MEETINGS AT DIGITAL WORKPLACES – AN EXPERIMENTAL APPROACH TO ANALYZE GROUP ATTACHMENT AND ORGANIZATIONAL COMMITMENT IN DIGITAL WORLDS

Research in Progress

Tristan, Gleich, University of Osnabrück, Germany, tristan.gleich@uni-osnabrueck.de

Sofia, Schöbel, University of Osnabrück, Germany, sofia.schoebel@uni-osnabrueck.de

Andreas, Janson, University of St.Gallen, Switzerland, andreas.janson@unisg.ch

Abstract

After facing the COVID-19 pandemic, organizations request their employees to work from home permanently. For an organization, this provides positive benefits such as reducing costs for rent. From an employee perspective, working from home can cause a feeling of isolation towards co-workers and lower attachment to an organization. One way to counteract this problem is to transfer the office to the digital world, especially spurred by the metaverse discussion to represent processes of our real world in digital environments that allow us to do everything in the same way digitally as we are doing in the real world. In this paper, we present a theoretical model for conducting a 2x2 between-subject experiment to analyze how digital real-world meeting experiences influence team attachment and organizational commitment. We contribute to theories such as the need of belonging and transfer them to digital environments and provide practical implications for designing digital offices.

Keywords: Digital Office, Meeting Accessibility, Team Attachment, Organizational Commitment

1   Introduction

In recent years, COVID-19 forced most companies to rethink their workplace design. This led to employees changing their workplace from their office environment to their private space and working as remote workers at a distance from each other (Schöbel et al. 2020). With multiple technology solutions, the way of working together has changed into a more and more digital workplace (Mićić and Mastilo 2022). This brings numerous positive aspects for organizations, i.e., by reducing costs for rent and facility. However, even after COVID-19, employees strongly wish to work in a hybrid work environment, combining physical presence with remote online work (Mićić and Mastilo 2022). Some organizations also make a complete shift from the physical office to the digital office, letting their employees work only from home. In this context, the physical workplace concept retrieves some issues because it is more than a place where people work together. It is also where the dimensions like social relationships, motivation, engagement, and self-realization take place (Ancillo et al. 2021). Several issues result from working solely digitally, such as the employee's social isolation from co-workers. Additionally, employees miss the possibility of spontaneous socialization in an office environment (Charalampous et al. 2019). Moreover, without social proximity and fewer face-to-face interactions, more and more employees feel not only out of sight but even out of the perception of others (Sewell and Taskin 2015) and ask for interactive ways to connect with co-workers (Babu et al. 2022). Current technologies like Zoom, Microsoft Teams, and Cisco WebEx enable interpersonal communication but

don't allow interpersonal interactions as experienced in a physical office. As a result, we can see that solutions for assisting employees by coping with a hybrid working environment are missing.

The so-called metaverse has the potential to overcome these limitations by allowing employees to generate better work productivity once working from home. It can be referred to as a computer-generated world with a consistent value system and an independent economic system linked to the physical world (Wang et al. 2022). In the metaverse, people can project themselves into the virtual world through avatars (Marabelli and Newell 2022). Therefore, it is a concept of immersive and emergent experience instead of just web content that seems to be the next stage of the Internet (Seidel et al. 2022). Lee et al. (2021) provide an abstract model of duality with three phases for the development of the metaverse to become this kind of system. They are starting with the creation of digital twins in the virtual world, where the physical environment is digitalized. In the second phase, native content is created by creators in the virtual world (digital natives), which can be linked to the physical world. In the third phase, the metaverse has become highly independent from the physical world (co-existence of physical-virtual reality), existing in a self-sustaining state (Lee et al. 2021). While the metaverse is still a new approach in its genesis (Christodoulou et al. 2022), there are different challenges for individuals and organizations mastering even the first phase, like a general lack of technology literacy or misunderstanding of user interfaces (Tan et al. 2022). However, the metaverse can potentially bring remote working and the digital workplace to the next major milestone, like working from anywhere and substituting the offline human (workplace) experience (Choi 2022), while still being present at the office or in meetings (Dwivedi et al. 2022). This highlights the issue where the successful implementation of the metaverse in the digital workplace needs to be researched and leads to the following research question.

RQ: How to design virtual meetings in a digital office environment to support team attachment and organizational commitment?

To achieve our goal, we use a 2x2 between-subject experiment and analyze how digital representation meetings in an office need to be designed to have an impact on the aspects of team commitment and organizational attachment. Therefore, we focus as a short-term goal on the underlying effects of ostracism in the context of those aspects. This will support us in building a base for developing design artifacts as a long-term goal. For our study, we involve individuals that are asked to work from home instead of the physical office and create a virtual environment similar to their physical office. In our environment, we simulate different collaborative meeting interactions and situations to analyze how such a digital office can support both a group and an organization. We contribute to theory by giving implications on how to design digital offices and avoid the backfiring effects of digital workplaces (Barev et al. 2021). Additionally, we contribute to theories involving team attachment and organizational commitment concerning aspects such as isolation that results from working solely digitally. We support practitioners by providing implications on how to design a digital office for those employees that are operating from home, not in the physical office.

The remainder of this research-in-progress paper is structured as follows: after motivating our work, we present some related work on isolation at workplaces and on organizational commitment and team attachment. Afterward, we present our hypotheses as well as our research model. We end our short paper with an overlook of our experimental procedure and describe expected contributions as well as a conclusion.

2 Theoretical Background

2.1 Isolation in Remote Workplaces

The term "Remote work" is grounded on the assumption that current technology allows employees to work from everywhere instead from the organization's offices. In the last years, especially working from home has become an often-used state for remote work. There are multiple benefits for an employee like better focus on tasks with less distraction, more organizational commitment, better work-life balance, higher job satisfaction, and employee retention (Golden 2006; Leonardi et al. 2010; McCloskey and

Igbaria 2003; Morganson et al. 2010). Typically, to stay connected, once working from home, web-conferencing systems are used (Hacker et al. 2020). Remote work has positive consequences for employees in regard to perceived autonomy, lower work-family conflict, and workplace relationship quality (Gajendran and Harrison 2007).

However, even with a positive impact on performance and less turnover rate (Gajendran and Harrison 2007), remote work has its downsides. While working remotely, employee experience isolation. On one side, employees are physically isolated. In this case, employees work in a setting like a Café or from home where there are not collocated with their organizational members (Bartel et al. 2012). Physical isolation is one of the significant challenges for employees by having less direct face-to-face contact (Bartel et al. 2012). On the other side, physical isolation is not only the reason for experiencing isolation. It can also happen when working together at the same place and in the same employer-offered space (Golden et al. 2008).

In this case, employee experience psychological isolation grounded on fewer (informal) interactions and, therefore, lower perceived effectiveness (van Yperen et al. 2014). In psychological isolation or work context professional isolation, the desire for social and emotional aspects of interaction is not supported (Golden et al. 2008; Marshall et al. 2007). Therefore, it is the feeling of an employee being separated from his organization and co-workers (Marshall et al. 2007). Results from Wang et al. (2020) show that physiological isolation does not correlate with psychological isolation. Hence, it is supposed that the lack of social interactions while working remotely decreases the chance of establishing work relationships through less face-to-face interaction (Goel et al. 2022; Sias et al. 2012) and leads to less spontaneous and informal interactions (Bartel et al. 2012).

2.2 Psychological Isolation, Team Attachment and Organizational Commitment

As described by Golden (2006), remote work has a positive impact on organizational commitment. The term commitment in the work context has been defined in multiple ways by researchers, encircling it as the attachment of an individual to an organization (Kacmar et al. 1999). In this regard, one of the most used concepts for organizational commitment is by Meyer and Allen (1991) (Harker Martin and MacDonnell 2012; Singh and Gupta 2015). This concept is built on three components, (1) Affective commitment, (2) continuance commitment, and (3) normative commitment. Affective commitment is focused on objective and subjective work characteristics and is described by positive work experiences based on the emotional relationship an individual has with an organization. Continuance commitment underlines the financial and social cost by leaving the organization. At last, normative commitment illustrates, as a much more theoretical than empirical aspect, the individual's feeling of obligation towards the organization (Meyer and Allen 1991). Each of these three components is widely seen as an individual concept in literature. However, affective commitment seems to be the core concept for organizational commitment in literature (Mercurio 2015). Therefore, organizational commitment has been researched to be similar to team commitment. This includes that team commitment can be defined as the psychological attachment of an individual towards a team (Singh and Gupta 2015).

People tend to develop an attachment to their surroundings involving other team members (Bowlby 1969). This is not limited to their private life. Instead, it is a relevant factor in their work life. At the workplace, employees want stable and secure relationships with their colleagues and work groups (Baumeister and Leary 1995), even in remote work. A common way to describe the relationship at the workplace is by using the adapted attachment theory from Bowlby (Yip et al. 2018), representing the emotional state of the individual towards another person. In the work context, the group attachment approach based on Smith et al. 1999 has become one of the central measures the emotional attachment in the workplace (Goel et al. 2022; Lee and Sawang 2016).

Like the original attachment theory, group attachment focuses on the two dimensions of avoidance and anxious for describing beliefs and expectations in relationships (Goel et al. 2022). Both dimensions have been presented as negatively correlated to desired work aspects, i.e., job satisfaction and performance (Goel et al. 2022). So it is understandable that a series of studies have shown that less emotional

attachment results in multiple adverse outcomes at the workplace (Yip et al. 2018). This has also been presented in different studies in the context of remote work. For example, Goel et al. (2022) demonstrated that higher attachment anxiety and attachment avoidance lead to less work engagement in virtual teams.

2.3 The Metaverse as a Solution to Design Working From Home Environments

The metaverse has been in the literature for decades, but the work of organizations to offer an affordable and end-user-focused virtual world is a relatively new phenomenon (Marabelli and Newell 2022). At the moment, there has been no single definition established for the metaverse. However, there are some characteristics in the literature which are often used. At first, with an integrated value system combined with an independent economic system, it is much more than a virtual representation of the physical world (Wang et al. 2022). In this virtual world, users are represented through avatars. Humans control those avatars through virtual reality equipment to get a whole experience by escaping from the real world (Marabelli and Newell 2022). The metaverse is not limited to an immersive experience – simply saying the metaverse allows us a more realistic digital experience of real-world processes and life-like environments (Guo et al. 2011), e.g., such as working from home and being in a virtual office with an avatar of the self at the same time. This also means that users are not limited to 2D pictures via face-to-face interaction. They are represented in 3D as a digital twin in a virtual office. Therefore, using avatars enables new kinds of interaction, like spontaneous meet-ups, without any planning and possibilities for informal private conversations. A user who spends their time in certain areas of a virtual office can be signaling to be open for interaction just by standing in a virtual coffee corner. This supports bonding processes with other co-workers and creating an online community (Ko and Jang 2014). In difference, by using traditional applications for digital communication like Microsoft Teams, Zoom, and so on, the interaction between co-workers is much more reduced to calls, chats, black screens, and planned meetings. Moreover, through the avatar, users get a different view of the group they belong to instead of just seeing a list of contacts in their communication application.

This leads to new opportunities for workplace design, where the physical world is digitalized, and employees can use the metaverse to work from everywhere and substitute parts of the offline human workplace experience (Choi 2022). One of these parts tends to be the interpersonal exchange between co-workers, where in virtual meetings, a new level of interactions and enriched communication seems to be possible. The metaverse provides an opportunity for organizations to discover and use digital twins in the metaverse as the office of the future (Allam et al. 2022), allowing us to create more realistic digital collaboration and meeting experiences.

3 Research Model

To achieve our goal, we plan to conduct an experiment. In our experiment, we simulate different meeting situations that can happen in the metaverse. These meeting situations differ from typical work meetings taking place in Team or Zoom. In a digital metaverse-based office, employees move around their digital office with their avatars. Employees can do everything they typically do in a physical office, like going to lunch together, having meetings in someone's office, etc. Based on these assumptions, we describe our research model and hypotheses in the following sections.

3.1 Hypotheses Development

Based on the assumptions of attachment and commitment, we want to analyze a research model by simulating different meeting situations that typically happen in physical offices but are now happening digitally. Figure 1 represents our research model and relationships we hypothesize to analyze how we need to design a digital office that supports team commitment and organizational attachment.
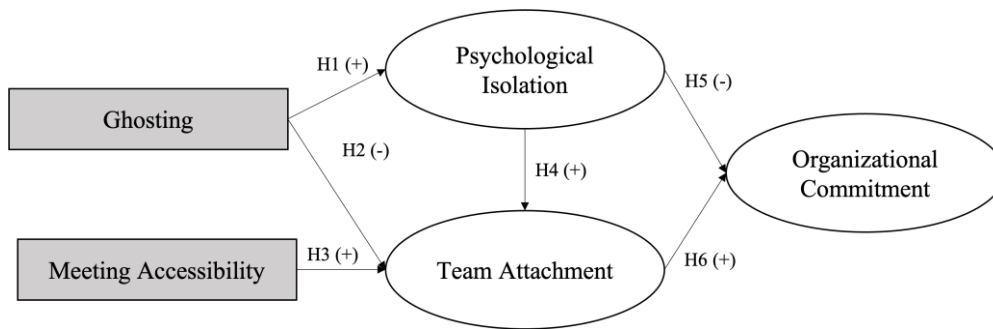
Figure 1: Research model

From a view of the current literature, the metaverse is often seen as a 3D world with sociocultural interaction (Messinger et al. 2009, Kim et al. 2012, Dionisio et al. 2013), where every user usually has the perspective to get a wholesome view of the virtual world with all other users. This leads to the point at which the avatars, as the center of the metaverse (Suzuki et al. 2020), users have much more insights about the status and availability of co-workers at a distance than just from chat and video conferencing applications. By using those applications, typically, users know who is reachable but have a limited understanding of who is in touch with someone else. They are limited to a status without any further explanation. In metaverse, all users know who is in interaction with someone, i. e. just by standing together with avatars in a virtual group. This leads to the point where also, in this new approach of a digital workplace, users can interact together but fend off someone who is trying to get in touch with them. This scenario is also possible in the offline world, where people are isolated, and it can be described by the term ghosting. This term is very similar to giving someone the cold shoulder. It terminates an interpersonal relationship, especially without explanation and no prior notice (Kay and Courtice 2022), bringing an employee into an uncomfortable situation with negative emotions like sadness (Freedman et al. 2022). Moreover, ghosting is quite similar to ostracism (Kay and Courtice 2022), which happens at the office and, therefore, even in the digital workplace, as cyber ostracism and harms employee well-being as well as work engagement and strives loneliness (Yang et al. 2022). If we simulate a digital work environment where each employee can observe other situations that they might not be aware of in a physical office. Observing such as situation can negatively influence an employee's feelings triggering a more intense feeling of isolation (Navarro et al. 2020). Thus, we hypothesize:

H1: Ghosting other team members in a virtual environment positively influences psychological isolation.

Attachment to co-workers is an important aspect of determining how they interact and feel. Typically, at physical workplaces, employees have stable and secure relationships with their co-workers (Baumeister and Leary 1995). Being connected to a group also in online settings is related to emotions, also being less effective if individuals are ignored by others at the workplace (Goel et al. 2022; Lee and Sawang 2016). This is based on group attachment as a construct that touches cognition and behavior on an individual level (Lee and Ling 2007). If we create a digital representation of an office, employees can experience different situations. If others are excluded from spontaneous meetings and are what we call ghosted by them but instantly aware that others have the possibility to interact, the attachment to a team suffers. In the context of metaverse, avatars would represent a group of co-workers supporting the belief of a user that they are interacting. Still, the user has no option to join this interaction. Accordingly, if in a digital office, employees experience situations in which they are ignored or ghosted by others, we hypothesize the following effect:

H2: Ghosting other team members in a virtual environment has a negative impact on team attachment.

The need to belong theory (Baumeister and Leary 1995; Wang et al. 2020) proposes that people need ongoing contact with others or interpersonal interactions with others without conflicts or negative effects. Additionally, people need to feel an interpersonal bond based on stability and emotional concern (Baumeister and Leary 1995). This underlines that next to the perceived attitude (e.g., ghosting), the accessibility for multiple frequencies of communication between co-workers matters, as well as the

extent of interpersonal interactions for building reliable and enriched relationships. The metaverse supports this kind of interaction. As stated by Kye et al. (2021), pupils used the accessibility from anywhere to engage and be together with others in virtual classrooms to overcome social distancing in metaverse as a mirror of the real world. Therefore, with the metaverse, we can design a more realistic work environment that assists us in supporting the need of belonging. The metaverse supports this, for example, by allowing users to move freely with their avatars, as in Gather Town, in order to start an interaction by approaching one or multiple users. In addition, it provides an opportunity to create a realistic real-world experience in digital environments (Allam et al. 2022), allowing us to create more realistic digital meeting experiences with simple accessibility and avoiding the negative effects of being isolated in working from home and being outranged from online meetings that other employees are doing. Consequently, we suggest the following hypothesis:

H3: Accessibility for interaction has a positive impact on team attachment.

If employees are psychologically isolated, their work experience is negatively influenced while suffering from fewer emotional relationships (Meyer and Allen 1991). Now when isolation prevails, relationships with others are reduced. This weakens group affiliation, which, according to the group attachment approach (Smith et al. 1999), avoids relationship expectations and leads to multiple negative outcomes in the workplace (Goel et al. 2022). In the context of metaverse, where if psychological isolation happens, we therefore hypothesize:

H4: *Psychological Isolation has a negative impact on team attachment.*

It is expected that in the following years, employees will continue to have a strong need to work in a hybrid workplace (Mićić and Mastilo 2022). With working from home and being physically isolated from other co-workers, psychological isolation will take a huge stake and can decrease the benefits of remote work for an organization (Allen et al. 2015; Toscano and Zappalà 2020). Psychological isolation negatively correlates with affective commitment in remote workplaces (Wang et al. 2020). A major issue for this lies in the fact that isolated employees have reduced interaction with other co-workers without informal exchange in hallways or other places where interpersonal exchange happens (Allen et al. 2015). As stated by Golden et al. (2008), on the one hand, employees experience the aspect of being out of sight of co-workers while working remotely and do not feel close to their organization anymore. On the other hand, there are still positive effects of remote work, leading to support organizational commitment as well as less turnover intentions (Golden et al. 2008). However, the usage of metaverse has the potential to influence remote work and mitigate psychological isolation. However, if isolation is still perceived, it is assumable that it has a negative effect on organizational commitment. As a result, we hypothesize the following:

H5: Psychological isolation in a virtual environment has a negative impact on organizational commitment.

In the context of the need to belong theory, employees need frequent emotional positive interactions with other co-workers while experiencing a stable interpersonal bond with them to feel commitment in the relationship to their teams (Baumeister and Leary 1995). The metaverse tends to foster an enriched and much more interactive interpersonal exchange, bringing the offline workplace to the virtual world through the usage of avatars (Dwivedi et al. 2022; Marabelli and Newell 2022). In other words, the metaverse can assist us in creating a more realistic online experience (Duan et al. 2021). In a metaverse office, employees can be connected in different and more real-world realistic ways allowing employees not only to have called together but also to create a 3D representation of themselves. Accordingly, we hypothesize the following:

H6: Team attachment in a virtual environment has a positive influence on organizational commitment.

3.2   Experimental Design and Measurement Instruments

To evaluate these effects, we conduct a 2x2 between-subject design experiment, where four different simulated situations of ad-hoc meetings will take place. Our four experimental groups are shown in Figure 2.
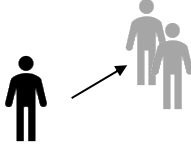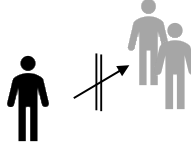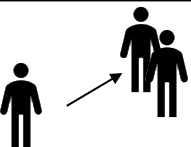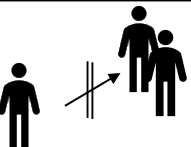
Figure 2: Experimental Groups

As presented in our research model, in our experiment, we manipulate and experimentally analyze two variables. The first one is meeting accessibility, and the second one is the disappearance – or in other words, ignorance – of co-workers. To run our experiment, we construct a digital office in Gather Town. We choose Gather Town to control for perceptions of immersion, in contrast to virtual reality environments, and provide a more generalizable contribution. Additionally, we will use different simulations in Gather Town, which depends on the accessibility to enter an ad-hoc meeting in a virtual environment as well as the reaction of shown co-workers, which seem to be in interaction (i.e., coffee-chat in the virtual break room). This features four treatments: (1) Employees who access a virtual ad-hoc meeting but presented virtual meeting members disappear. (2) Employees who access a virtual ad-hoc meeting and presented virtual meeting members stay for interaction. (3) Employees who try but can't access a virtual ad-hoc meeting, and after that, the presented virtual meeting members disappear. (4) Employees who try but can't access a virtual ad-hoc meeting, and after that, the presented virtual meeting members stay. We assume that employees differ in the reason why they are not able to interact with others in a virtual world. Therefore, a technological barrier (like a security configuration from an administrator of metaverse) would have another impact on perceived emotions than just people who disappear by leaving the metaverse and ghosting someone. This would lead to different results of our measurements regarding psychological isolation and team attachment. Next to these four treatments, we will conduct the experiment without treatment with a control group.

From a methodological perspective, we conduct three steps. The first one is a pre-test with a small group of people from different areas. In the context of those pre-tests, we will show our different scenarios as treatments and use think aloud method, where participants are invited to free speech about what they think without any rules or constraints. Based on those insights, we will enhance our experimental setting. The second one focuses on the experiment we are going to run. For analyzing our model and running our experiment, we collaborate with a mid-sized German company, which has made the decision to strongly foster a hybrid work environment in the future. The employees were asked to work from home solely. Each participant will be randomly assigned to one of the four groups. Before entering the digitally simulated office, we use a pre-test to ask for demographics and experience in digital work environments. Afterward, each of our participants will enter our digital office in which we simulate the different meeting situations. In addition, we use a questionnaire to analyze our research model. We use the professional isolation construct from Golden et al. (2008), which was successful used by Wang et al. (2020) in the context of remote work. For measuring team commitment, we will use the on-group commitment-based construct from Singh and Gupta (2015). At least, the organizational attachment will

be measured with the organizational attachment scale from Feeny et al. (2020), referring to attachment anxiety and avoidance.

After running our experiment, we add a qualitative approach to get more and deeper insights regarding the participants' experience, especially on how the effects of being ghosted and having limited access to meetings has been perceived and are rated. Therefore, we are using a problem-centered interview to ask them about the experiment and what they believe is in this context relevant for the future digital office. We believe this will support us building a stable base for developing design artifacts for the digital workplace in metaverse.

4   Next Steps and Expected Contributions

The goal of our research-in-progress paper was to present an experimental design that assist us in better designing the digital office of the future. After conducting our planned experiment and interviewing employees, we will first get insights into how they experience different meeting situations in their digital office worlds. We are currently working on the development of our Gather Town office representation. This representation is designed in the same way as the physical office of our involved organization. In the next step, we will integrate our different meeting situations which enables us to conduct our planned experiment. To assess the quality of our experiment, we will make a pre-test aiming at the question of whether the simulations are accurate and if the integrated questions are understandable for the participants or not. After pre-testing our experiment, we want to carry it out in the field. After running our experiment and evaluating our data, we plan to conduct problem-centered interviews with some of our participants to learn more from them about how they experienced the situations they were confronted with.

Our expected contributions are twofold. Once we have completed our analysis, we can enrich theories such as the theory of belonging, the theory of team attachment and organizational commitment in relation to digital work settings with not co-located team members (Yip et al. 2018). With the metaverse being more present in our work and private lives (Zallio and Clarkson 2022), we have to face other and more complex problems that we are typically experiencing in the physical world. We provide some implications and deeper theoretical understanding how we need to design virtual work environments that do trigger psychological isolation. Additionally, we are able to better explain and understand how group attachment and organizational commitment are constituting in virtual worlds. Practitioners will be supported by guidelines on how to create a digital work atmosphere that better support each employee. Additionally, by focussing on team meetings, we can give implications on what to consider regarding the construction of digital meeting to make them more effective and efficient.

5   Limitations and Conclusion

Our work has some limitations that provide room for future research studies. First, in our experiment, we only simulate one situation that can happen in a digital office. Our situations are narrowed down to meeting and collaboration situations that involve an interaction between two employees. Future research studies about the metaverse should consider different teamwork and collaboration settings to understand better how to make teamwork more effective. Second, for now, we conduct our experiment together with one organization. In future research studies, we should consider another sample and other organizations as well. Third, in our study, we focus on team meetings. Further studies should discuss and analyze different work situations as well. Summarizing the insights of our research in-progress paper, the goal of our study is to get a better understanding of how to design the future digital office. In doing so, we use the metaverse to simulate different meeting situations in a virtual office. With our research model and experiment, we analyze how digital meeting situations can influence psychological isolation, team attachment and organizational commitment. After completing our study, we will be able to enrich theories such as the need of belonging, organizational commitment and team attachment by exploring them in digital environments. From a practical view, we can guide organizations in developing their digital offices and support employees in creating better meeting situations.

References

Allam, Z., Sharifi, A., Bibri, S. E., Jones, D. S., and Krogstie, J. 2022. "The Metaverse as a Virtual Form of Smart Cities: Opportunities and Challenges for Environmental, Economic, and Social Sustainability in Urban Futures," *Smart Cities* (5:3), pp. 771-801 (doi: 10.3390/smartcities5030040).

Allen, T. D., Golden, T. D., and Shockley, K. M. 2015. "How Effective Is Telecommuting? Assessing the Status of Our Scientific Findings," *Psychological science in the public interest : a journal of the American Psychological Society* (16:2), pp. 40-68 (doi: 10.1177/1529100615593273).

Ancillo, L., Antonio de, Del Val Núñez, M. T., and Gavrila, S. G. 2021. "Workplace change within the COVID-19 context: a grounded theory approach," *Economic Research-Ekonomska Istraživanja* (34:1), pp. 2297-2316 (doi: 10.1080/1331677X.2020.1862689).

Babu, A., M. U., and Mohan, P. 2022. "Impact of the Metaverse on the Digital Future: People's Perspective," in *2022 7th International Conference on Communication and Electronics Systems (ICCES),* Coimbatore, India. 22.06.2022 - 24.06.2022, IEEE, pp. 1576-1581 (doi: 10.1109/ICCES54183.2022.9835951).

Barev, T., Schwede, M., and Janson, A. 2021. "The Dark Side of Privacy Nudging – An Experimental Study in the Context of a Digital Work Environment," in *Proceedings of the 54th Hawaii International Conference on System Sciences*, T. Bui (ed.), Hawaii International Conference on System Sciences (doi: 10.24251/HICSS.2021.500).

Bartel, C. A., Wrzesniewski, A., and Wiesenfeld, B. M. 2012. "Knowing Where You Stand: Physical Isolation, Perceived Respect, and Organizational Identification Among Virtual Employees," *Organization Science* (23:3), pp. 743-757 (doi: 10.1287/orsc.1110.0661).

Baumeister, R. F., and Leary, M. R. 1995. "The need to belong: Desire for interpersonal attachments as a fundamental human motivation," *Psychological Bulletin* (117:3), pp. 497-529 (doi: 10.1037/0033-2909.117.3.497).

Bowlby, J. 1969. *Attachment*, New York: Basic Books.

Charalampous, M., Grant, C. A., Tramontano, C., and Michailidis, E. 2019. "Systematically reviewing remote e-workers' well-being at work: a multidimensional approach," *European Journal of Work and Organizational Psychology* (28:1), pp. 51-73 (doi: 10.1080/1359432X.2018.1541886).

Choi, H.-Y. 2022. "Working in the Metaverse: Does Telework in a Metaverse Office Have the Potential to Reduce Population Pressure in Megacities? Evidence from Young Adults in Seoul, South Korea," *Sustainability* (14:6), pp. 3629-3646 (doi: 10.3390/su14063629).

Christodoulou, K., Katelaris, L., Themistocleous, M., Christodoulou, P., and Iosif, E. 2022. "NFTs and the Metaverse Revolution: Research Perspectives and Open Challenges," in *Blockchains and the Token Economy*, M. C. Lacity and H. Treiblmaier (eds.), Cham: Springer International Publishing, pp. 139-178 (doi: 10.1007/978-3-030-95108-5_6).

Dionisio, J. D. N., III, W. G. B., and Gilbert, R. 2013. "3D Virtual worlds and the metaverse," *ACM Computing Surveys* (45:3), pp. 1-38 (doi: 10.1145/2480741.2480751).

Duan, H., Li, J., Fan, S., Lin, Z., Wu, X., and Cai, W. 2021. "Metaverse for Social Good," in *Proceedings of the 29th ACM International Conference on Multimedia*, H. T. Shen, Y. Zhuang, J. R. Smith, Y. Yang, P. Cesar, F. Metze and B. Prabhakaran (eds.), Virtual Event China. 20 10 2021 24 10 2021, New York, NY, USA: ACM, pp. 153-161 (doi: 10.1145/3474085.3479238).

Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., Dennehy, D., Metri, B., Buhalis, D., Cheung, C. M.K., Conboy, K., Doyle, R., Dubey, R., Dutot, V., Felix, R., Goyal, D. P., Gustafsson, A., Hinsch, C., Jebabli, I., Janssen, M., Kim, Y.-G., Kim, J., Koos, S., Kreps, D., Kshetri, N., Kumar, V., Ooi, K.-B., Papagiannidis, S., Pappas, I. O., Polyviou, A., Park, S.-M., Pandey, N., Queiroz, M. M., Raman, R., Rauschnabel, P. A., Shirish, A., Sigala, M., Spanaki, K., Wei-Han Tan, G., Tiwari, M. K., Viglia, G., and Wamba, S. F. 2022. "Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy," *International Journal of Information Management* (66) (doi: 10.1016/j.ijinfomgt.2022.102542).

Feeney, J. R., Gellatly, I. R., Goffin, R. D., and Inness, M. 2020. "Organizational Attachment," *Journal of Personnel Psychology* (19:3), pp. 113-124 (doi: 10.1027/1866-5888/a000252).

Freedman, G., Powell, D. N., Le, B., and Williams, K. D. 2022. "Emotional experiences of ghosting," *The Journal of social psychology*, pp. 1-20 (doi: 10.1080/00224545.2022.2081528).

Gajendran, R. S., and Harrison, D. A. 2007. "The good, the bad, and the unknown about telecommuting: meta-analysis of psychological mediators and individual consequences," *The Journal of applied psychology* (92:6), pp. 1524-1541 (doi: 10.1037/0021-9010.92.6.1524).

Goel, R., Game, A., and Sanz Vergel, A. 2022. "Attachment and Work Engagement in Virtual Teams: Promoting Collaborative Job Crafting," *Small Group Research*, 104649642211218 (doi: 10.1177/10464964221121801).

Golden, T. D. 2006. "Avoiding depletion in virtual work: Telework and the intervening impact of work exhaustion on commitment and turnover intentions," *Journal of Vocational Behavior* (69:1), pp. 176-187 (doi: 10.1016/j.jvb.2006.02.003).

Golden, T. D., Veiga, J. F., and Dino, R. N. 2008. "The impact of professional isolation on teleworker job performance and turnover intentions: does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter?" *The Journal of applied psychology* (93:6), pp. 1412-1421 (doi: 10.1037/a0012722).

Guo, J.; Chow, A. and Wigand, R. 2011. " Virtual wealth protection through virtual money exchange," *Electronic Commerce Research and Applications* (10:3), pp. 313-330 (doi: 10.1016/j.elerap.2010.10.003)

Hacker, J., vom Brocke, J., Handali, J., Otto, M., & Schneider, J. 2020. Virtually in this together - how web-conferencing systems enabled a new virtual togetherness during the COVID-19 crisis. European Journal of Information Systems, 29(5): 563-584.

Harker Martin, B., and MacDonnell, R. 2012. "Is telework effective for organizations?" *Management Research Review* (35:7), pp. 602-616 (doi: 10.1108/01409171211238820).

Kacmar, K. M., Carlson, D. S., and Brymer, R. A. 1999. "Antecedents and Consequences of Organizational Commitment: A Comparison of Two Scales," *Educational and Psychological Measurement* (59:6), pp. 976-994 (doi: 10.1177/00131649921970297).

Kay, C., and Courtice, E. L. 2022. "An empirical, accessible definition of "ghosting" as a relationship dissolution method," *Personal Relationships* (29:2), pp. 386-411 (doi: 10.1111/pere.12423).

Kim, C., Lee, S.-G., and Kang, M. 2012. "I became an attractive person in the virtual world: Users' identification with virtual communities and avatars," *Computers in Human Behavior* (28:5), pp. 1663-1669 (doi: 10.1016/j.chb.2012.04.004).

Ko, E. and Jang, J.. 2014. " The Virtual Device Managing Module of the Metaverse Assisted Living Support System," *Proc. Int. Conf. Modeling, Simulation Vis. Methods (MSV) Steering Committee World Congr. Comput., Eng. Appl. Comput. (WorldComp)* (2014), pp. 125–126.

Kye, B., Han, N., Kim, E., Park, Y., and Jo, S. 2021. "Educational applications of metaverse: possibilities and limitations," *Journal of educational evaluation for health professions* (18), p. 32 (doi: 10.3352/jeehp.2021.18.32).

Lee, L.-H., Braud, T., Zhou, P., Wang, L., Xu, D., Lin, Z., Kumar, A., Bermejo, C., and Hui, P. 2021. "All One Needs to Know about Metaverse: A Complete Survey on Technological Singularity, Virtual Ecosystem, and Research Agenda," *JOURNAL OF LATEX CLASS FILES* (14:8), pp. 1-65 (doi: 10.48550/arXiv.2110.05352).

Lee, S., and Ling, L. 2007. "Chapter 9 Understanding Affectional Ties to Groups from the Perspective of Attachment Theory," in *Affect and Groups*, Bingley: Emerald (MCB UP), pp. 217-248 (doi: 10.1016/S1534-0856(07)10009-8).

Lee, S., and Sawang, S. 2016. "Unpacking the impact of attachment to project teams on boundary-spanning behaviors," *International Journal of Project Management* (34:3), pp. 444-451 (doi: 10.1016/j.ijproman.2015.12.003).

Leonardi, P. M., Treem, J. W., and Jackson, M. H. 2010. "The Connectivity Paradox: Using Technology to Both Decrease and Increase Perceptions of Distance in Distributed Work Arrangements," *Journal of Applied Communication Research* (38:1), pp. 85-105 (doi: 10.1080/00909880903483599).

Marabelli, M., and Newell, S. 2022. "Everything You Always Wanted to Know about the Metaverse* (*But Were Afraid to Ask)," *Academy of Management Proceedings* (2022:1) (doi: 10.5465/AMBPP.2022.11559abstract).

Marshall, G. W., Michaels, C. E., and Mulki, J. P. 2007. "Workplace isolation: Exploring the construct and its measurement," *Psychology and Marketing* (24:3), pp. 195-223 (doi: 10.1002/mar.20158).

McCloskey, D. W., and Igbaria, M. 2003. "Does "Out of Sight" Mean "Out of Mind"? An Empirical Investigation of the Career Advancement Prospects of Telecommuters," *Information Resources Management Journal* (16:2), pp. 19-34 (doi: 10.4018/irmj.2003040102).

Mercurio, Z. A. 2015. "Affective Commitment as a Core Essence of Organizational Commitment," *Human Resource Development Review* (14:4), pp. 389-414 (doi: 10.1177/1534484315603612).

Mićić, L., and Mastilo, Z. 2022. "Digital Workplace Transformation: Innovative Approach After Covid-19 Pandemic," *ECONOMICS* (10:2), pp. 5-17 (doi: 10.2478/eoik-2022-0014).

Messinger, P. R., Stroulia, E., Lyons, K., Bone, M., Niu, R. H., Smirnov, K., and Perelgut, S. 2009. "Virtual worlds — past, present, and future: New directions in social computing," *Decision Support Systems* (47:3), pp. 204-228 (doi: 10.1016/j.dss.2009.02.014).

Morganson, V. J., Major, D. A., Oborn, K. L., Verive, J. M., and Heelan, M. P. 2010. "Comparing telework locations and traditional work arrangements," *Journal of Managerial Psychology* (25:6), pp. 578-595 (doi: 10.1108/02683941011056941).

Meyer, J. P., and Allen, N. J. 1991. "A three-component conceptualization of organizational commitment," *Human Resource Management Review* (1:1), pp. 61-89 (doi: 10.1016/1053-4822(91)90011-Z).

Navarro, R., Larrañaga, E., Yubero, S., and Víllora, B. 2020. "Psychological Correlates of Ghosting and Breadcrumbing Experiences: A Preliminary Study among Adults," *International journal of environmental research and public health* (17:3) (doi: 10.3390/ijerph17031116).

Schöbel, S., Barev, T., Janson, A., Hupfeld, F., and Leimeister, J. M. 2020. "Understanding User Preferences of Digital Privacy Nudges – A Best-Worst Scaling Approach," in *Proceedings of the 53rd Hawaii International Conference on System Sciences*, T. Bui (ed.), Hawaii International Conference on System Sciences (doi: 10.24251/HICSS.2020.479).

Seidel, S., Berente, N., Yepes, G., and Nickerson, J. V. "Designing the Metaverse," *7th International Conference on Communication and Electronics Systems (ICCES)* (2022), pp. 6699-6708.

Sewell, G., and Taskin, L. 2015. "Out of Sight, Out of Mind in a New World of Work? Autonomy, Control, and Spatiotemporal Scaling in Telework," *Organization Studies* (36:11), pp. 1507-1529 (doi: 10.1177/0170840615593587).

Sias, P. M., Pedersen, H., Gallagher, E. B., and Kopaneva, I. 2012. "Workplace Friendship in the Electronically Connected Organization," *Human Communication Research* (38:3), pp. 253-279 (doi: 10.1111/j.1468-2958.2012.01428.x).

Singh, A., and Gupta, B. 2015. "Job involvement, organizational commitment, professional commitment, and team commitment," *Benchmarking: An International Journal* (22:6), pp. 1192-1211 (doi: 10.1108/BIJ-01-2014-0007).

Suzuki, S., Kanematsu, H., Barry, D. M., Ogawa, N., Yajima, K., Nakahira, K. T., Shirai, T., Kawaguchi, M., Kobayashi, T., and Yoshitake, M. 2020. "Virtual Experiments in Metaverse and their Applications to Collaborative Projects: The framework and its significance," *Procedia Computer Science* (176), pp. 2125-2132 (doi: 10.1016/j.procs.2020.09.249).

Tan, T. F., Li, Y., Lim, J. S., Gunasekeran, D. V., Teo, Z. L., Ng, W. Y., and Ting, D. S. 2022. "Metaverse and Virtual Health Care in Ophthalmology: Opportunities and Challenges," *Asia-Pacific journal of ophthalmology (Philadelphia, Pa.)* (11:3), pp. 237-246 (doi: 10.1097/APO.0000000000000537).

Toscano, F., and Zappalà, S. 2020. "Social Isolation and Stress as Predictors of Productivity Perception and Remote Work Satisfaction during the COVID-19 Pandemic: The Role of Concern about the Virus in a Moderated Double Mediation," *Sustainability* (12:23), p. 9804 (doi: 10.3390/su12239804).

van Yperen, N. W., Rietzschel, E. F., and Jonge, K. M. M. de. 2014. "Blended working: for whom it may (not) work," *PloS one* (9:7), e102921 (doi: 10.1371/journal.pone.0102921).

Wang, W., Albert, L., and Sun, Q. 2020. "Employee isolation and telecommuter organizational commitment," *Employee Relations: The International Journal* (42:3), pp. 609-625 (doi: 10.1108/ER-06-2019-0246).

Wang, Y., Su, Z., Zhang, N., Xing, R., Liu, D., Luan, T. H., and Shen, X. 2022. "A Survey on Metaverse: Fundamentals, Security, and Privacy," *IEEE Communications Surveys & Tutorials*, p. 1 (doi: 10.1109/COMST.2022.3202047).

Yang, L., Murad, M., Mirza, F., Chaudhary, N. I., and Saeed, M. 2022. "Shadow of cyber ostracism over remote environment: Implication on remote work challenges, virtual work environment and employee mental well-being during a Covid-19 pandemic," *Acta psychologica* (225), p. 103552 (doi: 10.1016/j.actpsy.2022.103552).

Yip, J., Ehrhardt, K., Black, H., and Walker, D. O. 2018. "Attachment theory at work: A review and directions for future research," *Journal of Organizational Behavior* (39:2), pp. 185-198 (doi: 10.1002/job.2204).

Zallio, M., and Clarkson, P. J. 2022. "Designing the metaverse: A study on inclusion, diversity, equity, accessibility and safety for digital immersive environments," *Telematics and Informatics* (75), p. 101909 (doi: 10.1016/j.tele.2022.101909).