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Intersections. EEJSP
9(1): 120–144.
https://doi.org/10.17356/ieejsp.v9i1.1049
https://intersections.tk.hu

Digital technology and family dynamics: The 3Rs conceptual model regarding the acceptance and use of digital technology in everyday family routines

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Abstract

The inclusion of digital technology in family life has led to the emergence of new practices of 'being together'. Communication between family members is mediated by digital technology, thus producing changes that can be observed in family dynamics. Eleven families participated in the present study that aimed to analyze family interaction with digital technology. Our qualitative study was guided by two research questions: *How do children and adults use and subjectively assess digital technology in their everyday lives?* and *How do families react to digital technology use and inclusion in their daily family routines?* Referring to the different forms of digital behaviors that a family can manifest in relation to the use of digital technology, we identified three specific family approaches to digitalization: *Resistant, Retained, and Receptive.* The 3Rs family conceptual model regarding the acceptance and use of digital technology includes children's and adults' perspectives and provides a constructivist approach to understanding how digital technology connects all family subsystems and ultimately produces changes in the dynamics and construction of family life and identity.

Keywords: Communication and Information Technologies; digital demographics; Family Digital

1 Introduction

Digital technologies (DTs) have transformed the way we learn, communicate, and work, thus, we can say that these technologies have become an intrinsic part of our lives. In analyzing the effects of DT on the family ecosystem, it is necessary to take into consideration not only the advantages and disadvantages of such technology on the family ecosystem but also the mechanisms that determine these consequences. Aiming to provide a qualitative perspective on how the family ecosystem has been changed by the usage of digital technology, the current paper describes a series of analyses of different aspects such as families' access to technologies, the digital devices that are used, and their modes of con-

nectivity, digital affordability, forms of digital inclusion in family life, and the opportunities and types of technology usage of families. By bringing together children's and parents' perspectives on DT use, we seek to evaluate and understand how the latter are incorporated by Romanian families and how they shape family dynamics and everyday life.

This study is relevant in a context in which the digitization process in all areas of society at the national level is beset by difficulty. The Digital Economy and Society Index (DESI) 2021 ranks Romania twenty-seventh out of 27 EU Member States. The same report (DESI, 2021) indicates that less than one-third of people aged between 16 and 74 have at least basic digital skills (56 per cent in the EU as a whole), while 35 per cent have at least basic software skills (EU average: 58 per cent). Only 10 per cent of individuals have above-basic digital skills. These data reveal a contrast: Romania ranks last in Europe in terms of digital competencies but has almost the highest connectivity speed in Europe – third place (DESI, 2021). As digital technology is being more frequently used by the younger population, the exploration of children's digital world and the digital habitus of Romanian families becomes relevant and fundamental for understanding the role of the family in this digital age.

How and *for what* children and adults use (and subjectively assess) digital technology in their everyday lives are considered two dimensions of the family model of DT use (Livingstone & Byrne, 2018). With the inclusion, expansion, and diversity of digital devices used in the family, there have been changes in what we may call '*doing family*' – the day-to-day act of reproducing the family environment through social interaction among its members (Morgan, 1999; Nedelcu & Wyss, 2016; Lorenz & Kapella, 2020). Various aspects of doing family, like family traditions, daily routines, or other distinctive elements that make the difference between two families, are influenced and shaped by the use of digital technology.

Digital technology use by family members affects the family ecosystem, with some areas being more technology-friendly and others being more resistant to the digitalization process. Therefore, the increasing frequency of digital technology usage at home gives technology an important role in building family dynamics. The use of various digital devices by each family member ultimately leads to a greater variety of digital activities, products, or digital content. The way technology is used may influence the attitude individual family members have toward DT, even in social contexts outside the family (e.g., at school). Several studies (Haddon & Vincent, 2014; Khourochvili, 2017; Baron et al., 2019; Casaló & Escario, 2019) have shown that the use of digital devices is becoming increasingly privatized and mobile. Following the studies in this area, this paper looks at the specific behaviors that family members display when including digital devices in the family environment.

A lot of previous data related to the role of DTs in family cohesion (Francisco, 2015; Gonzalez & Katz, 2016; Marlowe et al., 2017; Madianou, 2019) focuses on the role of digital technologies in the daily lives of transnational families, but less on how the use of digital technologies shapes the daily lives of families whose members stay together and interact on a daily basis. This study emphasizes the effect of the everyday use of technology and how this can change the family routine and ecosystem.

2 Trends in the use of technology in families and among children

Researchers' approach to examining the impact of digital technologies on family dynamics has gradually moved from a perspective that situates technology as an autonomous system that only interferes with some family dimensions to an integralist approach that identifies technology as a constructive part of the family with implications for all levels of the family ecosystem. The fact that digital technology is used actively as part of the daily routine may be seen in the digital activities in which the family engages and that influence family cohesion (Eynon & Helsper, 2015; Romero-Ruiz et al., 2017; Mullan & Chatzitheochari, 2019; Ceipek et al., 2021). Consequently, with the constant dynamic upgrading of technology, the concepts of family and technological change become increasingly interrelated. As a result of the daily use of digital technology in family life, different ways of being, doing copresence, and thereby 'doing family' are carved out (Döbler, 2019; Ducu et al., 2023).

Villegas (2013) suggests that technology use has at least one of two functions: it serves as a medium for independent user activities or as a vessel for socializing and communication. Starting from the idea that communication plays a central role in any family's functioning and the mental health and well-being of each family member (Oltean et al., 2020), new technologies have contributed to new ways of maintaining family communication. By bridging gaps (in line with the understanding of the interaction of social systems) and increasing the sense of social cohesiveness, the use of DT in the family's everyday life highlights the applicability of systems theory in the sense of the latter's support for continuous interconnection among family members. Digital technology has the ability to connect family members in different interactive ways: each family can have a common *active digital experience* (that engages family members in digital activities) or *a passive experience* (by accepting or submitting to digital content concerning family life in the online environment). Digital technology can be seen as driving changes in family life, or, conversely, family members' intentional use of technologies can be understood as mediating its effects (Mauthner & Kazimierczak, 2018). A study from Belgium (Beyens & Beullens, 2017) showed that the co-use of digital technology decreases conflict associated with compliance with the rules of use of DTs.

Any typology of families associated with DT use will be related to the variety of devices that are at the disposal of family members and the motives for the usage of these devices. Koener and Fitzpatrick (2006) argued that technology-mediated familial relationships are associated with the nature of technology use.

The diversity of digital devices and products used in the family can have a *fluid* and *adjustable* character. Fluidity is the ability and possibility of DTs to exert influence through time and space in all dimensions of family life (the same digital device can be used to organize daily activities within the family for communication and leisure purposes). Adjustability is the ability to adapt to interaction and involves factors such as age, context, or individual needs. Starting from these observations, the variety of digital technologies used by children and adolescents differs from that used by adults. The differences in terms of devices that are used also highlight the distinct aspects of the intentions and motivations that a family member may have during their engagement in a digital activity.

Regarding how children across Europe engage in digital activities, the most common activity in the online environment is related to leisure and entertainment, namely, watching content from the video-sharing platform YouTube (Martínez & Olsson, 2018; Ofcom, 2020; Konca, 2021). Digital touchscreen devices, such as smartphones and tablets, are preferred by children and are used more frequently than static devices, such as computers and television (Ofcom, 2015). For both adults and children, DT use can be motivated by the need for socialization and emotional externalization (Ellison et al., 2014; Vermeulen et al., 2018).

Parental flexibility may motivate the use of technology in the family by allowing DTs to be used as a reward for children and to regulate their behavior (Lwin et al., 2021) or for educational purposes (Selwyn & Facer, 2014).

At the national level, Romania has been identified as a poorly digitized country compared to Western European countries in recent years (Radu, 2019; INS, 2019). However, an upward trend can be identified in the digitization process compared to previous years, with the access of the general population to mobile broadband increasing in 2020 to 78.2 per cent compared to 64.2 per cent in 2019 and 57.3 per cent in 2018 (INS, 2020). In addition, social media is seen as an important source of information, with more than two-thirds of Romanians getting their news from Facebook, YouTube, and other social media platforms (Holdis, 2019; Radu, 2018). Moreover, it seems to be a tendency among families to use more interactive forms of DTs to replace television (Holdis, 2019, p. 83).

In an analysis of the digital life of Romanian families, Velicu and Mitarcă (2016, p. 4) showed that smartphones are more often used by parents, who consider them unnecessary for young children, while children migrate more towards the use of tablets. A similar result has been reported in other countries as well (Chaudron, 2015).

3 Family typologies regarding the use of digital technology in daily family life

Families' adaptation to the new digital age has been and continues to be challenging. The decision-making process related to the use of technologies in the family proves to be a complex one that is influenced by internal factors (such as the dynamics of family relationships, family values and beliefs, the family environment, and parents' perception of and motivation to engage with new technologies), contextual factors (access to technology, socio-economic status of the family, socio-cultural context) and socio-demographic variables (Austin et al., 1990; Van Dijk, 2017; Estacio et al., 2019). In addition, the various communication options mediated by DT that can be used by family members for interaction and the transition from 'conversational communication modes' to 'connected presence modes' have caused significant changes in intergenerational communication (Licoppe, 2004).

Concerning the importance awarded (and increasing frequency of) technology use by young people, keen to be accepted within their peer groups, families are often burdened by the latter's excessive use. The inappropriate use of convenient digital technology solutions by elderly members may also be an issue (Trilar et al., 2018). Seen by stakeholders as potential 'digital champions', young people can influence *gatekeepers'* perception of DT

use and the frequency of daily use of digital devices (Eynon & Helsper, 2015). The democratization and adaptation within the family of new digital methods of communication, leisure, and organization may come to replace specific patterns of family functioning.

For today's families who are 'the shelters' of digital natives, the concept of *closeness* and *togetherness* transcends time and space – a person can be in the kitchen with their mother while she is preparing dinner, yet at the same time with their aunt – on vacation in another part of the world – via a smartphone. Thus, through DT usage, the perception of distance and space changes, family ecosystems are strengthened, and new interaction scenarios and relational patterns emerge.

To understand how technology can shape daily family routines, the way it is used and its purpose must be considered. Most studies that have defined specific typologies of the use of DTs within the family and how the family structure is ultimately influenced have as a central element the theory of parental mediation (Valcke et al., 2010; Clark, 2011; Schaan & Melzer, 2015; Wagner et al., 2016; Rodideal, 2020; Eichen et al., 2021). The family dynamic is largely influenced by the parent-child relationship and the parent's role as *mediating* between child protection and ensuring access to technology (Harrison, 2015), in line with the norm of acting in the child's best interest (Livingstone, 2016; Alkhallouf, 2021).

Affected by specific socio-demographic factors, which differ from family to family, the vulnerability that may arise because of these contextual factors involves the issues of children's safety online and the harmony of the family ecosystem. Too much time may be spent using devices, with consequences for the psychological development of young children (Lenhart et al., 2015; Olsen & Pace, 2015; Kardefelt-Winther, 2017; Robidoux et al., 2019; Bajc et al., 2019; Hollis et al., 2020), the social-emotional lives of older children (Hatzigianni et al., 2016; Radesky et al., 2016; Suhana, 2017; Betts & Spenser, 2017; Goagoses et al., 2020; Sharpe, 2021; Bohnert & Gracia, 2021), in terms of accessing inappropriate or inaccurate content in terms of the users' capacity to understand (Livingstone et al., 2011; Sprung et al., 2020; Stoilova et al., 2020; Tiwari, 2020; Casillas-Martín et al., 2020) or in the less competent use of digital devices (Porat et al., 2018; Nikken & Opree, 2018; Fau & Moreau, 2018; Chaudron et al., 2019).

Several studies have shown that parents' misunderstandings about why children engage in some digital activities are contentious and generate conflict (Chatterjee & Yatnatti, 2020; Beneteau et al., 2020; Freeman et al., 2020). Therefore, understanding how technology use can shape family practices can contribute to minimizing the intergenerational gap (Prügl & Spitzley, 2021).

4 Methodology

The research described here aimed to explore how the lives of Romanian families are shaped due to technological transformation. In seeking to achieve this goal, and based on the previous literature, the study involved the analyses of six thematic dimensions: 1) Knowledge about and subjective assessment of digital technology by children; 2) Know-

ledge about and subjective assessment of digital technology by adults (parents); 3) Forms of use of DTs by family members and reasons for using them; 4) The presence of the family in the online environment (displaying the family on social networks; use of various digital products within the family to support and improve the daily routine – e.g., online shopping, paying bills, etc.); 5) The diversity of shared digital activities carried out within the family – co-activities and co-presence; 6) Family engagement in sustaining behavior that supports digital technical needs (vertical parent–child or horizontal child–child).

Two research questions guided the study: 1) *How do children and adults use and subjectively assess digital technology in their everyday lives?* and 2) *How do families react to digital technology use and inclusion in their daily family routines?*

4.1 Instrumentalization

The study used a participatory research approach involving *photo-elicitation interviews* (PEIs) with children and parents. PEI is a method of interviewing used in visual sociology and other fields of social research characterized by using graphical images to elicit comments on specific topics (Harper, 2002; Epstein et al., 2006). Photo elicitation is a participatory research technique that allows researchers to analyze participants' responses to images that are shown during the research process. Within photo elicitation, photographs may be researcher-produced, participant-produced, or co-produced by the researcher and participant (Lapenta, 2011). In our case, the images were produced by the researcher, allowing children to engage better in the research interview and actively contribute to the research process. Using images for increasing involvement by elicitation has proved useful in the past (Harper, 2002; Clark-Ibáñez, 2004; Epstein et al., 2006) in terms of the method's ability to maintain children's interest. Digital images ('show cards') that included various everyday scenes (e.g., a family meal, group play, and adult-child collaboration) associated with the digital lives of individuals and the family were developed and used to encourage the discussion of daily activities or present a story about individuals 'digital experience' of DTs use in the family context. PEI are a relevant approach for obtaining emotional and cognitive information about children's and young people's digital lives and exploring the intriguing subjectivity brought forth through the visual metaphors regarding the assessment of the role of DTs in daily family life.

In total, twenty-six semi-structured interviews were conducted (eleven families). In order to compare the perspectives of family members regarding the use of DTs, at least two members from each family were interviewed (of which one was a child between 5–6 and 8–10 years of age, the second was a parent, and the third was either the other parent or another adult or child from the family). The interviews with family members were conducted separately, without other family members being present. To ensure the comparability of the perspectives, the interview structure was similar for children and adults.

The main aspects of the interview guide are summarized in Table 1.

Table 1 Content of the interview guide

Interview guide content	**Research interest**
Introduction: interviewer, project, expectation, open questions, consent form.	Participatory research techniques
Individual use of DTs and apps: *Show cards with devices and apps are a memory aid*	DTs use and assessment, leisure time
ICT use of family members individually and together (e.g. communication about or via DT, digital literacy and intergenerational differences)	Family practices Intergenerational difference
Negotiating ICT use within the family	Rules negotiations and conflicts.
Prospective change: "What if…?" and "What would you like to have?"	Assessment effect Personal future
Questionnaire (for adults only)	Socio demographic information about the participating families

Source: Generated by the authors

Additionally, adult respondents completed a short standardised questionnaire about the following aspects:

- Age and gender of respondent
- Size of family/number of (step-)children;
- Number of people in household
- Age of household members
- Educational background
- Occupation
- Financial situation

The questionnaires were applied to each family, so they also reflect the children's situation.

4.2 Data collection procedure and sampling characteristic

Data collection followed the methodology developed throughout DigiGen – EU Horizont 2020 Project, whereby a set of twenty show cards were used. These cards were developed by the Oslo Met team and consortium members of DigiGen.

The show cards used in the data present study are connected to the digital lives of children and families as some parts of them illustrate devices and/or applications commonly used in the digital world and can be used to explore ownership and children's knowledge about these devices. The second category of show cards refers to a series of different situations/events related to digital life. Examples of images from this category can be consulted in Figure 1.

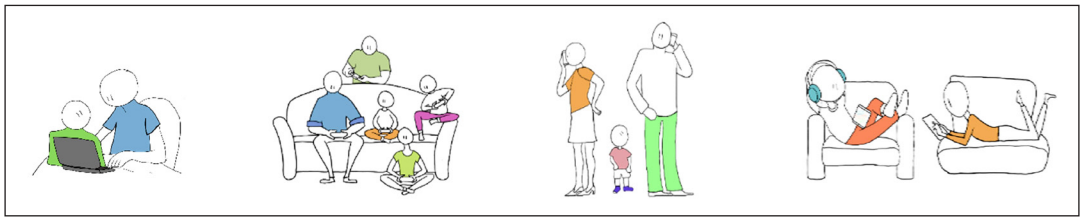

Figure 1 Examples of show cards.

Source: DigiGen field materials.

Scene 1: An adult and a child are sitting in front of a laptop. They are both looking at each other. (Could be homeschooling, research, Skype…)
Scene 2: Three children (potentially siblings) and two adults are sitting on a couch and playing together (the research participant is free to say what they think the people in the picture are playing).
Scene 3: Two adults (maybe parents) talking on the phone with a child between them.
Scene 4: Two children are sitting comfortably on different sofas. One of them is listening to music, and the other is reading.

The sample consisted of eleven families, including twelve children and fourteen adults. The families participating in the study were selected through a snowball sampling procedure, the starting point being four families with different social statuses from Cluj County, North West region of Romania. We tried to contact families and children with different socio-demographic backgrounds (see Table 2). Strategies used for recruiting participants were a mix of letters taken home from schools (an information letter regarding the research project was sent to several schools) and indirect contact using the social networks of the interviewer. Participants were selected based on the same specific criteria, and ideally had one or more younger siblings.

4.3 Data analysis

The first stage of the data analysis process was the completion by the interviewer of a 'Theoretical and Methodological Memo' – a table structured into five parts that condensed both the technical aspects of the research and the dimensions related to the thematic analysis. The five parts of the Memo required specific information on: (1) *Before the interview* – the recruitment process; relevant conversations outside the interview; (2) *General information about the interview* – data, name of interviewer, institution, contact person/gate keeper, location of interview, duration, age of children (5–6 or 8–10), gender; (3) *Meta information about the interview* – seating arrangements; observations about family environment; reflections on dynamic between interviewer and respondent; (4) *Interview content* – details about interview content, introduction, (Individual) ICT use: devices/apps, how, for what, how often, where; ICT use of family members: devices, apps, how, for what, how often, where, when; conflicts and arguments amongst family members about ICT use; negotiations within the family, rules, development of rules, strictness and exceptions; ICTs

in daily family life: advantages and disadvantages; prospective changes; and (5) *Methodological reflection* – What worked and what did not? How did formal (e.g., setting, recruitment, communication, additional materials, question formats/tasks, interaction) and content-related aspects contribute?

All interviews were audio-recorded and transcribed verbatim. Data were analyzed using qualitative thematic analysis performed in NVivo 10.

Table 2 Socio-demographic data related to sample of children

Child			**Interview partner**					**Educational background of parents**	**Area**			**Family form/ living arrangement**
Age	**♀**	**♂**	**Mother**	**Father**	**Sibling (age)**	**Grandparent**	**Aunt/uncle**		**urban**	**suburban**	**rural**	
5		✓	✓			✓		H	✓			Multi-generational household – grandparents in the same house
5	✓		✓					H	✓			Divorced parent, child lives with mother
6	✓		✓					H			✓	Two parents with children
6		✓	✓	✓				H	✓			Two parents with children
6	✓		✓	✓				H	✓			Two parents with children
6	✓		✓		✓ (9)			M			✓	Two parents with children
9	✓		✓					L		✓		Divorced parents. Living conditions are poor, below normal/decent living standard.
9		✓	✓					L		✓		Divorced parents, child lives with his stepmother. Living conditions are poor, below normal/decent living standard.
10	✓		✓					L	✓			Two parents with children
8		✓	✓	✓				H	✓			Two parents with children
9	✓		✓		✓ (6)			M		✓		Two parents with children
8		✓	✓					H	✓			Two parents with children

Source: Generated by the authors

Note: Educational background of parents: H = University or similar; M = secondary education granting access to tertiary education; L = below secondary education not granting access to tertiary education.

4.4 Ethical considerations

Research ethics approval was requested and obtained from the Ethics Committee of Babeș-Bolyai University. In order to comply with research ethics, the following materials were drafted, distributed to the participants, signed, and collected: *Information leaflet for guardians* – general information about the project, research questions, what we need from them, time frame, and contact details; *Consent form from guardians and information leaflet* and *Consent form for children.* The consent form for children was created to be child-friendly and included icons with a variety of digital devices (e.g., Facebook, TikTok, Nintendo, computer, smartphone).

5 Results

The sample distribution allowed for an in-depth analysis of the specific contexts and circumstances that shape the children's lives and growth. However, for this sample, the analysis of the family background and living environment offered only limited insights. In line with the gap in the literature regarding the impact of digital technologies in the everyday lives of families and the fact that family identity is shaped by technology-mediated co-present activities, triangulating perspectives within one family unit and comparison of the most relevant topics mentioned by family members led to six thematic units being identified. Based on the Memo structure, the data analysis process focused on identifying the use of DTs by individuals and in the family (e.g., communication, leisure time, and organization of daily life), with special attention paid to interactions with and through digital technology (type of activities); negotiations, rules and conflicts around DT use (e.g., privacy, time); and the assessment of DTs – the advantages and disadvantages of the latter from the perspective of individuals and the family with a focus on harmful versus beneficial effects on the family system and individuals.

The results are structured and presented by analyzing the six thematic dimensions of qualitative analysis according to the research question: *How do children and adults use and subjectively assess digital technology in their everyday lives?*

The eleven families were very different in terms of the possession of and access to technological devices of children, from children who share one smartphone with three other siblings (F1) to children who have two or more personal digital devices (F8).

Starting with an examination of the child's degree of familiarity with a particular digital device or apps, then the frequency with which the devices and apps are used, most of the children recognized both the devices and the applications shown in the images on the first series of cards. The children predominantly access the internet at home and through mobile devices. As for the frequency and diversity of digital technologies used by children, one of the most recognized and commonly used applications is YouTube, especially for children five to six years old, and TikTok for children eight to ten years old, the latter (TikTok) being perceived as a platform that offers the opportunity to manifest social status. At the same time, children are aware of the economic potential of this application: the opportunity to earn an income if you can produce attractive content.

Interviewer: What do you like most about the digital world?

F1_1: Watching TikTok, second place is YouTube.

Interviewer: And how do you watch TikTok?

F1_1: I enter it.

Interviewer: On what?

F1_1: On the phone. (RO-1-1)

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There are challenges that you can do, and if you have a profile with many followers, you can make money from views, but you have to know how to dance or be very different. (F11_2)

The devices most used (every day) are smartphones and smart TVs. Smart TVs are the main device for watching movies with family or specific videos on YouTube as well as devices for 'background noise'. Other less used devices (once every two or three days) are laptops and PlayStations, while less used apps are Roblox and Snapchat. However, PlayStations are the devices most desired by children, followed by smartwatches, but only two of the children who were interviewed have a console (F8_1 and F9_1). It is worth mentioning that girls consider the PlayStation to be an interesting device only for boys: 'Even though the games on the PlayStation are more for boys, sometimes I play with my brother' (F8_1).

The children use digital technology to meet some personal needs (socializing, entertainment, play). The most common activities which children engage in through digital technology are games, watching videos (tutorials of how other children play games), or just being 'online' or 'on TikTok'.

For children, digital technologies, particularly smartphones, represent a space for entertainment. Because most children are allowed to use these devices independently and generally without close monitoring, smartphones are a space of freedom and escapism from the 'world of adults'. Some of the children use specific applications, depending on their usefulness. For example, a young girl told us that she most often used TikTok for entertainment, Viber for socializing with classmates, and Roblox for virtual community gaming. For socializing with family members, she also uses applications such as Messenger and WhatsApp.

Regarding parents' use of technology, the most used digital devices are smartphones and laptops. The adults who use laptops associate them with the workplace, considering them work-related tools, while smartphones are mainly used in private spaces to meet personal needs, such as for entertainment and communication with family members and friends. The digital apps adults use most are Facebook, Instagram, apps for online shopping, and WhatsApp. Although adults use technology for personal and work-related communications and interaction, they also use technology to keep in touch with friends and extended family members.

Interviewer: And what kind of information do you look for on your laptop?

F4_2: Firstly, information related to school, professional, scientific things, and on the other hand, I look for news, press articles.

As mentioned earlier, the use of digital technologies is based on specific user needs. We have identified three areas where which adults most frequently use DTs: (1) For online shopping (F4; F8; F11). It is worth mentioning that those who use various applications for online shopping stated that they buy only non-perishable items, with food products being totally excluded from the online shopping list. (2) For communication and socialization purposes ('Facebook helps to maintain relations with all the family. For example, now I have a baby and I can't go to my mother's. I can call her on Messenger and I can see her any time' (F2_2)). (3) As a form of leisure, adults mention that they use YouTube, and some mention shared activities like gaming ('…for entertainment I prefer YouTube as an application, and the mobile phone as a device' (F7_2)).

In contrast to the results obtained in this study (that children predominantly access the internet at home and through mobiles), Chaudron (2015) research indicated that tablets were children's favorite devices at that time. This result was also acknowledged by Livingstone et al. (2015), who concluded that tablets are popular and important in young children's digital lives, particularly for leisure purposes. In the same age range, we highlight a change regarding the degree of children's independence related to using technology. While previous studies (Livingstone et al., 2015) showed that in situations when children used digital devices creatively to take photographs or generate video clips, parental mediation was still required to edit and complete the process, yet now we can talk about a *reverse support process* regarding the use of digital technologies. In most cases, especially in the case of socially vulnerable families, children support their parents with various DT-related activities.

How do families react to digital technology use and inclusion in the daily family routine? The behaviors in which children engage while using digital devices at home are related to pre-existing models of DT use in the family. Therefore, the extent to which digital technology is included in the family environment/space may influence the impact and changes in family dynamics.

The diversity of digital devices used by each family member, forms of engagement, and the amount of time spent on or with technology interfere with the domestic context, and also relevant are the number of devices the family owns, where they are located, family routines, and rules. Classification of the digital behavior of a family as a unit, in addition to being determined by the individual perspectives and approaches of each member, involves vertical (parent–child) and horizontal perspectives (child–siblings). Children are active observers of the digital behavior in which their parents are engaged and manifest interest in their siblings' digital activities.

Combining children's and adults' perspectives about the use, intentions, and motivations for using DTs, we developed the 3Rs family typology model (see Figure 2), which includes the following patterns regarding the acceptance and use of technology in family life:

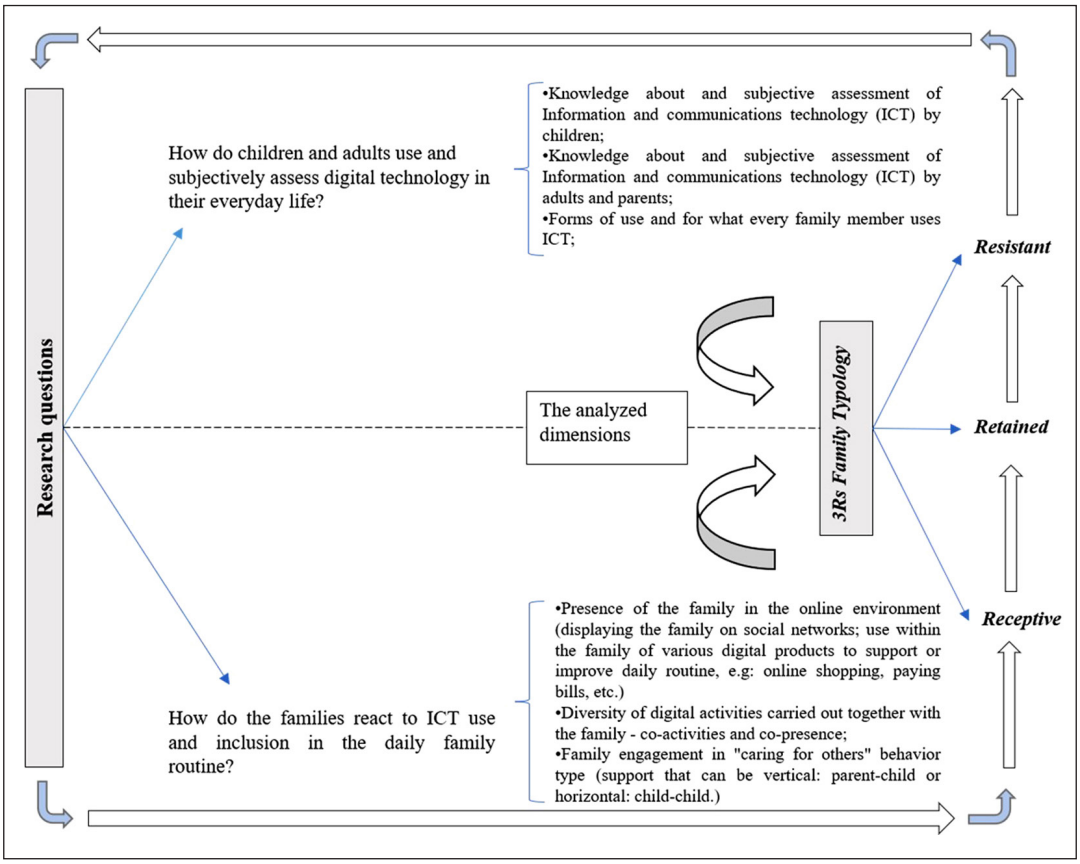

Figure 2 The 3Rs conceptual model regarding the acceptance and use of digital technology in day-to-day family life

Source: generated by the authors.

Resistant families consider that digital technology negatively affects family dynamics and engage in behaviors resistant to digitization: they use a less diverse set of digital devices, DT-mediated family activities are not extensive, and they prefer outdoor activities that they consider 'quality time with the family'. These families use technology at the minimum necessary level; the main goal is to keep in touch with each other and to access information and entertainment. On average, these families have between one to three digital devices (F1, F2, F3, F5): 'Technology helps us a lot to organize our day-to-day life, family life' (F1_2).

The communication function of DT is often seen as an advantage by parents and beneficial for maintaining family connections and facilitating easier relations between members. Seeing others was especially valued when in-person contact was problematic: '… now I have a baby, and I can't go to my mother's. I can call her on Messenger and I can see her all the time' (F2_2).

In this classification system, particular attention is paid to one Roma family. The children in this family reported having limited access to technology and use of a limited variety of digital devices. These devices were shared among family members, including children and parents and older and younger siblings. The negotiation of device usage for home-schooling proved to be challenging in such families. Additionally, poverty added to the difficulty and responsibility of maintaining the devices due to a lack of continuity in access to electricity. While social discrepancies between families are not the primary focus of this study, the confounding effects of the digital divisions between families resulting from their social background are acknowledged as a limitation of the current research.

It is interesting that in families with several children, including an older brother, the little ones know many details about the devices and applications from their siblings. For example, F7_1 knows about Facebook, WhatsApp, TikTok, Spotify, Instagram, and smartwatches from his sister, and F6_1 knows about sound-editing software from her brother:

> Interviewer: What else can we use a laptop for, except for online school and watching YouTube?
>
> F6_1: We can make music with it using a special program.
>
> Interviewer: Create, or listen to?
>
> F6_1: To create. My brother has a program named 'FL studio', and he uses it all the time. He likes music a lot, but my mother doesn't like what she hears… (F6_1).

A reverse learning process can be observed when children barely nine or ten years old show their parents how the devices work and help them find content of interest.

There is no real system for determining how much time children can spend on their digital devices in the case of the children living on the landfill due to the inability to charge their devices.

In the case of resistant families, we noticed that there are some strict, clear rules about DT use regarding the time permitted for using digital activities. In these families, parents usually specify the consequences they take when the rules are not followed.

> She (the daughter) is not allowed more than one hour on the tablet and is only allowed this after doing her homework. Sometimes, after sitting on the tablet for one hour, she goes and turns on the TV. If I notice, I go and turn it off (F6_2).

Children often internalize and accept the norms that are set by parents: the daughter of the aforementioned mother thinks the rules are there for the whole family and that it is appropriate to restrict the use of DTs if one behaves badly (F6_1).

One method the families use to promote compliance with rules is promptly reacting to disobedience, while another is providing rewards for compliance: 'Two hours a day [access], but if I abstain from Monday to Thursday, … [then I have] Friday, Saturday, and Sunday unlimited' (F9_1).

Retained families consider that technology can influence family dynamics 'as much as family members allow it' (F9_3); the behaviors they engage in are related to negotiating and finding a balance between the family's online and offline activities. With this type of family, we see a variety of digital devices: in addition to smartphones and TVs, they also use computers and laptops. On average, these families have between one to five digital devices (F4, F6, F9, F10). Members of such families are insecure about using multiple digital

devices. This uncertainty is linked to the negative impact they could have on family cohesion. However, they use a wider variety of digital products, considering technology to be a suitable alternative to leisure. In these families, DTs are used for communication and participation in social life.

This category includes families with no explicit rules regarding when technology may be used, but adults expect children not to look at a specific type of content. The behavior in which adults engage in such situations is often not consistent and is determined by unforeseeable factors from the perspective of the children.

From analyzing family participation in social media, we identified two approaches related to motivational aspects. Namely, that technology can meet the need for belonging to a small and homogeneous group (such as a family) and the need to be a part of a social group and be aware of social events. Through fostering online presence and including technology in family life, DT contributes to how families are organized and live together and has significantly transformed the latter during the last two generations, noticeably impacting relations between family members. The use of DT for family activities contributes to maintaining some shared time with family members, especially between children and parents, including spending time together for entertainment. The devices most commonly used for shared activities are smart TVs and smartphones, while the most used apps are Netflix, HBO, Messenger, and WhatsApp.

> Interviewer: Do you watch movies or YouTube videos on your computer or laptop?
>
> F6_2: No, the screen is too small. We use our laptops and computer more for news or specific information. For movies, we use smart TVs (F6_2).

F7_3 believes that watching a movie with his family is a technology-mediated activity that involves spending quality time with the family. Other online activities are 'just a waste of time'.

Regarding participation and social cohesion, DTs are used to access information, read news, and actively participate on social platforms in all kinds of discussions about social and political issues. For this, the digital device most commonly used is the smartphone, and the most often used applications are Facebook, Instagram, email, Pinterest, and YouTube. Likewise, adults use DTs to spend time with friends. For this, they use devices such as smart TVs. To stay aware of musical trends, they use YouTube.

> Ooh… Facebook! The thing I wake up with in the morning. I have an account, and I log in whenever I have free time. I find it useful. I found a lot of high school friends there, and I can see pictures of all my colleagues (F6_2).
>
> ***
>
> I admit that I don't really use all these devices. I mostly use Facebook and WhatsApp for communication; I have all kinds of groups there that I am part of. I talk a lot through video chat with some of my friends from other countries (F8_2).

In the case of retained families, even if specific rules are established, there is no continuity with their enforcement. We found indications of violations of the rules in these families, with some children acknowledging that at least they manage to break the rules sometimes: 'I secretly disobey them [the rules] sometimes' (F5_1).

Receptive families use digital technology frequently and own various devices and applications. On average, these families have between one to eight digital devices (F7, F8, F11). They consider technology to be something necessary for the family, making daily tasks easier. There are no rules regarding the use of DT. These families usually take a passive approach to DT usage regarding time spent on devices and the content of digital activities. This passivity related to rules does not necessarily mean a lack of digital education. Some parents may have difficulty managing the limits of their children's behavior. In other cases, families are aware of risks and explain them to children. Also, they seem to be ready to intervene if they consider that children are being exposed to risky situations. One explanation for the lack of rules in these families may be parents' high degree of confidence in their children's ability to understand dangers once they have been explained.

An interesting finding is that children from these families in which there are no rules consider that it would be good to have some rules for both children and adults. For example, in family F11, there are no rules, but the daughter thinks that some rules would be very useful. For example, she would ban the use of phones in the morning and the evening as this should be family time. Parents should play with their children, talk to them, and cook together.

> Interviewer (discussing the role play involving playing on the phone at bedtime): Do you think there should be any rules?
>
> F11_2: Yes, if I could set some rules, I would forbid family members to use the smartphone in the morning and the evening and to use devices only a maximum of two hours a day.

Another category includes those families that involve children in setting rules. In the case of family F8, the parents say that they impose no strict rules and give the children the opportunity to make their own decisions about using technology. The father claims that 'when rules are established, they are established together with the children.'

> The children's opinions matter, and we really take them into account. We have noticed that if you value their opinions, it is very easy for them to respect certain rules. This way, there are no conflicts (F8_3).

With all parenting types, punishment for breaking the rules is usually imposed, commonly in the form of longer or shorter restrictions on preferred DT, with obvious exceptions in families where no rules are imposed.

DT increasingly offers parents more and more opportunities to monitor children, reshaping how control and autonomy are negotiated within families. Negotiations and conflicts take place in two dimensions: vertically (child–parent/adult) and horizontally (child–siblings).

From the child's perspective, the most common causes of conflict related to the use of digital technology in the family are:

– Sharing one digital device with siblings

> Interviewer: How do you get along with your sisters when using the smart TV? Do you argue over it?
>
> F3_1: We sometimes argue because everyone wants to watch different things, but the smaller children win because if they don't get to watch what they want, they start crying (F3_1).
>
> ***

> Interviewer: How do you get along with your siblings when using the phone? Do you argue over it?
>
> F1_1: Yes (because they only have one phone, and everyone wants it). Everyone should have their own phone.

This girl's solution for making everyone happy was not imposing rules and negotiations; instead, she would provide smartphones for all the kids in the family, not only for adults.

In the case of family F11, members are split about the content of DT use according to their gender: the sisters sometimes agree to watch a vlog together as they have some common interests, but the son, the youngest child, prefers cartoons and cannot agree with the girls about content. If the phone is taken away from him, he starts crying, screaming, and hitting out. In such situations, the mother intervenes, usually returning the smartphone to him and telling the girls that they are older and must understand him.

– Non-compliance with rules set by parents: children spend too much time on devices or do not keep a minimum distance between them and the device.

> I have arguments with my mother because I watch things for older people, and sometimes when I sit too close to the TV while playing on the PlayStation. If I stay too close, I will have to wear glasses, and I don't want that (F8_1).

According to the adults, the most common causes of conflict related to the use of digital technology in the family are somewhat similar to those explained by children:

– Children have only one digital device that must be shared with the other siblings. In such situations, the parent always offers support and defends the younger child (F1; F2; F3; F11).

– Accessing inappropriate digital content

> Sometimes she watches YouTube videos from which she learns nothing, or she watches others to see how they play Minecraft. I tell her to turn off the phone because it annoys me when I see what she's looking at (F6_2).

– Spending too much screen time/time on devices (most parents complain that children spend too much time on devices)

> Yes. Because they are staying on the phone too long, and it's not good. My son often stays up until three or four in the morning (F2_2).
>
> ***
>
> F4_2: He learns a lot from cartoons, like an encyclopedia. A lot is learned from cartoons; it is a good opportunity to develop vocabulary, to access accurate information about the world. On the other hand, there is also the risk that the child will end up watching films that are not suitable for him. For the kids, visual impact is very strong. Inappropriate images can cause all kinds of emotions, such as fear and anxiety.

6 Conclusion

This article has explored the different ways family members engage in various behaviors related to the use of digital technologies in daily family life. The 3Rs family conceptual typology addresses the acceptance and use of digital technology by combining children's and adults' perspectives and provides a constructivist approach to understanding how digital technology changes the construction of family life and identity. Our results indicate that the intentions and motivations for using digital technologies are influenced by the capability of digital technologies to satisfy human needs. Technology is becoming a central element of the organization of the daily activities of family life, with a mediating role (Nag et al., 2016).

Although most of the activities mediated by digital technology occur on a personal/individual level, children appreciate and consider it important to engage in shared activities with other family members.

Within the family, access to technology and the frequency of use of digital devices are associated with the roles individuals occupy in the family. Possession of a personal smartphone and relaxation of rules regarding the use of DT can be associated with reaching maturity. This is seen in parents' commitment to buy children a personal smartphone when they 'are older'. Being an active part of children's lives, digital technology requires and intensifies the need for parental mediation in the child-technology relationship. Parents differ in their attitudes to the necessity of DT and their confidence in using digital technology, as well as in their ability to set limits consistently and with gentleness to ensure the safety of children. In the long term, the rules set by parents and the practices used to negotiate these rules will become the basic principles to which children refer when accessing and using digital resources.

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