The transformative role of digital media
in different social settings
during the COVID-19 pandemic

Inauguraldissertation

zur Erlangung des Doktorgrades
der Humanwissenschaftlichen Fakultät
der Universität zu Köln
nach der Promotionsordnung vom 18.12.2018

vorgelegt von
Jennifer Virginie Meier

aus
Wetzikon (ZH), Schweiz

Juni 2025

1. Gutachter: Prof. Dr. Dr. Kai Kaspar
2. Gutachter: Prof. Dr. Kai-Uwe Hugger

Abstract

The increasing spread of digital media has led to the dissolution of traditional social, spatial, and temporal boundaries, a development closely tied to the concept of mediatization. Mediatization refers to the process by which digital media increasingly mediate and shape social interactions, communication, and cultural practices. This transformation is particularly evident in how people use digital media to communicate, learn, and work. Following earlier waves of mediatization shaped by print and broadcast media, today's third wave is characterized by the pervasive integration of digital media into everyday life. Digital media play a transformative role in various social settings, enabling new forms of networking, collaboration, and participation in areas such as leisure, work, and education. During the COVID-19 pandemic, digital media became particularly important as contact restrictions severely limited face-to-face interactions. In many cases, they were the only means of maintaining social relationships. This exceptional situation gave new urgency and visibility to mediatization processes. In this dissertation, I examine how these processes unfolded in social relationships (Article 1), therapeutic approaches (Article 2), and educational settings (Articles 3 and 4) during different phases of the COVID-19 pandemic. I investigate how different age groups engaged with digital media in informal and formal settings to maintain relationships, adapt professional practices, and support learning. Drawing on qualitative and quantitative methods, the findings offer insights into both habitual and reflective forms of media appropriation and show how these practices were shaped by the unique social and institutional conditions of the pandemic.

Table of contents

1. Introduction

The increasing spread of digital media has progressively blurred traditional social, spatial, and temporal structures (Hepp, 2020). This ongoing process of mediatization shapes various aspects of daily life, including communication, work, therapy, and education. Already before the COVID-19 pandemic, digital technologies were reshaping interactions by merging formal and informal settings. In education, digital media facilitate not only teaching but also communication between teachers, students, and parents, intertwining academic and personal spheres (Li & Wong, 2020). In professional environments, emails and messaging apps increasingly blur the boundaries between work and private life (Orhan et al., 2021). Similarly, in psychotherapy, online therapy sessions and digital communication tools have softened the distinction between personal and virtual interactions, allowing for more flexible, location-independent care (Buckman et al., 2021).

The COVID-19 pandemic significantly accelerated these developments (Gao et al., 2022). The rapid shift to remote work (Aleem et al., 2023), online learning (Salame et al., 2023), and virtual healthcare (Kuchenbuch et al., 2020) were not merely preferred alternatives, but often the only viable ones. The pandemic thus marked a profound transformation in how individuals experienced and managed the interplay between formal and informal settings, highlighting the central role of digital media in this process. Against this background, this dissertation explores three key research questions:

1. *How did individuals appropriate digital media during the first nationwide lockdown in Germany to stay connected with friends and family?*
2. *Are psychotherapists of the next generation willing to use and adapt digital media to offer video psychotherapy after their graduation?*
3. *How do schoolchildren integrate digital media in both formal and informal settings, and what similarities and differences emerge between these settings?*

These questions collectively contribute to a broader understanding of how digital media facilitate and shape interactions across different social settings during the pandemic. The analysis focuses on how digital media reshape practices in both informal and formal settings, offering insights into broader mediatization processes. By addressing the three research questions, this dissertation aims to explore the evolving roles of digital media in daily life, professional adaptation, and educational experiences, paving the way for a deeper understanding of these transformations in the context of mediatization.

1.1. Theoretical Background

Digital media increasingly influence our daily lives and have fundamentally transformed numerous aspects of societal life since their introduction (Ytre-Arne, 2023). But what exactly constitutes *digital media*? While no universally accepted definition exists, several key characteristics can be identified. Digital media comprise interactive and adaptable content, providing a level of accessibility and engagement beyond traditional media (Saxena & Bansal, 2023; Maniou & Seitanidis, 2018). In contrast to traditional media, which are relatively static and allow limited interaction, digital media reach global audiences in real time (Xu, 2015), enable users to create and share content in participatory, scalable, and distributable ways (Rainie, 2020), and offer rapid and flexible access to information (Xie, 2008). The spectrum of digital media includes various electronic devices, such as smartphones, computers, tablets, laptops, gaming consoles, and other smart devices, which support the creation, storage, and consumption of digital content. Over the past two decades, digital media have gained increasing significance, shaping not only leisure activities (e.g., Hemmingsson, 2015; López-Sintas et al., 2017) but also education (e.g., Guzzetti & Lesley, 2015), healthcare (e.g., Haggerty, 2017), workplace (e.g., Gellmers & Yan, 2023), and social relationships (e.g., Guzzetti & Lesley, 2015). This is reflected in the way communication increasingly occurs through text, image, and video messaging, while social media, online platforms, videos, and digital games serve as central sources of information, guidance, and entertainment (Harenberg, 2024). As the use and prevalence of digital media continue to grow, their impact extends beyond individual behavior to shape broader societal structures and interactions.

In communication science, this comprehensive process of change is described by the concept of mediatization (Krotz, 2001; Krotz, 2007; Hepp, 2020). Mediatization refers to the long-term permeation of society, culture, and social relationships by media. Krotz (2001) emphasized that media not only create new possibilities for interaction but also transform existing structures and generate new dependencies. While digitalization refers to the process of increasing use of digital information and communication technologies, the concept of mediatization focuses on the accompanying changes in social interaction (Krotz, 2016). This process unfolds on multiple levels (Krotz & Hepp, 2012):

1. **Micro level**: In individuals' everyday lives, communication practices, social relationships, and personal actions change. (Digital) media offer new opportunities for networking but also influence the perception of proximity and distance.

2. **Meso level**: Institutions, organizations, and social groups integrate media into their structures, leading to new forms of collaboration and interaction, while also challenging existing hierarchies.

3. **Macro level**: At the societal level, media act as driving forces for cultural change by redefining norms, values, and power structures.

The concept of mediatization is understood as a discursive construct (Lunt & Livingstone, 2016). It serves to describe and make tangible sociocultural change but does not claim absolute truth and does not provide a theory from which specific hypotheses can be derived. Rather, it represents an approximation of dynamic and complex societal conditions that are continuously evolving (Krotz, 2007). In the later concept of *deep* mediatization (Hepp, 2020), it is emphasized that media are not only central components of social processes but that societal structures increasingly rely on digital media to function. This represents a shift from earlier conceptions of mediatization, as it highlights how society as a whole is undergoing a transformation driven by media, leading to profound changes in social and cultural practices. Hepp (2020) deliberately uses the term *deep*, referring to *deep learning*, to underline the growing importance of automated, algorithmically controlled processes that shape everyday life, communication, and social coordination in increasingly fundamental ways. Furthermore, mediatization is not a linear progression but a development unfolding in successive waves of transformation (Hepp, 2020). The first wave is associated with the rise of print media and the emergence of the public sphere. The second wave corresponds to the era of mass media, during which radio, television, and film restructured communication on a broad scale. The third wave, which characterizes the current stage of deep mediatization, is shaped by digital infrastructures, mobile connectivity, and the growing datafication of social life (Hepp, 2020). Taken together, the three waves of mediatization trace a historical development in which the media are gradually transformed from communication channels into infrastructures that fundamentally shape sociality, cultural practices, and institutional logics.

A related concept that focuses on individual engagement with digital media at the micro level is media appropriation. This concept describes how individuals integrate, interpret, and adapt media into their daily lives (Geimer, 2011; Geimer, 2017). It highlights the active role of users, who do not merely consume media content but actively incorporate it into their personal and social settings. Media appropriation is a lifelong process that varies depending on age and social environment. While older individuals often face challenges in adopting digital technologies (Martinez, 2022), younger people frequently use media to shape their identities and navigate social spaces (Wildermuth, 2008). Within

media appropriation research, different forms of appropriation can be distinguished. Rather than a strict dichotomy between creative and habitual use, there is an increasing recognition of a spectrum of appropriation practices (Thumel, 2024). Users may engage with media in a productive manner by creatively reshaping content or actively generating new meanings, while appropriation can also take habitual and routinized forms, aligning more closely with established social and cultural patterns (Geimer, 2011; Hepp, 2020). Contemporary mediatization research emphasizes that appropriation is embedded in complex societal structures and reflects both reproductive and transformative dynamics. This perspective underscores that media use does not occur in a social vacuum (Hepp, 2020). Instead, they actively engage with and adapt media in ways that are shaped by existing cultural and institutional frameworks and simultaneously contribute to shaping these frameworks. Thus, media appropriation is not a static condition but a dynamic process that continuously evolves in response to individual, social, and technological factors (Geimer, 2017). In this dissertation, I used both mediatization and media appropriation as theoretical foundations to analyze the individual use of digital media in informal and formal settings.

1.2. Mediatization in informal settings

Informal settings, such as leisure, family, and social networks, play a crucial role in mediatization processes. Informal settings are characterized by everyday situations where activities and learning occur spontaneously and are often driven by personal interests and experiences (Fallik et al., 2013). The widespread use of digital media has led more and more people to integrate these technologies into their daily routines. In 2024, 69 million people in Germany owned at least one smartphone (Statista, 2024), with the figure rising to 93% among 12- to 19-year-olds (MPFS, 2024). Among girls in this age group, the percentage was even higher, with 96% owning a smartphone (MPFS, 2024). These shifts are particularly pronounced among younger age groups, who often adopt new technologies more rapidly (Czaja et al., 2006) and integrate them deeply into their social interactions and leisure activities (MPFS, 2024). Digital media influence almost all areas of life, including accessing news (Duvekot et al., 2024; Kaspar & Fuchs, 2021; Ahlers, 2006), streaming films and music (Chalaby, 2024; Drott, 2018), playing video games (MPFS, 2024), for rehabilitation purposes (Rüth et al., 2023), participating in esports competitions (Akin, 2023; Molina et al., 2025), and engaging in social interactions through digital platforms (Gabbiadini et al., 2020), among other activities. Media appropriation is also reflected in language: terms like „googling," „tweeting," or „streaming" have become part of everyday vocabulary

(Priller-Gebhardt, 2023), reflecting how deeply digital technologies have penetrated communication. These developments illustrate the profound integration of digital media into everyday life, shaping not only communication and entertainment but also social interactions and cultural practices.

This shift is particularly evident in how people connect with others and communicate. Making plans, once done via landline calls 20 years ago, is now commonly organized through messaging apps like WhatsApp. Instead of meeting in person, communication increasingly takes place digitally – through text messages, video calls, or by sharing experiences and photos on social networks such as Instagram, Facebook, or WhatsApp (Gergle, 2018). Moreover, communication is the primary motive for using digital media for adolescents (Tanta et al., 2014). This is also confirmed by a representative German study (MPFS, 2018), which found that 35% of the time children and adolescents spend using digital media are dedicated to communication, followed by 31% for entertainment, 24% for gaming, and 10% for searching for information. Although adults use digital media less frequently than adolescents for communication (Blackwell et al., 2017), social interaction remains a central motive for media use (Whiting & Williams, 2013). The importance of digital media in maintaining social connections became even more evident during the COVID-19 pandemic, when social interactions were restricted, even in private settings (Bowden-Green et al., 2021). The first lockdown represented an unprecedented disruption to everyday social life, offering a unique opportunity to examine how people adapted their communication habits under these exceptional conditions. Article 1 (see Section 2.1) addressed this by exploring the following research question: *How did individuals appropriate digital media during the first nationwide lockdown in Germany to stay connected with friends and family?*

1.3. Mediatization in formal settings

While informal settings allow for spontaneous and self-directed engagement with digital media, formal settings such as schools and workplaces are characterized by structured environments where activities and learning processes follow specific guidelines and curricula (Fallik et al., 2013). In this dissertation, I focused on the use of digital media in education and psychotherapeutic practice within formal settings.

In the field of education, digital media create new possibilities for structuring teaching and learning while also affecting pedagogical practices, curricula, and forms of assessment (Rawolle & Lingard, 2014). However, a cross-national comparative study (Breiter & Ruhe, 2018) revealed that progress in integrating digital media varies across countries. At that time in 2018, English schools were

more mediatized than German schools, with a wider use of digital tools such as computers, tablets, and digital communication systems (Breiter & Ruhe, 2018). This difference was also reflected in the interactions between teachers, students, and parents: while English schools increasingly relied on digital communication, German schools still often used traditional methods such as pen and paper (Breiter & Ruhe, 2018). This result is consistent with an older international study from 2013, where less than a third of German eighth graders stated that they used computers in class at least once a week, and all other eighth-graders used digital media in school less often or not at all (Eickelmann et al., 2014). Based on these findings, the Ministry of Education and Cultural Affairs implemented a national strategy to improve digital infrastructure in schools (Gerick et al., 2017). However, a follow-up study showed that Germany continued to lag behind in international comparisons (Drossel et al., 2019). Yet, despite the opportunities that digital media offer for education, Germany's progress in digital infrastructure and integration remained significantly behind international developments in the late 2010s.

However, a shift toward digital media is also noticeable in Germany nowadays. Measures are being implemented both at the national level and within individual institutions to advance the digital education system. For example, an increasing number of schools are integrating tablet classes (e.g., Kirschner, 2023; Büttner, 2024), where each student uses a tablet for lessons, or adopting *BYOD* (Bring Your Own Device) approaches, where students bring their own digital media into the classroom (Hartenbach, 2020). At a national level, the „Digital Pact School", launched in 2019, provides financial resources to enhance digital infrastructure in schools, including broadband internet, digital devices, and interactive teaching tools (BMBF, 2019). This program supports projects such as the integration of smartboards, cloud-based learning environments, and professional development for teachers, aiming to ensure that students are equipped with the necessary skills to navigate a mediatized world. Another example at a federal level is the NRW Media Competence Framework (Medienberatung NRW, 2020), which serves as a guide for schools to systematically integrate digital media into teaching while promoting children's media literacy. Despite these efforts, significant challenges persist, particularly regarding the efficient use of allocated funds and the availability of qualified personnel capable of operating and maintaining the technology to ensure effective implementation (Weißheimer & Frömming, 2024). Nevertheless, these developments and national endeavors highlight the gradual transition towards a more mediatized educational system in Germany.

Digital media serve two main purposes in the classroom. On the one hand, they serve as tools in various subjects (learning *with* digital media) to present content more comprehensibly and engagingly

(Irion & Peschel, 2016). A meta-analysis indicates that the use of digital media in mathematics and science subjects has positive effects on students' learning outcomes (Hillmayr et al., 2020). Similarly, video games can stimulate reflection processes in the classroom (Rüth & Kaspar, 2021). On the other hand, the use of digital media itself is also a subject of discussion (learning *about* digital media), particularly in the context of media literacy (Irion & Peschel, 2016). Schools are regarded as central institutions for fostering media literacy among children and adolescents, as they are expected to prepare them for a reflective and responsible engagement with digital media (Nickel & Ganguin, 2023). However, challenges remain, particularly regarding technical infrastructure, teacher training, and the systematic integration of media education concepts into teaching. Studies indicate that while teachers increasingly incorporate digital media, there is still a lack of didactic frameworks and adequate support to fully utilize the potential of digital media for learning (Bećirović, 2023; Wang et al., 2014).

The skills cultivated through digital media integration in educational settings are increasingly relevant in professional settings. As schools (should) prepare children to navigate a mediatized world, workplaces benefit from employees who are proficient in digital communication, collaboration, and problem-solving. This growing proficiency in digital skills, cultivated in educational settings, directly translates to the workplace, where digital technologies such as collaboration platforms, video conferencing systems, and digital project management tools have transformed daily routines, particularly in office-based roles (It-Daily, 2023). Processes such as communication, organization, and documentation are increasingly digital (Marion & Fixson, 2021), improving efficiency and enabling flexible work models like remote work or hybrid work (Sokolic, 2022). This transformation, however, is not limited to traditional office jobs but also extends to specialized professions, such as psychotherapy. Here, digital technologies are gaining importance, whether through the use of video and online platforms for teletherapy (Hanley, 2020) or through blended care, which combines traditional face-to-face therapy with digital tools (Buelen et al., 2023). While traditional settings rely on in-person sessions, digital approaches offer new opportunities. Apps that help patients track their progress (Lui et al., 2017), digital diaries for self-reflection (Helweg-Joergensen et al., 2019), and video psychotherapy (Giovanetti et al., 2022) open innovative pathways. Studies indicate that digital therapeutic approaches not only enhance access to psychotherapeutic services but also demonstrate strong clinical effectiveness, particularly in the context of video-based psychotherapy (Karyotaki et al., 2017; Carlbring et al., 2018; Morriss et al., 2019; Giovanetti et al., 2022). However, even the most promising method cannot unfold its potential if it is not accepted and implemented by practitioners. While previous research showed that many

practicing psychotherapists are open to using video-based formats (Monthuy-Blanc et al., 2013; Zayyad & Toycan, 2018), little is known about how the next generation of psychotherapists perceive this shift. Given their younger age and higher digital affinity, they may be particularly well positioned to engage with digital formats (Czaja et al., 2006). Therefore, I examined the following question in Article 2 (see Section 2.2): *Are psychotherapists of the next generation willing to use and adapt digital media to offer video psychotherapy after their graduation?*

1.4. Blurring boundaries of formal and informal settings

The distinction between informal and formal use of digital media is not always clear-cut, especially among schoolchildren (Thumel, 2024). Digital media are not only used for entertainment or social interaction in leisure time but also for school-related tasks or deepen knowledge. At the same time, informal media practices find their way into school settings, for example, when children independently watch educational videos or use online resources (Pires et al., 2022; Zimmermann et al. 2020). This convergence aligns with the educational goal of better connecting formal learning with real-life experiences to foster schoolchildren's intellectual and personal development (Kumpulainen, 2010). While numerous studies have examined digital media usage either in school settings, such as the integration of new technologies into teaching (e.g., Ismail, 2015), the promotion of digital literacy skills (e.g., Zhang et al., 2020), or in informal settings, focusing on aspects such as usage duration (e.g., Bernath et al., 2020) or potential effects (e.g., Garmy et al., 2012). However, research that considers both settings simultaneously and examines the interplay between formal and informal usage settings remains scarce. One of the few studies that directly compares these settings is by Wang and colleagues (2014), who examine the role of mobile technologies in supporting learning processes across both settings. Their findings highlight that while digital media facilitate learning in both formal and informal settings, their use differs significantly: in school, they are often structured, guided by teachers and for collaborative tasks, whereas in informal settings, learners engage with them more autonomously, driven by personal interest and convenience. This study underscores the need for a more integrated perspective on digital media usage that accounts for the fluid transitions between formal and informal learning environments. I explored this issue further in Article 3 and Article 4 by asking: *How do schoolchildren today engage with digital media in both informal and formal settings, and what differences and similarities can be identified?*
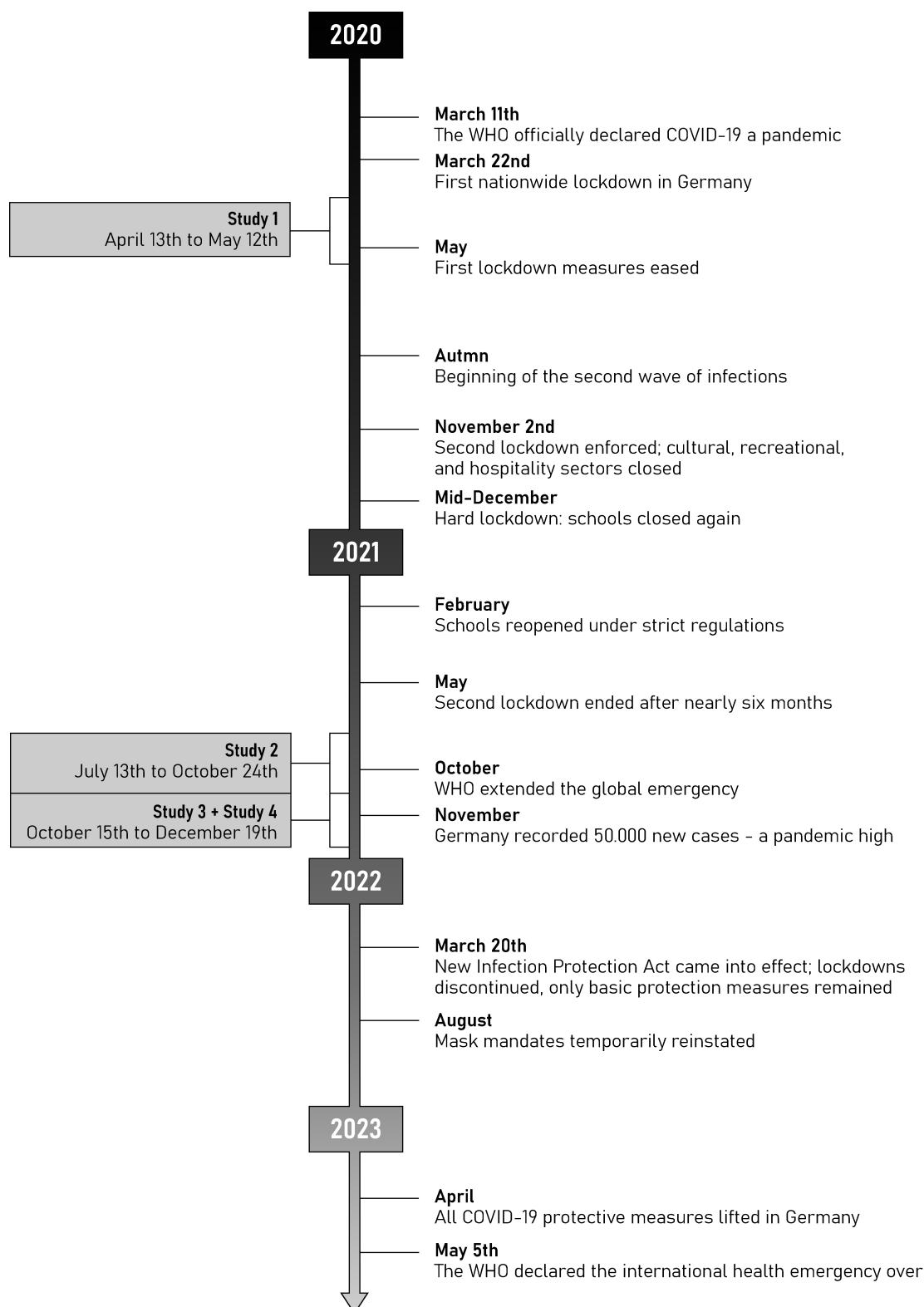
1.5. Mediatization and the COVID-19 pandemic

All four studies were conceptualized and conducted during the COVID-19 pandemic – a time when digital media played an even more central role in people's everyday lives, as restrictions on physical interactions led to an increased reliance on digital technologies (El-Moghazi, 2023; Polyakova et al., 2024). The impacts of this time remain evident today (Polyakova et al., 2024). To appropriately contextualize these studies and ensure their applicability in the future, this section provides an overview of the pandemic's progression, and the key measures implemented in Germany.

The SARS-CoV-2 virus, the source of the global pandemic, was first identified in December 2019 at a market in China (Zehrt, 2020). By January 20, 2020, the World Health Organization (WHO) confirmed human-to-human transmission, and only days later, the virus reached Europe (Zehrt, 2020). Germany reported its first COVID-19 case at the end of January. Although the WHO still assessed the global risk as low in late February 2020, it officially declared COVID-19 a pandemic on March 11 (Zehrt, 2020). Germany responded with extensive measures to curb the virus's spread. Large events were canceled, and social interactions were to be minimized (MDR, 2020). In addition, technical tools such as contact tracing apps were implemented to support these efforts (Kaspar, 2020). On March 22, 2020, the German government imposed its first three-month lockdown, which included restrictions on leaving home (MDR, 2020). Schools were closed, and homeschooling along with video conferencing became the predominant forms of instruction. Employees transitioned to remote work wherever possible. During this period, the first study for this dissertation was conducted, examining how digital media were appropriated to maintain social connections and engage in leisure activities, see Figure 1. In May 2020, the initial lockdown, originally planned for three weeks, was gradually lifted (MDR, 2020). Schools reopened in early May under strict hygiene protocols. Private gatherings were permitted under certain conditions. Gradual easing of restrictions followed, allowing cross-border travel once again. However, a return to normality was still distant. Local lockdowns were periodically reinstated, large-scale events remained banned, and mandatory testing was introduced to better trace infection chains (MDR, 2020). By autumn 2020, a second wave of infections became apparent. On November 2, 2020, extensive restrictions on public life were reintroduced (MDR, 2020). Cultural and recreational venues, restaurants, and hotels were closed until at least the end of November. Personal gatherings faced stricter regulations. In mid-December, schools were closed once again, shifting entirely to homeschooling (Jungblut, 2020). A minimum distance requirement further restricted public interactions. Just like the first one, the second lockdown was extended, lasting in parts until late April 2021 (MDR,

2022). Regionally dependent on infection rates, schools began reopening from February 10, 2021. The nationwide vaccination campaign started in April 2021, leading to a noticeable easing of restrictions (MDR, 2022).

Figure 1. Timeline of the COVID-19 pandemic and the data collection periods of the four studies.

In July 2021, the data collection for our online study on the intention to adapt video psychotherapy began (Article 2), which lasted until the end of 2021, see Figure 1. Despite progress, Germany experienced another infection wave in late August 2021. As a result, access to indoor public spaces was restricted to individuals who were vaccinated, recovered, or tested negative (MDR, 2022). The president of the Robert Koch Institute urged the public to reduce contacts and continue wearing masks (Bundesministerium für Gesundheit, 2023). While public life and schools remained open, strict measures aimed to minimize the risk of infection. At this point, data collection for Studies 3 and 4 was initiated, with media diaries being completed online by schoolchildren, see Figure 1.

In March 2022, a new Infection Protection Act came into effect, limiting COVID-19 measures to basic protection (MDR, 2023). Mask and testing mandates were lifted across many areas of daily life. In autumn 2022, mask mandates briefly returned in specific contexts, but the government refrained from imposing further lockdowns (MDR, 2023). By the end of 2022, the pandemic in Germany transitioned to an endemic phase, largely restoring societal normalcy (MDR, 2023). As of April 2023, all COVID-19 protective measures were lifted (Bundesregierung, 2023). On May 5, 2023, the WHO officially declared the international health emergency over (Haug, 2022). By this point, everyday life in Germany had largely returned to normal. Over more than three years, the pandemic had profoundly shaped public and private life, significantly limiting social interactions.

2. Synopsis and synergies of the articles

This dissertation comprises four empirical articles. At the beginning of this dissertation project, which coincided with the onset of the COVID-19 pandemic in Germany, my initial focus was on the informal setting: The first study examined media use for social interaction during leisure time in the first lockdown in Germany (Article 1). This was an exceptional situation: Before the pandemic, there were no comparable nationwide lockdowns in modern German history (Landeszentrale für politische Bildung Baden-Württemberg, 2023). Building on these findings, my subsequent focus shifted to a formal setting: the field of psychotherapy. In this domain, the use of digital media had long been subject to strict regulatory limitations. Prior to the pandemic, German health insurance providers allowed a maximum of 20% of psychotherapeutic services to be conducted via video psychotherapy (VPT) per quarter. However, during the pandemic, this regulation was adjusted, and therapy sessions conducted via video calls were reimbursed in full (BPtk, 2019). Together with my colleagues, I examined the factors that are related to psychology students' intention to offer VPT after graduation (Article 2). In addition, we analyzed their attitudes toward VPT, as well as their perceptions of its advantages, disadvantages, and desired learning opportunities. The final two studies combined both settings. In the media diary studies (Articles 3 & 4), secondary schoolchildren documented their media usage both inside and outside of school over several weeks. This enabled a direct comparison between formal and informal settings. Both articles were developed as part of the research project "Ganztag digital[1]," where I was part of the research team for four years. As part of the dissemination of this research, I presented partial results from Articles 3 and 4 during the poster session at the 52nd Congress of the German Psychological Society (Meier et al., 2022).

By combining quantitative and qualitative data and including participants from different age groups, this dissertation contributes to a deeper understanding of how people appropriate digital media during the COVID-19 pandemic.

---

[1] The project „Ganztag-digital: Digitale Medien und Medienbildung in der sozialen Welt der Ganztagsschule [All-Day Digital: Digital Media and Media Education in the Social World of the All-Day School]" was funded by the German Federal Ministry of Education and Research (BMBF), funding code 01JD1829, for the period from May 1, 2019 to December 31, 2022. The following research institutions and partners were involved: Cologne University of Applied Sciences (project lead), University of Cologne, Philipps-University Marburg, the Grimme Institute, and the Regional Educational Network in the Recklinghausen district (NRW) as a practical partner.

2.1. Article 1: Alone together: Computer-mediated communication in leisure time during and after the COVID-19 pandemic

The first article is based on an online survey, focusing on media use for social interaction during leisure time in the first lockdown in Germany (Meier et al., 2021). The COVID-19 pandemic represented an unprecedented challenge in modern human history (Yan, 2020). The nationwide lockdown, which began in March 2020 and was initially planned for three weeks, led to the near-total shutdown of public life (MDR, 2020). It profoundly impacted private life and leisure activities, as individuals were strongly advised to minimize contact with those outside their own households (Bundesministerium des Innern und für Heimat, 2020). Given the exceptional nature of this situation, no empirical studies had previously addressed how such unprecedented restrictions would impact the use of digital media, as no comparable circumstances had occurred in modern history (Landeszentrale für politische Bildung Baden-Württemberg, 2023). Accordingly, the objective of this study was to examine the impact of these extraordinary conditions on media use for social interaction during leisure time.

Social interactions are essential for psychological well-being (Baumeister & Leary, 1995; Kawachi & Berkman, 2001) but could no longer be met through conventional means due to pandemic-related restrictions. Digital media can help in this regard when actively used to fulfill specific needs, such as social connectedness (Katz et al., 1973). Therefore, my colleagues and I investigated which digital communication methods were utilized and which leisure activities were shared online during the national lockdown. Data collection for the first study began in April 2020, at a time when the lockdown had already been in effect for three weeks.

679 individuals aged 18 to 69 participated in this study. The results indicate that participants used several digital media more frequently than before the pandemic. In particular, video calls and instant messaging saw a significant increase, with over 70% of participants reporting more frequent use compared to pre-pandemic times. Traditional phone calls also emerged as part of this trend. Additionally, the study revealed a shift in the use of digital platforms for shared leisure activities. Low-key activities like conversations with others and spending time together were the most frequently mentioned activities, which is unsurprising given the primary function of messenger services, video and phone calls. However, new and less conventional online activities also emerged. For example, about a quarter of participants reported using virtual meetings for social drinking, 22% engaged in online sports activities, 18% watched films and 15% listened to music together. Additionally, 12% of participants engaged in creative activities in an online collaborative setting. Furthermore, we found a difference between

younger and older participants: older individuals engaged in fewer types of digital leisure activities than younger ones, which aligns with previous studies showing that younger people adapt to digital media more quickly than older generations (Czaja et al., 2006). However, age showed no relation to participants' intention to continue using digital media for communication, which we assessed in the context of post-pandemic use. In contrast, the intention to continue using digital media for social interaction was more strongly associated with the perceived quality of digital interactions and with personality traits, particularly openness to experience and introversion.

In retrospect, the study's findings align with broader research on digital media use during the pandemic. Numerous studies showed a substantial increase in digital media usage during this time (e.g., Cellini et al., 2020; Kerekes et al., 2021; Sheth, 2020), particularly in the domain of video conferencing tools (Kemp, 2020; Koeze & Popper, 2020). Pennington (2021) found that digital media were increasingly used to reconnect with former acquaintances and maintain social ties. Furthermore, the pandemic fostered new forms of social and organizational bonds through collective participation on platforms such as Twitter, where digital interactions promoted a sense of solidarity, community, and social support, even among strangers (Castro-Martinez et al., 2021). Adolescents spent significantly more time online during the pandemic: Platforms such as TikTok, Facebook, Snapchat, and Instagram saw increases in active users ranging from 8% to 38% in the United States (Statista, 2021). American adolescents primarily used digital media to stay connected with friends and family via text messages (83%), phone calls (72%), social media and video chats (66%), instant messaging apps (48%), and, to a lesser extent, emails (37%) (Statista, 2022). While the specific modes of connection differed from those identified in my study, the overall trend underscores the pivotal role of digital media in sustaining social interactions during the pandemic.

To sum up, the first article showed that the first lockdown during the COVID-19 pandemic led to increased use of digital media for maintaining social connections. The study provided insights into media appropriation, revealing how individuals integrated digital media into their everyday lives. Some engaged with media in ways that extended or transformed previous routines, generating new meanings and practices, while others reinforced existing habits and expectations. In doing so, the study contributed to understanding mediatization processes by illustrating how individuals adapted their communication and leisure behaviors on the micro level, while on the meso level, new shared practices emerged in digital environments. These practices helped maintain a sense of social connection and continuity during a period marked by physical distancing and widespread disruption of everyday routines.

2.2. Article 2: Understanding psychology students' perspective on video psychotherapy and their intention to offer it after graduation: a mixed-methods study

The second article was conducted during a calmer phase of the COVID-19 pandemic, specifically in the second year of the pandemic, during the summer of 2021. This period was characterized by low incidence rates and minimal restrictions (MDR, 2022). By that time, Germany had not fully returned to normality, and case numbers began rising again in August, approaching the fourth wave (MDR, 2021). While certain formal domains of society had to continue functioning despite the ongoing pandemic, psychotherapy serves as a key example.

In response to the pandemic restrictions, video psychotherapy (VPT) was added to the services covered by statutory health insurance (KBV, 2025a). VPT allows therapists and patients to interact through video calls with both visual and auditory communication (Meier et al., 2023). VPT has been extensively documented as clinically effective in diagnosis, emergency treatment, symptom relief, and therapy outcomes (Barak et al., 2008; Kessler et al., 2009; Bower et al., 2013; Karyotaki et al., 2017; Carlbring et al., 2018; Morriss et al., 2019; Giovanetti et al., 2022). Although VPT was widely adopted by psychotherapists during the pandemic (Buckman et al., 2021; Eichenberg et al., 2021; Ghaneirad et al., 2021), it remained unclear to what extent they are still interested in offering this format after the pandemic. In Article 2, we therefore focused on the next generation of psychotherapists: psychology students aspiring to pursue training to become licensed therapists after completing their graduation. Specifically, we examined the extent to which this format appeals to them and whether they intend to integrate and adapt it into their future professional practice.

A total of 255 psychology students, all of whom aspired to become psychotherapists after graduation, participated in the mixed-methods study. In the quantitative part, we aimed to explain the intention to use VPT by developing a new research model that integrated established predictors from two well-known intention models, complemented by relevant person-related characteristics. The findings indicated that attitudes toward VPT exhibited the strongest relationship with the intention to offer VPT. These results support previous studies that identified attitude as the strongest determinant of using e-health technology (Zayyad & Toycan, 2018; Gidenko, 2017). Furthermore, satisfaction with video calls was closely associated with the intention to integrate VPT into future practice. Students who had positive experiences with video conferencing tools, whether during the pandemic or beforehand, demonstrated a higher willingness to adopt VPT as a therapeutic approach. Further key variables

included the perceived usefulness of VPT and subjective norms. Overall, our regression model explained 73% of the variance, which is considered a high value in psychological research (Cohen, 1988).

In the qualitative part of the study, psychology students were asked about the advantages and disadvantages of VPT, as well as their preferences for learning opportunities during their studies to prepare for its application. The qualitative statements provided by students were subjected to content analysis (Mayring, 2015). The students contributed a total of 2,314 statements concerning the advantages, disadvantages, and preferred learning opportunities related to VPT, which we categorized using three distinct coding systems. Among the advantages, the most frequently cited were a low inhibition threshold, location flexibility, and the elimination of travel. In terms of disadvantages, students most often referred to a perceived lack of closeness between patient and therapist, limited access to nonverbal cues, and technical issues such as poor internet connectivity. The most frequently mentioned learning opportunities were "Training for technical skills" and "Practical application (role-playing/self-experience)." These results indicate that students particularly desire practical training. The third most frequently mentioned category, "General information about VPT," represents all learning opportunities related to the teaching and acquisition of theoretical knowledge. Overall, a balanced distribution between preferences for practical training and theoretical learning content was observed. No differences were identified between bachelor's and master's students, despite the latter group possessing more advanced knowledge of psychotherapy and being closer to graduation.

In summary, Article 2 investigated psychology students' intention to offer VPT as part of their future professional practice. In contrast to the broader and creative media appropriation processes explored in Article 1, this study focused on a structured form of media appropriation. We revealed a high degree of openness toward VPT, shaped by positive attitude, prior experiences, perceived usefulness, and social norms. In addition to the quantitative findings, the qualitative insights into perceived advantages and disadvantages of VPT provided a deeper understanding of how students reflect on the integration of digital media. These reflections highlight that media appropriation is not a purely habitual process but involves conscious negotiation, informed by both personal and professional considerations. Altogether, these findings illustrated mediatization processes in a formal setting across multiple levels: on the micro level, individual attitudes and experiences influence professional intentions; on the meso level, new training needs emerge within university programs; and on the macro level, structural change becomes visible as VPT is institutionalized and covered by public health insurance.

2.3. Article 3: Revealing schoolchildren's key situations in the use of digital media inside and outside school: A media diary study

The final two articles (Articles 3 & 4) were collected during the same period, from October to December 2021, when the fourth wave of the COVID-19 pandemic was strongly felt, and strict measures were implemented to minimize the risk of infection. However, schools and public life remained largely open (MDR, 2022). Both studies were part of the collaborative project "Ganztag-digital". The aim of our subproject was to investigate the media practices of children in lower secondary schools, with a particular focus on the all-day school setting. However, the project coincided with the peak phase of the pandemic, which imposed several constraints: The school closures in early 2020 also affected non-formal all-day school programs, and until the time of our data collection, it remained uncertain how the situation would evolve. Given this uncertainty, we decided to focus only on informal and formal media use. Another aspect affected by the pandemic was the planning of the media diaries. Originally, the media diaries were to be kept on paper, which our team would have collected on a weekly basis. The paper-based diaries would have had the advantage of higher compliance compared to the online version (Laughland & Kvavilashvili, 2018). However, as our study involves a vulnerable population, we had to obtain ethics approval[2] at an early stage and therefore opted for the online version of the media diaries.

In contrast to the previous two articles, this investigation specifically targeted children, as they create a distinct reality in the digital world (Calmbach et al., 2024; Borgstedt et al., 2014; Thumel, 2024). There are indications that, especially among children, the boundaries between formal and informal settings are increasingly blurring (Ade et al., 2023; Edwards-Groves, 2011). To capture their media appropriation, we conducted two parallel studies in eight schools in a district in North Rhine-Westphalia. Both studies were largely identical in design, with a joint baseline survey that gathered demographic data, personal variables, and media competencies. Afterward, schoolchildren completed media diaries weekly. Although similar in concept, these media diaries differed in structure between the two studies.

In Article 3, the focus was on the qualitative investigation of key situations with digital media. We examined the most significant digital media experiences of 49 schoolchildren in their daily lives and explored their nature. Through a content analysis of the schoolchildren's weekly statements, we identified a total of fifteen categories of key situations. The three most frequently mentioned categories were video games, learning, and online communication. These key situations occurred mainly in the children's leisure time and far less in the classroom. When digital media were used in class, the activities

---

[2] Ethical approval for both studies was obtained from the Ethics Committee of the Faculty of Human Sciences at the University of Cologne (reference number: KKHF0106).

were typically limited to working with office documents or searching for information. In contrast, key situations during leisure time were much more diverse and multifaceted. Furthermore, schoolchildren enjoyed discussing their experiences with others, typically with their school friends or family members. Conversations with teachers were less common, suggesting significant potential for pedagogical interventions aimed at enhancing digital competencies and reflective processes. Interestingly, most schoolchildren preferred engaging in face-to-face discussions about these key situations, rather than exchanging thoughts online. This finding aligns with Zimmermann and colleagues (2020), who found that face-to-face communication was the most common way for young people to discuss online videos.

Furthermore, the qualitative design of the study allows for insights at the individual level. Notable differences emerged among the schoolchildren. For instance, some experienced all four of their key situations in the classroom rather than during leisure time. While some schoolchildren repeatedly encountered key situations related to the same topic, others engaged with a variety of themes over the course of the study. An analysis of the qualitative statements regarding these key situations reveals that originally analog activities were carried out using digital media. This is illustrated by statements such as: "I drew a beautiful picture on my iPad with the Apple Pencil" or "I started doing more schoolwork on the PC. I feel that this way, I learn much more, and I can organize myself better than just holding a book in my hand and reading through the material." Additionally, we observed situations in which schoolchildren engaged in an activity for the first time, demonstrating a process of adaptation and learning. Examples include: "I played Fortnite for the first time at a friend's place. It was actually fun. I had watched Fortnite before, but playing it myself was more enjoyable," and "I figured out how to select people on WhatsApp in the status settings so they cannot see my status."

Overall, the study offered important insights into media appropriation processes among schoolchildren. Key situations occurred predominantly in informal settings and were more diverse than those in class. Some schoolchildren originally repurposed analog activities into digital formats, others used digital media to explore new practices. These patterns reflect a dynamic interplay of continuity and change. The study contributed to understanding mediatization in children's everyday lives by highlighting individual differences and situational variety. On the micro level, it showed how children adapt digital media across settings, and on the meso level, it highlighted the role of peer and family interactions. These dynamics reflect the evolving role of digital media in formal and informal settings. On the macro level, school as an institution provides a more regulated and structured environment for digital media use compared to the more spontaneous practices in informal settings.

2.4. Article 4: Revealing schoolchildren's key situations in the use of digital media inside and outside school: A media diary study

Similar to Article 3, this study focused on schoolchildren, particularly in comparing their formal media use in class with their informal media use during leisure time. However, unlike the previous study, Article 4 employed quantitative methods to examine digital media use and learning opportunities for acquiring digital competencies. Additionally, it allowed for a statistical analysis of temporal fluctuations in media use. While previous research often measured average daily or weekly media consumption, this approach risked oversimplification by aggregating data and overlooking structural temporal patterns (Ren et al., 2013). To minimize potential confounding effects due to school-related differences, only one of the participating schools and its schoolchildren were included in this study.

School and extracurricular learning spaces are increasingly merging (Edwards-Groves, 2011). The concept of Third Space Pedagogy (Edwards-Groves, 2011) assumes that learning processes are not limited to formal education but also take place in informal settings – such as at home, in social networks, or through independent digital exploration. Particularly in an increasingly digitalized society, the boundaries between school and private learning are becoming more blurred, as children and adolescents often use the same technologies outside of school that could also be used in class (Edwards-Groves, 2011). However, in practice, this integration does not run smoothly. While some schools implement strategies like BYOD (Parsons & Adhikari, 2016) to enable the use of personal digital media in class, media use in many schools remains highly regulated. This leads to a significant gap between the formal and informal use of digital media (Undheim, 2022). While digital media are used flexibly, individually, and often creatively in leisure time, in class it is mostly bound by specific didactic guidelines and is often used selectively (Wang et al., 2014). Furthermore, Wang and colleagues (2014) emphasize that insufficient teacher training in the integration of digital media constitutes an additional barrier. This study extends previous research by capturing schoolchildren's use of digital media across formal and informal settings over several weeks.

48 German schoolchildren aged between 10 and 16 years participated over a six-week period. The results showed that digital media were used both in class and outside of school, but with different motives and intensities. While schoolchildren used digital media in their leisure time more frequently for communication, entertainment, and learning than in school, there was no difference in the use for information-seeking between these two settings. The schoolchildren rated their overall media use as satisfactory but considered their informal use more meaningful than their use in class. This could suggest

that the use of digital media in class is not always perceived as necessary or beneficial by the schoolchildren, warranting further research. Another key finding concerns the perceived digital competence. The results suggest that schoolchildren tend to overestimate their own digital competencies, a finding consistent with earlier studies (Gutiérrez Porlán & Serrano Sánchez, 2016; Sciumbata, 2020). However, this self-assessment should be critically considered, as we relied on self-reports rather than conducting an objective competence test. Since research showed that self-assessments do not always provide an accurate reflection of actual abilities (Nygren & Guath, 2019), this limitation should be considered. Regarding learning opportunities for acquiring digital competencies, there were clear differences between the two settings of use. While some digital skills were promoted both inside and outside of school, certain areas showed differences: learning opportunities in the areas of "communication" and "reflection on digital media" were more frequently perceived outside of school, while formal digital skills, such as "working with Office programs" or "producing digital content", were more strongly promoted in class. A finding that also emerged in Article 3. Despite the learning opportunities available in both settings, self-reported progress in digital media competencies remained low throughout the study period. This may suggest that while schoolchildren are regularly exposed to digital media, they do not always perceive them as learning tools, or the content provided is not viewed as relevant competence growth. Additionally, we were able to examine whether there were temporal fluctuations in media use. The results showed that the use of digital media remained largely stable over several weeks. This suggests that digital media are more embedded in routine behaviors rather than being subject to short-term trends or situational influences. Since this aspect of fluctuations has been studied little, future research should continue with more granular time-series analyses over longer periods to better capture potential subtle changes.

Overall, Article 4 examined schoolchildren's digital media use in both formal and informal settings, revealing differing motivations and usage patterns. Children tend to find their leisure-time media use more meaningful than their school use, which is often restricted by didactic guidelines. On the micro level, the study demonstrated that media practices vary between school and leisure, with children having different needs fulfilled in each setting. On the meso level, social interactions, especially with peers, played a significant role in shaping leisure-time media use, while school use remains more isolated and goal-directed, limiting creativity. At the macro level, like Article 3, it pointed out the structural gap between formal and informal media use, which is shaped by institutional practices and curricula, and emphasizes the need for better integration of digital media in education.

3. List of publications

The survey on media usage during the COVID-19 pandemic in leisure time, the survey on VPT conducted with psychology students, and the two media diary studies with schoolchildren have been published as peer-reviewed journal articles:

1. Meier, J. V., Noel, J. A., & Kaspar, K. (2021). Alone together: Computer-mediated communication in leisure time during and after the COVID-19 pandemic. *Frontiers in Psychology, 12*, 666655. https://doi.org/10.3389/fpsyg.2021.666655

2. Meier, J. V., Noel, J. A., & Kaspar, K. (2023). Understanding psychology students' perspective on video psychotherapy and their intention to offer it after graduation: a mixed-methods study. *Frontiers in Psychology, 14*, 1234167. https://doi.org/10.3389/fpsyg.2023.1234167

3. Meier, J. V., & Kaspar, K. (2024a). Revealing schoolchildren's key situations in the use of digital media inside and outside school: A media diary study. *PLoS ONE, 9*(12), e0316567. https://doi.org/10.1371/journal.pone.0316567

4. Meier, J. V., & Kaspar, K. (2024b). How schoolchildren use digital media in class and outside of school over several weeks: a quantitative case study with media diaries. *Frontiers in Education, 9,* 1379755. https://doi.org/10.3389/feduc.2024.1379755

3.1. Article 1: Alone together: Computer-mediated communication in leisure time during and after the COVID-19 pandemic

Abstract

In spring 2020, the COVID-19 outbreak was declared a global pandemic and several lockdowns were followed in Germany. To weaken the spread of the virus, SARS-CoV-2, people were required to reduce their face-to-face contact with others. Computer-mediated communication (CMC) offers opportunities to stay in touch with important people and still meets social needs. During the first lockdown in spring 2020, we collected data from 679 participants to explore the role of CMC for social interaction in the context of leisure activities and how personal characteristics contribute to such media use. Results showed that people complied with the restriction and shifted their communication to several media, especially instant messengers and video calls. Many leisure activities were performed via CMC, especially low-key activities, such as just talking or simply spending time together. Perceived social closeness to others was positively related to the quality and quantity of CMC. The extent of leisure activities that people experienced with others via communication media was higher among younger individuals, males, and individuals with higher scores on positive state affect, extraversion, openness, and fear of missing out. The preference for solitude showed a negative relation. The motivation to continue using media for communication after the pandemic was strongly related to the quality and quantity of actual use. Low extraversion and high openness were related to higher motivation for future use. Implications such as the importance of providing fast internet and good usability of communication media as well as the relevance of increasing media literacy of people are discussed.

3.2. Article 2: Understanding psychology students' perspective on video psychotherapy and their intention to offer it after graduation: a mixed-methods study

Abstract

   Introduction: Video psychotherapy (VPT) demonstrated strong clinical efficacy in the past, with patients and psychotherapists expressing satisfaction with its outcomes. Despite this, VPT only gained full recognition from the German healthcare system during the COVID-19 pandemic. As society increasingly relies on new media, it seems likely that VPT will become even more relevant. Previous studies surveyed practicing psychotherapists and patients about advantages and disadvantages of VPT. In contrast, our approach targets a younger generation, specifically psychology students intending to become licensed practitioners after graduation.

   Methods: Our mixed-methods study was conducted in an online survey format and had two main objectives. Firstly, we investigated which person-related variables are associated with psychology students' behavioral intention to offer VPT after graduation, using a multiple regression analysis. Secondly, we explored psychology students' perception of advantages and disadvantages of VPT and identified their desired learning opportunities regarding VPT in their study program, using qualitative content analysis.

   Results: A sample of 255 psychology students participated. The multiple regression model explains 73% of inter-individual variance in the intention to offer VPT, with attitudes toward VPT showing the strongest relationship with intention to offer VPT. Expected usefulness, satisfaction with video conferencing, and subjective norm also showed significant relations. The students provided 2,314 statements about advantages, disadvantages, and desired learning opportunities, which we coded by means of three category systems. In terms of advantages, the most frequently mentioned categories were low inhibition threshold, flexibility in terms of location, and no need to travel. For disadvantages, the predominant categories included lack of closeness between patient and psychotherapist, lack of nonverbal cues, and problems with technology or internet connection. Regarding desired learning opportunities, training for technical skills, practical application through role-playing and self-experience, and general information about VPT were the most mentioned categories. In addition, we identified numerous other aspects related to these topics, reflecting a differentiated and balanced assessment of VPT.

   Discussion: We discuss the theoretical and practical implications of our findings for training the next generation of psychotherapists and outline a specific five-step plan for integrating VPT into study programs.

3.3. Article 3: Revealing schoolchildren's key situations in the use of digital media inside and outside school: A media diary study

Abstract

Introduction: Digital media have become integral to schoolchildren's lives, both within educational and non-educational settings. Educators emphasize the importance of bridging the gap between school learning and children's out-of-school activities. To identify potential variations and commonalities, we investigated key situations with digital media among lower secondary schoolchildren in Germany, aiming to determine which themes are especially relevant in different settings.

Methods: We analyzed the media usage of German schoolchildren (ages 10 to 17) in class and outside of school using a mixed-method approach with a focus on the qualitative facets of key situations. For this purpose, 49 schoolchildren from seven schools were asked to complete media diaries. Over a six-week period, they documented key situations with details on setting, emotional experiences, post-communication, social support, and self-reflection. We analyzed the key situations using content and frequency analyses.

Results: The schoolchildren reported 145 key situations, from which we developed a categorization system comprising 15 distinct categories. The most reported key situations involved "playing video games", "digital learning or homework", and "online communication or content sharing". Most key situations (115) took place outside of school, while 30 occurring in class. Schoolchildren mostly reported key situations that involved feelings of happiness and low levels of arousal. They discussed key situations more often and in greater depth with family members and school friends, and less often with school staff or non-school friends. Key situations were discussed more often face-to-face than online. Notably, schoolchildren engaged in self-reflection on their key situations, including concerns about excessive media use.

Discussion: Overall, the study provides comprehensive insights into the digital media behaviors of schoolchildren, highlighting individual differences and preferences. The discussion offers valuable implications for both educational practice and future research, particularly regarding the integration of digital media into formal educational settings.

3.4. Article 4: How schoolchildren use digital media in class and outside of school over several weeks: a quantitative case study with media diaries

Abstract

Introduction: Digital media play a central role in the lives of today's schoolchildren, immersed in an increasingly digital world. Modern technologies blur the lines between formal school settings and informal settings outside of school. Although formats like bring-your-own-device align the use in the formal setting with informal usage, a disjunction exists between children's interactions with digital technologies in their home environments and those within the educational setting. For bridging the gap between school learning and children's lives outside of school, it is essential to explore the differences and similarities in media usage in both settings.

Methods: In our case study, we examined schoolchildren's motives and evaluations of digital media usage in both settings, addressing individual needs. Additionally, we explored several dimensions of digital literacy through self-assessment, identified associated learning opportunities within and outside the school environment, and captured self-reported learning gains. We collected this data over the course of several weeks in a longitudinal design with media diaries, aiming to estimate the extent of the fluctuation.

Results: Eighty-four German schoolchildren aged between 10 and 16 years participated over a six-week period. We found differences but also similarities between media usage outside of school and in class. Digital media were less frequently used in class for entertainment, communication, and learning compared to outside of school, but no differences were reported regarding information search. Schoolchildren expressed above-average satisfaction with their media usage in both settings, but they perceived the usage of digital media outside of school as significantly more important than in class. Regarding their digital competencies, the schoolchildren displayed high self-confidence in most areas. Only in the areas of algorithms and programming, schoolchildren rated themselves as below average. While learning opportunities were identified in class and outside of school, the frequency of these opportunities varied across different digital skills. The self-reported learning gain in digital media usage remained consistently low in both settings. Across all analyses, there was no substantial temporal fluctuation in media usage over the study period.

Discussion: The findings raise crucial considerations regarding the integration of digital media in the classroom, fostering a discussion on their implications for both research and educational practices.

4. General discussion

In this dissertation, I explored how digital media use shaped social interactions and practices in informal and formal settings during the COVID-19 pandemic and how these developments relate to broader mediatization processes. Specifically, I examined how different age groups appropriated digital media across these settings. The four empirical articles offer insights into leisure, therapeutic, and educational settings, each addressing different dimensions of media appropriation and digital transformation. Article 1 focused on informal media use during the first COVID-19 lockdown. It showed that digital media were increasingly used to maintain social contact and engage in shared leisure activities. Notably, the study demonstrated both habitual and creative appropriation, with people not only using familiar tools more often (e.g., video calls, messaging apps) but also inventing new social practices with them (e.g., virtual social drinking, online sports, collaborative creative sessions). Article 2 examined the formal setting of psychotherapy and investigated psychology students' intention to offer VPT in the future. The study showed that openness to VPT is significantly related to prior experience with video calls and positive attitudes toward the medium. The qualitative data revealed that media appropriation in this context involved reflective negotiation, shaped by both personal values and perceived professional standards. Articles 3 and 4 focused on schoolchildren and addressed the use of digital media in formal and informal educational settings. Article 3 used qualitative media diaries to capture key digital experiences, while Article 4 analyzed patterns and perceived learning opportunities through quantitative data. Both studies found that digital media were used more frequently and diversely in leisure settings than in school. However, children reported similarly positive experiences in both settings, and key situations with digital media also occurred in classroom setting, suggesting commonalities despite structural differences. The four articles collectively provide a comprehensive view of mediatization and media appropriation across different settings, age groups, and purposes of digital media use. Since the four individual studies have been discussed in detail in the respective published articles, their broader implications for the two theoretical frameworks will be addressed in the following section.

While each study focused on a specific aspect, several overarching themes and patterns emerged. All four studies confirm the pervasive role of digital media in different aspects of life, aligning with the concept of deep mediatization (Hepp, 2020). With reference to the three levels of mediatization proposed by Krotz and Hepp (2012), I found empirical support for mediatization at the micro level,

whereas meso- and macro-level implications can be inferred indirectly. The micro level refers to changes in individual media usage (Krotz & Hepp, 2012), while the concept of media appropriation describes how individuals engage with and integrate media into their everyday lives (Geimer, 2011; Geimer, 2017). In all four studies, I identified findings related to both micro-level mediatization and media appropriation. For instance, Article 1 showed that individuals increasingly used digital media to maintain social contacts during the lockdown. This trend was also reflected in the surge in the number of users of video conferencing tools such as Zoom, which grew from 10 million daily users in December 2019 to a peak of 300 million in 2020 (Dubsky, 2020). Media appropriation in this setting was highly individual: while many participants relied on familiar practices (e.g., casual chatting), others creatively adapted digital media for new activities, such as virtual workouts or social drinking sessions via video call (Meier et al., 2021). In Article 2, mediatization at the micro level became visible through psychology students' intention to adapt VPT into their future professional routines. This represents a reflective form of appropriation, occurring at an early stage of a broader professional shift toward digital modalities. The students expressed general openness toward VPT. At the same time, they also articulated reservations, particularly regarding reduced emotional intimacy, technical difficulties, and limitations in nonverbal communication (Meier et al., 2023). Many of these concerns mirror those reported by practicing psychotherapists in earlier studies (Eichenberg et al., 2021). This correspondence suggests that the psychology students participating in our study demonstrated a high level of reflective engagement with the subject matter. Furthermore, the study revealed that students' attitudes toward VPT showed the strongest relationship with their intention to use it after graduation. This finding aligns with theoretical models of technology acceptance, especially the Technology Acceptance Model (Davis, 1989) and the Theory of Planned Behavior (Ajzen, 1991), which emphasize the key role of attitudes in shaping technology-related intentions. Similar associations have been reported in other health-related research (e.g., Monthuy-Blanc et al., 2013; Zayyad & Toycan, 2018). In this regard, the results of Article 2 underscore that individual attitudes constitute a central mechanism in the early stages of the media appropriation process. In Articles 3 and 4, the focus shifted to schoolchildren as a younger target audience. The findings revealed a generally high and diverse level of media use, with informal settings displaying more frequent and varied usage than formal school settings. At the same time, usage patterns and motives differed within both settings. In both studies, communication and entertainment (i.e., videogames) were the most frequently reported forms of media engagement. In contrast, media use for critical reflection or for creative purposes, such as "producing and presenting", was much less common

(Meier et al., 2024b). These results are consistent with prior studies indicating that communication remains a central motive for media use among children and adolescents (MPFS, 2018). Taken together, the findings across all four studies show that media appropriation at the micro level is neither uniform nor passive but instead a reflective and situated process. It is embedded in personal experience, shaped by age and developmental factors, individual and professional goals, and broader social expectations. These findings support the theoretical frameworks proposed by Geimer (2017) and Hepp (2020), both of which conceptualize media appropriation as a dynamic process shaped by the interplay of habit, creativity, and structural conditions. Under the exceptional circumstances of the COVID-19 pandemic, these dynamics became particularly visible, though not in the form of a linear or uniform development. The findings support Hepp's (2020) notion of deep mediatization, which posits that digital media are not just supplementary tools but are increasingly embedded in and transformative of everyday social practices.

The meso level examines how organizations or social groups integrate media into their structures, leading to new forms of collaboration and interaction (Krotz & Hepp, 2012). Although this level was not the primary focus of the empirical analyses, findings from all four studies provide insights that point toward meso-level processes of mediatization. In Article 1, this is reflected in the role of digital media in social interactions among friends and peer groups, while in Article 2, it pertains to the relationship between psychotherapists and clients. In Articles 3 and 4, meso-level dynamics become visible in the shared practices and routines of schoolchildren. Communication emerged as the most frequently mentioned motive for using digital media in both studies, especially within peer groups. Similarly, most children reported key situations related to communication. Altogether, the findings indicate that digital media enabled alternative forms of interaction across all age groups and settings, influencing everyday communication practices.

At the macro level, Krotz and Hepp (2012) identify broader societal and cultural transformations. Although none of the studies explicitly address this level, the COVID-19 pandemic triggered a paradigm shift in health insurance policies regarding the reimbursement of VPT. Prior to the pandemic, regulations had strongly limited the use of VPT. During the pandemic, however, these restrictions were lifted entirely, allowing psychotherapists to offer and bill for VPT sessions without limitation (KBV, 2025a). Shortly after the acute phase of the pandemic, the rules were tightened again, capping VPT at 30 percent of all sessions (KBV, 2025a). Recent developments, however, indicate a loosening of these limitations, with a new cap of 50 percent expected to take effect in April 2025 (KBV,

2025b). It remains uncertain how these regulations will continue to evolve, but the shifting policies reflect broader societal negotiations about the role of digital formats in healthcare. Comparable structural dynamics can be observed in the field of education. Articles 3 and 4 highlight the persistent divide between formal and informal media use among schoolchildren, shaped by institutional constraints such as curricular frameworks and didactic guidelines (e.g., Medienberatung NRW, 2020). While digital media are widely integrated into children's leisure activities, their use in schools remains limited and often goal-directed, restricting creative appropriation. This tension between formal education structures and informal media practices illustrates a broader cultural challenge in adapting institutional systems to the realities of digital media use and thus constitutes another dimension of mediatization at the macro level.

Overall, the findings across all four articles reveal that during the COVID-19 pandemic, mediatization processes unfolded on all three levels (micro, meso, and macro), shaping individual practices, social interactions, and institutional structures in response to the increasing significance of digital media. The pandemic served as a catalyst for these developments, especially in the early stages when few alternatives were available.

4.1. Limitations and future research

Despite the valuable insights provided by the four studies, several limitations should be acknowledged. First, this dissertation focused on selected areas within informal and formal settings, namely leisure, psychotherapy, and education. Given the wide range and complexity of both informal and formal domains, it was necessary to narrow the scope of investigation. This focus naturally limits the generalizability of the findings. However, the studies were not intended to develop a universal model of media appropriation. Instead, they aimed to provide in-depth insights into specific domains of digital media use such as social interaction, health care, and education, which were especially central during the COVID-19 pandemic (Monninger et al., 2023; Clemente-Suárez et al., 2021). Although the results do not cover media appropriation in all areas of life, they offer a valuable foundation for future research that could address additional settings.

Second, all studies relied on self-reported data. Self-reported questionnaires are commonly used for their ease of administration and direct insight into participants' perceptions (Salters-Pedneault, 2025), but they are susceptible to various biases and measurement errors that can undermine both the validity and reliability of the data collected. One major concern is recall bias, as participants may misremember or inaccurately report past experiences (Schmidt et al., 2023), especially when the time

frame is long, or the events were emotionally charged. Another common issue is social desirability bias, which occurs when individuals provide answers, they believe are more socially acceptable or favorable rather than reporting their true thoughts or behaviors (Berger, 2024). However, the online format of the present studies may have mitigated this bias to some extent. Research showed that online surveys can lead to higher reporting rates of socially undesirable behaviors compared to paper-based surveys, likely due to the increased sense of anonymity and reduced social pressure (Gnambs & Kaspar, 2015). Additionally, self-reports may be affected by response tendencies, such as acquiescence bias (a general tendency to agree with statements), extreme or midpoint responding, or satisficing (choosing the first acceptable answer without fully processing the question) (Berger, 2024). To address these issues, the studies included diverse question formats, both qualitative and quantitative, such as open-ended responses, Likert-scale items, or media diaries, to minimize potential biases. Especially when assessing attitudes toward and evaluations of technology and recalling key situation, the field often relies on self-reports. However, future research may benefit from utilizing standardized tests to measure media competence and learning outcomes in this area. While standardized tests could offer more objective data, they present challenges, as digital competencies and related requirements are not static but evolve over time and are influenced by age-related factors (Mejías-Acosta et a., 2024).

Third, the sample compositions in the studies were shaped by practical considerations, including participant availability and ethical constraints. Although efforts were made to include diverse age groups and educational backgrounds, certain demographic segments may have been underrepresented. This is particularly relevant considering the digital divide, which highlights that individuals from socioeconomically disadvantaged backgrounds often have limited access to digital media and lower levels of media literacy (Qaribilla et al., 2024; Yoon et al., 2020; Ma, 2021). In Study 1, this challenge was addressed by recruiting participants across various social media platforms, via mailing list and a survey platform. In Studies 3 and 4, participating schools represented a range of school types, though no schools with a vocational or non-academic track (such as the German *Hauptschule*) were included. Future research should aim for more heterogeneous samples to capture a broader spectrum of perspectives on media appropriation.

Finally, although the studies offer valuable insights into digital media appropriation, the findings should not be interpreted as a blanket endorsement of digital media use across all domains. The integration of digital technologies always involves both advantages and disadvantages, as well as opportunities and risks (Johnson, 2015; Wantanakorn, 2021). Policymakers and educators must carefully

assess the specific conditions under which digital tools are introduced to maximize their benefits while minimizing potential downsides. For instance, the phenomenon of "Zoom fatigue" illustrates the cognitive and emotional exhaustion associated with extended video conferencing (Nesher Shoshan & Wehrt, 2022), which should be considered when implementing VPT. In our research, we found that psychology students, when reflecting on VPT, identified many advantages and disadvantages, such as flexibility and accessibility on the one hand, and challenges related to emotional closeness and technology issues on the other (Meier et al., 2023). These reflections underscore the importance of understanding both the potential benefits and the drawbacks of digital media, as they play a crucial role in shaping the intention to incorporate VPT into professional practice. Similarly, while increased digital media use during children's leisure time may offer certain benefits, it also entails potential risks, including reduced physical activity (e.g., Rocka et al., 2022), sleep difficulties due to screen exposure in the evening (e.g., Hale & Guan, 2015; Uhls et al., 2017), excessive or problematic media use (Uhls et al., 2017), and psychosocial risks such as cyberbullying or social comparison in social media environments (Livingstone & Smith, 2014; Uhls et al., 2017). The accelerating development of AI-based technologies adds further complexity to this evolving landscape (Chen et al., 2020; Karan & Angadi, 2023), raising ethical and practical questions about their integration into educational and professional settings. While some institutions actively promote digital learning (Blum, 2024; Kirschner, 2023), others have adopted more restrictive measures. For example, certain schools in North Rhine-Westphalia have opted to ban smartphones entirely from school premises (Ringendahl, 2024), reflecting the broader societal debate about how to balance digital inclusion with appropriate regulations. This dissertation seeks to explore the processes of mediatization and media appropriation without claiming to fully endorse these developments, but rather to critically examine them, considering both their potential and their limitations.

I outlined some implications for future research when discussing the study's limitations. In the following, I add a few further considerations. Future research should examine the extent to which the pandemic-catalyzed changes in media appropriation endure over time. For example, although Article 2 participants expressed strong openness to VPT, it remains unclear to what extent they will actually integrate it into their own future professional practice. Similarly, the distinction between formal and informal settings in Articles 3 and 4 suggests the need for educational strategies that bridge the gap between these domains and support meaningful media appropriation in both settings (see Undheim, 2022). Furthermore, research must remain up to date with ongoing technological developments. As

artificial intelligence becomes increasingly embedded in everyday tools (e.g., Bialkova, 2024), it may give rise to new forms of media appropriation that are shaped by the specific affordances and logics of AI systems. These developments could have significant implications for education (Diaz & Nussbaum, 2024), as well as for communication and professional practice more broadly. It remains to be seen whether the integration of artificial intelligence even marks the beginning of a new, fourth wave of mediatization. Future studies should investigate how individuals and institutions engage with these technologies and how their use reshapes communication, therapeutic, and learning processes.

4.2. Conclusion

The findings of my dissertation contribute to a deeper understanding of mediatization and media appropriation across different settings and age groups during the COVID-19 pandemic. Drawing on four studies, I examined how digital media became part of everyday routines in leisure, professional, and educational environments during a time when physical contact was limited. Although the use of digital media varied depending on age group and setting, some overarching patterns emerged. The pandemic accelerated the uptake of digital media across domains of daily life and emphasized their growing importance for maintaining communication, enabling learning, and supporting professional adaptation. The four studies show that media appropriation is a flexible and setting-dependent process, shaped by individual routines, social dynamics, and institutional conditions. The ways in which adults, students, and schoolchildren engaged with digital media reflect a mixture of established habits, creative adjustments, and contextual constraints. This dissertation contributes to current debates on mediatization by showing how digital media have become embedded in various aspects of life and how their use is structured by the formal and informal nature of each setting. Beyond this, the results underline the significance of institutional structures and societal frameworks in shaping the integration of digital media, particularly in healthcare and education. The findings suggest that mediatization is a dynamic and ongoing process that was temporarily intensified by the conditions of the COVID-19 pandemic. While many of these developments were not entirely new, the pandemic amplified existing trends and made digital media use more visible and widespread. The results also point to the need for a balanced approach in dealing with digital media. Effective and meaningful media use requires critical reflection, adaptability, and attention to both opportunities and limitations. Future research should continue to investigate how digital media evolve in response to technological innovation, especially in relation to artificial intelligence, changing social expectations, and new forms of regulation. This will help to better understand the long-term implications of digital media integration for individuals and institutions.

References

Ade, L., Breiwe, R., Dehmel, L., Wolf, D. K., Rummler, K., Dander, V., Grünberger, N., & Schiefner-Rohs, M. (2023). Editorial: ENT|GRENZ|UNGEN (in) der Medienpädagogik [Editorial: (De)Boundarization in Media Education]. *MedienPädagogik: Zeitschrift für Theorie und Praxis der Medienbildung 53*. https://doi.org/10.21240/mpaed/53/2024.02.26.X

Ahlers, D. (2006). News consumption and the new electronic media. *The International Journal of Press/Politics, 11*(1), 29–52. https://doi.org/10.1177/1081180X05284317

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Akin, M. S. (2023). Communication with the social environment in multiplayer online games: The Turkey case. *International Journal of Game-Based Learning (IJGBL), 13*(1), 1–14. https://doi.org/10.4018/IJGBL.330755

Aleem, M., Sufyan, M., Ameer, I., & Mustak, M. (2023). Remote work and the COVID-19 pandemic: An artificial intelligence-based topic modeling and a future agenda. *Journal of Business Research, 154*, 113303. https://doi.org/10.1016/j.jbusres.2022.113303

Barak, A., Hen, L., Boniel-Nissim, M., & Shapira, N. (2008). A comprehensive review and a meta-analysis of the effectiveness of internet-based psychotherapeutic interventions. *Journal of Technology in Human Services, 26*, 109–160. https://doi.org/10.1080/15228830802094429

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

Bećirović, S. (2023). Challenges and barriers for effective integration of technologies into teaching and learning. In S. Bećirović (Ed.) *Digital pedagogy: The use of digital technologies in contemporary education* (pp. 123–133). Springer.

Berger, U. (2024). Ein Bias kommt selten allein: Wie (auch) Forschung Panik schürt [A bias rarely comes alone: How research (also) fuels panic]. *Psychotherapie Psychosomatik Medizinische Psychologie, 74*(11), 460–462. https://doi.org/10.1055/a-2403-9379

Bernath, J., Suter, L., Waller, G., Külling, C., Willemse, & I., Süss, D. (2020) *JAMES – Jugend, Aktivitäten, Medien – Erhebung Schweiz [Youth, activities, media - Survey Switzerland]*. Zürcher Hochschule für Angewandte Wissenschaften. https://doi.org/10.21256/zhaw-21175

Bialkova, S. (2024). *The Rise of AI User Applications Chatbots: Integration Foundations and Trends.* Springer.

Blackwell, D., Leaman, C., Tramposch, R., Osborne, C., & Liss, M. (2017). Extraversion, neuroticism, attachment style and fear of missing out as predictors of social media use and addiction. *Personality and Individual Differences, 116*, 69–72. https://doi.org/10.1016/j.paid.2017.04.039

Blum, C. (2024). *GYOD*. Retrieved April 18, 2025, from https://www.gymnasium-koeln-pesch.de/gyod

BMBF (2019). *Wissenswertes zum DigitalPakt Schule [Things to know about the DigitalPakt School]*. Retrieved April 18, 2025, from https://www.bildungsserver.de/nachricht.html?nachricht_id=652

Bundesministerium des Innern und für Heimat (2020). *Beschluss der Bundeskanzlerin und der Regierungschefinnen und Regierungschefs der Länder vom 22. März 2020 [Resolution of the Federal Chancellor and the heads of government of the federal states of March 22, 2020]*. Retrieved April 18, 2025, from https://www.bmi.bund.de/SharedDocs/downloads/DE/veroeffentlichungen/2020/corona/hinweis-einschraenkung-soziale-kontakte.html

Borgstedt, S., Roden, I., Borchard, I., Rätz, B., & Ernst, S. (2014). *DIVSI U25-Studie: Kinder, Jugendliche und junge Erwachsene in der digitalen Welt [DIVSI U25 study: Children, teenagers and young adults in the digital world].* SINUS-Institut Heidelberg. https://www.divsi.de/wp-content/uploads/2014/02/DIVSI-U25-Studie.pdf

Bowden-Green, T., Hinds, J., & Joinson, A. (2021). Personality and motives for social media use when physically distanced: a uses and gratifications approach. *Frontiers in Psychology, 12*, 607948. https://doi.org/10.3389/fpsyg.2021.607948

Bower, P., Kontopantelis, E., Sutton, A., Kendrick, T., Richards, D. A., Gilbody, S., et al. (2013). Influence of initial severity of depression on effectiveness of low intensity interventions: meta-analysis of individual patient data. *BMJ, 346*. https://doi.org/10.1136/bmj.f540

BPtk (2019). *Videobehandlung in Psychotherapie seit dem 1. Oktober 2019 abrechenbar. [Video treatment in psychotherapy billable since October 1, 2019].* Retrieved February 16, 2025, from https://www.bptk.de/videobehandlung-in-psychotherapie-seit-dem-1-oktober-2019-abrechenbar/

Breiter, A., & Ruhe, A. H. (2018). Paper versus school information management systems: Governing the figurations of mediatized schools in England and Germany. In U. Hasenbrink & A. Hepp (Eds.) *Communicative figurations: Transforming communications in times of deep mediatization* (pp. 313–339). https://doi.org/10.1007/978-3-319-65584-0_13

Buckman, J. E. J., Saunders, R., Leibowitz, J., & Minton, R. (2021). The barriers, benefits and training needs of clinicians delivering psychological therapy via video. *Behavioural and Cognitive Psychotherapy, 49*(6), 696–720. https://doi.org/10.1017/S1352465821000187

Buelen, F., Luyten, P., Claeys, H., Van Assche, E., & Van Daele, T. (2023). Usage of unguided, guided, and blended care for depression offered in routine clinical care: Lessons learned. *Internet Interventions, 34*, 100670. https://doi.org/10.1016/j.invent.2023.100670

Bundesministerium für Gesundheit (2023). *Coronavirus-Pandemie: Was geschah wann? [Coronavirus pandemic: what happened when?].* Retrieved February 16, 2025, https://www.bundesgesundheitsministerium.de/coronavirus/chronik-coronavirus.html

Bundesregierung (2023). *Corona-Schutzmaßnahmen sind ausgelaufen [Corona protection measures have expired].* Retrieved February 16, 2025, from https://www.bundesregierung.de/breg-de/aktuelles/ende-corona-massnahmen-2068856

Büttner, S. (2024). *Tablets im Unterricht - Herausfordung an Schulen in Köln und Umgebung [Tablets in the classroom - a challenge for schools in Cologne and the surrounding area].* Retrieved February 16, 2025, from https://www1.wdr.de/nachrichten/rheinland/ipad-schule-koeln-100.html

Calmbach, M., Flaig, B., Gaber, R., Gensheimer, T., Möller-Slawinski, H., Schleer, C., & Wisniewski, N. (2024). *Wie ticken Jugendliche? SINUS-Jugendstudie 2024 [What makes young people tick? SINUS Youth Study 2024].* Krüger Druck und Verlag.

Carlbring, P., Andersson, G., Cuijpers, P., Riper, H., & Hedman-Lagerlöf, E. (2018). Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. *Cognitive Behaviour Therapy, 47*(1), 1–18. https://doi.org/10.1080/16506073.2017.1401115

Castro-Martinez, A., Méndez-Domínguez, P., Sosa Valcarcel, A., & Castillo de Mesa, J. (2021). Social connectivity, sentiment and participation on twitter during covid-19. *International Journal of Environmental Research and Public Health, 18*(16), 8390. https://doi.org/10.3390/ijerph18168390

Cellini, N., Canale, N., Mioni, G., & Costa, S. (2020). Changes in sleep pattern, sense of time and digital media use during COVID-19 lockdown in Italy. *Journal of sleep research, 29*(4), e13074. https://doi.org/10.1111/jsr.13074

Chalaby, J. K. (2024). The streaming industry and the platform economy: An analysis. *Media, Culture & Society, 46*(3), 552–571. https://doi.org/10.1177/01634437231210439

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE, 8*, 75264–75278. https://doi.org/10.1109/ACCESS.2020.2988510

Clemente-Suárez, V. J., Navarro-Jiménez, E., Moreno-Luna, L., Saavedra-Serrano, M. C., Jimenez, M., Simón, J. A., & Tornero-Aguilera, J. F. (2021). The impact of the COVID-19 pandemic on social, health, and economy. *Sustainability, 13*(11), 6314. https://doi.org/10.3390/su13116314

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.) Routledge.

Czaja, S. J., Charness, N., Fisk, A. D., Hertzog, C., Nair, S. N., Rogers, W. A., & Sharit, J. (2006). Factors predicting the use of technology: Findings from the center for research and education on aging and technology enhancement (create). *Psychology and Aging, 21*(2), 333–352. https://doi.org/10.1037/0882-7974.21.2.333

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly, 13*, 319–340. https://doi.org/10.2307/249008

Diaz, B., & Nussbaum, M. (2024). Artificial intelligence for teaching and learning in schools: The need for pedagogical intelligence. *Computers & Education, 217*, 105071. https://doi.org/10.1016/j.compedu.2024.105071

Drossel, K., Eickelmann, B., Schaumburg, H., & Labusch, A. (2019). Nutzung digitaler Medien und Prädiktoren aus der Perspektive der Lehrerinnen und Lehrer im internationalen Vergleich [Use of digital media and predictors from the perspective of teachers in international comparison]. In B. Eickelmann, W. Bos, J. Gerick, F. Goldhammer, H. Schaumburg, K. Schwippert, et al. (Eds.), *ICILS 2018 – computer- und informationsbezogene Kompetenzen von Schülerinnen und Schülern im zweiten internationalen Vergleich und Kompetenzen im Bereich Computational Thinking. [ICILS 2018 - computer and information-related competencies of students in the second international comparison and competencies in Computational Thinking]* (pp. 205–240). Waxmann.

Drott, E. A. (2018). Music as a Technology of Surveillance. *Journal of the Society for American Music, 12*(3), 233–267. https://doi.org/10.1017/S1752196318000196

Dubsky, D. (2020). *Videokonferenzboom Zoom klettert auf 300 Millionen Nutzer pro Tag [Zoom video conferencing boom climbs to 300 million users per day].* Retrieved April 4, 2025, from https://www.connect-professional.de/software-services/zoom-klettert-auf-300-millionen-nutzer-pro-tag.299389.html

Duvekot, S., Valgas, C. M., de Haan, Y., & de Jong, W. (2024). How youth define, consume, and evaluate news: Reviewing two decades of research. *New Media & Society,* Onlinefirst. https://doi.org/10.1177/14614448241262809

El-Moghazi, M. (2023). Beyond the Pandemic? Exploring the Impact of COVID-19 on Spectrum Use and Management. In J. Whalley, V. Stocker, & W. Lehr (Eds.) *Beyond the Pandemic? Exploring the Impact of COVID-19 on Telecommunications and the Internet (*pp. 169–193). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80262-049-820231008

Edwards-Groves, C. J. (2011). The multimodal writing process: changing practices in contemporary classrooms. *Language and Education, 25*, 49–64. https://doi.org/10.1080/09500782.2010.523468

Eichenberg, C., Raile, P., Becher, S., Dapeci, C., Pacher, J., Rach, P. J. M., et al. (2021). Online und Telepsychotherapie [Online and telepsychotherapy]. *Psychotherapie-Wissenschaft, 11*(2), 71–79. https://doi.org/10.30820/1664-9583-2021-2-71

Eickelmann, B., Schaumburg, H., Drossel, K., & Lorenz, R. (2014). Schulische Nutzung von neuen Technologien in Deutschland im internationalen Vergleich. [School use of new technologies in Germany in international comparison]. In W. Bos, B. Eickelmann, J. Gerick, F. Goldhammer, H. Schaumburg, K. Schwippert, et al. (Eds.), *ICILS 2013 – computer- und informationsbezogene Kompetenzen von Schülerinnen und Schülern in der 8. Jahrgangsstufe im internationalen Vergleich [ICILS 2013 -computer and Information-Related Competences of Pupils in Year 8 in International Comparison]* (pp. 197–229). Waxmann.

Fallik, O., Rosenfeld, S., & Eylon, B.-S. (2013). School and out-of-school science: a model for bridging the gap. *Studies in Science Education, 49*(1), 69–91. https://doi.org/10.1080/03057267.2013.822166

Gabbiadini, A., Baldissarri, C., Durante, F., Valtorta, R. R., De Rosa, M., & Gallucci, M. (2020). Together apart: the mitigating role of digital communication technologies on negative affect during the COVID-19 outbreak in Italy. *Frontiers in Psychology, 11,* 554678. https://doi.org/10.3389/fpsyg.2020.554678

Gao, J., Kenyon, B., Choi, Y., Echavarria, I., Leichter, H. J., & Qiu, L. (2022). Blurred Boundaries: An Examination of Learning and Working in the Home during the COVID-19 Pandemic. *Current Issues in Comparative Education, 24*(2), 31–49. https://doi.org/10.52214/cice.v24i2.9415

Garmy, P., Nyberg, P., & Jakobsson, U. (2012). Sleep and television and computer habits of Swedish school-age children. *The Journal of School Nursing, 28*(6), 469–476. https://doi.org/10.1177/1059840512444133

Geimer, A. (2011). Das Konzept der Aneignung in der qualitativen Rezeptionsforschung. Eine wissenssoziologische Präzisierung im Anschluss an die und in Abgrenzung von den Cultural Studies [The concept of appropriation in qualitative reception research. A sociological specification in the context of and in contrast to cultural studies]. *Zeitschrift für Soziologie, 40*(4), 191–207. https://doi.org/10.1515/zfsoz-2011-0404

Geimer, A. (2017). Aneignung aus medien-, wissens-und kultursoziologischer Perspektive [Appropriation from a media, knowledge and cultural sociology perspective]. In O. Musenberg (Ed.): *Kultur – Geschichte - Behinderung, Band 2: Die eigensinnige Aneignung von Geschichte [Culture - History - Disability, Volume 2: The Stubborn Appropriation of History] (*pp. 41–60). Athena-Verlag.

Gellmers, J., & Yan, N. (2023). Digital leisure engagement and positive outcomes in the workplace: A systematic literature review. *International Journal of Environmental Research and Public Health, 20*(2), 1014. https://doi.org/10.3390/ijerph20021014

Gergle, D. (2018). Discourse processing in technology-mediated environments. In M. F. Schober, D. N. Rapp, & M. A. Britt (Eds.), *The Routledge handbook of discourse processes* (2nd ed., pp. 191–221). Routledge. https://doi.org/10.4324/9781315687384-12

Gerick, J., Eickelmann, B., & Bos, W. (2017). School-level predictors for the use of ICT in schools and students' CIL in international comparison. *Large-scale Assessments in Education, 5*(5). https://doi.org/10.1186/s40536-017-0037-7

Ghaneirad, E., Groba, S., Bleich, S., & Szycik, G. R. (2021). Nutzung der ambulanten Psychotherapie über die Videosprechstunde [Use of outpatient psychotherapy via the video consultation]. *Psychotherapeut, 66*(3), 240–246. https://doi.org/10.1007/s00278-021-00497-3

Gidenko, Y. L. (2017). *Telemental health care services acceptance among primary care physicians.* Retrieved February 16, 2025, from https://www.proquest.com/openview/ea20de8a3486d6fa9b2519baa3f2a339/1?pq

Giovanetti, A. K., Punt, S. E., Nelson, E.-L., & Ilardi, S. S. (2022). Teletherapy versus in-person psychotherapy for depression: a meta-analysis of randomized controlled trials. *Telemedicine e-Health, 28*(8), 1–13. https://doi.org/10.1089/tmj.2021.0294

Gnambs, T., & Kaspar, K. (2015). Disclosure of sensitive behaviors across self-administered survey modes: a meta-analysis. *Behavior research methods, 47*, 1237–1259. https://doi.org/10.3758/s13428-014-0533-4

Gutiérrez Porlán, I., & Serrano Sánchez, J. L. (2016). Evaluation and development of digital competence in future primary school teachers at the University of Murcia. *Journal of New Approaches in Educational Research, 5*, 51–56. https://doi.org/10.7821/naer.2016.1.152

Guzzetti, B., & Lesley, M. (2015). *Handbook of research on the societal impact of digital media.* IGI Global.

Haggerty, E. (2017). Healthcare and digital transformation. *Network Security, 2017*(8), 7–11. https://doi.org/10.1016/S1353-4858(17)30081-8

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: a systematic literature review. *Sleep medicine reviews, 21*, 50–58. https://doi.org/10.1016/j.smrv.2014.07.007

Hanley, T. (2020). Researching online counselling and psychotherapy: The past, the present and the future. *Counselling and Psychotherapy Research, 21*(3), 493–497. https://doi.org/10.1002/capr.12385

Harenberg, M. (2024). *Social Media als Nachrichtenquelle der Generation Z [Social media as a news source for Generation Z].* Retrieved April 30, 2025 from https://mediennetzwerk-bayern.de/netzwerkwissen-social-media-nachrichtenquelle-generation-z/

Hartenbach, F. (2020). *Bring your own Device – digitale Medien in der Schule richtig einsetzen [Bring your own device - using digital media correctly at school].* Retrieved February 16, 2025, from https://digitale-schule.blog/digitaler-unterricht/bring-your-own-device-digitale-medien-in-der-schule-richtig-einsetzen/

Haug, C. (2022). *Corona-Pandemie endet – Deutschland erlebt erste Endemie [Corona pandemic ends - Germany experiences first endemic].* Retrieved February 16, 2025, from https://www.mdr.de/wissen/ende-corona-pandemie-weltweit-zweitausenddreiundzwanzig-deutschland-endemischer-zustand-100.html

Helweg-Joergensen, S., Schmidt, T., Lichtenstein, M. B., & Pedersen, S. S. (2019). Using a mobile diary app in the treatment of borderline personality disorder: mixed methods feasibility study. *JMIR formative research, 3*(3), e12852. https://doi.org/10.2196/12852

Hemmingsson, H. (2015). Trendsetters and followers: Disabled young people's computer use during leisure time. In A. Twun-Danso Imoh, N. P. Thomas, S. Spryou, A. Dar (Eds.) *Studies in Childhood and Youth* (pp. 167–178). Springer.

Hepp, A. (2020). *Deep mediatization.* Routledge. https://doi.org/10.4324/9781351064903

Hillmayr, D., Ziernwald, L., Reinhold, F., Hofer, S. I., & Reiss, K. M. (2020). The potential of digital tools to enhance mathematics and science learning in secondary schools: A context-specific meta-analysis. *Computers & Education, 153*, 103897. https://doi.org/10.1016/j.compedu.2020.103897

Irion, T, & Peschel, M. (2016). Grundschule und neue Medien - Neue Entwicklungen [Elementary school and new media - new developments]. In: M. Peschel, & T. Irion. *Neue Medien in der*

Grundschule 2.0. Grundlagen - Konzepte – Perspektiven [New media in elementary school 2.0. Basics - concepts – perspectives] (pp. 11–15). Grundschulverband

Ismail, N. (2015). The integration of new media in schools: Comparing policy with practice. *International Education Studies, 8(12),* 231–240. https://doi.org/10.5539/ies.v8n12p231

It-Daily (2023). *Wie digitale Technologien unsere Arbeitsweise verändern [How digital technologies are changing the way we work].* Retrieved February 16, 2025, from https://www.it-daily.net/it-management/digitalisierung/wie-digitale-technologien-unsere-arbeitsweise-veraendern

Johnson, G. M. (2015). Young children at risk of digital disadvantage. In K. L. Heider & M. R. Jalongo (eds.) *Young children and families in the information age* (pp. 255–275). Springer.

Jungblut, M. (2020). *Chronologie eines Schuljahrs in der Coronakrise [Chronology of a school year during the coronavirus crisis].* Retrieved February 16, 2025, from https://www.deutschlandfunk.de/rueckblick-2020-chronologie-eines-schuljahrs-in-der-100.html

Karan, B., & Angadi, G. R. (2023). Potential risks of artificial intelligence integration into school education: A systematic review. *Bulletin of Science, Technology & Society, 43*, 67–85. https://doi.org/10.1177/02704676231224705

Karyotaki, E., Riper, H., Twisk, J., Hoogendoorn, A., Kleiboer, A., Mira, A., et al. (2017). Efficacy of self-guided internet-based cognitive behavioral therapy in the treatment of depressive symptoms: A meta-analysis of individual participant data. *JAMA Psychiatry 74*(4), 351–359. https://doi.org/10.1001/jamapsychiatry.2017.0044

Kaspar, K. (2020). Motivations for Social Distancing and App Use as Complementary Measures to Combat the COVID-19 Pandemic: Quantitative Survey Study. *Journal of Medical Internet Research, 22*(8), e21613. https://doi.org/10.2196/21613

Kaspar, K., & Fuchs, L. A. M. (2021). Who likes what kind of news? The relationship between characteristics of media consumers and news interest. *Sage Open, 11*(1), 1–12. https://doi.org/10.1177/21582440211003089

Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *Public Opinion Quarterly, 37*, 509–523. https://doi.org/10.1086/268109

Kawachi I., & Berkman L. F. (2001). Social ties and mental health. *Journal of Urban Health, 78*(3), 458–467. https://doi.org/10.1093/jurban/78.3.458

KBV (2025a). *Psychotherapie als Videosprechstunde [Psychotherapy as a video consultation].* Retrieved February 16, 2025, from https://www.kbv.de/html/videosprechstunde.php

KBV (2025b). *Videosprechstunden in noch größerem Umfang möglich - KBV und Kassen vereinbaren Maßnahmenpaket [Video consultations possible to an even greater extent - KBV and health insurance funds agree on package of measures].* Retrieved April 16, 2025, from https://www.kbv.de/html/1150_74375.php

Kemp, S. (2020). *Report: Most important data on digital audiences during coronavirus.* Retrieved February 16, 2025, from https://thenextweb.com/news/report-most-important-data-on-digital-audiences-during-coronavirus

Kerekes, N., Bador, K., Sfendla, A., Belaatar, M., Mzadi, A.-E., Jovic V., et al. (2021). Changes in Adolescents' Psychosocial Functioning and Well-Being as a Consequence of Long-Term COVID-19 Restrictions. *International journal of environmental research and public health, 18*(16*),* 8755. https://doi.org/10.3390/ijerph18168755

Kessler, D., Lewis, G., Kaur, S., Wiles, N., King, M., Weich, S., et al. (2009). Therapist-delivered internet psychotherapy for depression in primary care: a randomised controlled trial. *Lancet 374*, 628–634. https://doi.org/10.1016/S0140-6736(09)61257-5

Kirschner, S. (2023). *Statt Schulheft: Immer mehr Tablets an Bayerns Schulen [Instead of exercise books: More and more tablets in Bavaria's schools].* Retrieved February 16, 2025, from https://www.br.de/nachrichten/bayern/statt-schulheft-immer-mehr-tablets-an-bayerns-schulen,T6pkYda

Koeze, E., & Popper, N. (2020). *The virus has changed the way we internet.* Retrieved February 16, 2025, from https://www.nytimes.com/interactive/2020/04/07/technology/coronavirus-internet-use.html?action=click&module=Editors%20Picks&pgtype=Homepage

Krotz, F. (2001). *Die Mediatisierung kommunikativen Handelns. Der Wandel von Alltag und sozialen Beziehungen, Kultur und Gesellschaft durch die Medien [The mediatization of communicative action. The transformation of everyday life and social relationships, culture and society through the media]*. Westdeutscher Verlag.

Krotz, F. (2007). *Mediatisierung: Fallstudien zum Wandel von Kommunikation [Mediatization: Case studies on the transformation of communication].* VS Verlag für Sozialwissenschaften.

Krotz, F. (2016). Wandel von sozialen Beziehungen, Kommunikationskultur und Medienpädagogik. Thesen aus der Perspektive des Mediatisierungsansatzes. In: M. Brüggemann, T. Knaus, & D. M. Meister (Eds.). *Kommunikationskulturen in digitalen Welten* (pp. 19–42). GMK

Krotz, F., & Hepp, A. (2012). *Mediatisierte Welten. Forschungsfelder und Beschreibungsansätze [Mediatized worlds. Research fields and descriptive approaches]*. SpringerVS.

Kuchenbuch, M., D'Onofrio, G., Wirrell, E., Jiang, Y., Dupont, S., Grinspan, Z. M., et al. (2020). An accelerated shift in the use of remote systems in epilepsy due to the COVID-19 pandemic. *Epilepsy & Behavior, 112*, 107376. https://doi.org/10.1016/j.yebeh.2020.107376

Kumpulainen, K., Krokfors, L., Lipponen, L., Tissari, V., Hilppö, J., & Rajala, A. (2010). *Learning bridges: Toward participatory learning environments.* Helsinki University Print.

Laughland, A., & Kvavilashvili, L. (2018). Should participants be left to their own devices? Comparing paper and smartphone diaries in psychological research. *Journal of Applied Research in Memory and Cognition, 7*(4), 552–563. https://doi.org/10.1016/j.jarmac.2018.09.002

Li, K.C., & Wong, B. T.-M. (2020). Social Media in Higher Education: A Review of Their Uses, Benefits and Limitations. In: LK. Lee, L. H. U, F. L. Wang, S. K. S. Cheung, O. Au, & K. C. Li (Eds) *Technology in Education. Innovations for Online Teaching and Learning* (pp. 248–257). Springer. https://doi.org/10.1007/978-981-33-4594-2_21

Livingstone, S., & Smith, P. K. (2014). Annual research review: Harms experienced by child users of online and mobile technologies: The nature, prevalence and management of sexual and aggressive risks in the digital age. *Journal of child psychology and psychiatry, 55*(6), 635–654. https://doi.org/10.1111/jcpp.12197

López-Sintas, J., Rojas-DeFrancisco, L., & García-Álvarez, E. (2017). Home-based digital leisure: Doing the same leisure activities, but digital. *Cogent Social Sciences, 3*(1), 1309741. https://doi.org/10.1080/23311886.2017.1309741

Landeszentrale für politische Bildung Baden-Württemberg (2023). *Coronavirus - COVID 19 Die Pandemie in Deutschland [Coronavirus - COVID 19 The pandemic in Germany].* Retrieved February 16, 2025, from https://www.lpb-bw.de/coronavirus-covid-19

Lui, J. H. L., Marcus, D. K., & Barry, C. T. (2017). Evidence-Based Apps? A Review of Mental Health Mobile Applications in a Psychotherapy Context. *Professional Psychology: Research and Practice. 48*(3), 199–210. http://dx.doi.org/10.1037/pro0000122

Lunt, P., & Livingstone, S. (2016). Is 'mediatization' the new paradigm for our field? A commentary on Deacon and Stanyer (2014, 2015) and Hepp, Hjarvard and Lundby (2015). *Media, Culture & Society, 38*(3), 462–470. https://doi.org/10.1177/0163443716631288

Ma, J. K. H. (2021). The digital divide at school and at home: A comparison between schools by socioeconomic level across 47 countries. *International Journal of Comparative Sociology, 62*(2), 115–140. https://doi.org/10.1177/00207152211023540

Maniou, T. A., & Seitanidis, I. (2018). Television beyond digitalization: Economics, competitiveness and future perspectives. *International Journal of Digital Television, 9*(2), 105–123. https://doi.org/10.1386/jdtv.9.2.105_1

Marion, T. J., & Fixson, S. K. (2021). The Transformation of the Innovation Process: How Digital Tools are Changing Work, Collaboration, and Organizations in New Product Development. *Journal of Product Innovation Management, 38*(1), 192–215. https://doi.org/10.1111/jpim.12547

Martinez, C. (2022). Relational components in the use of digital devices and apps: Mapping media appropriation processes among older adults in Sweden. *Nordicom Review, 43*(2), 214–233. https://doi.org/10.2478/nor-2022-0013

Mayring, P. (2015). *Qualitative Inhaltsanalyse: Grundlagen und Techniken [Qualitative content analysis: Basics and techniques].* Beltz.

MDR (2020). 2020: *Die Chronik der Corona-Krise [2020: The chronicle of the corona crisis].* Retrieved February 16, 2025, from https://www.mdr.de/nachrichten/jahresrueckblick/corona-chronik-chronologie-coronavirus-102.html

MDR (2021). *Das war der August 2021 [That was August 2021].* Retrieved February 16, 2025, from https://www.mdr.de/nachrichten/jahresrueckblick/chronik-august-zweitausendeinundzwanzig-ereignisse-nachrichten-100.html

MDR (2022). *Die Chronik der Corona-Krise 2021 [The chronicle of the corona crisis 2021].* Retrieved February 16, 2025, from https://www.mdr.de/nachrichten/jahresrueckblick/corona-nachrichten-jahresrueckblick-chronologie-100.html

MDR (2023). *Die Chronik der Corona-Krise 2022 [The chronicle of the corona crisis 2022].* Retrieved February 16, 2025, from https://www.mdr.de/nachrichten/jahresrueckblick/corona-chronologie-jahresrueckblick-102.html

Medienberatung NRW (2020). *Medienkompetenzrahmen NRW [Media competence framework of NRW].* Retrieved February 16, 2025, from https://medienkompetenzrahmen.nrw/medienkompetenzrahmen-nrw/

Meier, J. V., Noel, J. A., & Kaspar, K. (2021). Alone together: Computer-mediated communication in leisure time during and after the COVID-19 pandemic. *Frontiers in Psychology, 12*, 666655. https://doi.org/10.3389/fpsyg.2021.666655

Meier, J. V., Noel, J. A., & Kaspar, K. (2022). Schlüsselmomente mit digitalen Medien: Eine qualitative Medientagebuchstudie mit Jugendlichen [Conference poster]. In C. Bermeitlinger, & W. Greve (Eds.) *52. Kongress der Deutschen Gesellschaft für Psychologie – Abstracts [52st Conference of the German Psychological Society]*. View Science

Meier, J. V., Noel, J. A., & Kaspar, K. (2023). Understanding psychology students' perspective on video psychotherapy and their intention to offer it after graduation: a mixed-methods study. *Frontiers in Psychology, 14*, 1234167. https://doi.org/10.3389/fpsyg.2023.1234167

Meier, J. V., & Kaspar, K. (2024a). Revealing schoolchildren's key situations in the use of digital media inside and outside school: A media diary study. *PLoS ONE, 9*(12), e0316567. https://doi.org/10.1371/journal.pone.0316567

Meier, J. V., & Kaspar, K. (2024b). How schoolchildren use digital media in class and outside of school over several weeks: a quantitative case study with media diaries. *Frontiers in Education, 9,* 1379755. https://doi.org/10.3389/feduc.2024.1379755

Mejías-Acosta, A., D'Armas Regnault, M., Vargas-Cano, E., Cárdenas-Cobo, J., & Vidal-Silva, C. (2024). Assessment of digital competencies in higher education students: development and validation of a measurement scale. *Frontiers in Education, 9*, 1497376. https://doi.org/10.3389/feduc.2024.1497376

Molina, P., Gómez-Gonzalvo, F., & Valenciano-Valcárcel, J. (2025). The sportization of esports and its implications in the near future of sport. *Sport, Ethics and Philosophy, 19*, 20–34. https://doi.org/10.1080/17511321.2024.2324390

Monninger, M., Aggensteiner, P.-M., Pollok, T. M., Kaiser, A., Reinhard, I., Hermann, A., et al. (2023). The importance of high quality real-life social interactions during the COVID-19 pandemic. *Scientific Reports, 13*(1), 3675. https://doi.org/10.1038/s41598-023-30803-9

Monthuy-Blanc, J., Bouchard, S., Maïano, C., & Seguin, M. (2013). Factors influencing mental health providers' intention to use telepsychotherapy in First Nations communities. *Transcultural psychiatry, 50*(2), 323–343. https://doi.org/10.1177/1363461513487665

Morriss, R., Patel, S., Malins, S., Guo, B., Higton, F., James, M., et al. (2019). Clinical and economic outcomes of remotely delivered cognitive behaviour therapy versus treatment as usual for repeat unscheduled care users with severe health anxiety: a multicentre randomised controlled trial. *BMC Medicine, 17*, 1–13. https://doi.org/10.1186/s12916-019-1253-5

MPFS (2018). *JIM-Studie 2018. Basisuntersuchung zum Medienumgang 12-bis 19-Jähriger [JIM study 2018: A basic study on media use among 12-to 19-year-olds].* Retrieved February 16, 2025, from https://mpfs.de/studie/jim-studie-2018/

MPFS (2024). *JIM-Studie 2024. Basisuntersuchung zum Medienumgang 12-bis 19-Jähriger [JIM study 2018: A basic study on media use among 12-to 19-year-olds].* Retrieved February 16, 2025, from https://mpfs.de/studie/jim-studie-2024/

Nesher Shoshan, H., & Wehrt, W. (2022). Understanding "Zoom fatigue": A mixed-method approach. *Applied Psychology, 71*(3), 827–852. https://doi.org/10.1111/apps.12360

Nickel, J., & Ganguin, S. (2023). *Medienkompetenz und Schule [Medialiteracy and school].* Retrieved February 11, 2025, from https://www.bpb.de/shop/zeitschriften/izpb/medienkompetenz-355/539983/medienkompetenz-und-schule/

Nygren, T., & Guath, M. (2019). Swedish teenagers' difficulties and abilities to determine digital news credibility. *Nordicom Review. 40*(1), 23–42. https://doi.org/10.2478/nor-2019-0002

Orhan, M. A., Castellano, S., Khelladi, I., Marinelli, L., & Monge, F. (2021). Technology distraction at work. Impacts on self-regulation and work engagement. *Journal of Business Research, 126*, 341–349. https://doi.org/10.1016/j.jbusres.2020.12.048

Parsons, D., & Adhikari, J. (2016). Bring your own device to secondary school: the perceptions of teachers, students and parents. *The Electronic Journal of e-Learning, 14*(1), 66–80.

Pennington, N. (2021). Communication outside of the home through social media during COVID-19. *Computers in Human Behavior Reports, 4,* 100118. https://doi.org/10.1016/j.chbr.2021.100118

Pires, F., Masanet, M.-J., Tomasena, J. M., & A Scolari, C. (2022). Learning with YouTube: Beyond formal and informal through new actors, strategies and affordances. *Convergence, 28*(3), 838–853. https://doi.org/10.1177/13548565211020545

Polyakova, V., Streltsova, E., Iudin, I., & Kuzina, L. (2024). Irreversible effects? How the digitalization of daily practices has changed after the COVID-19 pandemic. *Technology in Society, 76*, 102447. https://doi.org/10.1016/j.techsoc.2023.102447

Priller-Gebhardt, L. (2023). Wie die Digitalisierung unsere Sprache erweitert [How digitalization is expanding our language]. Retrieved February 16, 2025, from https://www.alumniportal-deutschland.org/de/magazin/deutschland/veraenderung-der-deutschen-sprache/wie-digitalisierung-unsere-sprache-erweitert/

Qaribilla, R., Indrajaya, K., & Mayawati, C. I. (2024). Digital Learning Inequality: The Role of Socioeconomic Status in Access to Online Education Resources. *International Journal of Social and Human, 1*(2), 51–58. https://doi.org/10.59613/55gdmt96

Rainie, L. (2020). The Everything-ness and the More-ness of the Internet: How Digital Is Different From Other Media. *International Journal of Communication, 14*, 5860–5879.

Rawolle, S., & Lingard, B. (2014) Mediatization and education: a sociological account. In K. Lundby (Ed.) *Mediatization of Communication*. De Gruyter Mouton. https://doi.org/10.1515/9783110272215.595

Ren, F., Kwan, M.-P., & Schwanen, T. (2013). Investigating the temporal dynamics of internet activities. *Time & Society. 22*(2), 186–215. https://doi.org/10.1177/0961463X11421359

Ringendahl, A. (2024). Immer mehr Kölner Schulen verbannen Handys aus dem Klassenzimmer [More and more schools in Cologne are banning cell phones from the classroom]. Retrieved April 20, 2025, from https://www.ksta.de/koeln/immer-mehr-koelner-schulen-verbannen-handys-aus-dem-klassenzimmer-896695

Rocka, A., Jasielska, F., Madras, D., Krawiec, P., & Pac-Kożuchowska, E. (2022). The impact of digital screen time on dietary habits and physical activity in children and adolescents. *Nutrients, 14*(14), 2985. https://doi.org/10.3390/nu14142985

Rüth, M., & Kaspar, K. (2021). Commercial video games in school teaching: Two mixed methods case studies on students' reflection processes. *Frontiers in Psychology, 11,* 594013. https://doi.org/10.3389/fpsyg.2020.594013

Rüth, M., Schmelzer, M., Burtniak, K., & Kaspar, K. (2023). Commercial exergames for rehabilitation of physical health and quality of life: a systematic review of randomized controlled trials with adults in unsupervised home environments. *Frontiers in Psychology, 14*, 1155569. https://doi.org/10.3389/fpsyg.2023.1155569

Salame, I. I., Gomes, V., Moreira, M. K., & Jihad, H. (2023). Impact of the digitization of teaching on undergraduate students as the result of the Covid-19 pandemic and transitioning to online learning. *International Journal of Instruction, 16*(3), 343–362. https://doi.org/10.29333/iji.2023.16319a

Salters-Pedneault, K. (2025). *The Use of Self-Report Data in Psychology. How researchers get insights straight from the source*. Retrieved April 20, 2025, from https://www.verywellmind.com/definition-of-self-report-425267

Saxena, A., & Bansal, S. (2023). Paid and unpaid digital contents and media science: Ethical consideration. In *AIP Conf. Proc. 2721,* 070011. AIP Publishing. https://doi.org/10.1063/5.0155022

Sciumbata, F. (2020). Students of humanities and digital skills: a survey on Italian university students. *Umanistica Digitale, 4*, 7–27. https://dx.doi.org/10.6092/issn.2532-8816/9877

Schmidt, P., Jendryczko, D., Zurbriggen, C. L. A., & Nussbeck, F. W. (2023). Recall bias of students' affective experiences in adolescence: The role of personality and internalizing behavior. *Journal of Adolescence*, *95*(5), 893–906. https://doi.org/10.1002/jad.12162

Sheth, J. (2020). Impact of COVID-19 on consumer behavior: Will the old habits return or die? *Journal of Business Research, 117,* 280–283. https://doi.org/10.1016/j.jbusres.2020.05.059

Sokolic, D. (2022). Remote work and hybrid work organizations. In *Economic and Social Development 78th International Scientific Conference on Economic and Social Development.* Retrieved February 16, 2025, from https://www.esd-conference.com/upload/book_of_proceedings/Book_of_Proceedings_esdAveiro2022_Online.pdf

Statista (2021). *Growth of monthly active users of selected social media platforms worldwide from 2019 to 2021.* Retrieved February 16, 2025, from https://www.statista.com/statistics/1219318/social-media-platforms-growth-of-mau-worldwide/

Statista (2022). *Technologies used by teens in the United States to stay connected to friends and family the no longer see in-person during the coronavirus pandemic in April 2020.* Retrieved February 16, 2025, from https://www.statista.com/statistics/1115305/technology-used-by-teens-stay-connected-during-coronavirus-pandemic-usa/

Statista (2024). *Anzahl der Smartphone-Nutzer* in Deutschland in den Jahren 2009 bis 2023 und Prognose bis 2030 [Number of smartphone users* in Germany in the years 2009 to 2023 and forecast up to 2030].* Retrieved February 16, 2025, from https://de.statista.com/statistik/daten/studie/198959/umfrage/anzahl-der-smartphonenutzer-in-deutschland-seit-2010/

Tanta, I., Mihovilovic, M., & Sablic, Z. (2014). Uses and gratifications theory – why adolescents use Facebook? *Medijska Istrazivanja 20*, 85–110.

Thumel, M. (2024). *Handeln im Feld der Medien- und informatischen Bildung [Acting in the field of media and information technology education]*. OAPublishing Collective. https://doi.org/10.21240/mpaed/diss.mt/2024.05.02.X

Uhls, Y. T., Ellison, N. B., & Subrahmanyam, K. (2017). Benefits and costs of social media in adolescence. *Pediatrics, 140*, 67–70. https://doi.org/10.1542/peds.2016-1758E

Undheim, M. (2022). Children and teachers engaging together with digital technology in early childhood education and care institutions: a literature review. *European Early Childhood Education Research Journal, 30,* 472–489. https://doi.org/10.1080/1350293X.2021.1971730

Wang, S.-K., Hsu, H.-Y., Campbell, T., Coster, D. C., & Longhurst, M. (2014). An investigation of middle school science teachers and students use of technology inside and outside of classrooms: considering whether digital natives are more technology savvy than their teachers. *Educational Technology Research and Development, 62*, 637–662. https://doi.org/10.1007/s11423-014-9355-4

Wantanakorn, P. (2021). Digital Media and Child Development in the COVID-19 Pandemic: Benefits, Disadvantages, and Effective Approaches. *Journal of the Medical Association of Thailand, 104*(9), p1563. https://doi.org/10.35755/jmedassocthai.2021.09.12543

Weißheimer S., & Frömming, G. (2024). *Der Digitalpakt: Chancen und Herausforderungen für die digitale Bildung in Deutschland [The Digital Pact: Opportunities and challenges for digital education in Germany].* Retrieved February 16, 2025, from https://www.erasmus-stiftung-brandenburg.de/blog/post/67713f8bb17c09c3a7309250

Whiting, A., & Williams, D. (2013). Why people use social media: a uses and gratifications approach. *Qualitative Market Research, 16*(4), 362–369. https://doi.org/10.1108/QMR-06-2013-0041

Wildermuth, N. (2008). The work of the imagination: young people's media appropriation in three cities. In K. T. Hansen (Ed.) *Youth and the City in the Global South.* Indiana University Press,

Xie, I. (2008). *Interactive information retrieval in digital environments.* IGI Publishing.

Xu, W. (2015). Digital content & digital technology Interactivity: Media convergence and digital media. In T.-H. Meen, S. Prior & A. L. (Eds.) *Innovation in Design, Communication and Engineering*. CRC Press. https://doi.org/10.1201/b18737

Yan, Z. (2020). Unprecedented pandemic, unprecedented shift, and unprecedented opportunity. *Human behavior and emerging technologies, 2*(2), 110–112. https://pmc.ncbi.nlm.nih.gov/articles/PMC7228313/

Yoon, H., Jang, Y., Vaughan, P. W., & Garcia, M. (2020). Older adults' internet use for health information: Digital divide by race/ethnicity and socioeconomic status. *Journal of Applied Gerontology, 39*(1), 105–110. https://doi.org/10.1177/0733464818770772

Ytre-Arne, B. (2023). *Media use in digital everyday life.* Emerald Publishing. https://doi.org/10.1108/9781802623833

Zayyad, M. A., & Toycan, M. (2018). Factors affecting sustainable adoption of e-health technology in developing countries: an exploratory survey of Nigerian hospitals from the perspective of healthcare professionals. *PeerJ, 6,* e4436. https://doi.org/10.7717/peerj.4436

Zehrt, W. (2020). *Deutschland im Ausnahmezustand - Die Corona-Chronik* [*Germany in a state of emergency - The Corona Chronicle*]. BoD – Books on Demand.

Zimmermann, D., Noll, C., Gräßler, L., Hugger, K.-U., Braun L. M., Nowak, T., & Kaspar, K. (2020). Influencers on YouTube: A quantitative study on young people's use and perception of videos about political and societal topics. *Current Psychology, 41,* 6808–6824. https://doi.org/10.1007/s12144-020-01164-7

Zhang, L., Zhang, H., & Wang, K. (2020). Media literacy education and curriculum integration: A literature review. *International Journal of Contemporary Education, 3*(1), 55–64. https://doi.org/10.11114/ijce.v3i1.4769

Statement

The four articles included in this dissertation have already been published in peer-reviewed academic journals. Additionally, I presented partial results from Article 3 at the DGPs Congress in 2022. A detailed breakdown of the contributions of each author to each article is provided below. Unless otherwise stated, the contributions of the authors are listed in the order of appearance in the published versions of the manuscripts.

Article 1

- Reference:

  Meier, J. V., Noel, J. A., & Kaspar, K. (2021). Alone together: computer-mediated communication in leisure time during and after the COVID-19 pandemic. *Frontiers in Psychology, 12,* 666655. https://doi.org/10.3389/fpsyg.2021.666655

- Author contributions:

  JM, KK, and JN developed the study idea, interpreted the results, and wrote the manuscript. JM and KK designed the study and performed the analyses. JM and JN collected the data. KK organized and supervised the data collection. All authors contributed to the article and approved the submitted version.

Article 2

- Reference:

  Meier, J. V., Noel, J. A., & Kaspar, K. (2023). Understanding psychology students' perspective on video psychotherapy and their intention to offer it after graduation: a mixed-methods study. *Frontiers in Psychology, 14*, 1234167. https://doi.org/10.3389/fpsyg.2023.1234167

- Author contributions:

  JM, JN, and KK developed the study idea, designed the study, interpreted the results, and wrote the manuscript. JN collected the data (as part of her master's thesis). JM and KK organized and supervised data collection. JM and JN performed the analyses. KK supervised the analyses. All authors contributed to the article and approved the submitted version.

Article 3

- Reference:

    Meier, J. V., & Kaspar, K. (2024a). Revealing schoolchildren's key situations in the use of digital media inside and outside school: A media diary study. PLoS ONE, 9(12), e0316567. https://doi.org/10.1371/journal.pone.0316567

- Author contributions:

    JM: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Visualization, Writing – original draft.

    KK: Conceptualization, Data curation, Funding acquisition, Methodology, Project administration, Resources, Supervision, Validation, Writing – review & editing

Article 4

- Reference:

    Meier, J. V., & Kaspar, K. (2024b). How schoolchildren use digital media in class and outside of school over several weeks: a quantitative case study with media diaries. *Frontiers in Education, 9,* 1379755. https://doi.org/10.3389/feduc.2024.1379755

- Author contributions:

    JM: Conceptualization, Formal analysis, Methodology, Visualization, Writing – original draft.

    KK: Funding acquisition, Resources, Supervision, Methodology, Project administration, Validation, Writing – review & editing, Conceptualization.

Declaration of the independence of the scientific work performed

The following person contributed to the creation of parts of the materials and to the data collection:

Josephine A. Noel (Article 3 and 4).

Beyond the declarations above, no one else was involved in the creation of content and material of this dissertation. Also, nobody has received from me, directly or indirectly, any monetary compensation for work related to the content of the submitted dissertation. Specifically, I have not made use of the paid help of consulting services (such as doctoral dissertation advisors or other people).

Cologne, 16.06.2025

Jennifer Virginie Meier