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The digitalization of family life: A multilevel conceptual framework

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Abstract

The internet and digital technologies have penetrated all domains of people's lives, and family life is no exception. Despite being a characterizing feature of contemporary family change, the digitalization of family life has yet to be systematically theorized. Against this backdrop, this article develops a multilevel conceptual framework for understanding the digitalization of family life and illustrates the framework by synthesizing state-of-the-art research from multiple disciplines across global contexts. At a micro level, as individuals "do" family online, digitalization influences diverse aspects of family practices, including family formation, functioning, and contact. How individuals "do" family online is not free-floating but embedded in macro-level economic, sociocultural, and political systems underpinning processes of digitalization. Bridging the micro–macro divide, family-focused online communities serve as a pivotal intermediary at the meso level, where people display family life to, and exchange family-related support with, mostly nonfamily members. Meso-level online communities are key sites for forming and diffusing collective identities and shared family norms. Bringing together the three levels, the framework also considers cross-level interrelations to develop a holistic digital ecology of family life. The article concludes by discussing the contributions of the framework to understanding family change and advancing family scholarship in the digital age.

KEYWORDS

communication, family, family theory, inequalities, media, theory

INTRODUCTION

The internet and digital technologies have penetrated all domains of people's lives, and family life is no exception. "Digital technologies have advanced more rapidly than any innovation in our history" (United Nations, n.d.), and the percentage of the world's population using the internet quadrupled from 16% in 2005 to 67% in 2023 (International Telecommunication Union, 2023). Against this backdrop, family life increasingly shifts online into a polymedia environment formed of diverse digital technologies, applications (hereafter apps), and platforms, which has ushered in sweeping transformations in how family life is practiced, experienced, and structured (Clark, 2013; Longo, 2023; Madianou & Miller, 2013; Odasso & Geoffrion, 2023). The digitalization of family life takes place alongside a number of other prominent family changes, including the deinstitutionalization, individualization, and commercialization of, as well as the gender revolution in, family life (Beck & Beck-Gernsheim, 2002; Cherlin, 2004; England, 2010; Hochschild, 2012). While the latter developments are well theorized, there is yet to be a systematic conceptualization of the digitalization of family life, an important lacuna we aim to address.

In their seminal review, DiMaggio et al. (2001) advocated that to unravel the internet's social implications, scholars need to undertake theoretically motivated research on the roles of both individual and structural dynamics. Similarly, family and human development theories have long stressed the importance of considering "multiple levels" of processes and "the mutual impact of these levels" in understanding family life (Cox & Paley, 1997, p. 248). Integrating and extending these insights from both internet and family research, we develop a multilevel conceptual framework for systematically understanding the digitalization of family life and illustrate the framework by synthesizing state-of-the-art research from multiple disciplines. Attentive to family diversity around the world, we go beyond focusing on prototypical families in the Global North (Smith, 1993) to adopt an inclusive definition of family (encompassing not only nuclear households but also extended family and kinship, sexual and romantic relationships, nonresidential families, and other evolving family forms) and to incorporate empirical insights from a global context (for a similar approach, see Ollier-Malaterre et al., 2019). Furthermore, although situated in the context of polymedia and rapid digital transformations, our multilevel framework goes beyond issues of mediated communication and social media representation that are often highlighted in media studies (Altheide, 2014). Rather, we focus on conceptualizing how digitalization, as an engine and key aspect of family change, has reconfigured practices, temporal–spatial modalities, and the organizing logic of family life.

As illustrated in Figure 1, our framework conceptualizes the digitalization of family life at three levels and the cross-level interrelations. We develop the framework in four steps. Starting with the micro–macro distinction highlighted by DiMaggio et al. (2001), we first discuss how individuals "do" family online at the micro level. Then, we consider how "doing family" online is embedded in and shaped by macro-level economic, sociocultural, and political contexts in which digital transformations take place. Next, we go beyond the micro–macro dichotomy by introducing meso-level dynamics as a pivotal intermediary in between. In meso-level online communities, people display family life to, and exchange family-related support with, mostly nonfamily members. After developing the three levels, we elaborate on the cross-level interrelations and illustrate the top-down (infra/structuring) and bottom-up (individual agency) processes that animate the digital ecology of family life. We conclude by discussing the contributions of our framework to understanding family change and advancing family scholarship in the digital age.

Notably, as the digitalization of family life hinges on digital access and literacy, we recognize that digital divides in both dimensions exist across social groups and contexts (van Dijk, 2020). Nevertheless, we also concur with the position taken by many scholars that going online is "sufficiently common" and will "further spread" (Madianou & Miller, 2013, p. 175).

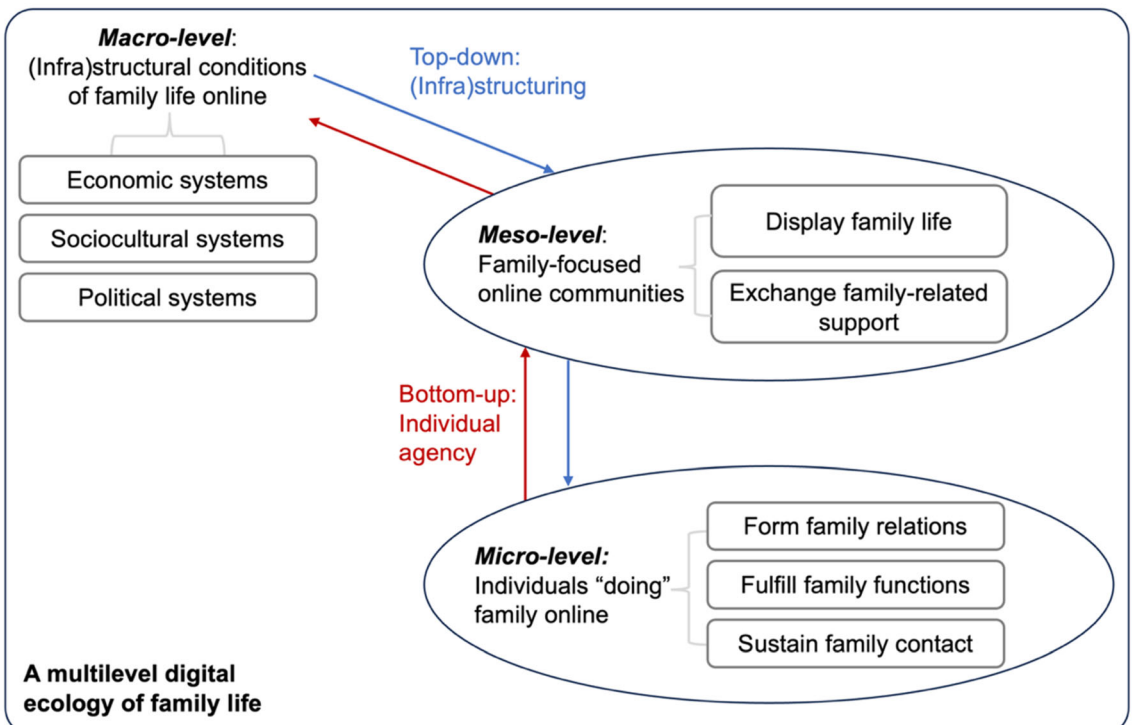

FIGURE 1 The digitalization of family life: A multilevel conceptual framework. [Color figure can be viewed at wileyonlinelibrary.com]

Moreover, given rapid changes in the landscape of digital technologies (Dworkin et al., 2018; Wood et al., 2023), the focus of our article is not on particular digital tools or platforms. Rather, we address the socio-technical dynamics characterizing a multilevel digital ecology of family life and cross-level linkages. In so doing, we aim to maximize the continuing conceptual relevance of our framework despite technological evolvements.

MICRO LEVEL

Rapid digital developments have transformed how individuals "do" family at the micro level. "Doing family" encompasses a broad range of fluid family practices, which are difficult, if not impossible, to exhaust (Morgan, 2011). Thus, we highlight three key theoretical perspectives to illustrate the influence of digitalization on micro-level family practices. First, a relational perspective calls attention to the formation of family relations in the first place (Morgan, 2011). Accordingly, we consider the implications of digitalization for forging intimate partnerships and (re-)making kinship—two long-standing areas of family research (Furstenberg et al., 2020; Sassler & Lichter, 2020). Second, a functional perspective emphasizes that family practices are enacted to achieve "practical ends" (Morgan, 2011, p. 75). Therefore, we consider how digitalization reconfigures the ways in which people fulfill core family functions, including both economic and care functions. Third, a symbolic interactionist perspective underlines the crucial role of routine family interactions and activities in generating the meaning of "family" and maintaining a sense of familyhood (Morgan, 2011). To illustrate this perspective, we discuss the role of digitalization in reconfiguring how people sustain family contact, a key form of symbolic interaction that creates and maintains a sense of connectedness, intimacy, and familyhood (Abel et al., 2021).

Forming family relations

Forging intimate partnerships

With the advent of the internet and the proliferation of smartphones and location-based apps, online dating is displacing traditional ways of meeting in brokering the formation of intimate partnerships (Rosenfeld et al., 2019). Online dating is believed to increase the efficiency of partner search by expanding the pool of potential partners, especially for people in thin dating markets (e.g., sexual minorities), because most people they encounter offline may not satisfy their minimum partner criteria (Rosenfeld & Thomas, 2012). As of 2009, as many as 70% of U.S. same-sex couples met online (Rosenfeld & Thomas, 2012). Dating sites and particularly apps have become so important in mediating sexual minorities' partner search that they are dubbed an "infrastructure of intimacy" for this population (Race, 2015, p. 271). Online dating also helps individuals overcome meeting constraints imposed by traditionally localized dating markets to form intimate partnerships across geographical distances and nation-states (Lee, 2016; Liu, 2022; Potarca, 2020).

Online dating substantially weakens the intervening role of preexisting social networks in relationship formation (Rosenfeld & Thomas, 2012). By circumventing family and friends in one's partner search, online dating turns one's intimate life into "a private matter" and separates it from other activities in everyday family life that are often jointly planned, carried out, or at least known by a family network (Bergström, 2022, p. 6). It is thus not surprising that 90% of U.S. couples who met online had no prior personal connections (Rosenfeld et al., 2019). The "individualizing" feature of online dating not only creates new pockets of privacy within the family but could also disrupt traditional patterns of who partners with whom. In North

American and European countries, couples who met online are more likely than those who met through family introduction to cross social boundaries and form interracial and/or interreligious relationships (Potarca, 2017; Qian & Hu, 2024; Rosenfeld & Thomas, 2012).

Although the rise of online dating has provoked popular fears of a "dating apocalypse" of compromised relationship commitment, studies from the United States and Germany show that compared with heterosexual couples who meet offline, online daters are more likely to transition into marriage, and once married, they have slightly lower divorce rates (Cacioppo et al., 2013; Potarca, 2021; Rosenfield, 2017). In this sense, online dating extends, rather than erodes or displaces, prevailing ideals of family relations that emphasize long-term commitment (Hobbs et al., 2017; Potarca, 2020; Rosenfeld, 2018).

Online dating can both reinforce and disrupt gender inequality in different-sex partnerships. On the one hand, similar to offline dating, men are more likely than women to make the first move in online dating, such as making the first contact online and initiating the transition from online interactions to offline meetings (Bergström, 2022; Berkowitz et al., 2021; Kreager et al., 2014; Qian, 2022; Wu & Trottier, 2022). Digitalization thus reinforces the preexisting norm that expects men to assume a proactive role, whereas women a reactive role, in heterosexual dating (Berkowitz et al., 2021; Qian, 2022). On the other hand, women are afforded more agency when dating online, as they can easily block disrespectful or aggressive men and gain greater control over with whom they communicate (Bergström, 2022; Rosenfeld, 2018). Furthermore, a German study shows that less-educated married women who met their husbands online have a more egalitarian division of housework than do those who met their husbands offline (Potarca & Hook, 2023). Such evidence suggests that women's enhanced agency and power in online dating may extend beyond the relationship formation stage and translate into greater gender equality in subsequent stages of family life.

(Re)making kinship

Furstenberg et al.'s (2020) review points to the significance of incorporating voluntary kin (also referred to as fictive kin) in family relationships. Online platforms are increasingly used to broker the (re)making of such kinship, which we illustrate through two salient examples: (1) matching between intended and birth parents in surrogacy/adoption, and (2) locating "genetic strangers" to broaden one's kinship network (Hertz & Nelson, 2018, p. 4).

Here, we focus on the brokerage role of the internet in surrogacy, although similar insights also apply to online adoption (Wahl et al., 2005). In forming families through surrogacy, online brokerage is particularly important for matching intended parents and surrogates—a foundational step that helps reduce uncertainty and disagreements later on (May & Tenzek, 2011; May & Tenzek, 2016). Before the internet, intended parents and surrogates relied mostly on professional agencies to broker a match. With the rise of the internet, independent matching has gained popularity (Berend, 2016; Hibino & Shimazono, 2013). The online matching process in surrogacy resembles that in online dating (Berend, 2016). On digital platforms specializing in surrogacy support, intended parents and surrogates post advertisements, filter candidates, contact or respond to desirable candidates, and arrange offline meetings to assess compatibility and establish viable ways forward (Berend, 2016; Hibino & Shimazono, 2013; May & Tenzek, 2016). Berend (2016) shows that online surrogacy in the United States not only creates parent–child ties for intended parents but also facilitates a reorientation from the biogenetic relatedness between the surrogate and the child to a fictive kinship between the surrogate and the intended parents. The individual initiative involved in finding a match and brokering a deal online enhances a sense of agency and control for intended parents and surrogates. It challenges the monopoly of third-party brokers but, at the same time, emphasizes individual responsibility

for avoiding slippages and disputes in an under-regulated digital market (Berend, 2016; Lavoie & Côté, 2023).

Online platforms, coupled with advancements in genetic technologies, also enable individuals to discover, locate, and (re)connect with genetic strangers, that is, previously unknown family or lost kin (Hertz & Nelson, 2018). Whereas family relations are increasingly formed by choice rather than biology, online platforms such as 23andMe have rekindled public interest in gene-based ancestry/kinship tracing (Andreassen, 2023). Through providing genetic profiling services and amassing large-scale biometric data, such platforms afford individuals conceived by gamete donation and those growing up in adoptive or foster families the opportunity to discover and (re)connect with their biological kin (Hertz & Nelson, 2018; Yin et al., 2020). Moreover, ancestry-based genetic analytics have come to shape people's health, marriage, and reproductive behaviors (Yin et al., 2020). In sum, digitalization has harnessed previously unfathomable power to (re)make kinship.

Fulfilling family functions

Economic functions

The family is a key economic institution (Becker, 1991). With rapid digitalization, people increasingly fulfill economic functions in the family using fintech (financial technology). Because fintech reduces "transaction costs" associated with "organizing and carrying out exchanges" (Treas, 1993, p. 724), it has become instrumental in facilitating economic exchanges between family members across distances and nation-states. Traditional remittance services are often costly and hinge on financial infrastructures that remain underdeveloped in poor areas, whereas informal remittance delivery through in-person visits or acquaintance networks is slow and risky due to potential theft or loss (Cirolia et al., 2022; Jack & Suri, 2014). Digital remittance services overcome these challenges by enabling cheaper, safer, and near-instantaneous money transfers, which substantially eases and expedites economic exchanges in translocal and transnational families (Cirolia et al., 2022; Jack & Suri, 2014). Digital tools have also changed the one-way migrant-to-family dynamics of sending remittances, as they allow family members to request money transfers from migrants with a few clicks, saving those in need of money from the embarrassment of asking for it via phone or video calls (Madianou & Miller, 2013). Thus, it is not surprising that left-behind families using fintech are more likely than those lacking fintech access to receive remittances and receive greater amounts from more sources, especially when faced with negative income shocks (Jack & Suri, 2014; Munyegera & Matsumoto, 2016). As fintech makes it easy to request, send, and receive funds, however, left-behind families may become overly reliant on remittances, overburdening migrants with frequent money transfer requests (Francisco-Menchavez, 2018; Jack & Suri, 2014). Fintech also facilitates intergenerational economic transactions. Allowance apps, for example, are dubbed "modern piggy banks," enabling parents to transfer money to children and track children's spending (Selvarajah, 2018). By using allowance apps, parents both give children low-level autonomy to manage money and exercise high-level control over children's spending.

As fintech lowers transaction costs of financial exchanges (Treas, 1993), it has also transformed the economic organization of, and attendant gender inequality in, family life. By rendering physical bank visits unnecessary for accomplishing tasks such as paying bills and transferring money, online and mobile banking makes it easier and less costly for partners to keep separate purses, thereby undermining the economic foundation of the unitary family (Hu, 2021). In Africa, women use mobile money to store money safely, which prevents their income from being confiscated by their husbands and other male relatives (Kim, 2022; Suri & Jack, 2016). Women's control over money and financial autonomy enhanced by fintech could,

in turn, reconfigure gendered power in family life and mitigate gender inequality in family practices such as the division of domestic labor (Hu, 2019).

Care functions

We use the case of childrearing to exemplify how digitalization has transformed the fulfillment of essential care functions in the family, although the conceptual insights also apply to other forms of family caregiving. For example, a parallel line of research has begun to examine how people use digital technologies to care for elderly family members—an important research direction given global population aging (Carr & Utz, 2020).

Digital technologies enable parents to practice childrearing at a distance (Lim, 2020). In Filipino transnational families, for example, migrant women practice intensive mothering by supervising their children's homework through video calls and monitoring children's social media footprints (Madianou & Miller, 2012). Performing their role as an authoritarian breadwinner, migrant fathers often use online channels to discipline their children and send remittances and goods back home (Cabalquinto, 2022). Although digitalization extends the normative practices of copresent parenting to parenting at a distance, the division of labor often mirrors gendered parenting roles prevailing in the offline world (Cabalquinto, 2022).

Digital parenting extends beyond transnational families. The omnipresence of the internet means that digital labor in parenting, that is, "the work and tasks performed by parents through digital technology and media to fulfill their parental duties," has become an everyday occurrence (Peng, 2022, p. 284). Parenting increasingly involves searching for, screening, and evaluating online information, shopping online for children, attending online parent–teacher meetings, coordinating online educational services, and monitoring and safeguarding children's use of digital technologies (Lim, 2020; Livingstone & Blum-Ross, 2020; Lupton et al., 2016; Peng, 2022). These digital parenting practices were intensified by an unprecedented shift toward online learning during COVID-19 school closures (Goudeau et al., 2021).

The digitalization of parenting has intensified expectations and practices of intensive parenting, while triggering concerns about surveillance and privacy (Clark, 2013; Dworkin et al., 2019; Leaver, 2017). The increasing popularity of digital parenting tools both enables and compels parents to transcend physical distance and extend the temporal span of their role to safeguard their children round the clock (Lim, 2020). For instance, tracking apps and webcams are widely used to ensure child safety by tracing children's locations, activities, and surroundings (Hasinoff, 2017; Liu, 2024). Parents' safeguarding practices are further bolstered by the use of parental control apps to monitor and manage children's screen time, digital technology use, and online safety (Clark, 2013; Livingstone & Blum-Ross, 2020). Digital parenting often imposes intimate surveillance over children's everyday lives (Leaver, 2017). Such surveillance, although performed by parents to provide care, express love, and ensure family safety, undermines children's privacy and autonomy (Hasinoff, 2017; Lim, 2020).

Compared with traditional parenting, digital parenting demands additional and often invisible cognitive labor, and it reinforces gender inequality in the division of childcare (Lim, 2020; Peng, 2022). Using digital tools such as tracking apps and webcams entails intensive cognitive labor as parents need to closely monitor notifications, location updates, and camera feeds to evaluate child safety (Hasinoff, 2017). Digital parenting, however, is often trivialized because it can be misrepresented as personal leisure and overlap with other activities (Peng, 2022). For example, looking for childrearing information may be mistaken for surfing the internet for fun, and parents often arrange their children's activities online during commuting. Closely intertwined with undervalued and highly feminized cognitive labor (Daminger, 2019), digital parenting is disproportionately performed by mothers (Heaselgrave, 2023; Peng, 2022).

Sustaining family contact

Digital technologies have also drastically transformed how people sustain family contact—routine symbolic interactions that give rise to a sense of familyhood (Abel et al., 2021; Qiu, 2022). Digitally mediated communication has featured prominently in migrant families for decades (Madianou & Miller, 2012). Before the internet, letters and recorded cassettes exchanged by mail were often used for family communication across distances and borders, but they lacked simultaneity and thus failed to generate a sense of everyday togetherness (Madianou & Miller, 2012). Phone calling, despite its simultaneity, was expensive and lacked visuality (Madianou & Miller, 2013). Recent digital developments have seen the proliferation of information and communication technologies (ICTs), such as instant messaging apps, video calling, and social media (Dworkin et al., 2019). ICTs are uniquely equipped to stretch family relations across households and national borders and sustain a sense of familyhood in translocal and transnational families (for reviews, see Abel et al., 2021; Baude et al., 2023; Hessel & Dworkin, 2018; Hessel & LeBouef, 2023; Tariq et al., 2022; Wood et al., 2023).

The COVID-19 pandemic has accelerated the digitalization of family contact far beyond a migrant context. Given the curtailment of movement and in-person contact, many people relied on virtual contact to interact with family members living in other households, albeit locally (Hu & Qian, 2021; Qian & Hanser, 2021). Video calls became "part of everyday life," and ICT-enabled online and hybrid family events gained popularity (Mcclain et al., 2021, p. 11). For example, video calling became commonly used for important family rituals, such as weddings and funerals, which would conventionally be carried out in person in non-pandemic times (Mcclain et al., 2021). Due to limited opportunities for offline socializing during COVID-19, digital technologies were instrumental in retaining a sense of connectedness by virtually enacting family rituals and maintaining family contact.

In today's polymedia environment, both nonresidential and coresidential families routinely use ICTs to communicate and coordinate family activities (Abel et al., 2021; Carvalho et al., 2015; Tariq et al., 2022). Family members select from and shift between a diverse repertoire of digital tools, in line with their specific relational and affective needs (Madianou & Miller, 2013). Asynchronous contact via email and chat message, for instance, is usually preferred over audio/video calling when individuals want to withhold emotions from and avoid confrontation with family members (Madianou & Miller, 2012). Partners living apart together exchange multiple emails and chat messages every day to maintain casual, continuous interactions without interrupting each other's work and life routines (Lindemann, 2017; Qiu, 2022; Valentine, 2006). Family chat groups invigorate the extended family by involving multiple generations and enhance the efficiency of discussions, arranging events, and sharing information among family members (Abel et al., 2021; Hessel & LeBouef, 2023). By contrast, synchronous video calling is particularly effective in engaging young children, as it allows for recognizing faces and gestures and conducting interactive playful activities (Eklund & Sadowski, 2023). To create a sense of copresence, family members may leave video calls on for extended hours to share their everyday lives in a virtual space, without feeling the pressure to talk (Abel et al., 2021; Francisco-Menchavez, 2018).

Digital interactions augment, but cannot replace, face-to-face family contact, and they may exacerbate gender inequality in kin-keeping activities (Cabalquinto, 2022; Hu & Qian, 2021; Newson et al., 2024; Valentine, 2006; Wajcman, 2015). First, despite the usefulness of ICT-enabled virtual copresence, face-to-face contact "remains the gold standard" for maintaining family intimacy as it embodies full sensory experiences of hearing, seeing, and physically feeling (e.g., hugging, kissing) family members (Baldassar et al., 2016, pp. 137–138). Second, it is important to recognize that sustaining digital family contact involves extensive labor, ranging from planning family calls, negotiating availability, and coordinating technologies to engaging everyone in online conversations (Bakuri & Amoabeng, 2023; Das, 2022; Eklund &

Sadowski, 2023). Traditionally, women assumed the primary kin-keeper role in the family (Rosenthal, 1985). Moving family contact online has not altered such gendered division of labor, as digital kin-keeping still disproportionately falls on women's shoulders (Abel et al., 2021; Das, 2022; Gubernskaya & Treas, 2016; Wajcman, 2015).

MACRO LEVEL

Micro-level family practices do not take place in a social vacuum. As individuals "come into […] a set of practices that are already partially shaped by legal prescriptions, economic constraints and cultural definitions" (Morgan, 2011, p. 7), "doing family" online is embedded in and shaped by macro-level forces (DiMaggio et al., 2001). Theorizing such macro-level dynamics is, therefore, integral to understanding the digitalization of family life. Our conceptualization of macro-level processes challenges technological determinism, which views technology as shaping the course of social change independent of socio-institutional forces (Sadowski, 2020). Rather, drawing on a political economy approach (Mazepa & Mosco, 2016), we demonstrate that digital platforms and technologies, although directly configuring micro-level dynamics of family life, embody and channel the influence of broader economic, sociocultural, and political forces in society. Going beyond discussing the role of macro-level forces in enabling and facilitating digital transformations, we apply the critical theoretical lens of political economy to critique and analyze how macro-level systems structure the digitalization of family life (Mazepa & Mosco, 2016).

Economic systems

A political economy perspective underscores capitalism as an enduring system structuring digital technologies and social life (Mazepa & Mosco, 2016). As family life increasingly takes place online and depends on digital infrastructures, digital capitalism increasingly colonizes and commodifies the private sphere of family (Sadowski, 2020; Srnicek, 2017; Wajcman, 2015). Digital data, such as location and biometrics, collected through smartphone apps and wearable devices are widely marketed as objective, trustworthy, and thus essential for family decision-making and risk management (Burrell & Fourcade, 2021). Business corporations' increasing cooptation of social media platforms and targeted online branding amplify the commodification of family life by promoting consumption (e.g., buying digital devices and services) as solutions to parenting problems and markers of responsible parenting (Scheibling & Milkie, 2023; Tiidenberg & Baym, 2017). Through manipulating parenting stress, the marketed promise of digital technologies extends capitalist ideologies to the family realm, exacerbating a classist, consumerist culture of intensive parenting and the pressure for parents, especially mothers, to conform to such culture (Scheibling & Milkie, 2023). The increasing use of and reliance on digital technologies open family life to not only intimate surveillance but also capitalist control by private enterprises (Leaver, 2017; Sadowski, 2020).

Digital capitalism operates on a global scale in reinforcing the postcolonial order of global inequality in family life. Digital technologies are largely created, owned, and managed by elites who are mostly wealthy white men in high-income countries (Sadowski, 2020). Building on high-income countries' wealth accumulation dating back to the colonial age, the monopoly of digital technologies paves the way for the extractive practice of "digital mining" that "strip [s] poor people and countries of material wealth and development potential" (Bateman et al., 2019, p. 487). With the digitalization of family life, such extractive practice has reached into the most intimate sphere of people's lives. For example, the extensive use of digital tools (e.g., ICTs, remittance apps) that are created and owned by firms in advanced economies helps

Filipino transnational families to stay connected and fulfill family functions at a distance (Cabalquinto, 2022). By sustaining prolonged family separation, these digital tools render it more viable for Filipino immigrants to stay and work in host countries where such tools are created, thus facilitating the extraction of labor from lower-income countries to advanced economies (Francisco-Menchavez, 2018). Underpinning the technology-enabled convenience is the extractive logic of digital capitalism, with individual families, often from the Global South, bearing the human costs associated with, for example, prolonged separation and weakened intergenerational solidarity (Cabalquinto, 2022; Madianou & Miller, 2012). Therefore, it is important to consider how digital capitalism influences and (re)produces global inequality in the practices and quality of family life.

Sociocultural systems

A political economy perspective further underlines that sociocultural systems structure how digital technologies are designed for and used in family life (Mazepa & Mosco, 2016). Preexisting values and biases rooted in broader sociocultural systems are reflected in and potentially amplified by the technical structure of digital platforms. Take sexual racism in online dating as an example. Dating platforms emphasize the visuality of user profiles, thus heightening the prominence of race, a visible characteristic, in partner search (Berkowitz et al., 2021; Robinson, 2015). The options to search for or filter out dating candidates by race dehumanize individuals with personhood and dignity to a few predefined racial categories (Mowlabocus, 2021; Robinson, 2015). The impersonal and anonymous setting of digital platforms may further fuel sexual racism as it places little sanction on the exclusion of an entire racial group from one's dating pool (Albury et al., 2017; Curington et al., 2021).

Preexisting sociocultural values and biases pertaining to family life are further reinforced by the proliferation of smart technologies, which increasingly rely on automated algorithms and artificial intelligence (Elliott, 2022; Sadowski, 2020; Williams, 2024). Such algorithms are trained on preexisting data, which are far from value-free but are influenced by and reflect broader sociocultural contexts (McCarthy, 2016). Algorithmic predictions extrapolated from these data, in turn, reinforce and reproduce entrenched racial, gender, class, and other biases (Burrell & Fourcade, 2021; Noble, 2018; Williams, 2024). For example, given the prevalence of homophily in existing social networking and assortative mating, algorithms behind social media and online dating platforms recommend connections based largely on the homophily rule (Fourcade & Johns, 2020). In many ways, algorithms and digitally mediated family life "hold up a mirror […] to practices and norms" prevailing in sociocultural systems (Elliott, 2022, p. 54).

Sociocultural systems legitimize and facilitate the role of economic systems in monetizing human desires by touting the promise of technology for managing affect and emotions in family life (McMillan Cottom, 2020). Parenting technologies such as tracking apps and webcams promise to bring parents "peace of mind," beyond merely aiding in parenting tasks (Leaver, 2017, p. 5). ICTs and remittance apps are not only tools for family communication and money transfer, but they also promise to help users cope with their longing for togetherness in the event of family separation and fulfill their roles as loving and filial family members from afar (Cabalquinto, 2022). Likewise, online dating platforms commonly promise to alleviate individuals' senses of anxiety and uncertainty in their partner search through data-based and algorithm-guided matchmaking (Bandinelli & Gandini, 2022; Duguay et al., 2024). Although digital platforms play up the rhetoric of fluid emotions and affect in family life, their actual operation reifies dynamic family practices and relations as hyper-rationalized calculatable acts, devoid of the social and affective meanings people attach to such acts (Burrell & Fourcade, 2021). The datafication of family life embedded in the design and operation of digital

technologies recasts individual users as "data points," classifies them based on typified attributes, and generates recommendations that often reinforce preexisting family norms, practices, and inequalities in the guise of providing "personalized" services (Mazepa & Mosco, 2016; Sadowski, 2020; Williams, 2024).

Political systems

A political economy perspective also stresses the role of politics in shaping the digitalization of family life (Mazepa & Mosco, 2016; Sadowski, 2020). At a national level, for instance, the Philippine state relies on international remittance as a key strategy to boost its gross domestic product (Cabalquinto, 2022). To institutionalize remittance flow into the Philippines, the government has established a discourse that valorizes transnational labor migrants who maintain homeland connections as national heroes and hails digital technologies as solutions to family separation (Cabalquinto, 2022; Francisco-Menchavez, 2018). Under authoritarian regimes, state politics even more directly intervene in the digitalization of family life (Liu, 2016; Miao & Chan, 2020). State censorship prescribes what opinions and information regarding family life can be shared online (Yang, 2022). Subject to state surveillance, individuals often self-censor by avoiding discussing sensitive topics with their family members via digital channels (Nedelcu & Wyss, 2016). Moreover, authoritarian states dictate "both *if* and *how*" online platforms can be developed (Miao & Chan, 2020, p. 222). In China, Blued (a gay dating app) legitimizes its services by proactively working with the state (e.g., the Center for Disease Control and Prevention). Despite state marginalization of sexual minority communities, Blued foregrounds its contribution to public health and specifically HIV/AIDS prevention in these communities, in line with government priorities (Miao & Chan, 2020). These examples showcase that digitalization may do little to alter how politics structure family life but can rather channel and amplify political influences.

At an international level, global politics also influence the dynamics of "doing family" online. Amid the U.S.-China tensions and trade war, former president Donald Trump issued executive orders to ban WeChat (China's most popular multi-purpose communication, social media, and money transfer app) from the U.S. market (Gertz, 2020). Such a move severely impeded the opportunity for Chinese transnational families to "do" family online, given that they almost exclusively rely on WeChat for family contact and economic exchanges (Qiu, 2022). Global politics shaping the digitalization of family life are not always imposed from the top down. As the Black Lives Matter movement spread worldwide from the bottom up, Grindr (a major gay dating app) removed its "ethnicity filter" (Mowlabocus, 2021). Together, these examples illustrate that the macro-level "structuration" of family life online is "a set of processes rather than fixed external structures" (Morgan, 2011, p. 7).

MESO LEVEL

Whereas DiMaggio et al. (2001) underscored the roles of individual and structural dynamics in shaping the social implications of the internet, we argue that the micro–macro dichotomy leaves out important middle-range dynamics at a meso level. At this level, individuals who often are without prior acquaintance form family-focused online communities. For families with prior acquaintance, online communities supplement offline connections to foster interactions and information sharing, such as the case of social media and chat groups comprising parents of children in the same playgroup, class, or neighborhood (Lim, 2020; Peng, 2022). In online communities, while some display their family life, others seek or provide help with family-related challenges that one may find difficult to discuss elsewhere (Barnwell et al., 2023; Doty &

Dworkin, 2014; Lupton et al., 2016). Interactions in online communities construct collective identities and shared family norms. By helping define family norms and exchange support, such communities inform how people "do" family at the micro level. Bridging the micro–macro divide as an important intermediary, such communities also channel and reshape macro-structural forces.

Whereas micro-level "doing family" online is almost exclusively directed at (existing or potential) family members, family members are often excluded from, or only form a small part of, the intended audience in meso-level family-focused online communities. A long tradition of family research has focused on the role of strong ties or "linked lives" in shaping family experiences and behaviors (Elder & Giele, 2009). Yet, the proliferation of family-focused online communities points to the increasingly crucial role of weak, diffuse, and virtual ties across unrelated individuals in influencing, calibrating, and normalizing family life and practices (Aston et al., 2021; Kolbaşı-Muyan & Rittersberger-Tılıç, 2023).

Displaying family

Before the internet, people typically captured family memories via personal diaries, photo albums, and video recordings, usually shared with a private audience of family members and close friends (Barnwell et al., 2023). The advancement of digital media in the internet era has popularized a variety of ways in which people share their family life online via blogs, podcasts, social media, etc. From a micro to a meso level, the shift from the former to the latter is demarcated by a change in the level of disclosure and privacy. Take sharing family photos as an example. Photo sharing in a family chat group is a relatively private practice of "doing family" online directed at sustaining familyhood. By contrast, posting family photos openly online (e.g., via virtual groups, websites, or social media) constitutes an act of displaying family, though the level of disclosure is further differentiated by the post's viewership. For influencers who display family online for fame and profits, posting family photos is more of a commercial than a personal act. Thus, digitalization complicates and problematizes the conventional conceptualization of family life as a private domain.

In the digital age, meso-level family displays have become commonplace. For example, from textual diaries to multimedia-augmented video clips, many ordinary women share their mothering experiences and feelings of joy and distress online for public consumption (Lupton et al., 2016; Reyna, 2022). Such displays challenge the often monolithic ideal of motherhood portrayed in mainstream media, broaden the notion of motherhood, and provide the audience who are in a similar situation with feelings of comfort and empowerment (Lopez, 2009; Lupton et al., 2016). As a consumerist culture permeates the digital sphere, displays of motherhood via blogs or social media are often commercialized to generate profits from promoting sponsored content and products (Blum-Ross & Livingstone, 2017; Scheibling & Milkie, 2023). Whereas women are more likely to display family life online, men also increasingly engage in such displays, to share their fathering experiences, demonstrate new caring masculinities, and normalize involved fatherhood (Lee, 2023; Scheibling, 2020; Scheibling & Marsiglio, 2021; Scheibling & Milkie, 2023). During COVID-19, many young people posted TikTok videos of their care for grandparents; without tagging family members, the posts were clearly targeted at a broader audience as a public display of "good grand-childrening" (Nouwen & Duflos, 2023, p. 1148).

Online family displays catalyze the formation of communities and shared norms that center on family-related issues. In today's cross-platform ecology of digital media, the reach of family displays is extended as they are linked and circulated across websites, social media platforms, and apps (Lupton et al., 2016). Interactive acts such as liking, following, commenting, and reposting facilitate community building in cyberspace (Lee, 2023; Lopez, 2009; Williams Veazey, 2021; Yang, 2022). Family-focused online communities could also extend to the offline

world, creating previously unlikely alliances (Xie et al., 2021). For example, many North American dad bloggers gather offline at the annual Dad 2.0 Summit to network and discuss issues about fatherhood and social media influencing (Scheibling & Marsiglio, 2021). The use of hashtags is a key driver of community formation on social media platforms. Beyond describing the content being shared, hashtags create linkages across individual users and posts around searchable themes such as #metoo, #familytradition, and #normalizebreastfeeding, which in turn increases the visibility of collective identities and voices (Barnwell et al., 2023; Locatelli, 2017; Quan-Haase et al., 2021). During COVID-19, a large number of "lockdown diaries," in textual, graphic, and video formats, were produced and shared on social media in many countries (Yang, 2022, p. xiv). Such sharing in online communities helped normalize exceptional family experiences, including involuntary solo living and protracted family coresidence, in unprecedented times.

Reaching a wide audience of mostly nonfamily members, online displays of family life turn personal struggles and reflections into public conversations. Such displays not only construct family norms for or within a given online community, but also contribute to and make up popular (sub-)cultures of family practices, such as "doing" pregnancy, parenting, and affirming family intimacy (Barnwell et al., 2023; Scheibling & Milkie, 2023; Tiidenberg & Baym, 2017). As online family displays challenge popular stigmas and (re)define family norms, they help otherwise isolated and marginalized individuals to position and navigate their shared family experiences (Lee, 2023; Lopez, 2009; Scheibling, 2020).

Exchanging family-related support

In online communities, individuals also discuss family life to seek help and provide support. Participants in such discussions often share similar identities, challenges, or desires in their family life (Lupton et al., 2016). Through asking questions, offering advice, and exchanging ideas, participants formulate solutions and actions to address family-related issues (Berend, 2016). In existing literature, family-focused online communities for (expecting) mothers are among the most well researched (Dworkin et al., 2018; Lupton et al., 2016). Compared with formal medical consultations, seeking information through websites, blogs, forums, apps, and social media is more convenient as it provides immediate access to information from a wide range of sources at a low or no cost (Lupton, 2016). In online communities, (expecting) mothers are also able to cross-check different sources of information, seek second opinions, and gain validation based on experiential knowledge from their peers, all of which empower them to interact with medical authorities with enhanced agency rather than passively follow instructions (Aston et al., 2021; Cohen & Raymond, 2011; Xie et al., 2021). Although online family-related help-seeking and support enable individuals to develop knowledge and (re)claim control in areas of family life that are traditionally assumed by professionals and institutions, they also reinforce women's disproportionate responsibilities for domestic labor, thus perpetuating gender inequality (Lupton et al., 2016; Williams Veazey, 2021).

Beyond meeting informational needs, online communities provide individuals with social and emotional support (Doty & Dworkin, 2014; Kopacz, 2021; Williams Veazey, 2021), which is particularly important in emotionally intense family life. Empathy and support from "experientially similar others" are effective for stress-coping (Thoits, 2021, p. 643). Compared to connections with family and close friends, disposable weak ties between experientially similar strangers in online communities alleviate participants' potential burden of feeling attached to and liable for one another (Aston et al., 2021; Small, 2017; Vivion & Malo, 2023). Under exceptional circumstances, online communities also provide crucial lifelines for many families. In natural disasters such as earthquakes and floods, online communities have long supported individuals to reconnect with their displaced families (Harrison, 2005; Phraknoi et al., 2023).

During COVID-19, online communities helped pregnant women and new mothers meet their informational, emotional, practical, and even medical needs (Chatwin et al., 2021; Hanser & Qian, 2022; Hooper et al., 2023).

The collective construction of family practices in online communities can be particularly helpful for navigating less-institutionalized family forms and relations in the absence of clearly defined norms. For example, with the contentious topic of surrogacy discussed at the micro level, surrogates in online communities not only develop and sustain a shared understanding of surrogacy as a "labor of love" to counter the stigmatization of surrogacy as baby trading, but they also establish legal and health know-how and standards (Berend, 2016). Online communities also help establish new ideals and practices, for instance, for sexual minority families to build supportive parent–child relationships in homonegative contexts (Wei & Yan, 2021).

The informational, social, emotional, and sometimes material support exchanged in online communities is particularly valuable to disadvantaged minority families who often lack resources, experience discrimination, and face institutional marginalization in an offline world (Cipolletta et al., 2017; Kopacz, 2021). In some Asian societies, for example, unmarried single mothers are strongly stigmatized and have difficulty registering their children officially (Raymo et al., 2015). Experiential knowledge shared by peers online is valuable in helping these marginalized mothers overcome bureaucratic, legal, and social barriers to raising children (Zhao & Lim, 2021). Other examples include online communities for racial/ethnic minority parents facing intersectional challenges of parenting and those for sexual and gender minorities navigating strained relationships with families of origin (Cipolletta et al., 2017; Fish et al., 2020; McLeod, 2020; Williams Veazey, 2021). Given the limited means for minority families to connect offline and their potential need for anonymity, online exchanges of support often serve as an essential lifeline (Zhao & Lim, 2021). It is also worth noting that marginalized families formed of, for example, sexual, gender, and racial minorities are subject to heightened risks of cyberbullying (Longo, 2023). Tailored interventions are needed to protect and support minority families who are particularly vulnerable to victimization in online communities.

CROSS-LEVEL INTERRELATIONS

The micro, meso, and macro levels discussed above do not operate in isolation but are closely intertwined and mutually shaping. Together, the three levels form a holistic digital ecology of family life, and cross-level interplays bring the ecology to life. As shown in Figure 1, the cross-level interrelations are bidirectional, involving top-down and bottom-up processes.

Top-down processes underline the role of (infra)structural conditions in both empowering and constraining how individuals "do" family online. The top-down (infra)structuring of family life online may not be explicitly visible because macro-level influence is often wielded through opaque digital platforms and algorithms (McMillan Cottom, 2020). Macro-level actors (e.g., private enterprises, governments) provide and control essential infrastructures, such as the internet, digital platforms, and mobile apps, that enable family life online. Meanwhile, the design and operation of such infrastructures are powerfully shaped by dominant economic systems, sociocultural values, and political regimes (Mazepa & Mosco, 2016; Sadowski, 2020; Williams, 2024). Private enterprises generate profits and cement their economic monopoly by monetizing family-related personal data extracted from platform and service users, thus amplifying the commodification of family life (Scheibling & Milkie, 2023; Srnicek, 2017). Governments regulate, surveil, and censor the internet to enforce their political agendas, for example, on governing sexuality and union formation, institutionalizing family separation in a remittance economy, and individualizing the well-being of family members as a matter of familial obligation rather than state welfare (Francisco-Menchavez, 2018; Liu, 2016; Longo, 2023;

Miao & Chan, 2020). In promulgating the digitalization of family life, macro-level actors, therefore, reinforce their own legitimacy, power, and dominant positions (Mazepa & Mosco, 2016; Sadowski, 2020).

By contrast, bottom-up processes emphasize the agentic power of individuals and families in resisting and (re)configuring macro-level dynamics. Exercising their agency, individuals and families influence the design and operation of digital technologies and contest macro-level forces imposed from the top down through user feedback and collective actions. For instance, Grindr users publicize discriminatory incidents they encountered on the dating app (e.g., profiles stating "no Blacks, no Asians, no fats, no fems") through a user-founded website (douchebags of Grindr) and its linked X (formerly Twitter) account (Albury et al., 2017). Collectively, the users call out, challenge, and resist sexual racism and discrimination to demand sociocultural change in online dating. In response, Grindr launched a Kindr campaign to demonstrate the company's commitment to combatting sexual racism and discrimination, including updating its community guidelines and imposing a lifetime ban on users for discriminatory behaviors and hate speech on the app (Mowlabocus, 2021). In another example, sexual minority individuals and families in Japan rallied those sharing similar identities and experiences from around the world online, to demand legal recognition of same-sex partnerships from the Japanese government (Yamamura, 2023). On TikTok, the trending of the hashtag #EldestDaughterSyndrome represents increasing awareness of, and efforts to challenge, gender inequality in family responsibilities among children (Hu, 2023).

At the meso level, family-focused online communities act as a key intermediary bridging the micro and macro levels in both top-down and bottom-up processes. From the top down, macro-level actors actively mobilize online communities, as a powerful medium, to channel and diffuse their influence over how individuals "do" family (Miao & Chan, 2020; Pariser, 2011). Commercial enterprises frequently structure various aspects of family life by strategically diffusing their marketing rhetoric through targeted online communities. For example, to normalize parents' digital monitoring of children as a necessary practice of care, technological enterprises sponsor social media influencers to publicly share their positive experiences of using the products (Leaver, 2017). Consumer brands often partner with top-ranked parent bloggers (especially mommy bloggers) to advertise their products and services as parenting solutions (Scheibling & Milkie, 2023). Such marketing ploy repackages top-down commercial agenda as desirable ideals of parenting shared by online community members, thus serving to normalize intensive parenting practices while valorizing digital surveillance over children (Leaver, 2017). In top-down processes, online communities embody and amplify the reach and influence of macro-level actors.

From the bottom up, family-focused online communities amplify the power of individuals and families to catalyze macro-level changes. These communities decentralize the power monopolized by traditional media and institutions (Quan-Haase et al., 2021; Srnicek, 2017; Zhao & Lim, 2021). Whereas it would be difficult for ordinary individuals and families to effect macro-level changes directly, online communities help make private family-related issues public and forge collective voices and actions (Locatelli, 2017; Quan-Haase et al., 2021). Collective efforts mobilized online, in turn, can change the design and operation of digital infrastructures, as well as disrupt and modify macro-level economic, sociocultural, and political structures (Noble, 2018; Quan-Haase et al., 2021). Such bottom-up processes empowered by online communities are exemplified in our earlier discussions about user-demanded dating app redesign, online rallies for the legalization of same-sex unions, and collective resistance on social media against a patriarchal hierarchy in the family, none of which would have been possible without meso-level intermediaries (Hu, 2023; Mowlabocus, 2021; Yamamura, 2023). The role of meso-level processes in linking the micro and macro levels highlights that the three levels constitutive of the digital ecology of family life are dialogical and mutually shaping rather than dialectical and conflictual.

DISCUSSION

In this article, we highlight that digitalization, a sweeping social transformation (United Nations, n.d.), is a key engine and aspect of family change, and we illustrate the multilevel processes through which such change has taken place. Our multilevel conceptual framework draws attention to the fact that micro-level family practices are not free-floating from macro-level economic, sociocultural, or political systems underpinning digital developments, yet they are not completely determined by such systems as individuals exercise agency to construct their family life. It also suggests that macro-level conditions are not immutable but can be modified by micro-level practices and meso-level mobilization. In this section, we synthesize and bring to the fore the theoretical implications of our framework.

Digitalization and family change

Digital transformations have fashioned at least three types of change in how family life is practiced, experienced, and organized. First, digital technologies, in some ways, *extend* and *enhance* long-standing offline family practices. ICTs, although not replacing face-to-face contact, have facilitated and enriched how family members sustain routine interactions and functional exchanges (Cabalquinto, 2022). Online communities bolster the informational, emotional, and sometimes material capacity of individual families to make sense of their experiences and navigate family challenges, particularly in difficult times and for otherwise isolated groups (Hanser & Qian, 2022; Xie et al., 2021). Second, digital tools and platforms are gradually *replacing* some traditional family practices. In the United States, online dating has displaced traditional matchmaking practices, such as introduction via family and friends, to become the most common brokerage of partnership formation (Rosenfeld et al., 2019). As new generations of digital natives rely almost exclusively on online banking and mobile money, managing finances digitally has important implications for gendered autonomy and power in family life (Hu, 2019; Suri & Jack, 2016). Third, digitalization *creates new* family practices. Using location-tracking technologies and wearable devices is becoming second nature to many people, which entails the incursion of digital capitalism and surveillance into private family life as never before (Burrell & Fourcade, 2021; Sadowski, 2020).

Digitalization has reconfigured the *temporal* and *spatial* modalities, as well as the *organizing logic*, of family life—key dimensions through which family life has been theorized (Elliott, 2022; Lim, 2020; Liu, 2024; Morgan, 2011). In terms of temporality, digital technologies enable asynchronous and synchronous interactions (Abel et al., 2021). Family members are afforded the flexibility to maintain asynchronous contact (through emails, online chat messages, and tagging each other in social media posts) and engage in real-time interactions (through audiovisual media) (Francisco-Menchavez, 2018; Qiu, 2022). Fintech enables near-instantaneous money transfers, thereby substantially reducing the time required for and efficiency of fulfilling economic functions in the family (Cabalquinto, 2022). As individuals "do" family online, both suspension (asynchronicity) and compression (speeding up) of family time are made possible. Digitalization thus creates temporal flexibility and changes the tempo of family life.

In terms of spatiality, family life online is experienced through the blurring and (re)making of physical and social boundaries. Overcoming the constraints of physical space, digital tools and platforms stretch family relations across households, distances, and nation-states, particularly against the backdrop of an increase in translocal and transnational families (Abel et al., 2021; Cabalquinto, 2022). Digitally connected family relations, therefore, challenge the normative expectation of physical copresence in family life (Madianou & Miller, 2012). In addition, by bolstering individuals' capacity to stretch family practices beyond spatial and

geographical boundaries, digitalization can extend and intensify family responsibilities (e.g., parenting labor) (Lim, 2020). Furthermore, in the digital era, the space of family life is extended into a virtual realm. Online communities bring together unrelated individuals to display family life and exchange family-related support in cyberspace and beyond; yet, at the same time, they can divide individuals and families into "filter bubbles" based on characteristics such as identities and class-based family lifestyles (Pariser, 2011; Scheibling & Marsiglio, 2021; Xie et al., 2021).

The logic underpinning the organization of family life is being reconfigured. The theoretical tradition of symbolic interactionism has long stressed the performative quality of "doing family," that is, people perform certain acts with and for their family members to sustain shared meanings and a sense of intimacy and familyhood (Morgan, 2011). However, digitalization has opened such previously private performances to a public audience consisting of mostly nonfamily members (Barnwell et al., 2023). Moreover, with mass datafication and digital surveillance of family life, constant digital incursions of third parties into intimate realms problematize the long-held dichotomy between a private family sphere and a public sphere outside the home (Dworkin et al., 2019). As part of this process, family life, along with its intense affect and emotions, is transmuted by data-driven algorithms and market operations into a series of impersonal, hyper-rationalized, and calculatable transactions (Burrell & Fourcade, 2021; Elliott, 2022). Ultimately, by monitoring, recording, and monetizing digital traces of family life, technological enterprises stealthily extract value from and redefine the meaning of family relations (Albury et al., 2017; Leaver, 2017).

Relations to other family changes

The digitalization of family life evolves alongside other prominent family changes, including the deinstitutionalization, individualization, and commercialization of, as well as the gender revolution in, family life. However, the relationships between these changes and digitalization are notably overlooked. Our research synthesis suggests that digitalization may constitute a crucial force underpinning the deinstitutionalization of family life (Cherlin, 2004), as it has weakened the role of traditional institutions in prescribing the scripts of family practices, while creating room for individuals to exercise agency in forging personalized ways of "doing family" (Bergström, 2022; Cohen & Raymond, 2011). The digitalization of family life echoes and buttresses the ethos of neoliberal individualization (Beck & Beck-Gernsheim, 2002), whereby individuals are held liable for their own family choices and well-being (Hasinoff, 2017; Lavoie & Côté, 2023). As commercial enterprises largely control the essential repertoire of infrastructures, operations, and services required to sustain the digital ecology of family life (McMillan Cottom, 2020; Srnicek, 2017), digitalization is a key driver of the commercialization of family life (Hochschild, 2012). Finally, the relationship between the gender revolution and the digitalization of family life is less straightforward. Digital transformations have empowered women in some aspects of family life (e.g., financial autonomy), while extending gender inequality into other aspects (e.g., digital parenting) (Kim, 2022; Peng, 2022; Suri & Jack, 2016). Building on these preliminary observations, we invite scholars to systematically theorize how the digitalization of family life relates to, and plays a role in, the evolvement of other family changes.

Implications for inequality

Whether the digitalization of family life reproduces or disrupts social inequality has been an important question in the family scholarship (Longo, 2023). As illustrated in our article, the digitalization of family life does not have a uniform impact on reinforcing or reducing social

inequality. Rather, such impact varies across social groups, areas of family life, and multiple levels, and the equalizing impact at one level/aspect is often paradoxically accompanied by a countervailing impact at another. For example, online dating reproduces the long-standing norm in heterosexual courtship that men make the first move, while giving women greater control over the dating process (Bergström, 2022; Qian, 2022). Norms formed online that replicate mainstream culture can disadvantage already-marginalized families, yet family-related support exchanged in online communities is particularly valuable for those encountering exclusion and stigmatization offline (Tiidenberg & Baym, 2017; Zhao & Lim, 2021). Although fintech facilitates remittance transfers to left-behind families in need of money, it also facilitates the capitalist extraction of labor from low-income to high-income countries, thus exacerbating global inequality (Bateman et al., 2019; Cabalquinto, 2022). Despite disrupting some forms of inequality at the micro level, digital technologies alone are limited in addressing macro-level inequality, such as structural sexism, racism, classism, and postcolonial global hierarchies (Bateman et al., 2019; Curington et al., 2021; Kim, 2022). The complex and seemingly paradoxical blend of benefits and pitfalls, equality and inequality is not entirely surprising, given that rapid digitalization thrives on the benefits it offers (for attracting individual uptake) as much as the inequality it (re)produces (for maximizing capitalist extraction) (Miao & Chan, 2020; Srnicek, 2017; Williams, 2024). Overall, our framework highlights the value of examining the multilevel nature and dynamics of inequality in the digitalization of family life.

Limitations and future directions

Despite our efforts to be as comprehensive as possible in synthesizing existing literature, the scope of this article is necessarily limited in several ways. First, we focus on family rather than work-family life. The digitalization of work and that of family life are both sweeping transformations—together, they blur the spatial, temporal, and relational boundaries between work and family (Ollier-Malaterre et al., 2019). Here, Ollier-Malaterre et al. (2019) have developed a conceptual framework for understanding the intersection between digital technologies and work-family dynamics. Second, treating digital access and literacy as preconditions for family life online, our multilevel framework builds on the assumption that individuals and families have sufficient, albeit unequal, digital access and literacy to "do" family online. Future research could consider the implications of the digital divide and exclusion in an era when family life online is increasingly mainstream. Third, given the conceptual focus of our article, we refer readers to methodological pieces in this issue and elsewhere for guidance on using digital data and methods in family research (e.g., Garcia Garcia & Barclay, 2020; Lupton, 2021; Sun, 2024).

Tracing profound societal changes brought by each wave of industrial revolution, it becomes evident that emerging technologies always introduce new opportunities, challenges, and questions that impact various domains of life (MacKenzie & Wajcman, 1999). The ongoing wave of digital revolution poses several grand questions regarding the future course of family change: Will the emotions in and meanings of family life remain resilient or be transmuted by hyper-rationalized digital technologies (Elliott, 2022)? Will digital technologies mitigate or exacerbate the ongoing global care crisis (Carr & Utz, 2020; Francisco-Menchavez, 2018)? Will digitalization facilitate global diffusion of family norms that leads to a convergence of family systems or entrench global inequalities that drive family systems further apart (Therborn, 2014)? Answering the above and many other emerging questions requires systematic attention to how individuals use digital technologies to "do" family at the micro level, the making and operation of family-focused digital communities at the meso level, and the configuration of macro-level (infra)structures, as well as the cross-level interplays. Our multilevel framework offers a conceptual tool that guides researchers to think through these core components and the holistic digital ecology of family life.

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