depicted in

Figure 8. These findings suggest that the negative impact of WFH on creativity is more pronounced in China compared to Germany, even after considering various individual and contextual factors.

A three-way interaction analysis was conducted to gain a more comprehensive understanding of how non-verbal cues, knowledge exchange in person, expressing ideas in person, and computer self-efficacy affect creativity, WFH, and country. The study found that for Germans, a high preference for non-verbal cues during

communication was negatively associated with creativity in the context of high WFH,

while a low preference for non-verbal cues was positively associated with creativity.

Table 6: Descriptive Statistics and Correlations of German Employees

	N	Min	Max	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Days Working from home	202	0.00	5.00	2.46	1.37	1														
Expert-rated Creativity	202	1.38	4.63	3.04	0.54	-.35**	1													
Non-Verbal Cues	202	50.00	112.00	86.72	8.37	0.02	-.27**	1												
Knowledge Exchange In Person	202	1.25	5.00	3.49	0.67	0.10	-.46**	.14*	1											
Expressing Ideas in Person	202	1.00	5.00	2.87	0.77	.39**	-.57**	0.07	.31**	1										
Computer Self-Efficacy	202	1.27	5.00	3.62	0.62	-.33**	.57**	-0.11	-.21**	-.45**	1									
Gender	202	0.00	1.00	0.50	0.50	-.18**	.44**	-.32**	-.21**	-.26**	.26**	1								
Age	202	21.00	60.00	40.85	10.94	.14*	-.72**	.16*	.33**	.35**	-.44**	-.27**	1							
Education Level	202	2.00	5.00	3.88	0.96	-.36**	.56**	-.25**	-.24**	-.62**	.42**	.29**	-.39**	1						
Culture Tightness	202	2.67	6.00	4.33	0.64	0.06	-0.12	0.04	.30**	0.13	0.04	-0.13	0.11	-0.07	1					
Marital Status	202	1.00	4.00	1.95	0.66	-0.13	0.06	-0.02	0.00	-0.10	0.09	.16*	-0.04	0.07	-0.05	1				
With Kids at Home	202	0.00	1.00	0.49	0.50	0.09	-0.03	0.03	0.12	0.01	0.07	0.03	-0.01	0.04	.17*	.22**	1			
With Old Parents at home	202	0.00	1.00	0.28	0.45	0.00	-0.10	-0.11	0.06	-0.06	-0.05	0.03	0.13	0.04	.17*	0.10	.20**	1		
Years in Company	202	0.00	45.00	13.65	10.13	-0.10	-0.05	0.04	-0.02	0.04	-0.14	0.12	.23**	0.04	-0.04	0.05	-0.06	0.02	1	
Position in Company	202	1.00	4.00	2.18	1.12	-.14*	0.02	-0.03	-0.07	-.19**	0.10	0.11	0.09	.25**	0.07	0.12	.20**	.24**	0.07	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 7: Descriptive Statistics and Correlations of Chinese Employees

	N	Min	Max	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Days Working from home	208	0.00	5.00	2.28	1.63	1														
Expert-rated Creativity	208	1.13	4.00	2.62	0.53	-.55**	1													
Non-Verbal Cues	208	69.00	125.00	90.37	11.74	.14*	-.33**	1												
Knowledge Exchange In Person	208	1.25	5.00	3.60	0.91	0.12	-.46**	.33**	1											
Expressing Ideas in Person	208	1.60	4.80	3.39	0.76	.35**	-.60**	.22**	.50**	1										
Computer Self-Efficacy	208	1.27	4.93	3.73	0.62	-.31**	.48**	-0.1	-0.06	-.29**	1									
Gender	208	0.00	1.00	0.51	0.50	-.25**	.41**	-.34**	-.15*	-0.09	.33**	1								
Age	208	21.00	60.00	38.39	10.70	.39**	-.72**	.53**	.50**	.54**	-.43**	-.35**	1							
Education Level	208	2.00	5.00	3.67	0.88	-.56**	.71**	-.33**	-.34**	-.64**	.36**	.30**	-.69**	1						
Culture Tightness	208	3.00	5.83	4.63	0.60	0.02	-0.02	.32**	.22**	0.08	.27**	0.06	0	-0.03	1					
Marital Status	208	1.00	4.00	1.96	0.35	0.02	-0.02	0.01	-.16*	-0.09	-0.01	0.03	0.1	-0.01	0.03	1				
With Kids at Home	208	0.00	1.00	0.59	0.49	-0.08	-0.03	-.25**	0.05	-0.01	0	0.11	-0.08	0.13	-0.12	.27**	1			
With Old Parents at home	208	0.00	1.00	0.42	0.49	.19**	-.14*	-0.05	0.09	0.01	-0.05	-0.11	0	-0.08	0.11	-0.07	0.11	1		
Years in Company	208	0.00	40.00	12.44	8.29	.14*	-0.1	.30**	-0.03	0.05	-0.05	-0.02	.26**	-.22**	.23**	.19**	-.41**	-0.06	1	
Position in Company	208	1.00	4.00	2.66	0.95	0.04	-0.03	.20**	0.12	0.08	0.09	0.05	.14*	-0.01	.20**	.16*	0	-0.03	.29**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 8: Effects of WFH on Expert-rated Creativity (Germany vs China)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.14	<.001	-0.14	<.001	-0.09	<.001
Country [a]	0.20	0.01	0.17	0.02	0.17	0.02
WFH X Country [a]	0.05	0.03	0.05	0.04	0.05	0.06
Non-Verbal Cues					-0.01	<.001
Knowledge Exchange In Person					-0.15	<.001
Expressing Ideas in Person					-0.21	<.001
Computer Self-Efficacy					0.26	<.001
Control Variables						
Culture Tightness			-0.05	0.08	-0.002	0.95
Marital Status			-0.01	0.84	-0.02	0.50
With Kids at Home			-0.03	0.41	-0.04	0.33
With Old Parents at home			-0.06	0.14	-0.07	0.06
Years in Company			0.00	0.88	0.00	0.92
Position in Company			-0.01	0.74	-0.01	0.65

[a]Country "1" for Germany and "0" for China

Figure 8: Effects of WFH on Expert-Rated Creativity Based on Country
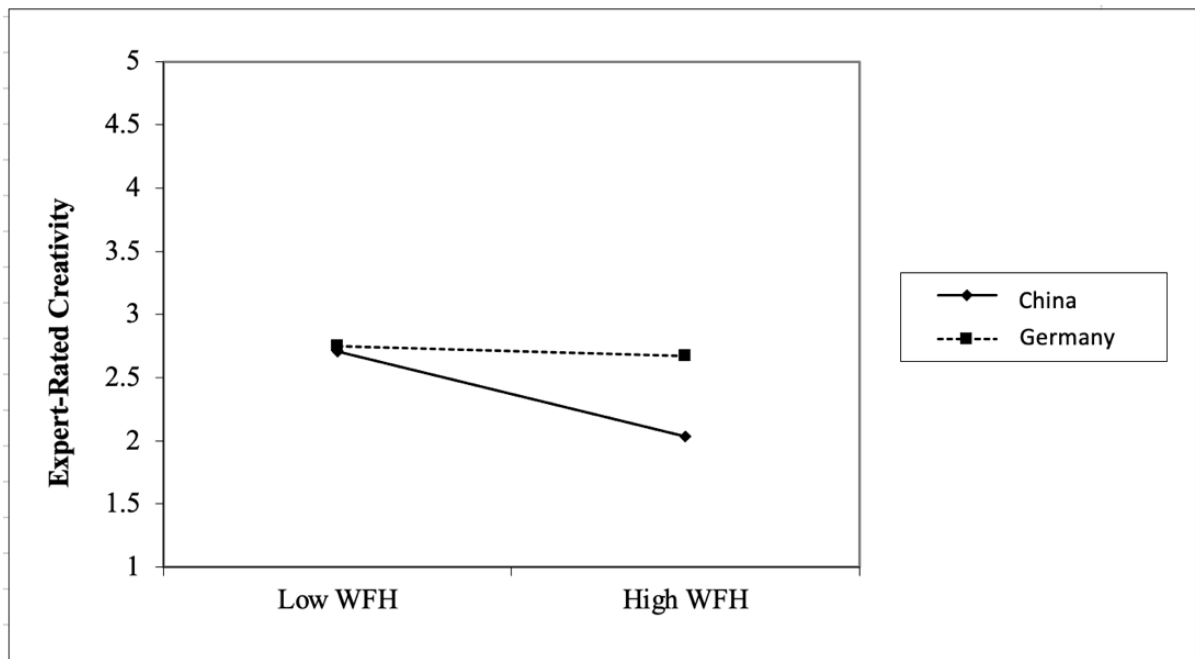
This may be because non-verbal cues such as facial expressions and body language are more difficult to convey in virtual communication. The absence of these cues may limit idea generation and hinder creative thinking. On the other hand, Chinese employees who highly value non-verbal cues in communication showed

decreased creativity with high WFH. In contrast, those with a low preference for non-verbal cues experienced increased creativity. This may be because non-verbal cues are more prevalent and important in Chinese communication culture, and their absence in virtual communication may lead to a feeling of disconnection and decreased creativity (Figure 9).

Figure 9: Effects of WFH on Expert-Rated Creativity Based on Non-Verbal Cues and Countries
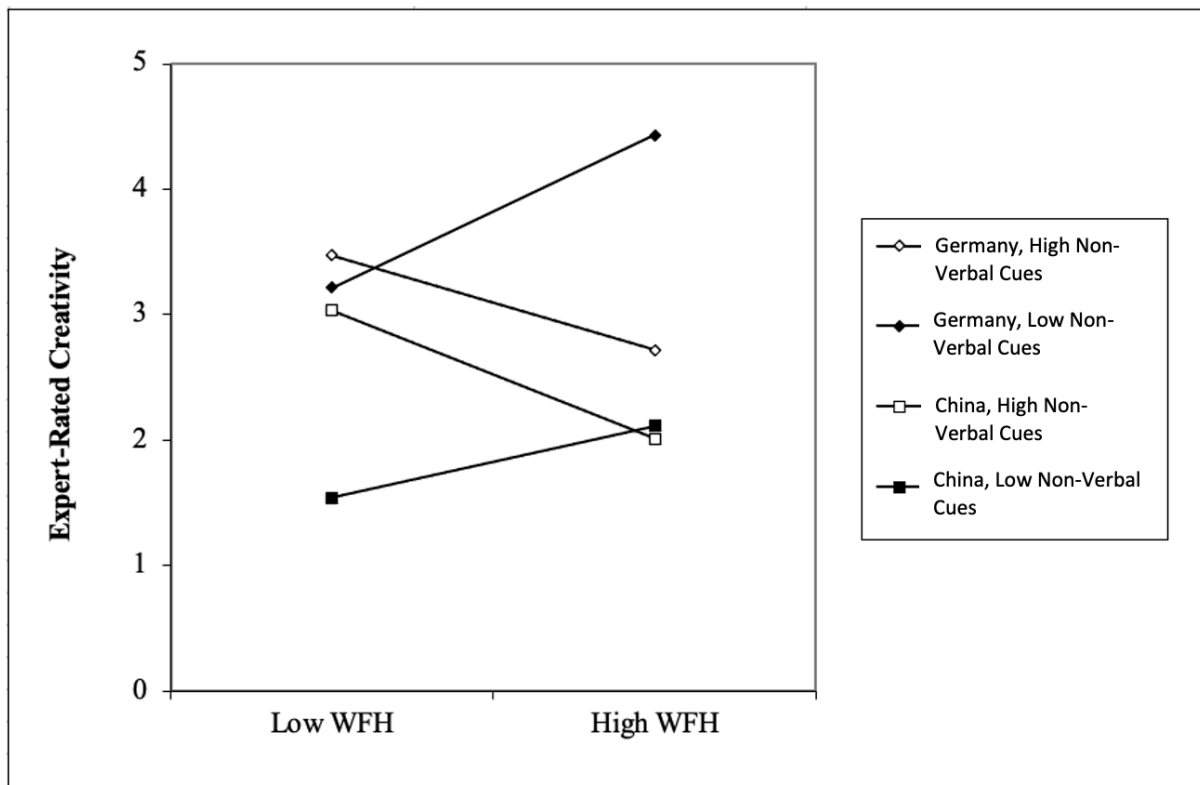
The finding reveals that German employees with a high and low preference for in-person idea exchange experience a decrease in creativity with high WFH. One possible explanation for this finding is that in-person idea exchange provides a richer and more nuanced communication experience compared to virtual communication. When working remotely, employees may miss out on non-verbal cues, body language, and other subtle cues that are only apparent during face-to-face interactions. Additionally, the lack of in-person communication may reduce the level of social

interaction and support that employees receive, which can have a negative impact on their creativity. Therefore, even those with a low preference for in-person idea exchange may still experience a decrease in creativity with high WFH due to the loss of these important communication and social factors.

On the other hand, Chinese employees with a high preference for in-person idea exchange experience a decrease in creativity with high WFH, while those with low preference experience an increase in creativity. This could be attributed to the Chinese culture's high value on interpersonal relationships and communication, often involving non-verbal cues and face-to-face interaction. Thus, Chinese employees who highly value in-person idea exchange may feel that remote communication through WFH is less effective in exchanging and generating new ideas, leading to a decrease in creativity. On the other hand, Chinese employees with a low preference for in-person idea exchange may find WFH to be less distracting and more conducive to independent thinking, leading to an increase in creativity (Figure 10).

Figure 10: Effects of WFH on Expert-Rated Creativity Based on Knowledge Exchange in person and Countries

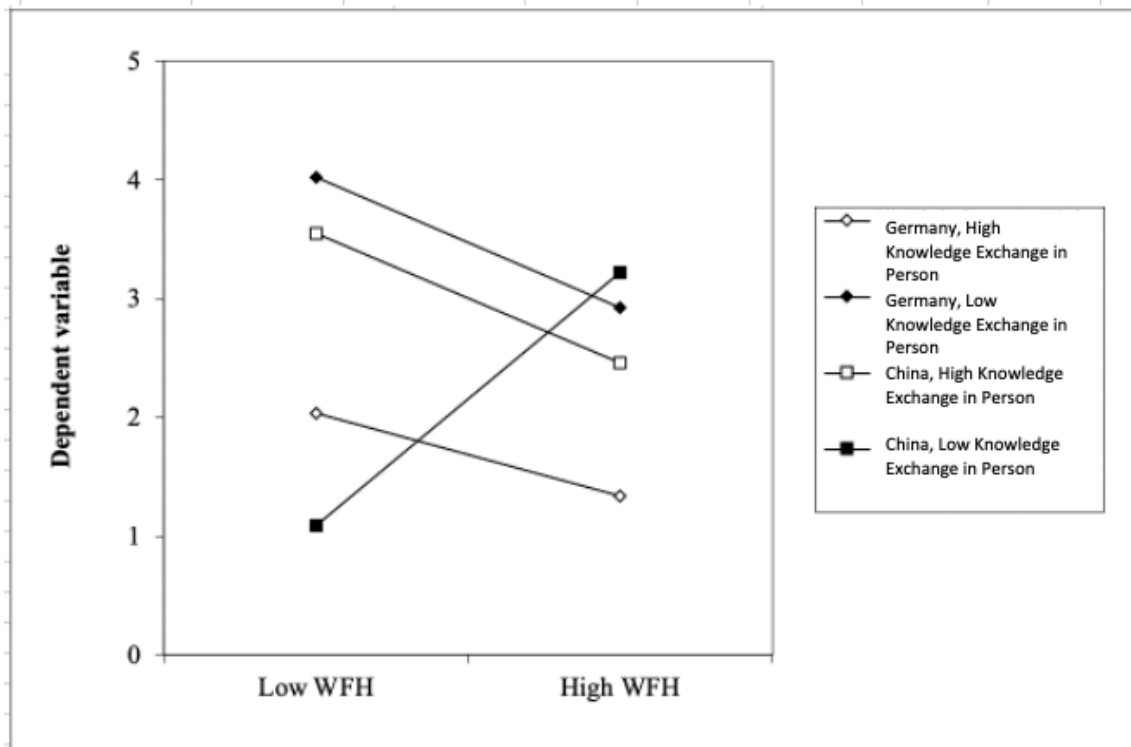Both German and Chinese employees with a high preference for in-person idea exchange experience a decrease in creativity with high WFH, while those with low preference experience an increase in creativity. The decrease in creativity for employees with a high preference for in-person idea exchange could be due to the loss of face-to-face interaction and the ability to bounce ideas off colleagues in an informal collaborative setting. The increase in creativity for individuals with a low preference for in-person idea exchange may be due to the fact that they feel more comfortable expressing themselves in a less formal and structured environment, such as their home, where they have more control over their work environment and can work at their own pace. In addition, Chinese employees may find that WFH reduces the effects of hierarchy in the workplace, allowing them to express themselves more freely and contributing to a more casual and relaxed setting. As a result, compared to

German, Chinese employees may feel more empowered to generate creative ideas without the pressure of conforming to traditional workplace norms (Figure 11).

Figure 11: Effects of WFH on Expert-Rated Creativity Based on Ideas Exchange in Person and Countries
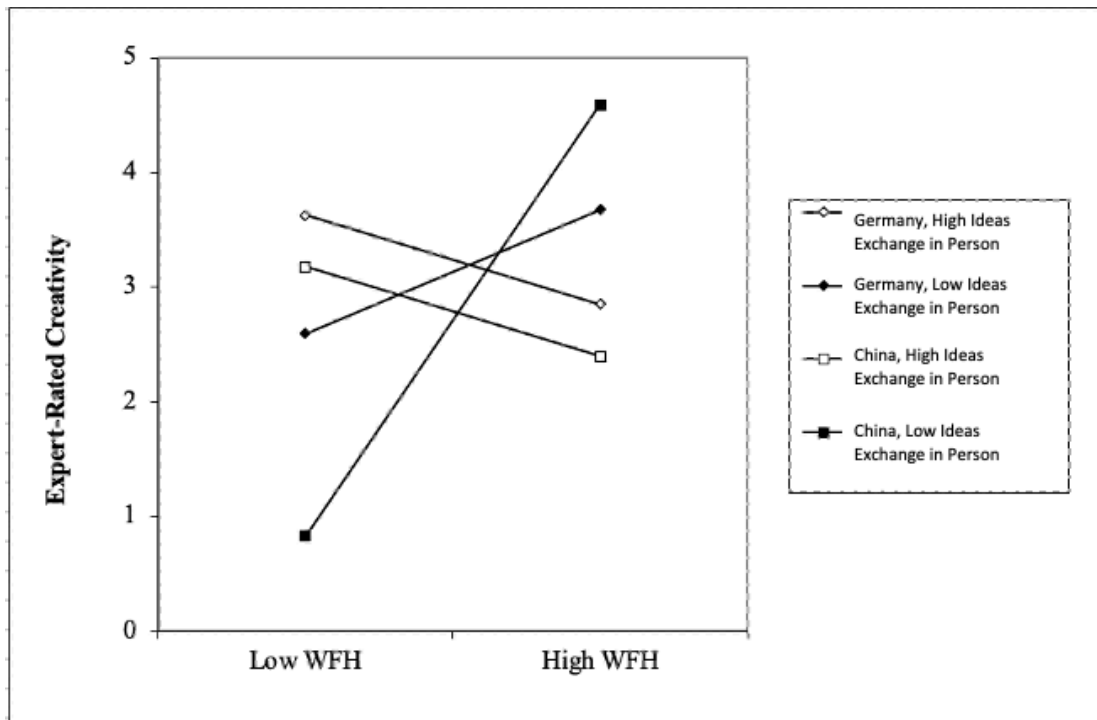
Lastly, there are notable differences in the findings, which suggest that computer self-efficacy impacts creativity among German and Chinese employees when working from home. German employees with high computer self-efficacy may experience a decrease in creativity with high WFH, as they may heavily rely on the digital tools and resources available in an office environment to support their creativity. Access to these tools is necessary for their creativity to improve. In contrast, employees with low computer self-efficacy may have yet to utilize the available digital tools in the office entirely. WFH may offer a less overwhelming and distracting environment, enabling them to focus on their work and increase their creativity slightly. On the other hand, Chinese employees with high computer self-efficacy may experience a slight decrease in creativity with high WFH, potentially due to higher

expectations for their ability to work effectively from home. They may also face technical difficulties or limitations in their WFH environment, such as limited internet connectivity. In comparison, employees with low computer self-efficacy may struggle to adapt to the technological demands of remote work, leading to a more significant decline in creativity. (Figure 12).

Hypothesis 2 is supported.

Figure 12: Effects of WFH on Expert-Rated Creativity Based on Computer Self-Efficacy and Countries
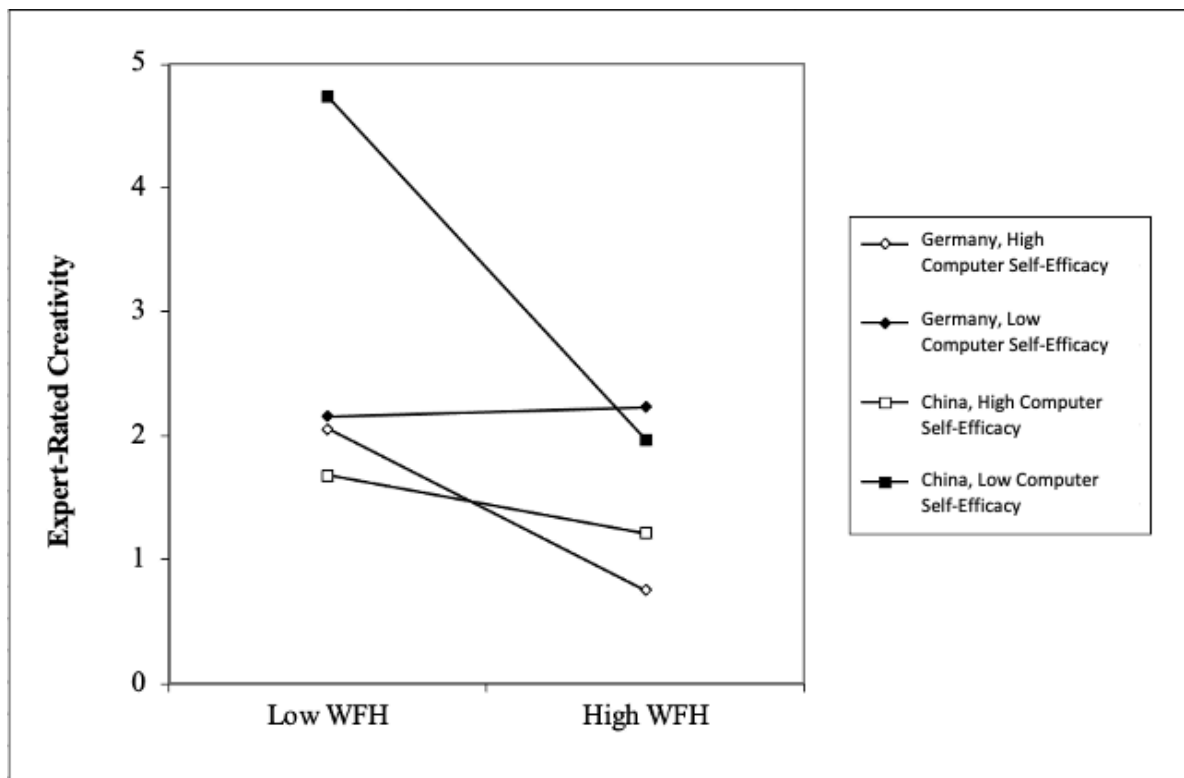
6.4.3. Hypothesis 3a: The negative impact of WFH on creativity is greater for women than for men employees.

The study discovered that working from home has a negative impact on the creativity of female employees (β = -0.18, t=-8.35, p = <0.001), whereas there was no significant effect on male employees (β = -0.36, t=-1.38, p = 0.17). In Table 9, the

results also showed that male employees are more creativity compared to female employees (β = 0.14, t=4.12, p = <0.001). Even after controlling for various demographic and work-related factors, this effect remained significant in Model 2 (β = 0.13, t=3.96, p = <0.001) and Model 3 (β = 0.08, t=3.19, p = 0.002). These findings suggest that female employees are more susceptible to experiencing a negative impact on creativity while working from home, particularly with increased frequency. These effects are depicted in Figure 13.

Table 9: Effects of WFH on Expert-rated Creativity (Male Vs Female)

	Model 1 (WFH & Gender)		Model 2 (WFH & Gender & Control Variables)		Model 3 (WFH & Gender with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.18	<.001	-0.17	<.001	-0.08	<.001
Gender [b]	0.05	0.59	0.08	0.40	0.02	0.74
WFH X Gender [b]	0.14	<.001	0.13	<.001	0.08	0.002
Non-Verbal Cues					-0.01	<.001
Knowledge Exchange In Person					-0.11	<.001
Expressing Ideas in Person					-0.28	<.001
Computer Self-Efficacy					0.18	<.001
Control Variables						
Culture Tightness			-0.08	0.02	-0.02	0.51
Marital Status			0.00	0.99	-0.04	0.26
With Kids at Home			-0.07	0.15	-0.04	0.29
With Old Parents at home			-0.10	0.06	-0.11	0.00
Years in Company			0.00	0.32	0.00	0.97
Position in Company			-0.04	0.06	-0.04	0.03

[b]Gender "1" for Male and "0" for Female

Figure 13: Effects of WFH on Expert-Rated Creativity Based on Gender
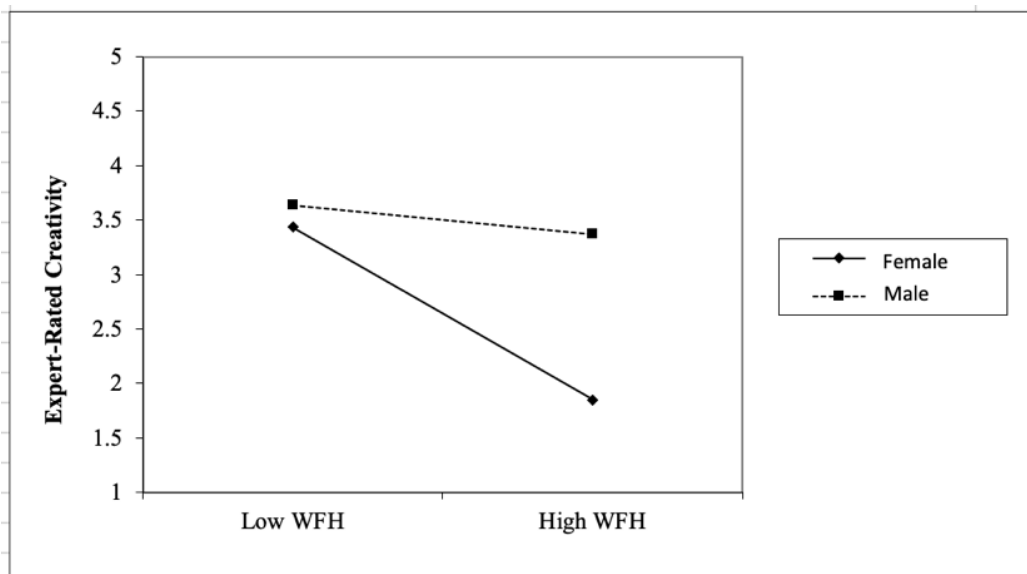
One possible explanation for the negative impact of working from home on the creativity of female employees is the importance of non-verbal cues in communication. Research has shown that non-verbal cues, such as facial expressions and body language, play a significant role in effective communication and understanding of others' ideas. However, these non-verbal cues may be limited or absent when working from home, especially in virtual communication, leading to misinterpretation or incomplete understanding of ideas.

Moreover, women are often socialized to be more attuned to non-verbal cues and emotions in communication, which could make it more challenging for them to communicate effectively and generate creative ideas when working from home. This, in turn, could contribute to the greater negative impact of their creativity when WFH, particularly with increased frequency.

Thus, Hypothesis 3a is supported.

6.4.4. Hypothesis 3b: The negative impact of WFH on creativity is greater for Chinese women than for German women employees.

Table 10 shows a comparison between German and Chinese female employees. Model 1 suggests that German women are more creative than Chinese women (β = 0.25, t=2.04, p = 0.04). The negative effect of WFH on creativity is found in both German (β = -0.15, t=-5.21, p = <0.001) and Chinese women (β = -0.20, t=-7.47, p = <0.001), with Chinese female employees having a greater negative effect than German female employees (β = 0.05, t=1.37, p = 0.17). In model 2, the addition of control variables did not change the coefficients (β = 0.05, t=1.37, p = 0.17). However, in Model 3, after adding WFH related variables such as non-verbal cues, knowledge exchange in person, expressing ideas in person, and computer self-efficacy, the coefficients of Country, WFH, and Creativity became significant (β = 0.07, t=2.23, p = 0.03). These effects are depicted in Figure 14.

Table 10: Effects of WFH on Expert-rated Creativity (German Female vs Chinese Female)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.20	<.001	-0.19	<.001	-0.11	<.001
Country [a]	0.25	0.04	0.23	0.07	0.07	0.46
WFH X Country [a]	0.05	0.17	0.05	0.17	0.07	0.03
Non-Verbal Cues					-0.01	0.05
Knowledge Exchange In Person					-0.07	0.08
Expressing Ideas in Person					-0.28	<.001
Computer Self-Efficacy					0.17	<.001
Control Variables						
Culture Tightness			-0.11	0.05	-0.02	0.72
Marital Status			0.03	0.61	-0.03	0.54
With Kids at Home			-0.15	0.04	-0.07	0.19
With Old Parents at home			-0.09	0.19	-0.11	0.05
Years in Company			-0.01	0.00	-0.01	0.09
Position in Company			0.03	0.35	0.03	0.22

[a]Country "1" for Germany and "0" for China

Figure 14: Effects of WFH on Expert-Rated Creativity Based on Chinese Female Vs German Female Employees
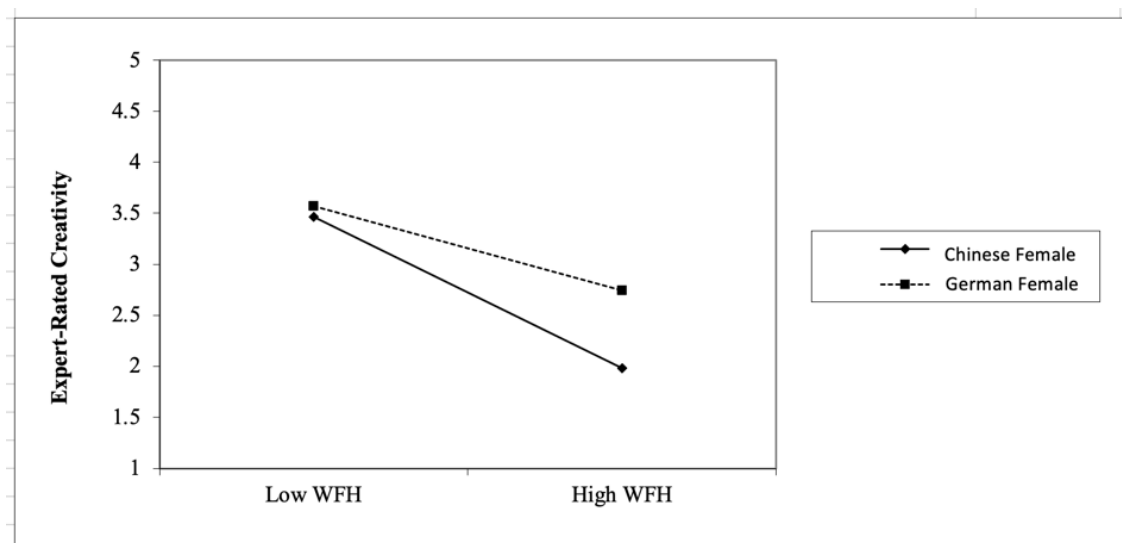
Cultural differences may play a role in the greater negative impact on creativity for Chinese female employees working from home compared to their German counterparts. In China, non-verbal cues are often given more weight in communication than in Germany. This means that Chinese women may find it more challenging to communicate effectively and exchange ideas with colleagues when working from home, where non-verbal cues are less available. As a result, this may negatively impact their creativity and ability to generate innovative ideas. This explanation is supported by the findings of the addition of variables related to in-person communication, such as the use of non-verbal cues (β = -0.01, p = 0.05) and expressing ideas in person (β = -0.28, p = <0.001).

Additionally, cultural and societal expectations and norms in China may significantly reinforce gender role differentiation, where women are expected to prioritise domestic responsibilities such as cooking, cleaning, and caring for children and elderly family members (Bauer et al., 1992; Matthews & Nee, 2000). This expectation is reinforced by cultural norms and social expectations that place a high

value on women's ability to maintain a harmonious and well-run household. In contrast, Germany's more egalitarian culture values gender equality and encourages both men and women to share domestic responsibilities (Cooke, 2004). German women are more likely to have the option of sharing household duties with their partners, leading to greater support for women's creative pursuits while working from home. If Chinese women are expected to prioritise domestic responsibilities and tend to face greater pressure to maintain a harmonious household, they may have less time and mental energy to focus on creative pursuits while working from home. In contrast, if German women have greater support for sharing domestic responsibilities with their partners and value gender equality, they may feel more empowered to prioritise their own creative pursuits while working from home. Overall, the cultural differences discussed may offer potential explanations for the significant difference in the impact of WFH on creativity for female employees in China compared to Germany.

Table 11: Effects of WFH on Expert-rated Creativity (German Male vs Chinese Male)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.08	0.01	-0.08	0.01	-0.05	0.05
Country [a]	0.33	0.01	0.34	0.01	0.22	0.03
WFH X Country [a]	0.06	0.21	0.06	0.27	0.06	0.14
Non-Verbal Cues					-0.01	0.06
Knowledge Exchange In Person					-0.19	<.001
Expressing Ideas in Person					-0.14	<.001
Computer Self-Efficacy					0.28	<.001
Control Variables						
Culture Tightness			0.03	0.51	0.02	0.55
Marital Status			0.00	0.98	-0.02	0.65
With Kids at Home			0.00	0.98	-0.01	0.91
With Old Parents at home			-0.02	0.76	-0.07	0.19
Years in Company			0.00	0.74	0.00	0.65
Position in Company			-0.04	0.23	-0.05	0.02

[a]Country "1" for Germany and "0" for China

Table 11 includes a comparison of German and Chinese male employees. Although the study did not have a specific hypothesis about this comparison, it was included for the sake of completeness in the analyses. The results indicate that there was no significant effect on creativity for male employees (Model 1: β = 0.06, t=1.27, p = 0.21, Model 2: β = 0.57, t=1.12, p = 0.27, and Model 3: β = 0.59, t=1.50, p = 0.14).

Thus, Hypothesis 3b is supported.

6.4.5. Hypothesis 4a: The negative impact of WFH on creativity is greater for older than younger employees.

This study involved the creation of two new variables to investigate the impact of age on employees creativity. Specifically, the variables were designed to capture the effect of older and younger employees by adding +1 and -1 standard deviations above and below the mean age score, respectively. This approach enabled an exploration of the influence of age on creativity when age was significantly above or below the mean, and facilitated the identification of any non-linear associations between age and creativity.

The current research analysed the impact of age on creativity among employees, with mean and standard deviations of age computed based on the entire sample size (Mean = 39.6, SD = 10.875). Findings indicated that older employees (Age +1 SD) had a negative effect on creativity (β = -0.36, p=<0.001), while younger employees (Age -1 SD) had a positive effect on creativity (β = 0.36, p=<0.001). These results revealed that for every one-unit increase in age, there was a -0.36 unit decrease in creativity, and for every one-unit decrease in age, there was a 0.36 unit increase in creativity. Further analysis that incorporated the work-from-home (WFH) factor into the regression revealed that the coefficient of WFH on creativity remained

significant for both older employees (β = -0.32, p=<0.001) and younger employees (β = 0.32, p=<0.001). These findings suggest that older and younger employees have a differential effect on creativity, particularly when working from home.

Table 12 presents the regression analysis results for the impact of age on expert-rated creativity among employees. Model 1 showed that younger employees are more creative compared to older employees (β = -0.01, r=-0.36**, t=2.63, p = 0.01), and that the effect increased with higher work-from-home frequency (β = -0.01, t=-5.02, p = <0.001). In Model 2, control variables were added for Culture Tightness, marital status, living with kids, living with old parents, years in company, and position in the company. The coefficients of the effects remained unchanged (β = -0.01, t=-4.89, p = <0.001). Model 3 incorporated additional WFH related variables, such as non-verbal cues, knowledge exchange in person, expressing ideas in person, and computer self-efficacy. The coefficients for Age, WFH, and Creativity were found to be similar (β = -0.01, t=-3.86, p = <0.001). Overall, these findings indicate that older employees have a more negative impact on expert-rated creativity. This effect is amplified with greater WFH frequency, even after controlling for various demographic and work-related factors. These effects are depicted in Table 15.

Older employees may have more experience and expertise in their field but may also be more set in their ways and less receptive to new ideas or approaches. In a WFH environment, where virtual communication tools are often the primary means of interaction, the lack of non-verbal cues such as facial expressions, tone of voice, and body language may make it more difficult for older employees to understand and interpret the ideas of their younger colleagues.

Table 12: Effects of WFH on Expert-rated Creativity (Older Vs Younger Employees)

	Model 1 (WFH & Age)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	0.24	<.001	0.23	<.001	0.17	0.00
Age	-0.01	0.01	-0.01	0.00	-0.01	0.09
WFH X Age	-0.01	<.001	-0.01	<.001	-0.01	<.001
Non-Verbal Cues					-0.01	<.001
Knowledge Exchange In Person					-0.05	0.03
Expressing Ideas in Person					-0.23	<.001
Computer Self-Efficacy					0.15	<.001
Control Variables						
Culture Tightness			-0.11	<.001	-0.06	0.04
Marital Status			0.02	0.65	-0.02	0.59
With Kids at Home			-0.05	0.24	-0.04	0.32
With Old Parents at home			-0.09	0.04	-0.11	0.00
Years in Company			0.01	0.01	0.01	0.01
Position in Company			-0.02	0.41	-0.02	0.17

Figure 15: Effects of WFH on Expert-Rated Creativity Based on Age
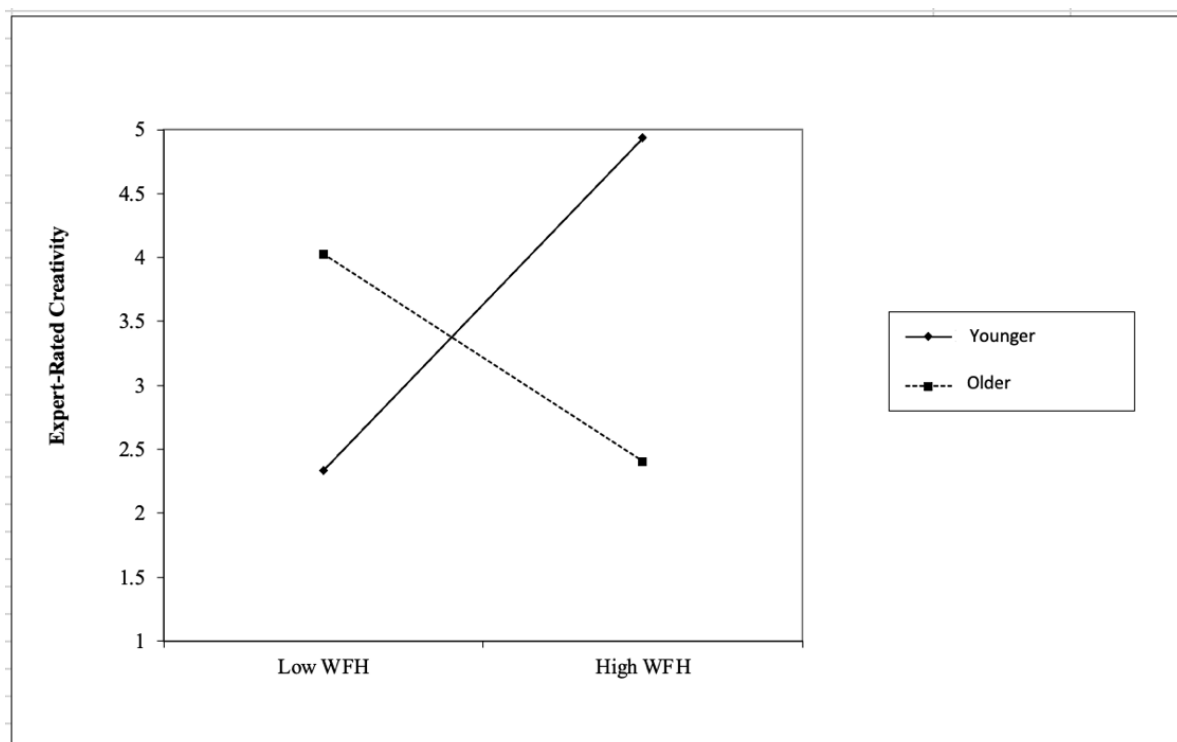
In contrast, younger employees who are more familiar with virtual communication tools may be better able to adapt to the lack of non-verbal cues and

find alternative ways to express their ideas and collaborate with their colleagues. Additionally, the negative impact of WFH on creativity may be amplified with age, as older employees may have more difficulty adapting to the new work environment and the different communication styles and technologies that it requires.

Thus, Hypothesis 4a is supported.

6.4.6. Hypothesis 4b: The negative impact of WFH on creativity is greater for older Chinese than older German employees.

To compare the effect of age on creativity between older Chinese and older German employees, a standard deviation of +1 above the age mean was used. The results indicate that both older Chinese (β = -0.39, p=<0.001) and older German (β = -0.39, p=<0.001) employees have a negative effect on creativity. Additionally, when examining the effect of WFH on creativity, the coefficient of WFH remained significant for both older Chinese (β = -0.32, p=<0.001) and older German (β = -0.37, p=<0.001) employees. This indicates that WFH has greater negative impact on older employee creativity.

This study found that older employees, represented by those with an age of +1 standard deviation above the mean, had a negative effect on creativity (β = -0.36, p=<0.001), while younger employees, represented by those with an age of -1 standard deviation below the mean, had a positive effect on creativity (β = 0.36, p=<0.001). This suggests that as age increases, creativity decreases, and as age decreases, creativity increases. Additionally, after accounting for the effects of WFH, the coefficient of WFH on creativity remained significant for both older employees (β = -0.32, p=<0.001) and younger employees (β = 0.32, p=<0.001). This suggests that the impact of WFH on creativity differs between older and younger employees.

Based on the computed mean (Mean = 39.6) and standard deviation (SD = 10.875) of age using the entire sample, an age value of +1 standard deviation above the mean (i.e., 50 years old and above) was used to define older employees in this study.

In Table 13, a comparison is made for German and Chinese employees aged 50 years old and above. Model 1 suggests that older Chinese employees with higher WFH frequency will have a greater negative effect compared to older German employees (β = 0.02, t=0.39, p = 0.7). In model 2, even when added, the control variables for Culture Tightness, marital status, living with kids, living with old parents, years in company and position in the company. The coefficients effects did not change significantly (β = 0.02, t=0.39, p = 0.7). Model 3 included when WFH related variables such as non-verbal cues, knowledge exchange in person, expressing ideas in person and computer self-efficacy. Country, WFH and Creativity coefficients remain insignificant (β = 0.08, t=2.47, p = 0.1). Therefore, the findings suggest that older Chinese employees have a more negative impact on expert-rated creativity, but this effect is not significant with greater WFH frequency, even after controlling for various demographic and work-related factors. These effects are depicted in Figure 16.

Although the study did not have a specific hypothesis comparing younger German and younger Chinese, it was included for the sake of completeness in the analyses. Based on the computed mean (Mean = 39.6) and standard deviation (SD = 10.875) of age using the entire sample, an age value of -1 standard deviation below the mean (i.e., 29 years old and below) was used to define younger employees in this study.

Table 13: Effects of WFH on Expert-rated Creativity (Employees 50 Years Old and Above)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.17	<.001	-0.15	<.001	-0.15	<.001
Country [a]	0.35	0.07	0.40	0.04	0.05	0.81
WFH X Country [a]	0.02	0.70	0.02	0.70	0.08	0.10
Non-Verbal Cues					-0.01	0.15
Knowledge Exchange In Person					0.09	0.22
Expressing Ideas in Person					-0.17	0.02
Computer Self-Efficacy					0.20	<.001
Control Variables						
Culture Tightness			0.01	0.91	0.00	0.98
Marital Status			-0.04	0.62	-0.08	0.24
With Kids at Home			-0.10	0.27	-0.13	0.12
With Old Parents at home			-0.09	0.33	-0.09	0.28
Years in Company			0.00	0.81	0.00	0.76
Position in Company			0.08	0.04	0.04	0.23

[a]Country "1" for Germany and "0" for China

Figure 16: Effects of WFH on Expert-Rated Creativity Based on Older Chinese Vs Older German Employees
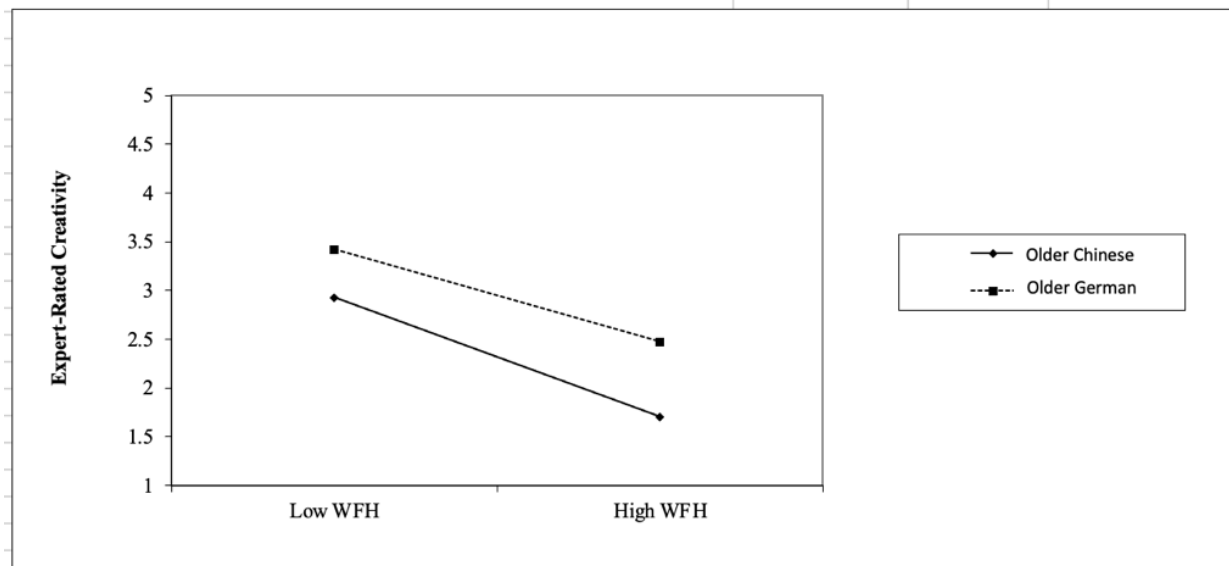
Findings indicated that younger German and Chinese employees (Age -1 SD) had a positive effect on creativity, respectively ($\beta = 0.39$, p=<0.001 and $\beta = 0.39$, p=<0.001). Further analysis that incorporated the work-from-home (WFH) factor into the regression revealed that the coefficient of WFH on creativity remained significant

for both younger German employees (β = 0.37, p=<0.001) and younger Chinese employees (β = 0.32, p=<0.001). These findings suggest that both younger German and Chinese employees have a positive impact on creativity, especially when they WFH.

Table 14: Effects of WFH on Expert-rated Creativity (Employees 29 Years Old and Below)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.01	0.95	0.02	0.80	0.02	0.80
Country [a]	0.93	<.001	0.93	<.001	0.78	0.00
WFH X Country [a]	-0.15	0.18	-0.18	0.11	-0.10	0.33
Non-Verbal Cues					-0.01	0.27
Knowledge Exchange In Person					-0.16	<.001
Expressing Ideas in Person					-0.06	0.30
Computer Self-Efficacy					0.13	0.18
Control Variables						
Culture Tightness			-0.11	0.05	-0.09	0.14
Marital Status			0.03	0.64	-0.02	0.74
With Kids at Home			0.24	0.00	0.23	0.00
With Old Parents at home			-0.03	0.73	-0.01	0.87
Years in Company			0.01	0.07	0.01	0.13
Position in Company			-0.05	0.23	-0.06	0.09

[a]Country "1" for Germany and "0" for China

Table 14 includes a comparison of younger German and younger Chinese. The results suggest that younger German employees have a more negative impact on expert-rated creativity. However, this effect is not significant with greater WFH frequency, even after controlling for various demographic and work-related factors (Model 1: β = -0.15, t=-1.36, p = 0.18, Model 2: β = -0.18, t=-1.62, p = 0.11, and Model 3: β = -0.10, t=-0.97, p = 0.33).

One possible suggestion for why there were no significant differences between older Chinese and German employees is that the comparison was made specifically

for both cultures, those aged 50 and above. It's possible that the level of importance placed on knowledge exchange and expressing ideas in person differs between the two groups within this age range (in model 3, these 2 variable is not significant). With China's rapid technological advancement, the negative impact of WFH on creativity may be more pronounced in older employees (i.e. 60 and above) compared to their German counterparts. However, further research would be needed to explore these possibilities.

Hypothesis 4b is not Supported

6.4.7. Hypothesis 5a: The negative impact of WFH on creativity is greater for lower than higher-educated employees

This study involved the creation of two new variables to investigate the impact of education on employees creativity. Specifically, the variables were designed to capture the effect of higher and lower-educated employees by adding +1 and -1 standard deviations above and below the mean education score, respectively. This approach enabled an exploration of the influence of education on creativity when education was significantly above or below the mean, and facilitated the identification of any non-linear associations between education and creativity.

The current research analysed the impact of education on employees creativity, with mean and standard deviations of education computed based on the entire sample size (Mean = 3.77, SD = 0.925). Findings indicated that higher educated employees (Education +1 SD) had a positive effect on creativity (β = 0.36, p=<0.001), while lower educated employees (Education -1 SD) had a negative effect on creativity (β = -0.36, p=<0.001). Further analysis that incorporated the WFH factor into the regression revealed that the coefficient of WFH on creativity remained significant for both higher-educated employees (β = 0.32, p=<0.001) and lower-educated employees (β = -0.32,

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p=<0.001). The findings suggest that education level moderates the relationship between WFH and creativity. Higher-educated employees demonstrated increased creativity when working from home, potentially due to their access to a broader vocabulary and stronger digital communication skills. This may have allowed them to compensate for the lack of non-verbal cues and resulted in a limited negative impact on their creativity. In contrast, lower-educated individuals exhibited lower creativity with high WFH frequency, possibly due to a reliance on external cues and struggle with articulating ideas in a remote setting. These effects are depicted in Figure 17.

Figure 17: Effects of WFH on Expert-Rated Creativity Based on Education
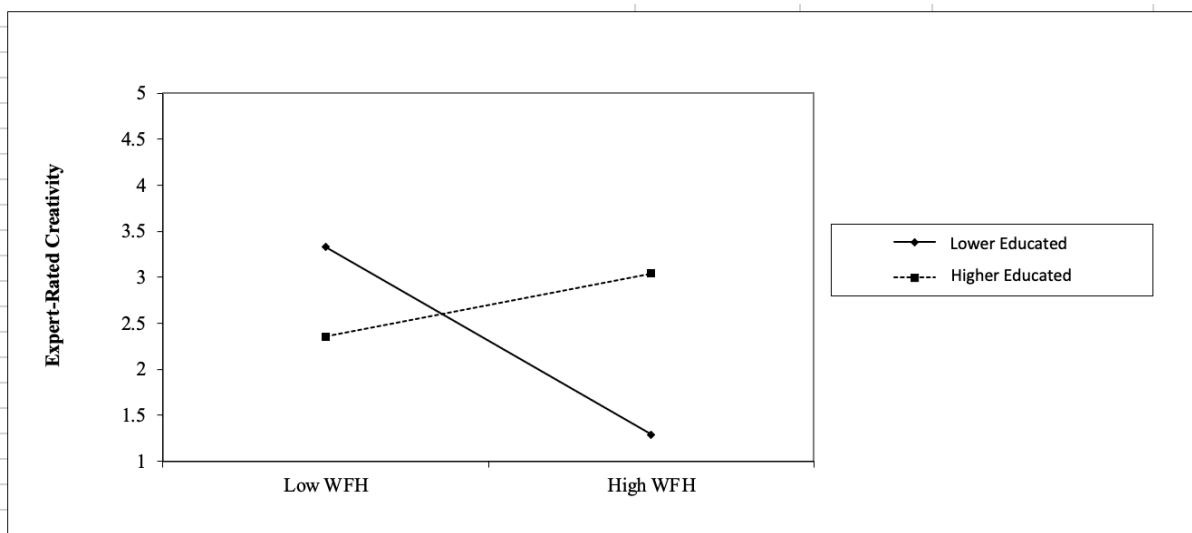
Table 15 displays the regression analysis results investigating the influence of education on expert-rated creativity among employees. The findings from model 1 indicate that higher-educated employees had a greater positive effect on creativity compared to lower-educated employees (β = 0.12, r=-0.63**, t=2.24, p = 0.03). Furthermore, for higher-educated employees, a higher frequency of WFH had a greater positive effect on creativity compared to lower-educated employees (β = 0.08, t=4.78, p = <0.001). The coefficients remained unchanged when adding control

variables for demographic and work-related factors in model 2 (β = 0.08, t=4.51, p = <0.001). In model 3, additional WFH related variables, such as non-verbal cues,

Table 15: Effects of WFH on Expert-rated Creativity (Education)

	Model 1 (WFH & Education)		Model 2 (WFH & Education & Control Variables)		Model 3 (WFH & Education with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	-0.34	<.001	-0.31	<.001	-0.27	<.001
Education	0.12	0.03	0.14	0.01	-0.04	0.41
WFH X Education	0.08	<.001	0.08	<.001	0.07	<.001
Non-Verbal Cues					-0.01	<.001
Knowledge Exchange In Person					-0.11	<.001
Expressing Ideas in Person					-0.20	<.001
Computer Self-Efficacy					0.19	<.001
Control Variables						
Culture Tightness			-0.07	0.02	-0.03	0.27
Marital Status			0.03	0.55	-0.02	0.57
With Kids at Home			-0.09	0.04	-0.06	0.13
With Old Parents at home			-0.09	0.05	-0.10	0.01
Years in Company			0.00	0.61	0.00	0.20
Position in Company			-0.06	0.01	-0.04	0.03

knowledge exchange in person, expressing ideas in person, and computer self-efficacy were included, and the relationship between education, WFH, and creativity remained positive and significant for higher-educated employees (β = 0.07, t=4.8, p = <0.001). Thus, the findings suggest that lower-educated employees have a more negative impact on expert-rated creativity. This effect is amplified with greater WFH frequency, even after controlling for various demographic and work-related factors. It is possible that higher-educated employees may have developed stronger non-verbal communication skills, allowing them to express their ideas better and collaborate effectively with others, even in a WFH environment. In contrast, lower-educated employees may struggle to communicate effectively in the absence of in-person interaction, leading to a greater negative impact on expert-rated creativity when WFH. This importance of non-verbal cues is observed in Model 3, which indicate a strong

negative correlation on WFH, Education and Expert-rated Creativity (β = -0.01, p = <0.001).

Thus, Hypothesis 5a is supported.

6.4.8. Hypothesis 5b: The negative impact of WFH on creativity is greater for lower-educated Chinese employees than for German employees.

To compare the effect of education on creativity between lower-educated Chinese and lower-educated German employees, a standard deviation of -1 above the education mean was used. The results indicate that both Lower-educated Chinese (β = -0.40, p=<0.001) and Lower-educated German (β = -0.29, p=<0.001) employees have a negative effect on creativity. Additionally, when examining the effect of WFH on creativity, the coefficient of WFH remained significant for both older Chinese (β = -0.33, p=<0.001) and older German (β = -0.26, p=<0.001) employees. This indicates that the creativity of lower-educated employees is more strongly affected by WFH.

To define lower-educated employees in this study, the education level was determined based on the mean (Mean = 3.77) and standard deviation (SD = 0.935) of education in the entire sample. Specifically, an educational value of -1 standard deviation below the mean (i.e., 2.835 and below) was considered indicative of lower education. As education is represented numerically from 1 to 5, the closest code to the value of -1 standard deviation was 3, which was used to identify lower-educated employees in this study. In this case, employees without any degree certification.

The results of the regression analysis for the impact of lower education on expert-rated creativity among Chinese and German employees are presented in Table 16. Model 1 indicated that lower-educated Chinese employees had a significantly greater negative effect on creativity compared to lower-educated German employees

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(β = 0.42, t=4.46, p = <0.001). However, the effect is insignificant on WFH and creativity. Model 2 included control variables for Culture Tightness, marital status, living with kids, living with old parents, years in company and position in the company. However, the effects of the coefficient remained insignificant (β = -0.07, t=-1.68, p = 0.09). In Model 3, additional WFH related variables such as non-verbal cues, knowledge exchange in person, expressing ideas in person, and computer self-efficacy were introduced. The results showed that there was no significant difference between lower-educated German and Chinese employees in terms of the effect of WFH and Creativity (β = 0.06, t=-1.68, p = 0.14). Thus, the findings suggest that lower-educated Chinese employees appear less creative than lower-educated Germans, but this effect is not significant with WFH, even after controlling for various demographic and work-related factors. These effects are depicted in Figure 18.

Table 16: Effects of WFH on Expert-rated Creativity (Lower Educated German vs Lower Educated Chinese)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	0.02	0.49	0.04	0.20	-0.11	<.001
Country [a]	0.42	<.001	0.41	<.001	0.25	0.10
WFH X Country [a]	-0.05	0.20	-0.07	0.09	0.06	0.14
Non-Verbal Cues					-0.01	0.01
Knowledge Exchange In Person					0.00	0.95
Expressing Ideas in Person					-0.19	0.01
Computer Self-Efficacy					0.26	<.001
Control Variables						
Culture Tightness			-0.04	0.32	0.04	0.50
Marital Status			0.02	0.62	-0.06	0.38
With Kids at Home			-0.02	0.66	-0.07	0.31
With Old Parents at home			-0.14	0.01	-0.02	0.72
Years in Company			0.00	0.86	0.00	0.46
Position in Company			-0.06	0.01	0.07	0.03

[a]Country "1" for Germany and "0" for China

Figure 18: Effects of WFH on Expert-Rated Creativity Based Low Educated German Vs Chinese Employees
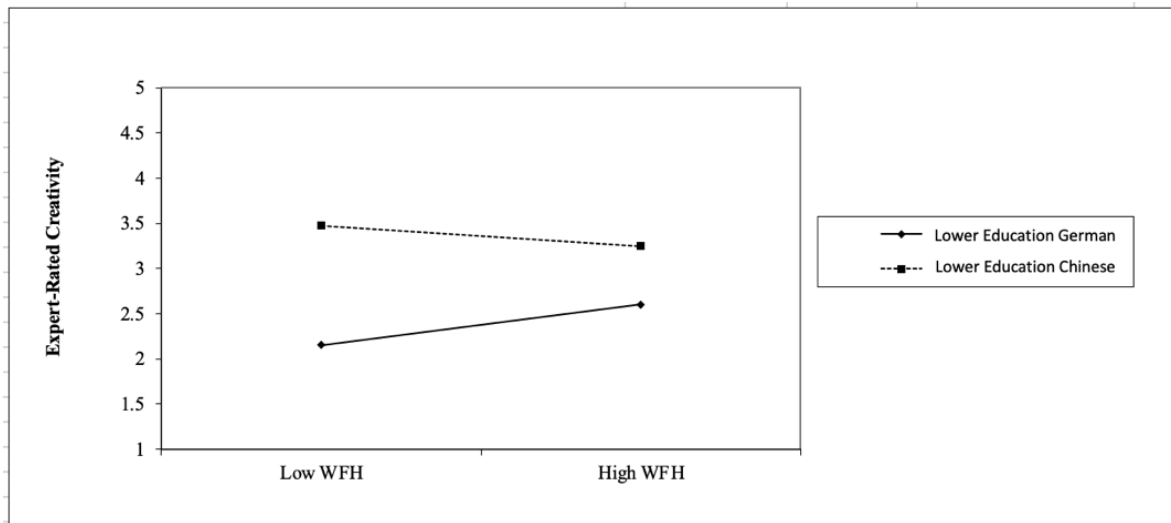
Although the study did not have a specific hypothesis comparing higher educated German and higher educated Chinese, it was included for the sake of completeness in the analyses. Based on the computed mean (Mean = 3.77) and standard deviation (SD = 0.935) of education using the entire sample, an education value of +1 standard deviation above the mean (i.e., 4.705 and above) was used to define higher educated employees in this study. As education is represented numerically from 1 to 5, the closest code to the value of +1 standard deviation was 5, which was used to identify high-educated employees in this study. In this case employees with Master certification and above.

It is found that both High-educated Chinese (β = 0.40, p=<0.001) and High-educated German (β = 0.29, p=<0.001) employees have a positive effect on creativity. Additionally, when examining the effect of WFH on creativity, the coefficient of WFH remained significant for both Higher-educated Chinese (β = 0.33, p=<0.001) and Higher-educated German (β = 0.26, p=<0.001) employees. These finding suggest that WFH have negative effect on creativity for both German and Chinese High-educated employees.

Table 17: Effects of WFH on Expert-rated Creativity (Higher Educated German vs Higher Educated Chinese)

	Model 1 (WFH & Country)		Model 2 (WFH & Country & Control Variables)		Model 3 (WFH & Country with WFH Related Variables)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
WFH	0.08	0.41	0.03	0.73	0.04	0.63
Country [a]	0.40	0.08	0.34	0.16	0.36	0.08
WFH X Country [a]	-0.07	0.54	-0.06	0.61	-0.05	0.58
Non-Verbal Cues					-0.01	0.25
Knowledge Exchange In Person					-0.23	<.001
Expressing Ideas in Person					-0.15	0.07
Computer Self-Efficacy					0.24	0.03
Control Variables						
Culture Tightness			0.01	0.95	-0.03	0.73
Marital Status			0.04	0.61	-0.06	0.41
With Kids at Home			-0.07	0.55	-0.01	0.96
With Old Parents at home			-0.02	0.85	0.01	0.93
Years in Company			0.00	0.84	0.00	0.55
Position in Company			-0.16	0.00	-0.14	<.001

[a]Country "1" for Germany and "0" for China

Table 17 presents a comparison of High-educated German and Chinese. The results suggest that there was no significant difference in expert-rated creativity between the two groups when they worked from home, even after adjusting for various demographic and work-related factors (Model 1: β = -0.7, t=-0.61, p = 0.54, Model 2: β = -0.59, t=-0.51, p = 0.61, and Model 3: β = -0.54, t=-0.56, p = 0.58).

There could be several reasons why the negative impact of WFH on creativity is not significant for lower-educated Chinese employees compared to their German counterparts. Firstly, it is important to note that the dissertation defined "lower-educated" as those with at least a Diploma or lower. It is possible that the adverse effect of WFH on creativity is even greater for employees of a particular culture with a lower educational level, such as those with a high school education or lower.

Additionally, age was found to have a strong moderating effect on the relationship between WFH and creativity. A majority of German employees (55%) in the study were aged 50 years old and below, while only 41% of Chinese employees

were in this age group. This age difference could have led to a skewed positive effect on the German when analysing education and its impact on the relationship between WFH and creativity. Therefore, further research is needed to better understand the relationship between WFH, education level, and creativity.

Hypothesis 5b is not supported.

6.5. Additional Analysis

The correlation analysis conducted between demographics, cultures, and WFH-related variables revealed intriguing findings, as presented in

Table **18**. Examining the impact of demographics on WFH-related variables, it was observed that women displayed a higher tendency to utilise non-verbal cues (-0.32**) and engage in knowledge exchange in person (-0.18**) compared to men. However, women exhibited lower computer self-efficacy (0.29**) in comparison. Regarding age, older employees demonstrated a stronger preference for the use of non-verbal cues (coefficients 0.34**) and engaging in knowledge exchange in person (0.41**), but they displayed a lower level of computer self-efficacy (-0.42**). Lastly, lower-educated employees were more likely to rely on non-verbal cues (-0.30**), engage in knowledge exchange in person (-0.15**), and express ideas in person (-0.62**). Notably, lower-educated employees exhibited lower computer self-efficacy (0.26**).

The examination of cultural effects on WFH-related variables revealed noteworthy distinctions between Chinese and German employees. Chinese individuals exhibited a higher likelihood of utilising non-verbal cues (-0.29**), engaging in knowledge exchange (-0.26**), and expressing ideas in person (-0.35**) compared to their German counterparts. Further investigating the demographic differences within each cultural group, it was observed that Chinese women displayed a stronger inclination towards non-verbal cues (-0.25*), knowledge exchange (-0.14**), and expressing ideas in person (-0.20**) compared to German women.

Analysing the impact of age, younger Chinese employees demonstrated a higher preference for utilising non-verbal cues (-0.13**) and higher level of computer self-efficacy (-0.19**) compared to their younger German counterparts. In contrast, younger German individuals exhibited a stronger inclination towards expressing ideas in person (0.27**). Specifically, Chinese employees aged 29 years and below displayed a higher tendency to engage in expressing ideas in person (-0.24*)

compared to their German counterparts of the same age group. Similarly, Chinese participants aged 50 years and above exhibited a stronger inclination towards non-verbal cues (-0.56**), knowledge exchange (-0.36**), and expressing ideas in person (-0.49**) compared to German employees of the same age range.

Furthermore, in terms of education, lower-educated Chinese employees displayed a higher preference for utilising non-verbal cues (-0.21**), engaging in knowledge exchange (-0.11**), and expressing ideas in person (-0.31**). Similarly, this trend persisted when comparing lower-educated Chinese employees to their German counterparts. Lower-educated Chinese participants exhibited a stronger inclination towards non-verbal cues (-0.31**), knowledge exchange (-0.22*), and expressing ideas in person (-0.40**) compared to lower-educated German employees.

These findings highlight the influence of gender, age, and education on employees' preferences and attitudes towards WFH-related variables in both German and Chinese contexts.

Table 18: Correlations of German vs Chinese Demographic and WFH-Related Variables

	Non-Verbal Cues	Knowledge Exchange In Person	Expressing Ideas in Person	Computer Self-Efficacy
	Coeff	Coeff	Coeff	Coeff
Gender	-32**	-.18**	-.01	.29**
Age	.34**	.41**	-.01	-.42**
29 Years Old and Below	.18	-.07	-.07	.04
50 Years Old and Above	.12	.02	.08	-.15
Education	-.30**	-.15**	-.62**	.26**
Lower Educated	-.04	.16	.19*	-.20**
German Vs Chinese	-.29**	-.26**	-.35**	-.06
German Vs Chinese Gender	-.25*	-.14**	-.20**	.09
German Vs Chinese Age	-.13**	.01	.27**	-.19**
29 Years Old and Below	-.09	.16	-.24*	.02
50 Years Old and Above	-.56**	-.36**	-.49**	-.041
German Vs Chinese Education	-.21**	-.11**	-.31**	.01
Lower Educated	-.31**	-.22*	-.40**	.02

7.   DISCUSSION AND INTERPRETATION

This dissertation explores the impact of WFH on employee creativity and further examines the role of cultural differences in the relationship between WFH and creativity. Furthermore, it found that the impact of WFH on creativity was different for employees of different demographic backgrounds. This nuanced understanding highlights the importance of considering cultural differences when examining the impact of WFH on creativity in diverse cultures. It offers insights on effectively managing and supporting creativity in a WFH environment.

First, based on the analysis results, WFH significantly negatively affects employee creativity. This negative effect is more pronounced with an increase in the frequency of WFH. The study also found that non-verbal cues, the preference for knowledge exchange in person, and expressing ideas in person are significant factors contributing to this adverse effect of WFH on creativity. However, the study also

discovered that employees with high computer self-efficacy could mitigate the negative impact of WFH on creativity. This highlights the importance of providing training and resources to enhance employees' computer skills and self-efficacy to maintain their creativity while working from home.

The negative effect of WFH on creativity may be attributed to several factors. One possible explanation is that WFH reduces the opportunities for spontaneous interaction and socialisation that are essential for generating new ideas and fostering creativity. Employees may also feel isolated and disconnected from their colleagues and the organisational culture, which can hinder their ability to collaborate and share knowledge.

Non-verbal cues, such as body language and facial expressions, are also important for effective communication and collaboration. In a WFH setting, these cues are often absent, which can result in misunderstandings and misinterpretations, leading to a breakdown in communication and a decrease in creativity. Moreover, the preference for knowledge exchange in person and expressing ideas in person highlights the importance of face-to-face interactions in facilitating creativity. Brainstorming sessions, group discussions, and informal chats with colleagues can inspire new ideas and perspectives, leading to innovative solutions to complex problems. These types of interactions are more difficult to replicate in a WFH environment, which can limit opportunities for creativity. On the other hand, employees with high computer self-efficacy are more confident in their ability to use technology to complete their work effectively. They may be more comfortable using digital communication tools and collaborating remotely, which can help them maintain their creativity while working from home.

Second, this dissertation also explored the cultural differences in the effect of WFH on creativity. The findings revealed that the negative effect of WFH on creativity is observed in both German and Chinese cultures. However, the impact of this effect is more significant in Chinese culture due to communication preference differences. This suggests that cultural factors play a critical role in determining the effect of WFH on creativity.

The difference in communication preferences between German and Chinese cultures may explain why the negative effect of WFH on creativity is more pronounced in Chinese culture. Chinese culture places a greater emphasis on non-verbal cues, face-to-face interactions, and interpersonal relationships in communication. In contrast, German culture tends to rely more on direct communication and explicit language. As a result, when employees in Chinese culture work from home, they may experience more significant barriers to effective communication and collaboration, leading to a decrease in creativity. This may be especially true for employees who value face-to-face interactions and non-verbal cues in communication. In contrast, German may be more accustomed to digital communication tools and may have a greater comfort level with WFH arrangements. Therefore, the negative effect of WFH on creativity may be less significant in this culture.

Third, to better understand the effect of WFH and Creativity. This dissertation explores the effects of WFH and creativity across different demographics. The findings revealed that women experience a greater negative impact on creativity when working remotely compared to men. Based on the results, one possible explanation for this gender difference is that women tend to place a greater emphasis on non-verbal cues, knowledge exchange, and expressing ideas in person compared to men. In WFH setting, these opportunities for face-to-face interactions may be limited, leading to a

decrease in creativity among women. Between cultures, the negative impact of WFH on creativity is more pronounced among Chinese women than German women. It was found that Chinese women place a greater emphasis on face-to-face interactions and non-verbal communication compared to German. As a result, Chinese women may experience more significant barriers to effective communication and collaboration when working remotely, leading to a decrease in creativity. For completeness sake, this dissertation also included men in the analysis to compare the effect of WFH on creativity across German and Chinese male employees. The results indicate that there was no significant effect on creativity between German and Chinese men.

Fourth, regarding age differences, it is found that younger employees experience a lesser negative impact of WFH on creativity compared to older employees. Younger employees may have grown up with technology, leading to higher computer self-efficacy. They are more comfortable using virtual communication tools, making it easier for them to collaborate with colleagues and maintain their creativity while working from home. Furthermore, it is found that younger employees have a lower reliance on non-verbal cues, knowledge exchange in person, and expressing ideas in person compared to older employees. They may be more adaptable to WFH arrangements that rely on virtual communication and may be better at communicating with peers virtually.

Lastly, in terms of demographic attributes, the negative impact of WFH on creativity is more significant among lower-educated employees compared to higher-educated employees. Higher-educated employees may have developed stronger non-verbal communication skills, allowing them to express their ideas better and collaborate effectively with others, even in a WFH environment. In contrast, lower-

educated employees may need more in-person interaction to communicate effectively, leading to a greater negative impact on creativity when WFH.

8.   THEORETICAL CONTRIBUTION AND FUTURE RESEARCH

8.1.   Theoretical Contribution

The findings of this dissertation have significant theoretical contributions to the existing literature on creativity, culture, and communication. This study helps inform the System Model of Creativity (Csikszentmihalyi, 2014), which posits that creativity emerges from the interaction between individuals, their domain, and the sociocultural context. Specifically, this study highlights the importance of the social and cultural context in which creativity occurs. The negative effect of WFH on creativity may be attributed to the reduced opportunities for socialization and collaboration, as well as the absence of non-verbal cues in communication, which are essential for effective collaboration and the exchange of ideas. Therefore, findings from this study suggest that creativity may be influenced not only by individual factors such as domain expertise but also by the sociocultural context in which it occurs.

Furthermore, the study found the negative impact of WFH on creativity and the role of non-verbal cues and face-to-face interactions in fostering creativity align and further support with (E. T. Hall, 1976) Hall's theory. The theory suggests that in high-context cultures, non-verbal cues and implicit communication are critical for effective communication and collaboration, and thus may be important for fostering creativity. The study's finding that communication preferences play a critical role in shaping the effect of WFH on creativity highlights the need for a nuanced understanding of cultural differences in communication preferences to promote effective communication and collaboration in WFH settings. It contributes to the theoretical understanding of high-

low context culture by providing empirical evidence for the importance of non-verbal cues and communication preferences in cross-cultural communication and collaboration, particularly in the context of WFH and creativity.

Moreover, the study's findings align with the Social Network Theory, which posits that social interactions and networks influence individuals' attitudes, behaviours, and outcomes (Burt, 1995; Wasserman & Faust, 1994). In a WFH environment, social interactions and networks may be limited, leading to a decrease in creativity. The study's results also align with the Communication Accommodation Theory, which suggests that individuals adapt their communication styles to their social context (Giles & Coupland, 1991). In a WFH environment, individuals may need to adapt their communication styles to collaborate with colleagues and maintain creativity effectively.

8.2. Practical Implications

Although the dissertation suggests that WFH can have a negative impact on employee creativity, it does not necessarily mean that companies should discourage WFH entirely. This is because WFH has been shown to have many benefits, such as increased productivity, reduced commuting time, and lower overhead costs. Furthermore, WFH can lead to increased job satisfaction and work-life balance, which can, in turn, result in higher employee retention rates. Moreover, the COVID-19 pandemic has demonstrated the need for WFH as a viable alternative to traditional office-based work. Many companies have adapted to this new reality by implementing WFH policies, and these policies may continue to be necessary in the future for various reasons, such as cost-saving, flexibility, or safety.

Rather than discouraging WFH, companies can implement measures to mitigate its negative impact on creativity. Firstly, organisations could provide training and resources to enhance employees' computer skills and self-efficacy. This can help

employees feel more confident and comfortable using digital communication tools and collaborating remotely, mitigating the negative impact of WFH on creativity.

Secondly, managers should facilitate spontaneous interaction and socialisation opportunities among employees, even in a WFH setting. This can be achieved through virtual brainstorming sessions, group discussions, and informal chats with colleagues. Managers should also encourage the use of video conferencing and other digital tools to replicate face-to-face interactions as much as possible.

Thirdly, managers should be mindful of the cultural differences in communication preferences and adapt their management practices accordingly. For example, in cultures that place a greater emphasis on non-verbal cues and face-to-face interactions, managers may need to provide more support and guidance to employees to overcome the lack of communication and misinterpretation in WFH.

Fourthly, managers should be aware of the demographic differences in the impact of WFH on creativity and provide targeted support to employees as needed. For example, providing additional training and resources to women who may experience a greater negative impact on creativity while working from home.

Lastly, organisations should develop flexible WFH policies that consider the needs and preferences of different employees. This can promote a more inclusive and supportive work environment that values employee creativity and well-being.

In summary, understanding the impact of WFH on creativity and the demographic and cultural factors that moderate this relationship can help organisations and managers develop more effective strategies to support employees in a WFH environment. By providing targeted training and resources, facilitating virtual interactions, and developing flexible policies, organisations can promote employee

creativity and maintain high productivity and innovation in the face of changing work arrangements.

8.3. Limitations and Future Research

While this study provides valuable insights into the impact of WFH on employee creativity and the moderating role of cultural differences and demographics, there are several limitations to consider.

First, the study on the impact of cultural context on communication only examined two cultures with extremely high and low context communication styles, namely German and Chinese. While this study provides valuable insights into the cultural differences between these two countries, it is essential to note that these results may need to be more generalizable to other cultures that may lie somewhere between the spectrum. It is essential to recognize that every culture is unique and has its communication style, which is influenced by several factors, such as history, traditions, beliefs, and values. Thus, more research is needed to examine how cultural context affects communication in other cultural contexts to gain a more comprehensive understanding of cross-cultural communication.

Additionally it is important to note that the study did not account for the role of organisational factors in the WFH context. For example, leadership style and communication policies may also play a crucial role in shaping the impact of WFH on creativity. A supportive and empowering leadership style can enhance employees' motivation and sense of autonomy, leading to higher creativity. Communication policies that encourage frequent and open communication among team members can also facilitate idea-sharing and collaboration. Therefore, future research should investigate the role of these organisational factors to gain a more comprehensive understanding of the impact of WFH on creativity.

To address these limitations, future research could expand the scope of the study to include more cultures and examine the impact of organisational factors on the relationship between WFH and creativity. Moreover, future research could use a longitudinal design to capture changes in employee creativity over time and explore the long-term effects of WFH on employee creativity. Additionally, future research could use objective measures of creativity and include a wider range of demographic variables to explore further the moderating effects of demographics on the relationship between WFH and creativity. Overall, this study highlights the importance of considering cultural differences and demographics when examining the impact of WFH on creativity and provides directions for future research to explore this important topic further.

8.4. Conclusion

The impact of working from home on employee creativity is a complex and multifaceted topic that requires careful consideration of cultural and demographic factors. From this dissertation, it has unfolded that employees with high computer self-efficacy can mitigate the negative impact of WFH on creativity. However, the negative effect of WFH on creativity is more significant for women, Chinese employees, and those with lower education. Additionally, younger employees experience a lesser negative impact of WFH on creativity than older employees due to their higher computer self-efficacy and adaptability to virtual communication. Cultural factors play a critical role in determining the effect of WFH on creativity, and it is important to consider these factors when managing and supporting creativity in a WFH environment.

However, it is also essential to recognise that WFH can have many benefits. For employees, WFH offers increased flexibility in managing work-life balance, leading

to reduced stress levels and improved overall well-being. It allows for a customised work environment, minimised distractions and enhanced productivity. Additionally, WFH can lead to financial savings, as employees can reduce commuting costs and expenses related to professional attire and meals. From the organisational perspective, WFH promotes increased employee satisfaction and retention, as it is seen as a valuable perk and can attract top talent. It also offers business continuity and resilience during unexpected events, such as natural disasters or public health emergencies. Furthermore, WFH offers significant cost-saving opportunities. By implementing WFH policies, organisations can reduce expenses related to office rental space, utilities, and maintenance. With fewer employees physically present in the office, there is a potential for downsizing or reconfiguring office space, resulting in substantial cost savings.

Regarding creativity, the research findings indicate that WFH can have a positive impact, particularly for younger, higher-educated German men. Younger individuals tend to exhibit higher computer self-efficacy and adaptability to virtual communication, which can enhance their creativity in a WFH setting. Similarly, higher levels of education are associated with better communication abilities further fostering creativity in a WFH environment. While the research suggests that WFH can be advantageous for creativity among specific demographic groups, it is important to note that individual experiences may vary. Cultural factors, such as communication preferences and teamwork dynamics, can also influence the relationship between WFH and creativity. Therefore, organisations should consider the diverse needs and characteristics of their workforce when implementing WFH policies and provide support and resources to facilitate creativity regardless of the work arrangement.

In light of the research findings, it is recommended that organisations consider implementing flexible work arrangements instead of mandating a full 5-day WFH policy. While WFH has shown numerous benefits and potential negative impacts on creativity, it is important to strike a balance between remote work and in-person collaboration. Flexible work arrangements allow employees to have a combination of remote work and office-based work, providing the opportunity for social interaction and collaboration. By incorporating social interaction into flexible work arrangements, organisations can address potential drawbacks associated with WFH, such as feelings of isolation and reduced team cohesion. This can be achieved by encouraging employees to come into the office for specific days or activities that require face-to-face interaction, such as team meetings, brainstorming sessions, or social events. By facilitating in-person connections, organisations can foster a sense of belonging, teamwork, and camaraderie among employees.

In addition to in-person interactions, organisations can leverage technology to facilitate social interaction among remote employees. Virtual communication platforms can be utilized for informal chats, virtual coffee breaks, or virtual team-building activities. This allows employees to connect and build relationships despite physical distance, promoting a sense of community and collaboration within the organisation. It is important for organisations to establish clear guidelines and expectations regarding social interaction in flexible work arrangements. This includes defining the frequency and purpose of in-person office days, as well as encouraging remote employees to engage in virtual social interactions. Managers and team leaders should also play an active role in fostering a supportive and inclusive work environment, where all employees feel connected and valued.

By incorporating social interaction into flexible work arrangements, organisations can reap the benefits of both remote work and in-person collaboration. This approach ensures that employees have the flexibility to work in a way that suits their needs while maintaining social connections and teamwork. Overall, it contributes to employee well-being, team cohesion, and organisational success in the context of flexible work arrangements.

Finally, it is crucial for both organisation and scholars to recognise that cultural differences and demographics can play a significant role in shaping the impact of WFH on creativity, and future research should consider exploring these factors further.

9. APPENDIX

9.1. Email to Employees to patriciate in Work From Home Employee Survey

Dear Colleagues,

COVID-19 has fundamentally changed the way we work. Employees are the most valuable resource to HELLA, and it is important to understand how work-from-home arrangements have impacted our teams and the organisation.

A colleague in Singapore is pursuing his Doctoral Degree, with a research focus to understand the impact of work-from-home arrangements for organisations. He is working with Prof. Roy Chua, an esteemed Professor from the Lee Kong Chian School of Business, Singapore Management University.

<u>I would appreciate if you could invite your teams to participate in an online survey on this topic.</u>

This survey will take 15-30 minutes to complete, and participants are encouraged to complete the survey in 1 sitting. As a token of appreciation, those who complete the survey will receive a reward of 10 EUR. Alternatively, they may choose to donate the reward to United Nations International Children's Emergency Fund (UNICEF). They can select the reward option at the end of the survey.

Participation in this survey is voluntary, and colleagues can withdraw from the survey at any point of time. Please be assured that all information collected is entirely anonymous. Any research results report or publication will be at the aggregate level, and individual participant data cannot be identified.

Should our colleagues have any questions concerning this survey, they can contact the Co-Investigator directly: Prof Roy Chua at royyjchua@smu.edu.sg.

9.2. Survey Questionnaire

WFH and Video Conferencing						
In a week, what is the average number of days you work from home?	0 Day	1 Days	2 Days	3 Days	4 Days	5 Days
In a week, what is the average number of hours you work from home?	____ hours					
In a week, how many meeting(s) do you use virtual conferencing (MS Team, Zoom, etc.)?	____ times					
In a week, how many time do you turn on virtual conferencing (MS Team, Zoom, etc.) video camera?	____ times					

High-Low Context Culture Scale					
It is very important to me to feel I am a part of a group.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My social status is an important part of my life.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I often feel left out of things going on around me.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Being able to work in harmony with others should at times come before doing the job well.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
In general, it is more important to understand my inner self than to be	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

famous, powerful, or wealthy.					
A person's word is his bond and you need not spell out the details to make him behave as he or she promised.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
A person cannot think unless he/she can put it into words.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Computer Self-Efficacy Scale					
I feel confident in the utilization of video conferencing tool even when no one is there for assistance.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have sufficient skills to use video conferencing tool.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel confident when using the video conferencing tool even if I have only the online instructions.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel confident when using video conferencing tool features.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel confident when using video conferencing tool for group discussions.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel that video conferencing tool is enjoyable no matter what the usage purposes are.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that video conferencing tool helps me to improve my imagination by obtaining information.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that I can have a variety of experiences while using video tool software without any interference.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that video conferencing tool is a temporary solution during the Covid-19 pandemic.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that video conferencing tool is a mandatory solution for employees to continue working during the Covid-19 pandemic.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel that video conferencing tool made working space narrow.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I will make use of video conferencing tool regularly in the forthcoming time.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I intend to make use of functions of video conferencing tool for providing assistances to my work activities.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I will give out my recommendation to others to use video conferencing tool.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I will use video conferencing tool on a regular basic in the future.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Non-Verbal Cues					
I use my hands and arms to gesture while talking to people.	Never	Rarely	Occasionally	Often	Very Often
I touch others on the shoulder or arm while talking to them.	Never	Rarely	Occasionally	Often	Very Often
I use a monotone or dull voice while talking to people.	Never	Rarely	Occasionally	Often	Very Often
I look over or away from others while talking to them.	Never	Rarely	Occasionally	Often	Very Often
I move away from others when they touch me while we are talking.	Never	Rarely	Occasionally	Often	Very Often

I have a relaxed body position when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I frown while talking to people.	Never	Rarely	Occasio nally	Often	Very Often
I avoid eye contact while talking to people.	Never	Rarely	Occasio nally	Often	Very Often
I have a tense body position while talking to people.	Never	Rarely	Occasio nally	Often	Very Often
I sit close or stand close to people while talking with them.	Never	Rarely	Occasio nally	Often	Very Often
My voice is monotonous or dull when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I use a variety of vocal expressions when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I gesture when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I am animated when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I have a bland facial expression when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I move closer to people when I talk to them.	Never	Rarely	Occasio nally	Often	Very Often
I look directly at people while talking to them.	Never	Rarely	Occasio nally	Often	Very Often
I am stiff when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I have a lot of vocal variety when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often

I avoid gesturing while I am talking to people.	Never	Rarely	Occasio nally	Often	Very Often
I lean toward people when I talk to them.	Never	Rarely	Occasio nally	Often	Very Often
I maintain eye contact with people when I talk to them.	Never	Rarely	Occasio nally	Often	Very Often
I try not to sit or stand close to people when I talk with them.	Never	Rarely	Occasio nally	Often	Very Often
I lean away from people when I talk to them.	Never	Rarely	Occasio nally	Often	Very Often
I smile when I talk to people.	Never	Rarely	Occasio nally	Often	Very Often
I avoid touching people when I talk to them	Never	Rarely	Occasio nally	Often	Very Often

Measurement of Creativity

The economic outlook remains for Automotive Industry remains uncertain and challenging. The massive supply shortage for electronic components and materials and the development of the coronavirus pandemic continue to give rise to significant risks. At the same time, it can be assumed that the increase in raw materials prices, energy, and logistic cost will persist.

Artificial Intelligence tool is one potential solution to help supply chain professionals solve key issues and improve global operations. AI can be used throughout supply chains from manufacturing, warehousing, and shipment. It reduces the impact of the worker shortage, reduces errors, and better tracking of goods from one point to another. Most importantly, AI can result in potential savings for the business.

The management of (the company) decided to develop and implement an AI initiative to solve the above problems. The aim is to develop a solution that will result in potential savings for the business and an opportunity to increase business revenue.

Imagine you are this project's lead manager, what novel AI solutions would you introduce? Suggest as many ideas as you can and be sure to elaborate each idea you proposed.

Culture Tightness						
There are many regulations and norms that people are supposed to abide by in this organization.	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
In this organization, there are very clear expectations for how people should act in most situations.	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
People agree upon what behaviors are appropriate versus inappropriate in most situations in this organization.	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
People in this organization have a great deal of freedom in deciding how they want to behave in most situations.	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
In this organization, if someone acts in an inappropriate way, others will strongly disapprove.	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
People in this organization almost	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree

always comply with norms.					

Knowledge Exchange in Person					
I am more skilled at collaborating with others in-person to diagnose and solve problems	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I can share information and learn more from one another in person.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I interact and exchange ideas more with people in person from different areas of the company.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I partner more in person with customers, suppliers, colleagues, etc., to develop solutions.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Expressing Ideas in Person					
I can express myself freely during in Face-to-Face discussion	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am more comfortable in expressing opinions during Face-to-Face discussion	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I can creatively express opinions during Face-to-Face discussion	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel more stress in Face-to-Face meeting	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Face-to-Face meeting helps improve my thinking ability					

Demographic Questions				
Your age this year?	_____ Years			
How do you describe yourself:	Male		Female	
What is your Nationality (Chinese, German, American, etc.):	_____			
What is your current marital status?	Single	Married	Living with partner	Others
How many children under 18 living with you?	_____			
How many Seniors (parents, etc.) live or stay in your household at least half the time:	_____			
How long have you been working in the company (in years)?	_____			
Which of the following best describe your position in the company?	Senior Management	Head of Department	Team Lead	Associate/ Specialist
What is the highest level of education you have completed?	Primary School / High School / Diploma / Vocational or equivalent / Bachelor's Degree / Graduate Degree (MBA, MA, MS, PhD, etc)			

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