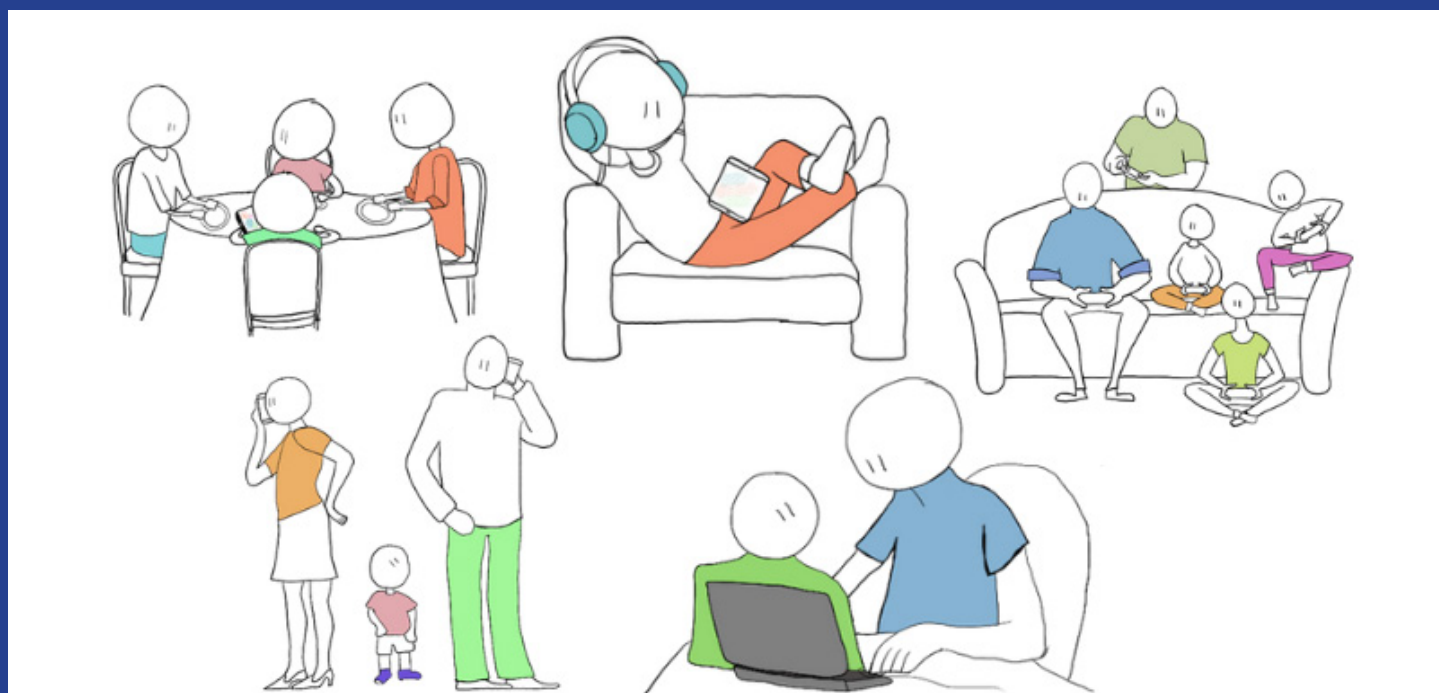


Integration of digital technologies in families with children aged 5-10 years

A synthesis report of four European country case studies

DigiGen - working paper series





The impact of technological transformations on the Digital Generation

870548

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Table of contents

Contents

| | |
|--|-----------|
| List of abbreviations: | 6 |
| Executive Summary | 7 |
| 1. Introduction | 14 |
| 2. Theoretical Framework for WP3 | 16 |
| 2.1. Agency of children | 19 |
| 2.2. Vulnerability | 20 |
| 2.3. Concept of resilience..... | 21 |
| 2.4. Development of autonomy | 26 |
| 2.5. The ‘Doing Family’ Approach | 27 |
| 3. Methodology | 29 |
| 3.1 Focus and research question of WP3 | 29 |
| 3.2 Methodological approach | 30 |
| 3.3 Recruitment and sample | 34 |
| 3.4 Memos and data analysis | 35 |
| 4. Results and conclusions regarding the methodological approach..... | 36 |
| 4.1 Setting..... | 36 |
| 4.2 Interviewer and moderator behaviour | 38 |
| 4.3 Additional material..... | 38 |
| 4.4 Focus Groups | 39 |
| 4.5 Family interviews | 41 |
| 5. Results and conclusions regarding access, use and integration of DT in 5-10-year-old children’s lives and their families | 42 |
| 5.1 Digital technologies are part of children’s everyday lives | 42 |
| 5.2 Doing Family is supported by DT in multiple ways and by diverse activities.44 | |
| 5.2.1 From heavy users to highly sceptical families—Integration of DT into families | 44 |
| 5.2.2 Parents as role models, children as instructors regarding DT—Roles ascribed to family members..... | 45 |
| 5.2.3 Building up and maintaining ‘we-ness’ and a family identity by DT..... | 47 |
| 5.2.4 DT supports the management of balance within the family..... | 49 |
| 5.2.5 Care practices in families become diverse through DT, not only reduced to physical co-presence | 51 |

| | |
|---|-----------|
| 5.3 Parental mediation on DT | 53 |
| 5.3.1 Rules setting as a dominant mediation style of parents | 54 |
| 5.3.2 Genesis of rules in families: Discussion processes, experts' advice and children as co-creators..... | 55 |
| 5.3.3 Rules often focus on limiting time for digital activities..... | 56 |
| 5.3.4 Perspectives on rules from children and parents..... | 58 |
| 5.4 Conflicts around DT arise but are primarily described by parents and less by children at the ages of 5–10 years | 59 |
| 5.5 Decreasing, increasing or developing new vulnerabilities through DT | 60 |
| 5.6 Children aged 5–10 and their families are aware of multiple beneficial and harmful effects of DT | 66 |
| 6. Summary and Recommendations..... | 72 |
| 6.1 Summary | 72 |
| 6.2 Recommendations | 75 |
| 7. References..... | 82 |
| 8. Appendix | 93 |
| 8.1 Overview of focus groups and interviews (Sample)..... | 93 |
| 8.2 Templates for Consent and Information sheets | 97 |
| 8.3 Information and consent sheets for parents..... | 97 |
| 8.4 Information and consent sheets for children..... | 103 |
| 8.5 Show cards for focus groups and interviews with children..... | 106 |
| 8.5.1 Devices and software as show cards..... | 107 |
| 8.5.2 Scenes as show cards | 108 |




Table of Figures

| | |
|--|----|
| Figure 1: Structure of DigiGen project based on Bronfenbrenner's ecological system theory..... | 15 |
| Figure 2: Theoretical Framework of Work Package 3 (Family) by DigiGen | 18 |
| Figure 3: Multilevel recursive processes in resilience in the family resilience framework from Walsh | 25 |
| Figure 4: Overview of methodological approach of WP3..... | 31 |

Table of Tables

| | |
|--|----|
| Table 1: Beneficial and harmful effects of DT, reported by children aged 5 to 10 years and their parents..... | 69 |
| Table 2: Overview of conducted focus groups with children age 5 to 6 years | 92 |
| Table 3: Overview of conducted focus groups with children age 8 to 10 years.... | 93 |
| Table 4: Overview of conducted individual interviews (family interviews) with children age 5 to 6 years | 94 |
| Table 5: Overview of conducted individual interviews (family interviews) with children age 8 to 10 years | 95 |



List of abbreviations:

| | |
|------------|-----------------------|
| DoA | Description of Action |
| GA | Grant Agreement |
| EU | European Union |
| WP | Work Package |

Regarding Digital Technologies:

| | |
|------------|--|
| DT | digital technologies (devices and apps) |
| ICT | information and communication technologies (specific devices and apps) |
| DD | digital devices (without apps) |

Country Codes:

| | |
|-----------|---------|
| AT | Austria |
| ET | Estonia |
| NO | Norway |
| RO | Romania |

Methodological approach:

| | |
|--------------|-----------------------------|
| FG_KG | Focus Groups Kindergarten |
| FG_PS | Focus Groups Primary School |
| F | Family Interview |

For example: AT_FG1_KG (Austrian Focus Group in Kindergarten No. 1)
ET_F8 (Estonian Family Interview No. 8)

In order to ensure the anonymity of individual family members, the exact No. of the family in the specific country is not identified, only the country code and the role in the family e.g.:

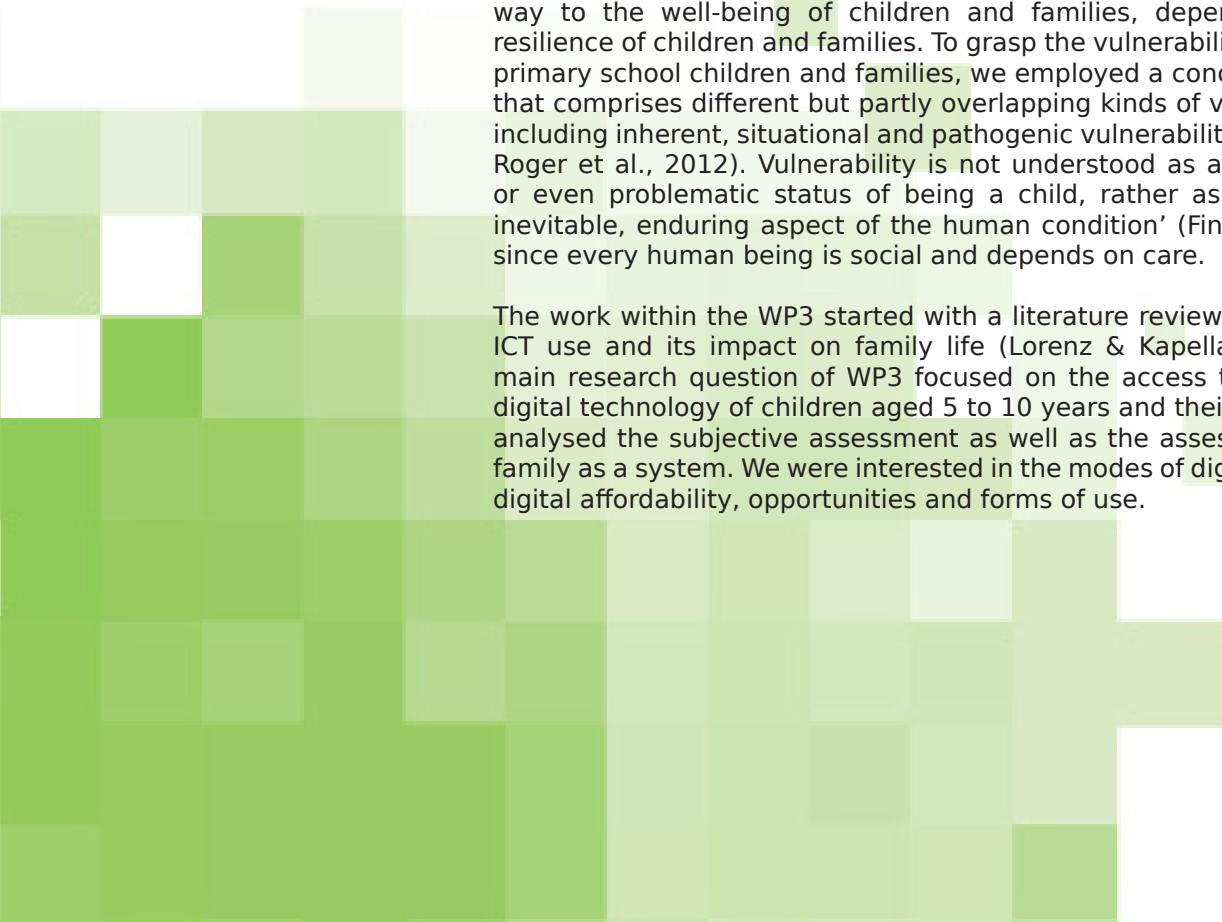
NO_child (Norwegian child)
ET_father (father in Estonia)




Executive Summary

DigiGen, in general, aims to develop significant knowledge about how children and young people make use of and are affected by the technological transformation in their everyday lives. To gain better understanding of this transformation, DigiGen looks at several areas of the lives of children and young people. These systems comprise family, education, leisure time and civic participation, and are based on ecological-system theory (Bronfenbrenner, 1979) and the techno-subsystem (Johnson & Ptoplampu, 2008). In examining the system of the family, WP3 works with a wide and broad definition of families. Family is understood as an exclusive unit of solidarity—a socio-relational structure or network of two or more people—built for longevity. Family, therefore, was always and still is diverse (e.g., Nave-Herz, 2015; Mitterauer, 2009; Segalen, 2010). To describe the impact of digital technologies (DT) on the well-being of children, the work in WP3 of DigiGen is based on several theoretical concepts. In line with the social constructivist perspective, family is defined by daily practice and comes into being through 'doing family'. Furthermore, children are not only recognised in their agency but at the same time as being vulnerable and as co-constructors of 'doing family'. The use of DT can contribute in a beneficial or harmful way to the well-being of children and families, depending on the resilience of children and families. To grasp the vulnerability of pre- and primary school children and families, we employed a conceptualisation that comprises different but partly overlapping kinds of vulnerabilities, including inherent, situational and pathogenic vulnerability (Lotz, 2016; Roger et al., 2012). Vulnerability is not understood as an exceptional or even problematic status of being a child, rather as a 'universal, inevitable, enduring aspect of the human condition' (Fineman, 2008), since every human being is social and depends on care.

The work within the WP3 started with a literature review on children's ICT use and its impact on family life (Lorenz & Kapella, 2020). The main research question of WP3 focused on the access to and use of digital technology of children aged 5 to 10 years and their families. We analysed the subjective assessment as well as the assessment of the family as a system. We were interested in the modes of digital inclusion, digital affordability, opportunities and forms of use.



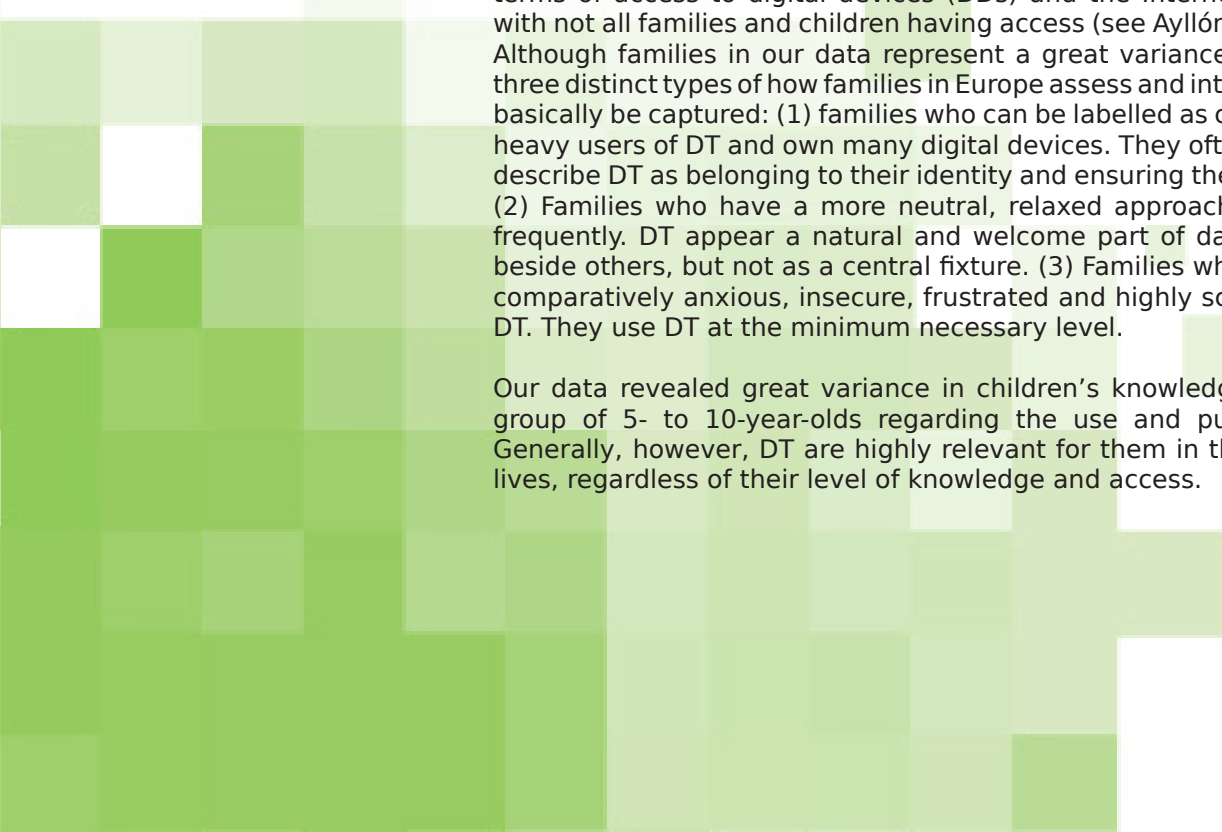



Parental mediation strategies and negotiations regarding integrating and dealing with DT in daily family life were other aspects of interest, as well as the manifold beneficial and harmful effects of DT that children and families are aware of. The central research question was how family life is shaped by digital technology, how it is reflected in 'doing family' and how it impacts the well-being of children and families.

The empirical work of WP3 was organised in four country case studies, conducted in Austria, Estonia, Norway and Romania. Each country focused on two age groups of children: (1) children between five and six years and still in kindergarten, and (2) children aged between 8 and 10 years and already in primary school. By looking at these two different age groups, we were able to observe differences before and after a major transition—from kindergarten to school. This contrasting comparison was chosen because we expected school children to be more experienced and familiar with DT than children at kindergarten age. In the fieldwork, each participating country pursued two methodological approaches and conducted (1) focus groups with children and (2) individual interviews with at least three members of one family, including at least one child from the age groups of interest in WP3.

Children today are living in media-rich households with access to a variety of different devices and DT are a central part of children's everyday lives (e.g., OECD, 2019; Eurostat, 2019; Lorenz & Kapella, 2020). However, there are differences within European countries in terms of access to digital devices (DDs) and the Internet in families, with not all families and children having access (see Ayllón et al., 2021). Although families in our data represent a great variance in using DT, three distinct types of how families in Europe assess and integrate DT can basically be captured: (1) families who can be labelled as comparatively heavy users of DT and own many digital devices. They often glorify and describe DT as belonging to their identity and ensuring their well-being. (2) Families who have a more neutral, relaxed approach and use DT frequently. DT appear a natural and welcome part of daily family life beside others, but not as a central fixture. (3) Families who seem to be comparatively anxious, insecure, frustrated and highly sceptical about DT. They use DT at the minimum necessary level.

Our data revealed great variance in children's knowledge in the age group of 5- to 10-year-olds regarding the use and purpose of DT. Generally, however, DT are highly relevant for them in their everyday lives, regardless of their level of knowledge and access.

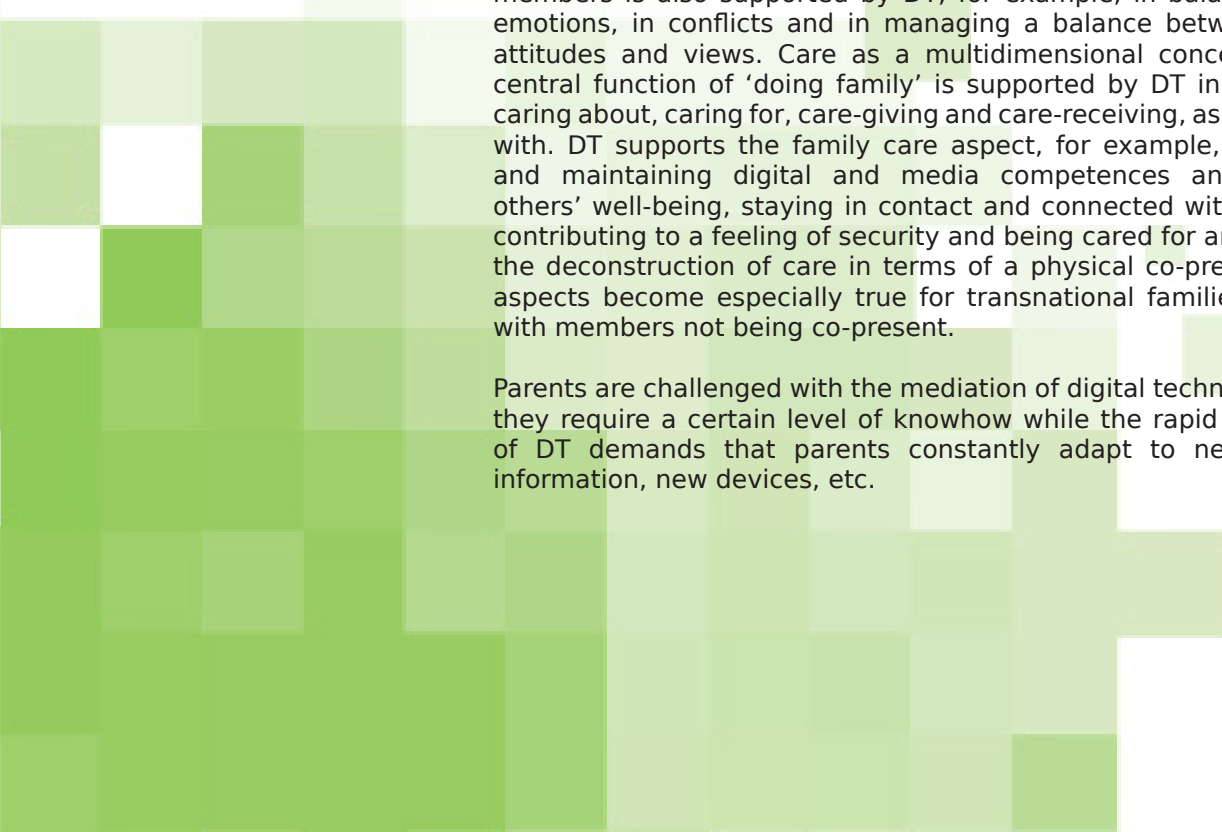





The most known and accessible DDs for children are smartphones, tablets, smart TV sets, video game consoles (e.g., PlayStation, Xbox, Nintendo Switch), smart speakers, laptops and desktop computers. Children in the age group of 5 to 10 years differ not only regarding their individual family situation and (social) context they are living in but also in terms of their age. There is a clear difference between the knowledge and use of DT and whether a child owns devices or not. If children have their own devices, their access is less limited and their knowledge is based on their own practical experiences, and less on observing others.

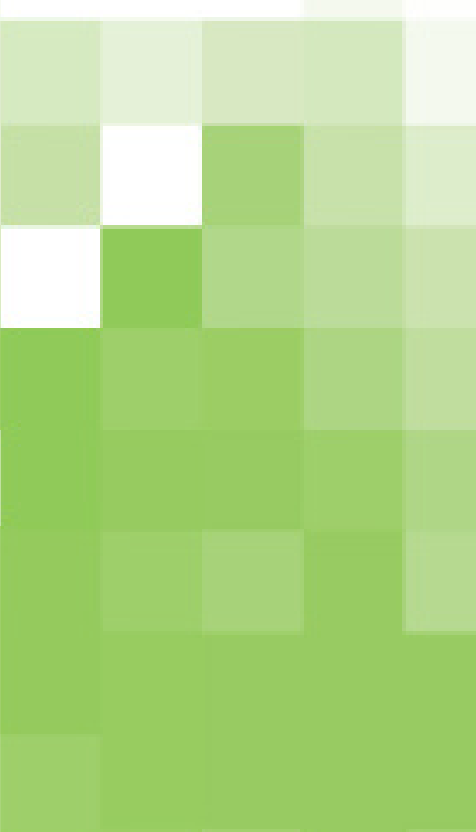
There is comprehensive evidence that DT contribute to 'doing family' in several dimensions; for example, experiencing DT actively together can shape family identity and create a feeling of we-ness, and co-use of DT can also serve as a springboard for conversations regarding (sensitive) topics and can also strengthen children's resilience. As our data reveal, several roles regarding DT are relegated to parents and children. Parents, for example, function as role models, guides and supervisors of online activities, home teachers, and filters of content that should not reach the child. Children also have the role of teachers or instructors for DT in the family: they help to shape the digital competences of other family members across generations, and they have the role as a companion and playmate, and controller of DT use and activities of siblings but also of parents and other family members. DT supports the building up and maintaining of 'we-ness' and family identity, especially to maintain communication. The management of balance within the family and its members is also supported by DT, for example, in balancing various emotions, in conflicts and in managing a balance between different attitudes and views. Care as a multidimensional concept and as a central function of 'doing family' is supported by DT in the sense of caring about, caring for, care-giving and care-receiving, as well as caring with. DT supports the family care aspect, for example, by obtaining and maintaining digital and media competences and supporting others' well-being, staying in contact and connected with each other, contributing to a feeling of security and being cared for and supporting the deconstruction of care in terms of a physical co-presence. These aspects become especially true for transnational families or families with members not being co-present.

Parents are challenged with the mediation of digital technologies, since they require a certain level of knowhow while the rapid development of DT demands that parents constantly adapt to new situations, information, new devices, etc.






In their upbringing of children, parents can draw on a range of common parental mediation practices regarding DT, for example, restrictive mediation, mediation through monitoring, active mediation by negotiation and explaining through co-use and by active distractions (see also, e.g., Chaudoron et al., 2018; Nikken & Jansz, 2014; Clark, 2011; Livingstone & Helsper, 2008). Our data reveal setting rules as a dominant mediation style of parents around two poles: (1) parents' mediation is characterised by very precise and clear rules regarding the integration of DT into family life and (2) Parents' mediation is characterised by different mediation styles and is less focused on rules. Rules often focus on limiting time for digital activities. The genesis of rules in the family is manifold, for example, by discussion processes, advice of experts and in a co-creation process with children. In Norway, it seems to be common for almost all parents to get advice from a well-known website. For kindergarten children, it is normal that rules exist and have to be obeyed. Children in primary school show higher awareness, level of reflection and understanding, but also a greater probability of questioning existing rules and, furthermore, parents' assessments and roles in the process of defining and controlling rules. Conflicts around DT arise but are primarily described by parents and less by children at the age of 5 to 10 years.



Our data reflect that children's or families' use of DT has the potential to affect the vulnerability of children in different ways. On the one hand, DT can contribute to exacerbating the vulnerability of children or to the emergence of new vulnerabilities, for example, through children's lack of digital competences, overprotection of parents, children as the main instructors and mediators on DT in the family, exposure to specific content or experiences and if the child is excluded by other family members and their digital activities. On the other hand, children's use of DT can also help to reduce children's vulnerability, for example, through its contribution to the feeling of solidarity in the family through the possibility to stay in contact and care for one another (e.g., through a shared device) and positive impact on health and well-being, for example, by enhancing digital competence as a resilience-enhancing factor. Children aged 5 to 10 years and their families are aware of multiple beneficial and harmful effects of DT in diverse areas, such as effects on health, social effects and 'doing family', effects on emotions, safety aspects and effects, educational effects and effects on the development of children and young people.

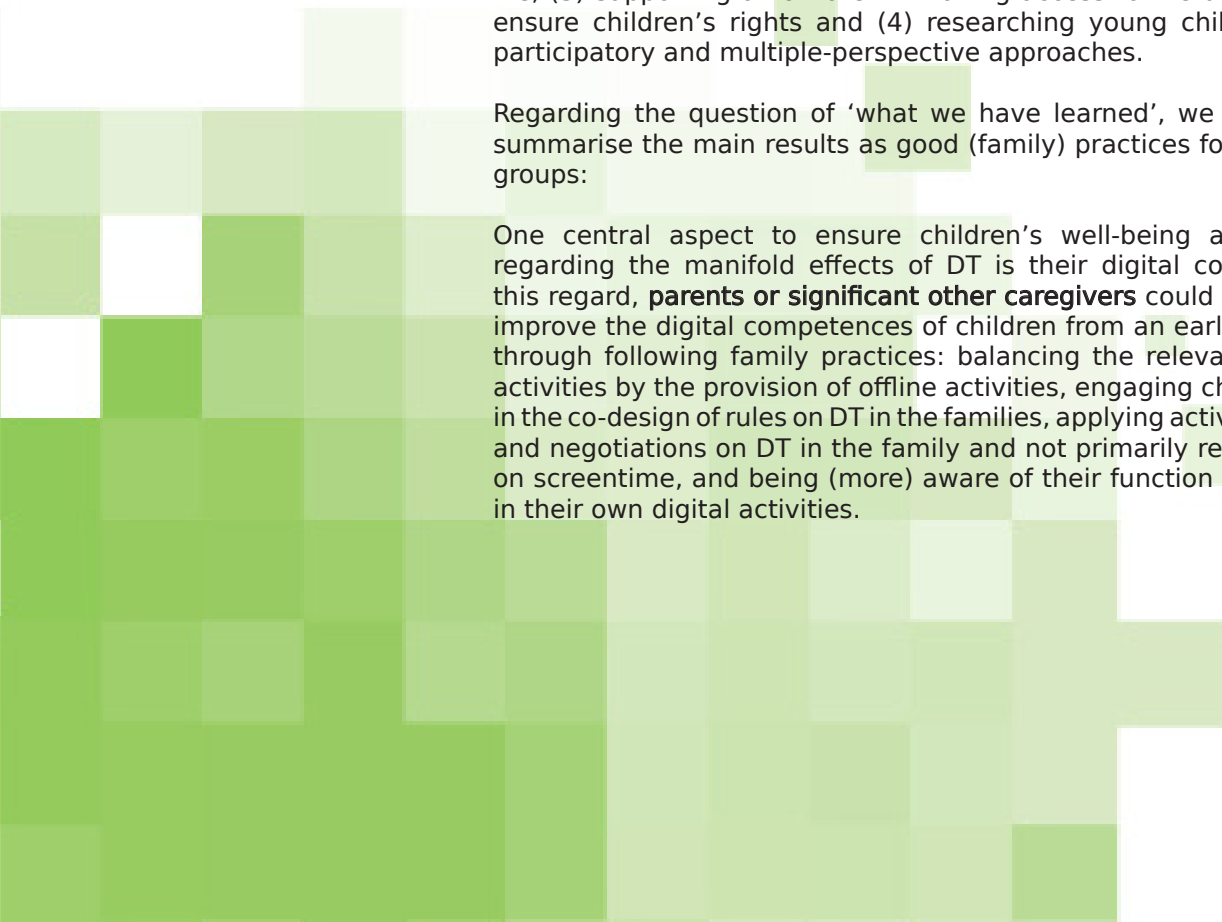



In our methodological approach, we could see that our multiple-perspective interview research proved to be very valuable to triangulate perspectives for a more nuanced understanding of shared knowledge and family practices. Furthermore, comparing the different perspectives within one family allows for new insights. Triangulating means comparing, relating and integrating perspectives—not validating them. This allows for a more comprehensive understanding of family dynamics and practices. Another triangulation exercise was the integration of different disciplinary perspectives amongst researchers. Further, our approach of conducting focus groups turned out to be very fruitful, even with the younger children. We successfully conducted focus groups with children aged from five to six and from 8 to 10 years. Generally, focus groups with children are characterised by children's short attention span. Furthermore, they require more directive moderator behaviour.

Based on these results, we offer four recommendations with regard to children's well-being, which are described as (family) practices that could be supported by various players (e.g., policymaker, teachers, stakeholders): (1) building and improving children's digital competences from an early age onward to ensure their well-being and to avoid increasing and creating (new) vulnerabilities of children, (2) promoting DT as one way to support 'doing family' in everyday family life, (3) supporting all children in having access to the digital world to ensure children's rights and (4) researching young children through participatory and multiple-perspective approaches.

Regarding the question of 'what we have learned', we would like to summarise the main results as good (family) practices for three target groups:

One central aspect to ensure children's well-being and resilience regarding the manifold effects of DT is their digital competence. In this regard, **parents or significant other caregivers** could strengthen or improve the digital competences of children from an early age onward through following family practices: balancing the relevance of online activities by the provision of offline activities, engaging children (more) in the co-design of rules on DT in the families, applying active discussions and negotiations on DT in the family and not primarily restrictive rules on screentime, and being (more) aware of their function as role model in their own digital activities.

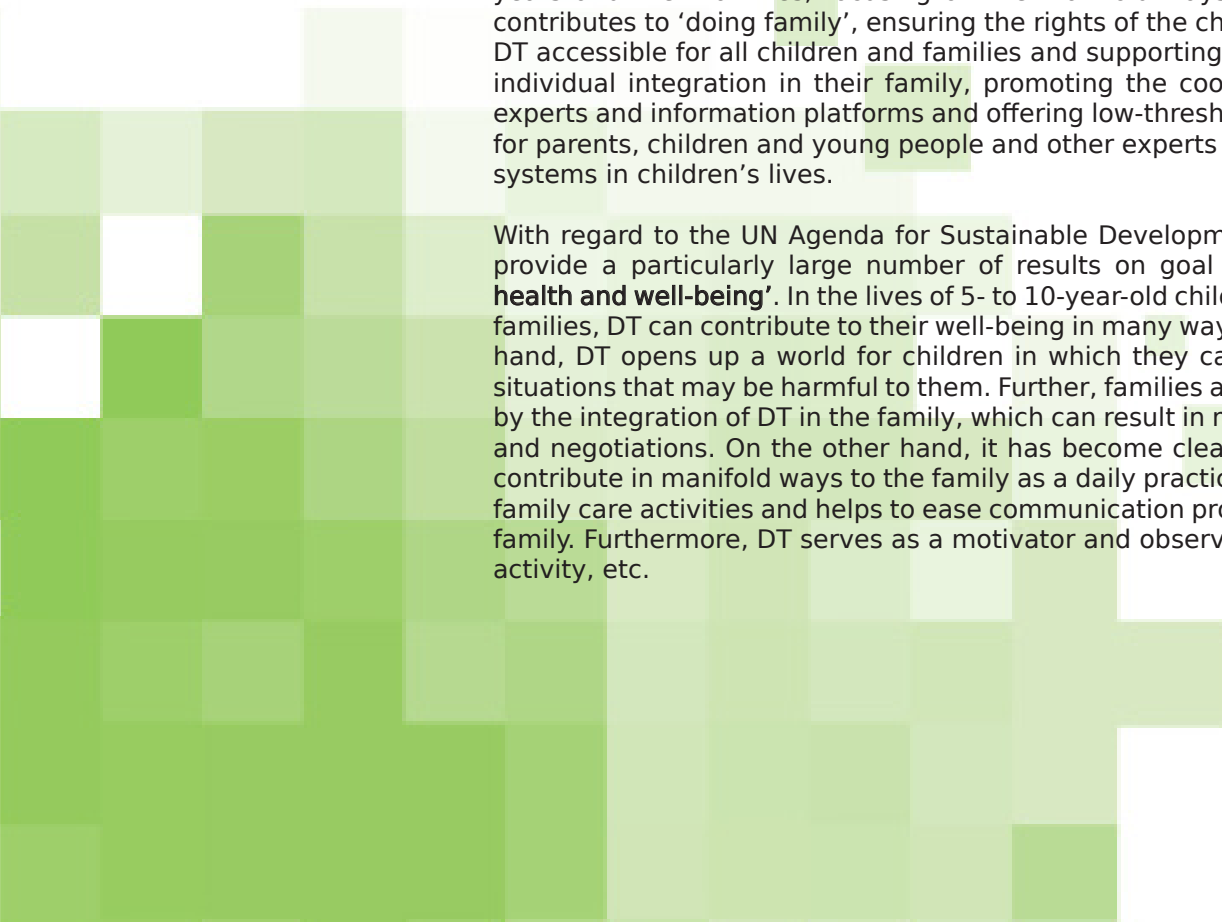





Further, the cooperation with other persons in relevant systems (e.g., teachers, kindergarten teachers, experts) could support parents in pulling together and being consistent in the building and maintaining of digital competences of children in the age of 5 to 10 years.

Our data also revealed some good practices of **children at the age of 5 to 10 years** that contribute to their own well-being or the well-being of other family members. Through digital co-activities, children can improve their own digital competences in their role of teachers or instructors for DT and in shaping the digital competences of other family members. Children themselves also report that their sense of security increases when they know that parents know where they are and can reach them at any time, and through the fact that they themselves are able to call for help at any time, for example, with a smartphone. Children also mention that they try to balance their digital activities with analogue activities, which some of the children enjoy more than digital activities.


Policymakers and stakeholders could also contribute to enabling children and families to realise the full potential of DT in a positive way, for example, by sharing evidence and age-appropriate information on how DT can be integrated into the lives of children aged 5 to 10 years and their families, focusing on the manifold ways in which DT contributes to 'doing family', ensuring the rights of the child by making DT accessible for all children and families and supporting them in their individual integration in their family, promoting the cooperation with experts and information platforms and offering low-threshold education for parents, children and young people and other experts from relevant systems in children's lives.



With regard to the UN Agenda for Sustainable Development, our data provide a particularly large number of results on goal No. 1: '**Good health and well-being**'. In the lives of 5- to 10-year-old children and their families, DT can contribute to their well-being in many ways. On the one hand, DT opens up a world for children in which they can experience situations that may be harmful to them. Further, families are challenged by the integration of DT in the family, which can result in many conflicts and negotiations. On the other hand, it has become clear that DT can contribute in manifold ways to the family as a daily practice. It supports family care activities and helps to ease communication processes in the family. Furthermore, DT serves as a motivator and observer of physical activity, etc.



Most importantly, DT contributes to the well-being of children and their families in supporting and enhancing the digital competences of children and other family members. Some evidence relates to goal No. 10: **'Reduced inequalities'**. If families have access to DT, it can help to anchor individuals or families in certain cultural groups and thereby reduce inequalities. Moreover, the simple provision and access to digital devices and the Internet can help reduce inequalities. Since WP3 only focused on children aged 5 to 10 years, less evidence can be provided for goal No. 4: **'Quality education'**. Some of our data show that, especially in the context of the COVID-19 pandemic's increase in home-schooling, access to DT has become more important for children in primary school to stay connected and be able to join online classes. Parents' roles as home teachers also have increased. Our data also contribute to goal No. 11 on making cities and **human settlements inclusive, safe, resilient and sustainable**, again triggered by the COVID-19 pandemic. Respondents reported how important it was to stay in contact with friends and family members through DT and be reassured that everybody is well and safe. DT in that sense has become part of sustainable communities.



1. Introduction

The Description of Action (DoA) describes the deliverable as follows:

D 3.2: Final Synthesis Report of WP3—presented as DigiGen Working Paper 3.2, with the provisional title ‘Studying children and young people within the family system’

Technology is part of our daily lives, and technologisation progresses rapidly. This is even more true for digital technologies in recent decades. (Digital) Technologies have also entered the family sphere and other systems that children are living and being raised in (e.g., educational and care institutions). Nowadays, families and individuals are constantly surrounded by (digital) technologies and constantly interact with them. They therefore can be described as mediatised, and, particularly for children, digital technology has become a central part of everyday life (Lange, 2020; OECD, 2019; Ofcom, 2018). The results presented in this report strongly support this. In this report, technology in general and digital technology in particular is understood as being embedded in social and familial practices. As humans interact with and through technology, it is a central part of human interactions. By understanding (digital) technology in a social constructivist sense, we start from the technologies themselves and ask what role (digital) technologies play in our culture, families, interactions and in daily lives, and do not reduce technologies to the conditions of their possibilities or their instrumental purpose. This approach links product attributes of technologies with individual and familial needs and values, and understands the outcomes of this interaction as being mediated through (digital) technology and contributing to the well-being of humans (see, for example, Verbeek, 2005; Hassenzahl & Tractinsky, 2006; Von Terzi et al., 2021; Johnson & Puplampu, 2008).

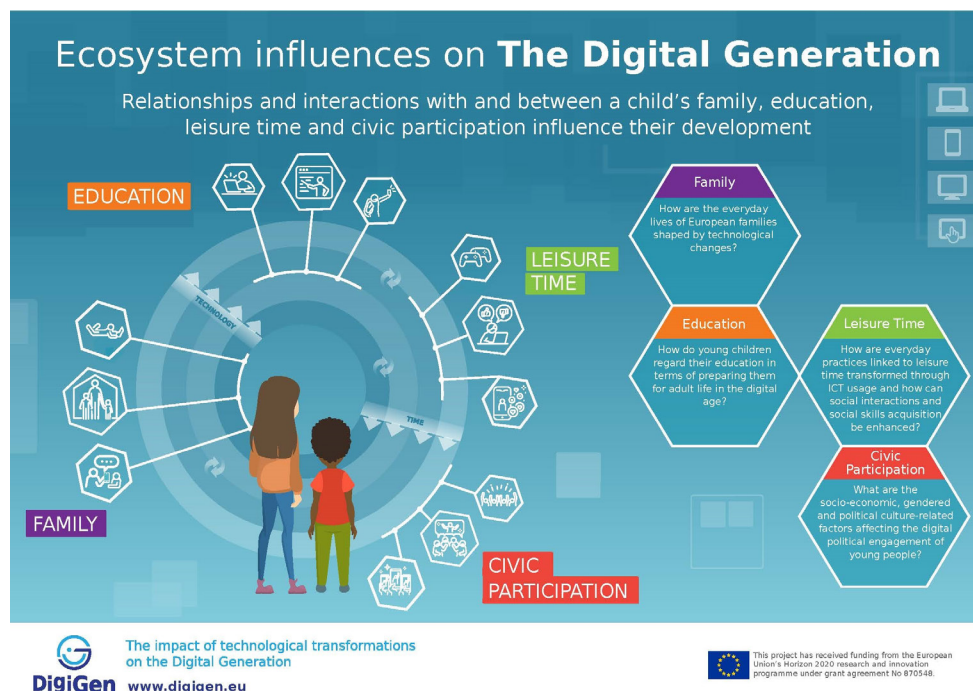
Digital technologies (DT) have penetrated families in various ways, for example, how they spend their free time as individuals and/or as a family, in the organisation of households and family life, in the area of education or further personal training, in the reconciliation of work and family and regarding communication processes within the family. It is obvious that DT affects the lives of children and their families, but still it is not fully clear in which ways DT are integrated in children’s and their families’ lives, what relevance DT have for children and which effects can be observed. This is especially true for children of younger ages. Consequently, DigiGen Work Package 3 focused on children at the age of between 5 and 10 years and their families. Particularly on families with younger children, the body of research is scarce with regard to DT so far, especially when compared to existing evidence for families with older children and teenagers.

With the present research, we, on the one hand, want to contribute to the understanding of how children and families deal with DT in their everyday lives and how they can be supported, and on the other hand, we want to strengthen children’s rights by considering and valuing children’s perspectives. Through an enhanced understanding of their individual relevancies and family practices, it will be easier to strengthen children and families in gaining and maintaining digital competences, which will contribute to their resilience in a positive way and thereby contribute to their safety and well-being. With our research, we attempt to support children, parents and significant others in their digital practices and competences by considering individual, cultural and regional needs of families and children. Moreover, we hope that our qualitative research with and our findings on children in this age group will inspire more research with younger children in regard to DT.

DigiGen as a whole aims to develop significant knowledge on how children and young people use and are affected by DT in their everyday lives. In order to understand children’s lives in their multiple contexts and references and what role DT plays in them, DigiGen applies Bronfenbrenner’s ecological systems theory and has structured its overall work accordingly along so-called ‘work packages’ (WP).

Each work package thus examines a specific system that children and young people are living in: family, school, leisure time and civic participation (see Figure 1 and more in the Grant Agreement¹). This report is the final report of WP3, focusing on the family system.

Figure 1: Structure of DigiGen project based on Bronnfenbrenner's ecological system theory



Source: DigiGen.

The main focus of WP3 was on children's use of DT within the family and out-of-school context and their impact on family communication, family daily life and on the well-being of children and families. In that sense, we also examined the beneficial and harmful effects of DT on individuals and the family system and on the vulnerability of children. The workflow in WP3 was organised in country case studies, in Austria, Estonia, Norway and Romania. We focused on two age groups of children: (1) children between five and six years and still in kindergarten and (2) children aged between 8 and 10 years and already in primary school. By examining these two different age groups, we were able to observe similarities as well as differences in children's use and assessment of DT before and after a major transition—from kindergarten to school. In the fieldwork, each participating country pursued two methodological approaches and conducted (1) focus groups with children and (2) individual interviews with at least three members of one family, whereby one interview partner was a child in one of the two age groups WP3 is examining.

This report is the final synthesis report of WP3, studying children across Europe at the age of 5 to 10 years in the family ecosystem. This report is based on a general literature discussion (Lorenz & Kapella, 2020) and on the country case studies (see Kapella & Sisask, 2022). It brings together the central results of the case studies and connects them to the theoretical framework of WP3. We summarised the main findings from each country report and highlighted country-specific differences explicitly.

Within the work of WP3, family is understood as the central domain of children's and young people's lives, but not in a static sense. In line with the social constructivist perspective, family is defined by daily practices and comes into being through 'doing family'. Related to this, children are recognised

¹ More information is available on DigiGen's website: www.digigen.eu

in their agency and as co-constructors of ‘doing family’ but at the same time as being vulnerable. The effects of DT can contribute in a beneficial or harmful way to the well-being of children and families, depending on the resilience of children and families. These theoretical assumptions of WP3 are described in **Chapter 2** of the report. **Chapter 3** gives an overview of the main research questions and the methodological approach of WP3 as well as the overall fieldwork and sample of WP3. In the cross-country comparison, **Chapter 5 and Chapter 4** will summarise and highlight the main research findings in regard to the content (Chapter 5) and in regard to the methodological approach of WP3 (Chapter 4). Based on these findings and on the literature discussion, **Chapter 6** will present some recommendations for how children and families could be supported by parents themselves and various other players (e.g., policy makers, stakeholders, teachers) in order to ensure the well-being of children and their families regarding the use and the integration of DT and to enable them to benefit from DT as much as possible.

Without the motivated, committed and creative cooperation of the entire DigiGen team involved in WP3, this report would not have been possible. Our special thanks go to the entire team for the inspiring discussions throughout the project. Thanks to your ideas, patience, time and perseverance as the COVID-19 pandemic changed our entire plan for the field work and made it harder to reach out to children and their families.

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2. Theoretical Framework for WP3

DigiGen in general aims to develop significant knowledge on how children and young people use and are affected by the technological transformation in their everyday lives. To gain better understanding regarding this transformation, DigiGen examines several areas or systems of the lives of children and young people. These systems comprise family, education, leisure time and civic participation, and are based on the ecological-system theory (Bronfenbrenner, 1979) and the techno-subsystem (Johnson & Pupilampu, 2008).

WP3 focused on the family as one influential aspect and area of children’s and young people’s lives. Regarding forms, norms and conditions of founding a family and transitioning into parenthood, families have changed tremendously in recent decades. Although the majority of families today still consist of children and two parents who are both gestational/generic and legal, and also social parents, the family forms and family arrangements people are living in during their life spans are nevertheless diverse. Attempts to define families often refer to a specific family model, that is, the traditional family or nuclear family, mostly understood as a breadwinner husband and a homemaker wife who live together with their biological children. This model is almost seen as ‘natural’ and universal and based on the narrative of the nuclear family. However, socio-historical research clearly shows that family was always and still is diverse (Mitterauer, 2009; Segalen, 2010; Gestrinch, 2008; Laslett, 1977; Nave-Herz, 2015). Consequently, DigiGen works with a wide and broad definition of families. Family is understood as an exclusive solidarity unit—a social-relational structure or network of two or more people—designed for a relatively long duration. Its members share goals and values,

have a long-term commitment to one another, take responsibility for each other and often reside in the same household (e.g., Nave-Herz, 2015). Aside from the nuclear family, therefore, some examples of different family forms are same-sex parents and families, patchwork families, adoptive families, mixed-race families, families with different cultural backgrounds, single-parent families, families that come about with the help of reproductive medicine, foster families and multiple parenthood.

To describe the impact of DT on the well-being of children and young people, the work in WP3 of DigiGen is based on **several theoretical concepts**, which will be briefly described in this chapter:

1. Referring to new childhood sociology, DigiGen acknowledges the **agency of children** and young people. They are actors in their own rights and actively shape their social relationships (see Chapter 2.1).
2. Children are not only recognised in their agency but at the same time as being vulnerable. The **vulnerability** of children and young people or individuals, in general, is not understood as an exceptional state, nor as a necessarily regrettable one. We understand vulnerability rather as a notion of universal or 'ontological' vulnerability. Starting from the fact that all human beings are embodied and social beings who depend on care, all human beings can be conceived as vulnerable. Children can be considered as vulnerable in a specific way due to their more extensive dependency on care and because of their lack of independence and autonomy (see Chapter 2.2).
3. To ensure and enhance the well-being of children and young people in their development, the concept of **resilience** becomes crucial. Resilience plays an important part in decreasing or increasing vulnerability and in the development of new vulnerabilities (see Chapter 2.3).
4. One developmental task of children and young people lies in the **development of autonomy**. Autonomy and vulnerability are strongly intertwined and contribute to the resilience and well-being of children (see Chapter 2.4).
5. Family, as the central domain of children's and young people's lives, is not understood in a static sense in DigiGen. In line with the social constructivist perspective, family is defined by daily practice and comes into being through **'doing family'** (see Chapter 2.5).

The theoretical concepts work together as shown in Figure 2. The main focus of WP3, the well-being of children, is represented in the largest circle of Figure 2. All other aspects are embedded in that circle to underline its contribution to the well-being of children. As the **concept of well-being** is rather complex, this study relies on the definition that a stable well-being is reached 'when individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge' (Doge et al., 2012, p. 230). Furthermore, the WHO² definition of health is 'a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity'. Following the perspective of the sociology of childhood and a developmental perspective, the difference between the aspect of well-being and of well-becoming is important. This difference points to the concept of being (object or state) and the concept of becoming (change or development), referring to children's lives as experienced in the present and to children's lives as they develop (see Ben-Arieh et al., 2014). With regard to corresponding interventions and recommendations for DigiGen WP3, we suggest, in line with Lotz (2016), that interventions and recommendations should not only aim for mitigating vulnerabilities, but also promote and foster the (further) development of autonomy in relation to vulnerabilities and promote and foster resilience.

² See: <https://www.who.int/about/governance/constitution>

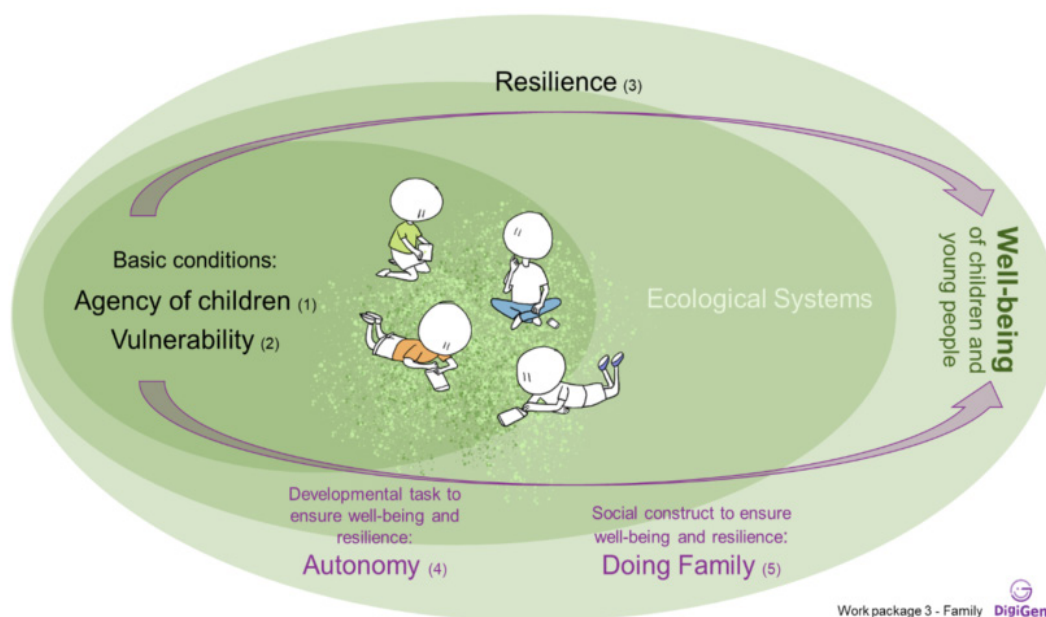


Figure 2: Theoretical Framework of Work Package 3 (Family) by DigiGen

Source: Own design, Austrian Institute for Family Studies, University of Vienna.

One of the central research questions of the DigiGen project concerns the influence of DT on the well-being of children and young people. The results of WP3 aimed to enhance the understanding of how to maintain or improve the **well-being of children and young people** with regard to their use of DT and their orientation in the digital world. In order to analyse the data in this respect and to gain results, we developed and pursued a specific theoretical framework. Within this framework, we combined developmental theories with social constructivist perspectives on children and families. We departed from the major paradigm in the last century in positioning children and young people in society:

Children and young people are no longer perceived as passive, but as competent and active actors in their **agency** of shaping their social relationships (Honig, 2008, 2017). Children are understood as 'being' instead of 'becoming'. In recent work in the field of childhood sociology, childhood is not understood as a universal, biological stage in life, but rather as shaped and constructed by historical, cultural and social factors. Children and young people are described as being active actors in this construction and determination (James, 2013; Prout, 2011; Alanen, 1997). In other words, children themselves are co-constructors of childhood and society (Qvortrup, 2014). This is particularly crucial in regard to DT and their integration in children's lives and their families (see No. 1 in Figure 2, more in Chapter 2.1).

Besides considering and respecting the agency of children and young people, they at the same time are perceived in their **vulnerability**. Being vulnerable is not understood in the sense of an exceptional or even regrettable status of being human, but as a universal aspect of the human condition, as human beings are fundamentally embodied and dependent on care (e.g., Fineman, 2008; Lotz, 2016; Mackenzie et al., 2014). Since children and adolescents are more dependent on care than adults, they are to be regarded as even more vulnerable (see No. 2 in Figure 2, more in Chapter 2.2). DT are expected to influence their vulnerability in different ways.

In order to maintain the well-being of children and young people, their resources and competences, that is, their **resilience**, play a central role (see No. 3 in Figure 2, more in Chapter 2.3). Competences are understood not only in terms of digital competences. Rather, resilience is defined in a developmental systems perspective as a process and as a result of the interaction between an individual and his

or her environment. This enhances the understanding of complex adaptive systems, like children and young people, their families or other institutions children are involved in with (e.g., schools). So-called resilience-enhancing factors help to protect the well-being of individuals and systems. These factors involve strength and resources that individuals and families can mobilise within their personal lives, in their family life and in the transactions with their social environment (e.g., Windle, 2010; Masten, 2021; Fritz et al., 2018; Walsh, 2016). Hence, DT and digital competences can be understood as resilience-enhancing factors. Several processes, as our results show, play a role in building up digital competences, for example, the parental belief systems and how DT are integrated in the family, the communication about the DT in the family system or the organisation of family life around DT and DD.

Furthermore, developing **autonomy** as one central developmental task is closely linked to the training of digital competences in order to maintain the well-being of children and young people is (see No. 4 in Figure 2, more in Chapter 2.4). Of similar importance is our understanding of family as a daily practice of doing family, based on interactions and communication among the different family members (see No. 5 in Figure 2, more in Chapter 2.5). The development of autonomy is understood as a lifelong process to become independent and self-reliant. It is an essential ingredient for individual growth. In this way, children and young people become self-determined when their needs for competence, connection and autonomy are fulfilled (e.g., Soenens et al., 2018; Lotz, 2016).

As it will become clear during this report, **digital competences** of children and young people are the key element in maintaining and building up their well-being and to avoid increasing or creating vulnerabilities. Digital competences, also referred to digital literacy or digital intelligence³ in the literature, can be described as such:

... involves the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking. (European Council, 2018, p. 9⁴)

2.1. Agency of children

In scientific discourses (e.g., see Mayall, 2013; James, 2013; Prout, 2011; Jenks, 2005; Hurrelmann, 2002; Zinnecker, 2000), children nowadays are seen as active agents in their own right and actively shape their social relationships. Childhood is regarded as a social construct rather than a natural phenomenon. Children and childhood are variables in social analysis that cannot be completely detached from other variables such as gender, class, etc. In their agency and through interaction, children are actively involved in constructing and determining their own lives, as well as those of the people around them and the society they live in. Children are co-constructors of their own biography. Through interaction, children learn about the structures and institutions that make up our world in their complexity and diversity. Children, like adults, have personal lives as individuals that they reflect upon from time to time. Furthermore, children's experiences are considered as being fundamentally embodied and emotional.

The consideration of childhood as a social construct is a phenomenon of recent history and was accompanied by a further change in the perspective on childhood and adolescence: childhood increasingly was considered as an independent phase of life and children as active social agents

³ The DQ Institute defines digital intelligence as 'a comprehensive set of technical, cognitive, meta-cognitive, and socio-emotional competences that are grounded in universal moral values and that enable individuals to face the challenges and harness the opportunities of digital life' [<https://live.dqinstitute.org/global-standards/>].

⁴ [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&from=EN)

in their own rights. In the 20th century, the view on children as well as on childhood has changed enormously and can be classified as a paradigm shift. This new view on children and childhood is reflected legally in the United Nations Convention on the Rights of the Child adopted and ratified in 1989 (see UN General comment No. 25, CRC/C/GC/25 for children's rights in relation to the digital environment). This UN convention, in particular, transformed the child from a legal object into a legal subject (Schmahl, 2017).

For a long time, children were also invisible in the context of scientific research (Alanen, 1990). From the 1960s onwards, scholars started to rethink their conceptualisations of children and childhood. The question 'What is childhood?' was increasingly discussed. The institutionalisation of childhood as an independent phase of life and its conceptualisation as a social construct were prerequisite for the development of a sociology of childhood and also for promoting the individualisation of childhood (Honig, 2008). From the 1980s or 1990s onwards, the debate on the construction of childhood as well as on children entailed the formation of a 'new' sociology of childhood that also took hold in sociological discourses (e.g., Alanen, 1990; Behnken & Zinnecker, 1998; Du Bois-Reymond, 2010; Prout 2011; Zartler, 2018).

To view children as independent, with their own rights and in their agency, is a leading concept for our study, methodological approach and the overall DigiGen project. This will be in line with a right-based approach, respecting the rights of children, meeting ethical consideration in research with children and in the end, contributing to their well-being.

2.2. Vulnerability

When positioning children as being capable of acting or having agency and at the same time being vulnerable (e.g., Andresen et al., 2018; Lotz, 2014), we do not consider the latter—vulnerability—as an exceptional or even regrettable or problematic status of being human or opposite to the agency of children. Rather, we draw on Fineman's (2008) definition of vulnerability as being a 'universal, inevitable, enduring aspect of the human condition'. Human beings in this sense are understood as social beings who are fundamentally embodied. As we cannot escape our bodies or our social dependence on other persons, human beings can be characterised as being ontologically vulnerable (Lotz, 2016; Mackenzie et al., 2014; Fineman, 2008; MacIntyre, 1999). Human beings thus are always vulnerable to or dependent on other individuals and groups. The concepts of 'vulnerability' and 'dependency' can thus be considered as interchangeable and relational characteristics of human beings in general (Goodin, 1985). On the one hand, vulnerability points to a universal ontological condition, while on the other, the term vulnerability can be used to describe how people vary in their exposure to risk and their resources for countering such risks (Rogers et al., 2012). Following this conceptualisation, vulnerability arises from many sources: biological, social, political, environmental and cultural.

To grasp vulnerability within DigiGen's WP3 focus on pre- and primary school children and families, we employed a conceptualisation that comprises different but partly overlapping kinds of vulnerabilities. First, our analytical perspective was informed by the taxonomy proposed by Roger et al., (2012; see also Mackenzie et al., 2014) including inherent, situational and pathogenic vulnerability. Lotz (2016) added a further category that points to the possibility of human beings actively avoiding or countering vulnerabilities: subsumed under the term 'discretionary' vulnerability. The author describes two distinct subcategories: (1) imposed and (2) assumed vulnerability. With this categorisation, Lotz wants to introduce a distinct class of moral obligations arising from vulnerability and wants to point to the autonomy and agency of vulnerable persons.

- While the first term, proposed by Rogers et al. (2012; see also Mackenzie et al., 2014), refers to being **inherent** to the human condition, arising from our corporeality, our neediness, our general

- dependence on and from others, as well as our affective and social nature,
- **situational** vulnerability is context-specific and is caused or exacerbated by personal, social, political, economic or environmental circumstances and situations of a person or social group.
 - The proposed taxonomy of Rogers et al., (2012, see also Mackenzie et al., 2014) identifies a subset of situational vulnerabilities that are particularly ethically troubling and that they refer to as **pathogenic** vulnerabilities. These vulnerabilities arise from the exacerbation or compounding of existing vulnerabilities or the generation of new vulnerabilities. Sources can vary, from morally dysfunctional interpersonal and societal relationships characterised, for example, by disrespect or abuse, or by socio-political situations characterised, for example, by oppression, domination or injustice. For instance, children, who are apparently vulnerable due to their need for care, are susceptible to pathogenic forms of vulnerability, such as the risk of being a victim of sexual abuse in the family or care institutions. 'A key feature of pathogenic vulnerability is the way that it undermines autonomy or exacerbates the sense of powerlessness engendered by a vulnerability in general' (Mackenzie et al., 2014, p. 9).
 - Further, **discretionary** vulnerability, proposed by Lotz (2016), includes two subcategories:
 - **Imposed** vulnerability occurs when agents are intentionally placed through a decision of a third party into conditions in which new vulnerabilities will occur or existing vulnerabilities will be deepened and/or extended. These conditions either enable or inhibit agents' resilience.
 - **Assumed** vulnerability describes knowingly, and in some sense, willingly accepted vulnerabilities. However, 'willingly' should not be understood as 'happily', but merely points to those situations where we put ourselves into positions and conditions that we know will make us more vulnerable. In that sense, we accept this increased vulnerability.

Furthermore, vulnerability is a basic concept for a central ethical principle in European bioethics and biolaw. This principle is framed by two basic ideas: (1) it defines vulnerability as reflecting the finitude and fragility of life in general, but also as being context-dependent. More importantly, (2) it entails a moral and ethical responsibility to care for vulnerable others whose autonomy, dignity or integrity is threatened (Rendtorff, 2002).

Due to their dependency on others and their need for care, we thus conceive children as a vulnerable group per se, representing 'inherent' vulnerability, and, compared to adults, a higher risk of exposure to 'situational' and 'pathogenic' vulnerabilities. The fact of vulnerability gives rise to specific moral and political obligations to support vulnerable individuals and groups and to reduce the risk of avoidable vulnerabilities (Rogers et al., 2012). A central aim in supporting families and children is to maintain their well-being under adversity or stress and/or help them to recover. To maintain well-being or to re-establish well-being, resilience of individuals plays an important role.

One of the main research questions of the DigiGen project within the framework Horizon 2020 is to detect vulnerabilities of children regarding DT and to be able to meet or avoid these specific vulnerabilities. For our study, this new approach to the definition vulnerability seems to be relevant, since it allows including and discussing different aspects. On the one hand, positive and negative aspects of vulnerabilities could be discussed. On the other hand, aspects like children being disadvantaged or at-risk could be included in the umbrella concept of vulnerability.

2.3. Concept of resilience

Closely linked to the concept of vulnerability is the concept of resilience⁵. Even if there is no single agreed-on operational definition of resilience, based on a literature review, Fisher and Ragsdale suggest the definition: 'the process by which individuals are able to positively adapt to substantial difficulties, adversity, or hardship' (2019, p. 592). Similarly, Lotz proposed a definition that does not

⁵ Since resilience is a complex construct and in order to address the complexity and development of this construct as well as the focus on family resilience, this sub-chapter is somewhat more detailed.

restrict resilience to the overcoming of significant adversity or trauma, but sees it as essential for every human agent, being ‘a capacity to confront, absorb, withstand, accommodate, reconcile, and/or adjust to conditions of adversity, setback, and challenge in the pursuit of desired or desirable goals and states [...] not a single trait or attribute but, rather, a suit or cluster of skills, attitudes, and resources, the possession of which constitutes a general kind of disposition and orientation towards the world and one’s place and condition within it’ (Lotz, 2016, p. 50). The concept of resilience is criticised, has evolved from a purely psychological phenomenon to a social construct and has been defined variously in different disciplines (Stamm & Halberkann, 2015), combining several aspects like competences, strength, resources, etc. Nevertheless, the concept is used in DigiGen WP3. We are aware of the limitations of the concept of resilience and its often simplistic use that neglects complex context, but still believe it is a useful approach in the theoretical framework of DigiGen WP3 and especially in the discussion on vulnerability and well-being of children and young people.

Resilience plays an important part in reducing or decreasing vulnerabilities. In the course of their lives, human beings are confronted with various stressful situations or events. These adversities have an impact on (mental and physical) health, well-being and quality of life and often bear the risk of impacting life and healthy development in a negative way. Health and well-being are not only influenced by individual attributes, but also by the social circumstances in which people find themselves and by the environment/culture they are living in (e.g., WHO, 2012). In recent decades, much research has been conducted to improve the knowledge about the factors that contribute to the development of children, the maintenance or reduction of resilience and how resilience can be promoted to improve well-being, health and quality of life. Resilience is understood as a dynamic and not a static process. In his work on resilience, Rutter points out that, in resilience research, the importance of so-called ‘steeling’ effects is recognised. In brief, this effect involves successful coping with stressful experiences that should decrease negative impact of stressful experiences or adversities by improving resilience resources: ‘Exposure to stresses or adversities may either increase vulnerabilities through a sensitization effect or decrease vulnerabilities through a steeling effect’ (Rutter, 2012, p. 337).

Although there is not a clear and uniform and **definition for resilience** (Windle, 2010; Home et al., 2017), the discussion and definition of resilience has significantly changed from a trait-oriented concept (e.g., primarily determined by a certain personality type, like a ‘hardy personality’) to an outcome- or process-oriented approach (maintenance or regaining of well-being and health despite significant stress or adversity⁶). Resilience is understood as a process and a result of the interaction between an individual and his or her environment. Its acquisition depends on both personal characteristics and characteristics of the environment (Chmitorz et al., 2017; see also Windle, 2010; Rutter, 2012; Brooks & Goldsmith, 2017; Masten, 2018; Job et al., 2020). Resilience as a concept is used in diverse scientific disciplines, for example, in psychology, pedagogy and medicine. Based on a systematic review, concept analysis and consultation through face-to-face meetings (experts, stakeholders, etc.), Windle defines resilience as

The process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources within the individual, their life and environment facilitate this capacity for adaptation and ‘bouncing back’ in the face of adversity. Across the life course, the experience of resilience will vary. (Windle, 2010, p. 152)

In a similar way, Rutter defines resilience as including increasing or decreasing vulnerability links:

Resilience can be defined as reduced vulnerability to environmental risk experiences, the overcoming of a stress or adversity, or a relatively good outcome despite risk experiences. (Rutter, 2006, quoted from Rutter, 2012, p. 336)

⁶ A WHO study showed that 30% of all mental health problems are attributable to childhood adversity (Kessler et al., 2010).



As should have become clear, the concept of resilience is not only understood on an individual level, but also in terms of a **system thinking** approach as a system framework (Masten, 2018; Brook & Goldsmith, 2017; Walsh, 2016; Windle, 2010). This system thinking is based on the relational developmental systems framework, which drew on ideas from multiple disciplines and theories, for example, ecological theory (Bronfenbrenner, 1979), developmental system theory, family system theory and therapy, models of family stress and resilience theory. From that perspective, the resilience of a system of one level, for example, the family or extended family, will depend on the resilience of connected systems, for example, educational or child care institutions. In that understanding, resilience is also defined as the ‘capacity of a system to adapt successfully to significant challenges that threaten its function, viability, or development’ (for more, see Masten, 2018).

System thinking is not only applied to the resilience of systems, but also on an individual level. Windle (2010, p. 158), for example, illustrates another aspect of this system thinking by describing layers of resources and assets that facilitate resilience, with individual resources (temperament, attitudes, biology, behaviour, motivation) in the centre. This centre is surrounded by circles (similar to Bronfenbrenner’s framework) with the resources of the family and household (cohesion, support, stability, finances, housing), the neighbourhood, social context (work, social networks, services, transport, environment, schools) and social policies (employment, fiscal, welfare, health, housing, education).

To get into more detail about system thinking in the definition of resilience, Masten and Cicchetti start from the core ideas that (1) many interacting systems at multiple levels shape the function and development of living systems, (2) the capacity for adaption of a system and its development is dynamic, (3) change can be spread across domains and levels of function since living systems are built upon interconnections and interactions and (4) systems are interdependent (Masten 2018, p. 15). The definition of resilience from a developmental systems perspective is intended to be scalable across system levels from micro- to macro levels and also across diverse disciplines. It helps to understand the resilience of complex adaptive systems, like a person (e.g., the immune system within a person), a family, an economy, a business organisation or a school (Masten, 2021). Based on these core ideas of Masten and Cicchetti (2016), the **systems framework of resilience** summarises the following principles that stem from a developmental systems perspective on resilience.

1. Many interacting systems shape the development of resilience in a living system.
2. Living systems are self-organised with higher-order emergent capabilities that can be surprising or unpredictable based on knowledge from lower levels of analysis.
3. Resilience develops and changes because all of the systems accounting for resilience are dynamic; thus, human resilience develops and changes as a person develops and changes.
4. The capacity for adapting to challenging circumstances (resilience) depends on many interconnected systems.
5. The capacity for adaption can be conceptualised at multiple levels.
6. The resilience of an individual extends beyond the individual organism through interactions and connections to other systems.
7. Adaption of a complex system, such as a person, to major disturbances can take multiple forms: returning to equilibrium through self-stabilising or external co-regulatory systems, breaking down to lower levels of function, death or transformation.
8. Human resilience is shaped by the legacy of biological and cultural evolution through the evolution of many systems in the natural and built world and also by individual development. (Masten, 2021, p. 116f)

Summing up, the individual resilience of a person (as one living system) very much depends on other systems that continuously interact with the individual (Masten, 2018; Masten & Cicchetti, 2016; Walsh, 2016; Brook & Goldsmith, 2017). In applying this systems approach of resilience to one system—the family, Walsh (2016) describes a concept of **family resilience**, based on a meta-analysis and her own clinical practice. This concept refers to the family as a functional system

that is impacted by highly stressful events and social contexts. She defines family resilience ‘as the capacity of the family, as a functional system, to withstand and rebound from stressful life challenges—emerging strengthened and more resourceful’ (p. 315). In her understanding, the family facilitates the positive adaptation of all members and strengthens the family unit. Brook and Goldsmith (2017) point in a similar direction, as they understand the concept of resilience in a broader sense and do not connect the term primarily to young people who cope with great burdens or adversity. Based on manifold factors, all families and parents develop their own unique goals and aims for their educational process and are led by many resilience-enhancing factors. Brooks and Goldsmith (2016) conceive every **interaction between parents and children** as an opportunity to support children in their resilience and strength, similarly to Walsh (2016).

The concept of resilience is organised around so-called **resilience-enhancing factors**. They are also called protective factors, assets, resources or strengths. Resilience-enhancing factors are understood as resources that protect a person from potential negative effects of encountered stress by modifying or mediating the individual’s response to stress and adversities. ‘In other words, they facilitate the competence/capability that enables resistance to adversity and underlies the process of adaptation’ (Windle, 2010, p. 157). The discussion on resilience-enhancing factors has a long tradition. The Kauai Longitudinal Study⁷, with a cohort of multiracial children from infancy to young adulthood (Werner, 1989) is a pioneer study in that area. Based on her results, Werner (1989) identifies three relatively enduring constellations of protective factors: ‘(1) Dispositional attributes of the individual that may have a strong genetic base, such as activity level, sociability, and intelligence; (2) affectional ties within the family that provide emotional support in times of stress either from a parent, grandparent, sibling, mate, or spouse; and (3) external support systems at school, work, or church that reward the individual’s competences and provide him with a sense of meaning and internal locus of control’ (Werner, 1989, p. 171).

Scholars researching resilience often identify **resilience-enhancing factors across three levels** (e.g., Windle, 2010; Fritz et al., 2018⁸):

1. Individual level (e.g., psychological, neurobiological). For the individual level, Fritz et al., (2018) identified as protective factors: (a) cognitive factors (cognitive reappraisal and mental flexibility), (b) factors that regulate emotions (e.g., distress tolerance), (c) the social interaction or attachment (like an insecure attachment, rejection) or (d) the self-concept (like self-esteem).
2. Social level (e.g., family cohesion, family and/or parental support, positive family climate, parental involvement, positive parenting).
3. Community/society level (e.g., support systems, social networks, institutional and economic factors).

Regarding family resilience and resilience-enhancing factors, Walsh (2016) identifies nine key transactional processes that facilitate family resilience and organises them further in three domains/dimensions. She bases her framework on the three assumptions: (1) families under stress develop strength in response to a crisis, or with prolonged adversity, (2) there is no single model of healthy functioning that fits all families since it has to be adapted to each family and their specific situation and context (e.g., values, life challenges) and (3) functioning and well-being of single members may vary over time since challenges emerge and families evolve. Walsh identifies the following dimensions with key transactional processes to demonstrate interactive dynamic processes, which involve strength and resources that family members can mobilise within their family system and in

⁷ From the prenatal period, the Kauai Longitudinal Study (in Hawaii) has monitored the impact of a variety of biological and psychosocial risk factors, stressful life events and protective factors on the development of a multiracial cohort of children who were born in 1955 and followed up periodically until they reached adulthood. In the course of the study, the roots of resilience were also examined.

⁸ Fritz et al. (2018) have conducted a systematic literature review and aimed to identify empirically supported resilience-enhancing factors that reduce the risk of psychopathology in young people as a subsequence of childhood adversity. In their review, they focused on social, emotional, cognitive and behavioural resilience-enhancing risk factors. They searched English, Dutch and German literature in Web of Science, PsycINFO and Scopus (e.g., including MEDLINE), for all years until November 2016.

a transaction with their social environment (see Walsh, 2016, p. 319):

Dimension A): Belief systems

1. Making meaning of adversity, e.g., relational view of resilience; normalising and contextualising distress; a sense of coherence, e.g., via crisis as a meaningful, manageable challenge
2. Positive outlook, e.g., hope and/or optimistic bias, confidence in overcoming challenges, encouragement, focus on potential
3. Transcendence and spirituality, e.g., higher values, spirituality (faith, contemplative practices, community, connection with nature), transformation (learning, change and positive growth from adversity)

Dimension B): Organisational processes

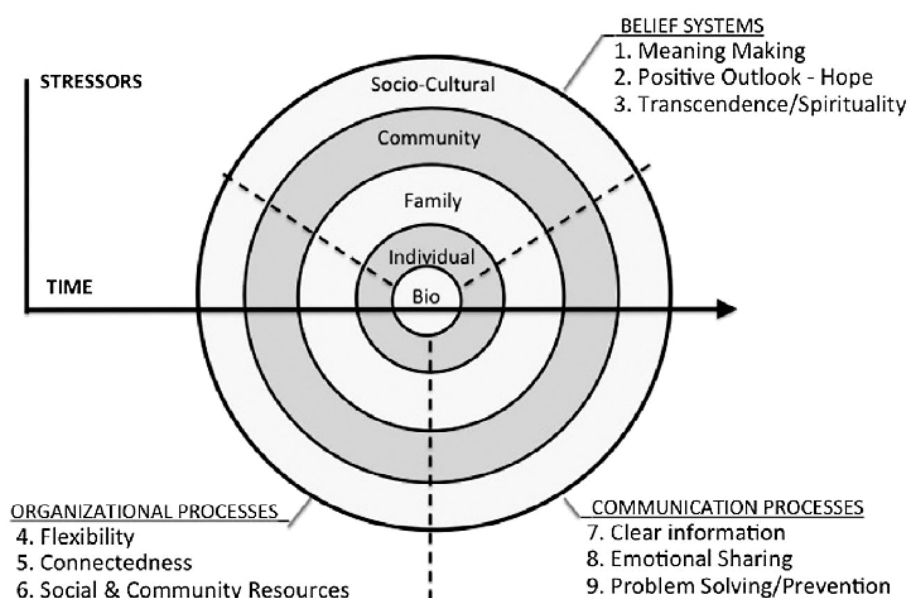
4. Flexibility, e.g., rebound, adaptive change to meet new challenges, reorganisation, strong authoritative leadership, varied family forms (cooperative parenting/caregiving teams)
5. Connectedness, for example, mutual support, teamwork and commitment, respect of individual needs and differences, seeking reconnection and repair resources
6. Mobilising social and economic resources, e.g., recruiting extended kin; social and community supports; models and mentors; building financial security; navigating stressful work/family challenges; transaction with larger systems

Dimension C): Communication/problem-solving processes

7. Clarity, e.g., clear, consistent messages, information; clarifying ambiguous situations
8. Open emotion sharing, e.g., painful feelings (sadness, suffering, anger, fear, etc.); positive interactions (love, appreciation, gratitude, humour, fun, etc.)
9. Collaborative problem solving, e.g., creative brainstorming, sharing decision-making, repairing conflicts, negotiation, focusing on goals, concrete steps, learning from setbacks

By focusing on the family system level of analysis, grounded in an ecosystemic and developmental perspective, Walsh explains the dynamic, recursive processes in the resilience of families operating both within and across system levels in the context of stress/adversity and over time, as Figure 3 shows. From the angle of family research and for the DigiGen project, she identifies important resilience-enhancing factors, such as the belief systems of family members, especially for the diverse cultural backgrounds of families in Europe.

Figure 3: Multilevel recursive processes in resilience in the family resilience framework from Walsh



Source Walsh, 2016, p. 322.

To sum up the various aspects in developing resilience and the complexity in conceptualising resilience, for DigiGen the focus should be drawn on resilience-enhancing factors, regarding both individuals and families. DT themselves are also considered as one resilience-enhancing factor that can contribute to the well-being of children in many ways. Resilience-enhancing factors furthermore are considered as key elements in building up and maintaining digital competences of children and families.

2.4. Development of autonomy

One important aspect that can also be considered as a developmental task is the **development of autonomy** of children and young people. Two broad conceptualisations can be distinguished regarding autonomy (Soenens et al., 2018): (a) autonomy is constructed as independence or self-reliance. Individuals act independently and do not rely on the behaviour, decisions or thinking of others. One of the developmental tasks for children and young people would be to become more independent. This gradual process should take place in a supportive context; (b) autonomy is constructed as a volitional function to regulate behaviour on the basis of deeply endorsed values, preferences and interests. The need for autonomy is considered an essential ingredient for individuals' growth, integration and well-being. The within-person concordance is crucial for the development of autonomy.

In the light of the UN Convention on the Rights of the Child and the UN General Comment No. 25, CRC/C/GC/25 on children's rights in the digital environment, the development of autonomy plays a central role in the enforcement of children's rights. Only if children become more and more autonomous and independent can they act in their agency regarding their own rights.

In recent years, the '**Self-Determination Theory (SDT)**' by Deci and Ryan has become a prominent approach. It links the development of children and young people with the development of autonomy, and for that reason is relevant for DigiGen. Human beings are led by the organisation principle of expanding and/or elaborating their cognitive schema and the representation of themselves. This organisation principle is conceptualised as an ongoing, lifelong process across different life domains. Human beings furthermore are understood as inherently active and intrinsically motivated, in a proactive, purposive and organised way. In this integrative process, individuals internalise and integrate extrinsic motivation in combination with their intrinsic motivation. The organised behaviour of people is furthermore understood as a result of being consistently subjected to consistent and coherent teaching and socialising practices (see e.g., Deci & Ryan, 2013).

In this sense, autonomy can be defined as "a suite of rational, affective, deliberative, and self-interpretative skills and competences" that enable a person to "make choices and act in line with [their] reflectively endorsed beliefs, values, goals, wants, and self-identity" (Lotz, et al., 2016, p. 53, quoting partly Mackenzie et al., 2014). Similarly, Anderson defines autonomy

... as an array of capacities that individuals have for leading their lives, in contrast with approaches that view autonomy largely as a condition of causal control. [...] Autonomy competences include, for example, the ability to appreciate what activities one finds genuinely worthwhile, to figure out how to realize one's ends, to step back from one's felt convictions, and to actually carry out one's intentions in the face of temptations. There are thus many dimensions along which autonomy is developed and exercised, including interpretive, deliberative, critical, and executive capacities. In this sense, being autonomous is like being able to find one's way through the woods: you have to discern where you want to go, figure out how to get there, persevere through the brambles, and occasionally stop to ask yourself whether the trip is worth the effort. (Anderson, 2014, p. 137)

These autonomy skills and competences are learned with and from others, where social institutions and interpersonal relationships such as those in families provide the contexts and support for

acquiring these competences.

The development of autonomy is very much linked with other theoretical approaches of this report: the agency of children, their vulnerability and their resilience. The understanding of autonomy as a developmental task of children and young people focuses on the process of this development and helps to understand that contributing to the well-being of children should be seen as a process of development in which children and young people have to be supported.

2.5. The 'Doing Family' Approach

For understanding daily life in contemporary families and the role digital technologies (DT) are playing, WP3 uses a socio-constructivist and praxeological concept—the 'doing family' approach (Jurczyk et al., 2014, 2017, 2020; Morgan, 2011; Nelson, 2006). The 'doing family' concept is alluded to in the seminal work from the 1980s on 'doing gender' of West and Zimmerman (1987), and applies the same socio-constructivist logic and defines family in a broad understanding as a daily practice. Morgan (1996; see also Finch, 2007) was one of the first to discuss this approach and stated that family is defined rather by 'doing' family things than by 'being' a family. His work on family practices shifts the analysis from family as structure or static concept that individuals belong to, to an understanding of family as sets of activities that define the family. Morgan defines family rather as a 'quality rather than a thing' (Finch, 2006, p. 66). In being involved in practices in the family context, individuals can be seen as 'doing family'. He introduces six key features of the family practice's approach: (1) an attempt to link the perspectives of the observers and the social actors, (2) an emphasis on the active or 'doing', (3) a sense of the everyday, (4) a sense of the regular, (5) a sense of fluidity or fuzziness and (6) a linking of history and biography (Morgan, 2011). With this approach, 'doing family' is not only understood in a socio-constructivist sense but also in a praxeological sense (Jurczyk, 2020).

This view on the family does not focus on values and attitudes or on certain forms of coexistence that often serve as characteristics to define and describe families. It rather focuses on (daily) practices that establish and shape personal relationships between generations and, if necessary, between genders. The family is produced and exhibited on a daily basis by following common practices (see Jurczyk et al., 2020):

- Management of balance in the family, not only in terms of organisational aspects, but also the management of emotions and the distribution of rights and obligations/duties within the family
- Construction of commonalities, not only in terms of organisational aspects, but more an identity-oriented construction of the family. There are different strategies/forms to construct commonalities:
 - Creation of social bonds through processes of inclusion and exclusion (as described for example by Nelson, 2006).
 - Construction of intimacy and closeness by creating a 'we-feeling' (we-ness) in the family and by
 - Displaying family, as described, e.g., by Finch (2007), as the way in which a family is presenting itself as a family. By 'displaying' I mean to emphasize the fundamentally social nature of family practices, where the meaning of one's actions has to be both conveyed to and understood by relevant others if those actions are to be effective as constituting 'family' practices (ibid., p. 66).
- Care comprises other interactions in the construction of family as a daily practice. In relation to the aspect of care in the 'doing family' approach, family is understood as a relationship of care between generations in a private context that is based on commitment. This definition puts the focus on three characteristics that constitute the family: (1) generativity and intergenerational relationships, (2) commitment in assuming responsibility for the care of others and (3) the placement of the family in a private lifeworld context (Jurczyk et al., 2020, p. 32). Care practices

demand the production of shared time-spaces as well as bonding and building up relationships. Often, care depends on co-presence, although care practices in families are not exclusively limited to that (for more on the definition of care, in general, see Chapter 5.2.5).

Within the DigiGen project, as already mentioned, children and young people are also understood as social actors in their own development. Children today are living in media-rich households with access to a variety of different devices and technologies, which they use from an early age onward. The ubiquity of DT at home shapes family dynamics. Digital technologies can thus be understood as a central element for the concept of 'doing family' (Lange, 2020) as they are part of daily acts of reproducing family by social interactions among its members. According to Eurostat (2019), Internet access is almost universal for households with children in Europe (98% in the EU) and parents are also more likely to use digital technologies than adults without children (Kildare & Middlemiss, 2017). However, 5.3% of children in Europe are digitally deprived—understood as children living in a household that cannot afford to have a computer and/or live with adults who claim they cannot afford an Internet connection for personal use at home (Ayllón et al., 2021).

The question of how DT contributes to the formation of everyday routines is the core concern of the domestication theory, which fits well in the 'doing family' approach. Silverstone (2006) and colleagues focused on (media) technologies already existing in the 1990s and pursued the question how these came to be familiar and embedded in families' everyday lives and home and how they became a part of users' everyday lives and practices. The process of domestication contains four core dimensions (Silverstone, 2006; Reuver et al., 2016): (1) appropriation, as the initial step that brings the technologies into the daily lives of families and their homes, (2) objectification, using the technology and exploring its basic functions, (3) incorporation into daily domestic family life, giving it a place in daily routines and family practices and (4) conversion, relinking the domestication process to the outside world, and in those terms, displaying the technology to world.

The ways in which children use DT and how DT is implemented in families impacts family life (for more insights, see the literature overview of Lorenz & Kapella, 2020; Livingstone & Blum-Ross, 2020; Erstad et al., 2019). Some results provide an overview: young children use DT to relax or for entertainment purposes by watching videos on a tablet (Chaudron et al., 2018; Teuwen et al., 2012), which is their preferred digital device (European Commission, 2019a; Chaudron et al., 2018; Holdampf-Wendel et al., 2014; Chaudron et al., 2015; IFES, 2013). Further, the older the children become, the more time they spend on a variety of different digital activities (Šmahel et al., 2020; Holdampf-Wendel et al., 2014). Finally, children and young people most frequently use digital devices in their homes (Livingstone et al., 2011; MPFS, 2016a; Tillmann & Hugger, 2014).

For a better understanding of how DT affects the reproduction of a family, one needs to know whether children, young people and their parents usually use their devices alone or together with other family members. Against the background of 'doing family', joint family activities play an essential role because shared activities are more likely to create a sense of 'we-ness' that supports family cohesion (Galvin, 2006). Digital device use is increasingly privatised and mobile, that is, more children access the Internet in the privacy of their bedroom (Chaudron et al., 2015; Livingstone et al., 2014). The most frequently shared family activity is watching TV. Other DT family activities include learning about something on the Internet, contacting friends or family together and playing computer/video games collectively (Courtois & Nelissen, 2018; Livingstone et al., 2017; MPFS, 2016b; Chambers, 2016; Brown & Barkhuus, 2011). All shared DT activities can be described by either passive co-presence or active co-use. During co-present DT family activities, one family member is actively engaged in an DT activity, while other family members are present but not actively involved in the activity. By contrast, in the case of co-use, several family members take an active role together or interact during the DT activity. Typically, co-presence family time takes place in the families' common areas (Tillmann & Hugger, 2014; Livingstone et al., 2011) when children do not want to be alone but want to spend co-present time with the family. Such situations are crucial in terms of the concept of 'doing family' because they allow for emotional and physical contact, meaningful casual conversations and

collective experience that strengthen family bonding, even though they are not actively engaging in a shared activity (Tillmann & Hugger, 2014; Volda & Greenberg, 2009). Co-use activities contain shared movie evenings, family video/online gaming and communication via different digital devices. This socio-constructive approach of 'doing family' and understanding family as a daily practice in which family will be reproduced and constructed by interactions among its members seems to be a perfect ground to understand DT as a vehicle to 'do family' and to gain more insights on how DT is integrated into children's and their families' lives by daily family practices.

3. Methodology

3.1. Focus and research question of WP3

The focus of WP3 is on the family system and on children's home environment and out-of-school context (see Grant Agreement). WP3 examines children's use of digital technology (DT) within the family and its impact on family communication and families' daily life, and thus on processes of 'doing family', understood as daily family practices. In the analysis of the collected data, the objectives relate to three levels:

1. Access to technology, devices, the digital divide and modes of connectivity
 - a. to investigate the use of DT, children's subjective assessment (2 groups: ages 5- 6 and 8-10), and its relevance in their everyday lives
 - b. to understand how these two groups navigate the digital world and how they reflect on the content of and their experiences with DT
2. Modes of digital inclusion, digital affordability, opportunities and forms of use
3. Negotiations within families in terms of use and outcomes
 - a. to examine the potential positive and negative impact of DT on family life, communication and the overall family system
 - b. to understand the challenges, advantages and impacts associated with DT from the perspective of different family members, primarily children, but also parents or significant others (siblings, grandparents, etc.)
 - c. to explore the intergenerational and bi-generational dynamics of DT use and digital competences (or even generational digital divides)

Next to these content-related foci on DT in families, WP3 also aimed to gain more insights regarding the methodological approach of conducting research within the family setting, particularly when comprising children in early childhood. Some topics of interest were, for example, behaviour and interaction of the interviewer with young children; researchers' perception of the interview, tasks and question formats; inclusiveness in recruitment; and ethical considerations.

Especially in fieldwork with young children, ethical considerations play a central role. All research with children must be ethical, sensitive and respectful (Skeleton, 2008, p. 23). 'Children are "becomings" at the same time as they are "beings", something that children themselves are very aware (...) Respect for children's status as social actors does not diminish adult responsibilities. It places new responsibilities on the adult community to structure children's environment, guide their behaviour and enable their social participation in ways consistent with their understanding, interests and ways of communicating, especially in the issues that most directly affect their lives' (Woodhead & Faulkner 2008, p. 35). This is the guiding framework for designing our research. We aim to devise positive research experiences in which there is minimum difficulty (Warin, 2011).

In the preparation of our fieldwork and guidelines, we considered that relations amongst peers continue after the focus groups meetings and that the discussion in the focus groups might have an impact on social relations outside the focus groups and fieldwork. Therefore, we tried to avoid children

finding themselves in a competitive situation of who has more DT at home or has more knowledge. As discussions and interviews may give rise to stress or distress of individual participants, we tried to provide sufficient time for warming up without taking too much of the children's concentration and to integrate playful elements. We took questions of confidentiality into account, especially in the family interviews where more family members were interviewed. Furthermore, structural and formal considerations were discussed as well, such as providing sufficient information and getting the consent of participants, especially regarding parents giving consent for their participating children (see Annex Chapter 8.2 to 8.4). Informed consent is more than a form; it is also a process. The information must be presented to enable persons to decide whether or not to participate in the research voluntarily. For the researchers involved in DigiGen, we understand that the informed consent process is a dialogue of the study's purpose, duration, risks and benefits. The process of consenting is ongoing and it must be made clear to the participant that it is their right to 'withdraw' or 'opt-out' of the study at any time. All participation in the DigiGen project is voluntary. As DigiGen involves children/minors as participants, the information should be provided to them and their parents/legal guardian using a language that is comprehensible and suitable for each group. All data subjects (participants) will be asked for consent that is in full compliance with the strengthened conditions of Art. 7 in the General Data Protection Regulation (GDPR). Lastly, we ensured that the collection of data and its use were in accordance with the GDPR. When conducting research including children as participants, obtaining consent from parents or legal guardians is an essential part of research ethics. Parental consent (or legal guardian consent) is also usually required for children's participation in research. Children's right to consent on their own behalf may be regulated by law. In addition, and beyond legal requirements, the DigiGen researchers will obtain the assent from children (as a sign of appreciation) participating in the research and will ensure their assent throughout the data collection by being sensitive to any verbal or non-verbal clues that may indicate a lack in assent. Ethics also involve equal opportunity to participate and be heard. In terms of presenting the diversity of children, the recruiting should pay attention to different family forms (e.g., one-parent families, families with two parents, extended family forms) as well as to diversity in socio-economic background, rural and urban areas, multi-cultural backgrounds and potentially physical disability (see Chapter 3.3 on recruitment and sample).

The main research questions for WP3 were the following:

- How is family life shaped by technological transformation and reflected in 'doing family'?
- How do children use and subjectively assess digital technologies in their everyday life?
- Which beneficial and harmful effects for individuals and the family system result from DT in children's lives?
- Which aspects of diversity, vulnerabilities and social inequalities are related to/result from DT in children's everyday lives?
- What are methodological insights when conducting research within the family setting, particularly with children in early childhood?

3.2. Methodological approach

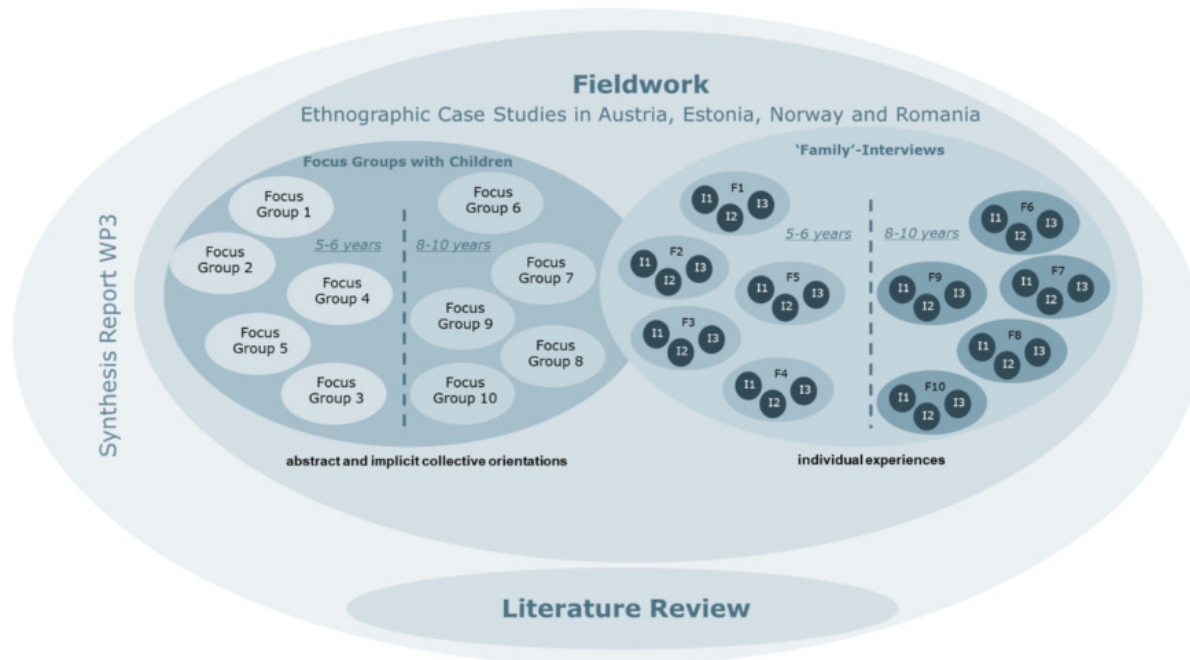
One of the first tasks within WP3 was a systematic literature review on existing data and literature on how the everyday lives of European families are shaped due to technological transformations. This literature review was a form of starting point for the field work. In this context, reference should also be made to the scoping review within the WP7 of the DigiGen project, which also includes a literature analysis on the topic of the family. The work on this review has not yet been completed and is therefore not part of the present report.

The main task within WP3 concerned the collection and analysis of qualitative data by pursuing a multi-method and multi-perspective approach. We conducted focus groups with children (10 per participating country) and family interviews (10 families/30 interviews per participating country)

as ethnographic case studies. The four participating countries were: Austria, Estonia, Norway and Romania. These countries have been chosen to do justice to the diversity in Europe. As Ayllón et al., (2021) demonstrates, there is a wide range of digital deprivation within the European countries. The percentage of children who live in a household that cannot afford to have a computer and/or cohabit with adults who cannot afford to have an Internet connection is very high across all countries in Europe, although data show a certain north-south divide in Europe. The digital deprivation of children is very low in countries like, for example, Iceland (0.4%), Estonia (0.7%) and Norway (1.1%). In contrast, it is very high in the Mediterranean and Eastern European countries like Romania (23.1%), Bulgaria (20.8%), Hungary (11.6%) and Spain (8.8%). Reflecting this divide, the countries that have been selected for WP3 are different regarding the level of digital deprivation of children: Austria (2.6%), Estonia (0.7%), Norway (1.1%) and Romania (23.1%) (for more details, see Ayllón et al., 2021). Romania, as one of the countries with the highest digital deprivation, also reflects a strong trend towards increasing digitalisation (INS, 2021b). There are strong indications that Internet access and use of DT technology have been accelerated in the years before the pandemic, and especially in the period during the pandemic, forced by the lockdown context, home office work and online schooling. For example, the access of the general population with mobile broadband increased in Romania in 2020 to 78.2%, compared to 64.2% in 2019 and 57.3% in 2018 (INS, 2021a, and for more on the Romanian context see Case Study Romania Barbuta et al., 2022).

Within the fieldwork of WP3, we focused on two age groups of children: (1) children between five and six years and still in kindergarten and (2) children aged between 8 and 10 years and already in primary school. By examining these two age groups, we were able to observe differences before and after a major transition—from kindergarten to school. This contrasting comparison was chosen because we expected school children to be more experienced and familiar with DT than children at kindergarten age.

Figure 4: Overview of methodological approach of WP3



Source: Own illustration.

Before the fieldwork started, we conducted a systematic **literature review** focusing on relevant

literature in Europe. The main focus was on empirical findings regarding the impact of DT on families. We focused on the access to technologies, the digital divide, devices and modes of connectivity, ways of digital inclusion, opportunities and forms of use, as well as negotiations within families regarding DT. This literature review was presented in two reports (deliverables): (1) Deliverable 2.1 as DigiGen Working Paper No. 2, 'ICT usage across Europe. A literature review and an overview of existing data' (Ayllón et al., 2020) and (2) 'Children's ICT use and its impact on family life' (Lorenz & Kapella, 2020) as DigiGen Working Paper No. 1.

In the fieldwork, we pursued two methodological approaches and conducted (1) focus groups with children and (2) individual interviews with at least three members of one family, whereby one interview partner was a child of one of the two age groups WP3 is examining.

Focus groups

From a methodological point of view, interaction among participants is the strength of focus group research because it can generate a wider spectrum of opinions, explore topics and generate hypotheses, and warrants external validity. However, the interaction among participants can also be a weakness: the specific communication process and group dynamic can be a potential threat to validity and inhibit communication. Furthermore, the group dynamic can become more important than the content.

Focus groups create a safe peer environment and are similar to settings in kindergarten and school that children are familiar with. This mode of data collection attempts to replicate a real-life setting of children's social groups and offers insights into meaning-making in situ amongst peers. The focus groups aim to elicit collective orientations (rather than individual experiences) within a peer group setting. The goal of openness and communicativeness is to let participants say whatever they have to say, with their own relevancies and in their own words. The strength of focus-group research lies in its suitability for exploring new fields and generating hypotheses. Different to interviews, not only the view of one person is surveyed, but a view that is validated through the group dynamic. Interaction among the respondents stimulates new ideas. 'The group interaction produces data and insights that would be less accessible without the interaction found in the group' (Morgan, 1988, p. 12). Focus groups elicit a wider spectrum of opinions. At the same time, group pressure challenges participants to be more realistic. Therefore, 'such a forum of opinion gathering may render data that are more [externally] valid than methods that assess individuals' opinions in relatively asocial settings' (Albrecht et al., 1993, p. 54). Only in the process of a discussion does one have to take a certain position and articulate and defend it. Thus, interactions may give rise to more spontaneous expressive and emotional views than individual interviews (e.g., Kvale, 2009; Barbour, 2018). 'Children may also be encouraged to give their opinions when they hear others and their memories may be triggered by the contributions of the other children' (Lange & Mierendorff, 2011, p. 87). Thus, breadth and depth of information increases.

What is communicated is not only an expression of attitudes and beliefs but also a result of the dynamic of the situation. Interviews and focus groups are interactions and shaped by the societal and situational context as well as the interactional partners. This is particularly relevant when children are participants in research. As a methodological approach, the focus group can soften the power imbalance between adult and child that exists in one-to-one interviews. The openness of the method allows the researcher to get closer to children's views. Additionally, authority in the relationship, otherwise difficult to eliminate, can be diminished through establishing communication and trust (Richter, 1997). The superior number of children present, as compared to the adults, can be helpful in the same sense (Heinzel, 2000). It is not the interaction between child and adult, but the one between children that is focused on (Vogl, 2009). However, potential imbalances and generational hierarchies demand well trained interviewers/moderators and reflective and flexible behaviour. Thus, demands on interviewers/moderators in child interviews or focus groups with children are amplified. Empathy, flexibility and sensitivity are crucial and experience in working with young children is

helpful—but not, strictly speaking, necessary.

- The objective in the focus groups is to gain knowledge about collective orientations and relevancies. The emphasis is put on discourses among the children themselves, rather than on the interaction with the adult researcher. This enables analysing the ‘common sense’ and joint construction of meaning in the peer groups, rather than in the individual perspective and biography.

In WP 3, focus groups were conducted with age-specific groups of five- to six-year-old children and with children at the ages of 8 to 10 years. Participants knew each other beforehand and formed a so-called real-life group. Focus groups elicited children’s perspectives on DT and their family in a peer group setting. The aim was to better understand children’s interactions with and through digital devices and for what type of activities they are using them, their assessment of DT and relevance of DT in everyday and family life, as well as diversity and social inequality in access to DT.

From a methodological point of view, we investigated specifics of group composition and group dynamic, threats to data quality and specificities of moderator involvement and interaction with children as well as ethical considerations.

Family Interviews

Interviews were conducted with individual children in these age groups and at least two additional family members but in separate interviews. This approach is based on the recognition that family life and accounts of family members involve dynamic interchanges in which individual versions are fluid, influenced by the anticipation of others’ accounts and by the interaction with the researcher. This approach falls under what is called multiple-perspective interview (MPI) research, which has considerable potential, specifically in family research (Dekovic & Buist, 2005; Harden et al., 2010; Vogl et al., 2019; Zartler, 2010). ‘Despite the challenges, research with parents and children in families gives researchers privileged access to families’ lives. Through multiple perspective research it is possible to explore the lives, not simply of individuals or standpoints but of families, and to gain a rich understanding of the complex and dynamic ways that children’s and parents’ everyday lives are experienced as part of a family’ (Harden et al., 2010, p. 450).

Research questions for MPI studies refer to a relational unit or social group as a unit of analysis and mutual impact of related persons (Eisikovits & Koren, 2010). MPIs are interviews conducted separately with members of a social group. These interviews offer insights into joint lives in complex social systems: they account for the individuals’ interrelation and joint life context (Eisikovits & Koren, 2010) but give participants more freedom to express their own views and provide more privacy and confidentiality than joint interviews (Valentine, 1999). Consequently, they might thus offer the opportunity to compare potentially conflicting accounts (Vogl et al., 2019).

Following these thoughts and to avoid the dominance of some family members and tailor the interview proceedings to children, we decided on individual interviews with children in both age groups and with at least two other individual family members, instead of joint family interviews. By these means, we could ensure utmost confidentiality and could give every interviewed family member an equal say. It has to be kept in mind that within the DigiGen project and in WP3, we employed a broad definition of family (see Chapter 2) and thus also involved family members of the extended family, like aunts or grandparents. Although the data collection is based on individual interviews, the unit of analysis is the family. This is achieved by triangulating the perspectives of the family members who have been interviewed.

The **family interviews** aimed for insights into individual experiences and views but also family practices regarding the challenges, advantages and impacts of DTs generally and specifically on family life, negotiation of practices and use of DTs, as well as (retrospective) changes across time.

From a methodological stance, we were interested in potential threats to data quality in interviews with children, demands on interviewer behaviour and specificities in the interaction with young children, children's perceptions of interviews and question formats and tasks, but also reflect on ethical considerations of interviewing children and other family members and practicalities of triangulating perspectives in family research. We decided against joint family interviews to ensure confidentiality and give every family member an equal say.

Although the data collection was based on individual interviews, the unit of analysis was the family. In the analysis, the interview material covers both an individual and a relationship level. On the individual level, the interview material is analysed 'in silo' without taking account the other perspective(s). The relationship level refers to the actual triangulation of perspectives on the level of a social relational unit (Vogl et al., 2019, p. 612). Triangulating perspectives does not serve validation purposes but to gain a wider understanding of the constructive nature of family reality and dynamics (Vogl et al., 2019). By the triangulating different family members' perspectives, we could analyse how families are sharing attitudes and values towards DT and how they converge or differ in their perceptions and assessment of DT in their family life and doing family.

- The objective of conducting and analysing interviews is to explore respondents' individual views on digital technologies and the construction of family life ('doing family'). In triangulating perspectives, we did not aim to validate individual interviews but to gain a wider understanding of the constructive nature of family reality and dynamics regarding digital technologies.

To ensure a similar procedure in collecting the data and analysing the data across the participating countries, we provided a manual for all WP3 researchers and held monthly online meetings with researchers from all participating countries. Next to a methodological literature review, the outline of the manual included e.g.:

- Consent forms and information sheets for children and adults, which had to be translated into each country language (see Appendix 8.2, 8.3, 8.4)
- Show cards for the work in focus groups with children, but also to be used in family interviews (see Appendix 8.5)
- Focus group guideline with leading questions, information on the use of the show cards, etc.
- Interview guideline for children and adults and a short questionnaire for adults to get some information on the family background
- Template for a detailed 'theoretical and methodological memo' of each focus group and each interview, completed by the interviewer/main moderator and the assistant to be used for the analysis
- Template for 'focus groups results' and for 'interview results' - including observations and reflections on the methodological approach

Both the manual and the monthly meetings allowed constant exchange among participating researchers and enabled a coherent cross-country comparison, which is presented in report in hand. However, this procedure also provided space and openness for country specifics, questions, discussions, and ethical considerations and by that improved the qualitative work.

3.3. Recruitment and sample

The COVID-19 restrictions demanded even more flexibility on part of the researchers than already specific to qualitative research. Recruitment and fieldwork had to be adjusted to the specific circumstances and to national and local requirements/restrictions and had to be changed continuously over the project's duration. We had to warrant the safety of both participants and research staff members.

Initially, we planned for a multi-level selection and recruitment process, comprising the selection of institutions in a first step and attending children in a second. Unfortunately, institutions were not accessible or under strict conditions during our fieldwork. Researchers in most participating countries were not allowed to enter school or kindergarten premises and recommended social distancing measures hampered face-to-face encounters. Thus, institutions could only provide limited access to children and their families or rooms for conducting our fieldwork. Consequently, for those countries denied institutional access, the personal networks of researchers were utilised for recruiting potential participants and enabled subsequent snowball sampling. This implied that the contacts were mostly facilitated by parents. A well-known problem of snowball sampling is a tendency for homogeneous samples. Nevertheless, as our substantive results show, we could reach a diverse sample of families regarding their DT practices as well as regarding their regional and socio-demographic backgrounds. The overall sample of families reflects the diversity of families in terms of cultural, economic and educational background and of family and living forms. We reached out to single-parent families, multi-household families and families after a divorce or separation, families of the ethnic group of Roma and families with diverse educational backgrounds (for more details, see Chapter 8.1).

For the focus groups, once a contact was established, we asked for recommendations and contact details for further participants. Generally, parents were very helpful, encouraged friends of their child (and their parents) to participate and helped to organise the focus groups by collecting consent forms, invited us to their home or delivered all children to a rented location. Using parents as gatekeepers in some participating countries—rather than institutions—allowed us to talk to some parents before and after the focus groups, which gave us additional contextual information. In a school or kindergarten setting, this would not have been the case. Recruitment for family interviews was easier because we only had to assemble one family at a time with a child in the respective age group or arrange individual appointments.

Due to the COVID-19 pandemic, we could not offer preliminary meetings with children or parents to provide information on the project as originally planned. This mostly had to be conveyed through telephone conversations and e-mail. Establishing trust is more difficult this way but social ties helped to compensate for this. Institutions as gatekeepers might reassure parents, and less effort on their part is usually necessary. In sum, recruitment was difficult—not because parents did not value our study but because the circumstances were obstructive: social distancing measures were prohibitive, appointments had to be suitable for all participating children or had to be postponed due to infections or contact with infected people and parents had to either open their home for data collection purposes or deliver their child to a place in the vicinity.

Despite these difficulties in recruitment caused by the COVID-19 pandemic, the final sample comprises a variety of different family forms and living arrangements, diverse backgrounds in terms of highest parental school education and in terms of rural and urban areas (see Table 2 to Table 5 in the Annex). As well as families involving two (biological) parents living with their children, we also included single-parent families, families living in a multi-generational household, rainbow (LGBTIQ*) families, families with migration or binational backgrounds, large families (3+ children), divorced parents and reconstituted families, as well as families of specific communities like Roma families. Overall, WP3 conducted $n=42$ focus groups with a total of $n=176$ children at the ages of 5 to 10 years and $n=42$ family interviews with a total of $n=124$ interview partners of families in the participating countries (for more information, see Table 2 to Table 5 in the Annex). Fieldwork was conducted between October 2020 and June 2021.

3.4. Memos and data analysis

After each interview or focus group, the interviewer, moderator and assistant individually completed

memos on the fieldwork experience. In focus groups, the moderator and assistant discussed their experience and completed the memos in a next step. Afterwards, the data were analysed together with members of the research team who were not involved in the field work. For the family interviews, in some countries, for example, we had interpretation meetings where three team members participated. Each person had either conducted one or more of the interviews or had listened to the recording and taken notes. Thus, each member of the research team took one interviewee's perspective and we then discussed the findings about the respective family from these three perspectives. This practice always enhanced the nuanced understanding of the family and the dynamics therein. In the process of fieldwork, these discussions became more abstract and we were able to distil patterns and make meta-inferences across cases. For all countries whose data were analysed, a triangulation of the different perspective of the family members took place, in one or the other way.

This practice is highly recommended, because it allows for a more nuanced understanding by triangulating different researchers' perspectives. Triangulation was not used to verify children's statements or interviews by the perspective of adults; rather, it was used to gain more insights into family practices by equating the perspectives of different family members. It allowed us to gain a more nuanced picture, to interpret contradictions in our data and to analyse rather complex family lives. Our different disciplinary backgrounds were also valuable for diverse readings. We strongly recommend this strategy because it created new insights and led to communicative validation of interpretations.

4. Results and conclusions regarding the methodological approach

4.1. Setting

With the restrictions during the COVID-19-pandemic, in most participating countries we could not follow our initial plan to recruit only through and conduct research only in schools and nurseries/ kindergarten. We had to find alternative rooms and digital formats to conduct interviews in; these alternatives will be discussed among other aspects in this chapter.

The family's home was the natural place for the interviews. The best place for interviews with children is a setting that is familiar to them. Interviews in an unfamiliar place (rented rooms or offices) or through Zoom were perceived as less comfortable. For individual interviews, the familiar setting in the child's bedroom could be comforting and gives them the opportunity to show the interviewer things. In a focus group, however, the visiting children do not have this advantage. Further, conducting focus groups in this setting often comes with space restrictions, but also a power imbalance between participants: the host is on home ground and has more say in a sense. At the same time, the bedroom is often a play zone. Thus, it might be difficult or unattractive to concentrate on the focus group when toys are around them. Friendship pairs can easily dominate focus group discussions and this effect seems to be even greater when focus groups are conducted in a child's home. At the same time, friends might discuss in more detail using DD at home. Furthermore, in a few interviews, younger siblings created a serious distraction and disturbance to the interview, while, in contrast, when participating in a focus group, they were marginalised. However, it is impossible to send the siblings away, particularly when the children are sharing a bedroom or when parents are interviewed simultaneously.

For focus groups, most countries also used private homes, but we did not conduct any focus groups with children online. Using family homes for interviews and focus groups allowed for insights into living conditions and ICT equipment in the home. This is valuable contextual information. However, the family home or child's bedroom as a location for interviews or focus groups has several

methodological implications.

Another implication of conducting field work outside schools and nurseries was that parents were either present or nearby. This had mixed implications. On the one hand, for younger children, it was sometimes reassuring to have parents nearby and some children preferred their parents to stay during the individual interview or focus group. Furthermore, the chance to also informally talk to the parents or observe the parent-child interactions and family dynamics before and after the interview or focus group can be very informative. In one focus group, for example, the participants' mothers had gathered for prosecco and coffee while their children participated in the focus group and stayed in that apartment afterwards. The participant of the house wanted to play on a DD after the focus group, but his mother did not allow it. This resulted in an argument and ended in doors slamming. This gave us interesting insights into family dynamics and practices around the use of DDs.

On the other hand, when the interviewer talks too much to the parents, it might undermine the expert status that we want to assign to the children. The child should always be the centre of attention. Parents have an influence on what is said and how—sometimes directly by saying something but also by their mere presence. Furthermore, parents being present makes confidentiality impossible. Thus, sensitive or controversial issues were raised more rarely when parents listened to children's interviews. Further, it can be tempting to ask or refer to parents when they are present during the interview. However, this would undermine the expert status that we try to assign to the child participant. Either way, parents had positive and negative effects on the course of the interviews and focus groups: they gave confidence and encouraged the children, but they also might have influenced what children said and how they behaved.

Video recordings are very helpful for the analysis but might not be possible in small rooms. Video recordings make it easier to determine speakers (especially in larger groups) and facilitate analysis. Video recordings offer additional information, capture nonverbal behaviour (common in younger children) and open up the visual level for analysis and interpretation. None of the children seemed to be disturbed or irritated by the recording device. To acquaint children with technical equipment, it can be helpful to let them press the 'record' button, try the device before the actual focus group and listen/watch a short recording they make. This is also good advice for audio recorders and increases the acceptance.

Online interviews with children

The experiences with online interviewing were mixed. Sometimes the connection was bad and strong dialects were even more difficult to comprehend via online platforms. The advantage of online interviews is that children can stay in their familiar home environment and can show their toys and other items or places that are referred to in the interview, similar to face-to-face interviews in the child's home. This contributed to children being more relaxed and interested. Such an approach contributed to activating some of the same benefits as interviewing at family homes even though the researcher was only there virtually. Furthermore, especially when children are used to video calls, video interviews give children and parents a sense of safety and are not difficult to organise, although some children did not say much and had difficulty focusing on the interviewer. In some cases, it seemed more difficult to maintain focus and motivation when the interviewer was not physically present. The interviewer can talk about some general topics in the beginning (e.g., where the child is sitting now, if he/she is used to making such video calls, if he/she wants to show their favourite toy to the camera) and might use material like show cards (see Chapter 8.5) via a shared screen or by holding a picture to the camera. However, in some cases, parents were listening in the background and afterward referred to some statements in their own interview that their child had made. To summarise, online interviews are a good but not an equivalent substitute for face-to-face interviews—particularly with children.

Nevertheless, overall, parents said they did not think it would work out but were relieved it did. We

also experienced parents taking a break in their own interview to check if their child was comfortable in their own interview in another room. They reported back that 'everything went well and the child was surprisingly engaged' (N_I_p).

4.2. Interviewer and moderator behaviour

Researching young children is particularly demanding. Interviewers should be aware of children's cognitive abilities at specific ages. Small children are interested in talking about their lives and are happy to reveal their personal experiences, but it might be difficult for them to answer the questions of what children at their age might generally think or feel in a certain situation. Pretending to be ignorant of digital devices to elicit further information by the moderator/interviewer only partly works. If children do not believe it, it can undermine the moderator's credibility and is counterproductive for ascribing an expert status to children.

Children are often more outspoken than adults. A child could suddenly say 'I am bored; I want to go'. Additionally, children's need for a toilet may disrupt the process. Children can also be unruly and ignore reprimands. One strategy was to ask specific children something and refer to another child's statement and ask what they thought of it or whether they knew more/something else. This way, the moderator was able to get their attention back, and they started to concentrate on the group discussion and on the other children again.

Questions should refer to practices with the devices and not knowledge. School-like settings should be avoided because it counters the intention of seeing children as actors in their own right. Thus, we should not lecture or judge children but keep an open mind and take them seriously. Children should be free to talk (without indicating first) but we should be prepared to take an active and sometimes directive role.

We also found that during the interview or focus group itself, more interpretive work is necessary. The interviewer/moderator constantly needs to question his/her understanding and be very attentive to potential contradictions. This is crucial for asking and reassuring comprehension because equivalence of meaning cannot be taken for granted; for example, a child referred to a hearing aid but meant head phones. The semantic and pragmatic meaning of words is not necessarily equivalent between adult interviewer/moderator and child participant.

4.3. Additional material

Focus groups were structured along a guideline that integrated diverse visual aids and techniques, for example, **show cards** (see Chapter 8.5). It is important to be sensitive to children's language and be prepared to negotiate with them on central terms of the study. For example, it was challenging to explain to children what DTs are. It is important to find out at the very beginning of the interview which words represent DT most appropriately and understandably for them. For that purpose, the pictures with DT and situation cards prepared for the DigiGen study were extremely helpful. We used show cards of DT for warming up. Generally, these visual aids were well suited in this respect, but they often took too much time and thus concentration. Depending on the situation, we flexibly used more or fewer show cards. We also tried grouping the show cards and discussing a set of three to four cards at once. This can also be an option for not spending too much time on each single card. Again, flexibility and adapting proceedings is a requirement for moderators/interviewers.

For some children (especially younger ones) overly abstract pictures might be difficult to understand and realistic images could be more helpful. Another option could be that children draw pictures themselves. It was also cognitively challenging for smaller children to understand and follow the instructions regarding tasks where situation cards, emoticons and stickers were involved. Such tasks

are interesting and may provide valuable data difficult to obtain otherwise, but too complicated and time-consuming to implement. It should be considered carefully whether the benefits outweigh the time or perhaps whether the tasks can be organised in a simpler manner. In general, it seems useful to integrate into the verbal interview more interactive tasks; for example, role plays at the end of the focus group interviews worked very well.

One of the main advantages identified in the procedure is that the images of the show cards expressed very well the essence of the research questions, pointing to key aspects of digital life. They are useful not only for describing their knowledge about ICT, but also to engage children in talking about their experiences in using the technology. Cards showing family scenes also allow children to project their feelings and frustrations around family habits and rules. Through this method, we can affirm that the cards considerably increased the interactivity during the data collection sessions.

The **role play**⁹ was particularly appropriate for the preschool participants as it is a good way of including a playful element in the focus group and motivates children. However, it requires some courage by the moderator to play the role of a child who secretly takes a smartphone to bed. Thus, we recommend preparing the moderator with a plan B to have the flexibility to change the proceeding. Even though the children might not play a parent, they would still articulate what they thought a parent would say, potential consequences, general rules and sanctions. In some instances, and in both age groups, depending on the general setting and assessment of the moderator, we changed the role play, with the moderator using Playmobil figures to enact the scenario. In only one instance did we use the situation card. However, if children engaged in human role play, we found more interaction than in the role play with figures. It should also be mentioned that the playing requires some courage by the moderator and that depending on the group, not everybody feels comfortable with it. Thus, we recommend preparing the moderator with a plan B to have the flexibility to change the proceeding. A danger of the role play can also be that it is too abstract, with the children making it into a fictive game that has not much to do with the reality they experience, for example, when the reactions are greatly exaggerated. Thus, the role play is a good way of including a playful element in the focus group and motivating children.

As an alternative to the role play, we also prepared a **situation card** (see Chapter 8.5). Showing the situation card after the role play still generated additional insights. When situation cards—or visual stimuli in general—are employed, we should not only ask ‘How do you like the picture?’ because it could be misunderstood for ‘How do you like the way it has been drawn?’ or ‘What do you think about the image?’ but also what it is they see and what they like or dislike. This is important to establish a common ground and validate our interpretations. We offered them to put stickers on happy, neutral or sad smileys in order to express their first emotion with the situation they saw. However, they might put a sticker on a happy smiley because they like the way it has been painted rather than what can be seen in the picture. Smileys worked with the school-age children; they were familiar with this way of assessing topics. For preschool children, putting stickers on smileys is enjoyable but using stickers of different colours for like and dislike and sticking them directly on the situation card worked better. Some experiences for preschool children also show that the access via stickers to discuss the situation card was too complicated and took too much time in the interviews. The emoticons and stickers on them were confusing and sometimes preschool children did not understand until the end what was expected from them (see for example country report of Estonia, Sisak et al., 2022).

‘**What if there were no DT?**’ generated mixed results¹⁰. For some groups, it did not elicit many ideas from the children—sometimes their concentration span was exhausted, or for some younger children, it was too abstract. Some children had very insightful, even philosophical and analytical thoughts

9 In the role play, the following scenario was presented to the children in the focus groups. The moderator plays the child and the children are the parents. The moderator, as the child, is going to bed and secretly takes the smartphone with them and uses it under the blanket. Parents come in: what would happen now? What do children think parents would say or do? (See also situation card in Chapter 8.5.2.)

10 This was a part of the focus groups and interviews where children were asked ‘What if there were no smartphones/tablets/TV/internet?’ Children should answer questions such as ‘What is it you could not do? What would you miss? What would you like about not having ...?’

about this, for example, 'I would not be sad because I would not know what I am missing' (AT_FG1_PS).

4.4. Focus Groups

Focus groups are often characterised by a non-directive style of interviewing, as the prime concern is to encourage a variety of viewpoints on the topic discussed in the group. However, due to the age and status difference and the need to structure the focus group, it was not possible to minimise power imbalance. However, underlining the expert status of children and sitting on cushions was important and successful in empowering children to participate. We found that direct cooperation among participants was limited, particularly in the younger age group (five- to six-year-olds). The communication was rather moderator-centred, which makes insights into peer orientation processes in situ questionable.

Sometimes we could detect some tension among participants, for example, about who was right and had power of defining, which basically is about a desire to dominate others. Further, for some children, it was important to impress the moderator and they boasted, for example, about the number of devices they had at home or how long they could use them. Generally, the children were very moderator-centred, competing for her attention and recognition. Thus, the moderator was (unintentionally) very central and even more so with younger children.

For both age groups, there was only limited direct discussion among participants. Statements were often complementary without an argumentative exchange about the exact meaning of the word, with different and new arguments brought in to support one's view. However, this does not mean that participants did not refer to each other. To be complementary, the other person's position has to be heard first. Adult standards about debating a topic might fail with young children, but the group setting and the other participants' contributions elicit further thoughts and statements, and this is the added value of the group setting. Thus, adult standards of a 'discussion' as a debate with an exchange of arguments might be difficult to meet with young children. However, even for the younger age group (five to six years) the other children gave important impulses and thus the insights methodologically differed from individual interviews. Furthermore, we could see more interaction and direct reference to other participants in the older age group (9 to 11 years) and also more statements of opinions.

At the same time, children often had their own agenda: they contributed off-topic information or explored the facilities, played with a piano in the room or other objects and got distracted easily—particularly at preschool age. The moderator did not only have to monitor the progress of the focus group discussion but also sometimes reprimand participants and encourage silent members that hardly had a chance to contribute when other members were too dominant. However, there is a fine line between putting pressure on members to contribute and giving everyone an equal chance to contribute. It requires sensitivity and empathy, a good understanding of children, but also flexibility to give room for children's agendas and at the same time find a way back to the topic. For the natural setting, it is also not important that every participant contributes equally. It is only natural that some children are more talkative and more outspoken than others. If the moderator invites individual participants to contribute, it has to be in a sensitive way without pressure.

Disclosures by participants are shared with all group members and not just the researcher. Intense discussions may give rise to stress or distress individual participants. However, perhaps because we had recruited very often exclusive friendship groups and did not ask sensitive questions, we could not detect any distress from participants. The moderator has the responsibility to monitor group dynamics closely and intervene if individual participants are excluded or somehow 'dismissed'. Everybody should have the opportunity to participate—without pressure to do so and without negative consequences.

Furthermore, *gender* did not seem to make a difference in the level of participation, although loud and sometimes unruly participants tended to be boys (playing with technical devices, destroying show cards, walking around the room, admonishing other children). The *duration* of 30 to 40 minutes is the maximum time that kindergarten children can focus. The older children can endure only slightly longer focus groups, depending on the group size. The group size had to be adjusted due to COVID-19 restrictions in most participating countries, but three to five was evidently a good size for a productive focus group. Real-life groups in which participants know each other beforehand are helpful, but strong friendship between two participants might imbalance the focus group.

In addition to the moderator, an assistant was present in all focus groups. This had the advantage of having someone else experience the focus group and allowing for a joint reflection. Furthermore, the assistant helped with technical aspects such as audio-recordings or when a child needed to be taken to a toilet (it also happened that all of the children needed a toilet). Of course, the assistant can feel free to ask questions, however, we found that it is better if one person leads the focus group, otherwise it can confuse the children and require a coordination effort between moderator and assistant. Managing and facilitating the group can be challenging enough.

In sum, what makes focus groups with children different compared to those with adults is the shorter attention span, off-topic contributions and more directive moderator behaviour. The added value of focus groups with pre- or primary school children lies in the inspiration they give each other in talking about certain topics and remembering experiences, but also in how they refer to and discuss some aspects and more with enthusiasm, without necessarily needing the moderator's interventions. This is as opposed to building one coherent opinion or conclusion or contradicting each other and discussion topics and arguments. Group dynamics can hamper the communication process, issues of dominating others, unruly behaviour and silent participants being examples.

4.5. Family interviews

Interviews with children are more balanced in terms of word-share than qualitative interviews with adults. This also implies that the interviewer has to be more active and thus potentially directive and suggestive. Sometimes questions have to be repeated. However, repeating the question about potential conflicts regarding DT use in the family and phrasing it differently several times might suggest that the interviewer keeps asking until he/she gets the expected answer or does not believe the child.

It is also important to clarify the purpose of the interview and the expectation to reduce anxiety. Some children were slightly nervous at the beginning and had to warm up. Starting with the show cards was helpful to start the conversation, also because the children had something to look at other than the interviewer—constant eye contact can increase insecurity. However, while most children engaged well in the show cards, we found that we had too many of them. Overall, the time we spent on the first topic (knowledge about different devices and software) in the interview guideline was too much and took too much concentration. Thus, subsequent topics were often addressed only briefly. For some children, the show cards were not necessary, and they preferred talking about ICTs freely; others were totally fixated on the pictures and did not want to talk about anything else.

Longer narrative elements are unlikely with young children. However, children sometimes follow their own agenda and tell stories that are not related to the interview topic. As a sign of appreciation, interviewers should still give room for these narrations even though they might not be directly relevant for the research—at least not at first glance.

Despite the presence of other family members, we sometimes got the impression of socially desirable answers—we heard the parent's voice behind what children said. Some children seemed to replicate what they had heard, rather than having their own opinion. However, it is very difficult

to determine whether this really constitutes social desirability. Actually, we think it does not. This is a normal developmental stage in which the attitudes and norms of significant others are copied and not a repetition of what they have heard from their parents because it seems an acceptable answer. Furthermore, to have an idea of what is socially acceptable or desirable, someone needs to be well socialised within a society and well versed in perspective taking. Both are questionable at such a young age. Often, children do not only repeat adults' words one by one but add their own interpretation, perception and reflection. To contextualise the children's statements and views, interviewing other (adult) family members has great potential—like for all members of the family. However, it is not necessary to validate or confirm what children say. If we are interested in children's perspectives, we have to take them seriously as informants in their own right. Parents or other adults can add their perception of the child, but it does not mean that the adult's view out-rules the child's. Having another perspective simply gives the opportunity for better understanding the family system from a more holistic point of view.

Because children's attention is less persistent and they can get tired quickly, it is of great importance to structure the interview wisely and keep the length of the interview reasonable, for example, focus groups for preschoolers should not exceed 30 minutes and for primary school children 45 minutes. The formal introduction part should be conducted briefly, clearly and precisely. If possible, a separate preliminary meeting with children could be organised for that.

5. Results and conclusions regarding access, use and integration of DT in 5-10-year-old children's lives and their families

Based on the case studies in Austria, Estonia, Norway and Romania (see DigiGen working paper Kapella & Sisask, 2022), the cross-country analysis at hand reveals common topics for digital technologies in the lives of five- to ten-year-old children and their families. The way in which these children use and have access to DT reflects its significance and relevance in their everyday lives (see Chapter 5.1). DT also plays an important role in the development or maintenance of a family identity, regardless of whether the integration of DT in the family is accompanied by either positive or rather sceptical and cautious attitudes. Furthermore, DTs are a crucial part in the creation of everyday family life (see Chapter 5.2). To support children and young people in navigating in the digital world, parental mediation plays a central role in building up and maintaining children's digital competences. Parents often face challenges in their mediation practices (see Chapter 5.3), particularly when conflicts around DT arise, although our data reflect that conflicts are mainly mentioned by adults and less by children (see Chapter 5.4). Another aspect that has become clear in the cross-country analysis is the potential of DT to increase the vulnerability of children and young people or to create new vulnerabilities, but also to cushion or reduce existing vulnerabilities of children, young people and families (see Chapter 5.5). Finally, results reveal that children and parents are aware of manifold beneficial and harmful effects of DT (see Chapter 5.6).

5.1. Digital technologies are part of children's everyday lives

Children today are living in media-rich households with access to a variety of different devices and DT are a central part of children's everyday lives (e.g., OECD, 2019; Eurostat, 2019; see also Lorenz & Kapella, 2020). However, there are differences within European countries in terms of access to DD and the Internet in families and not all families and children have access (see Ayllón et al., 2021). Moreover, our data revealed great variance in children's knowledge in the age group of 5- to 10-year-olds regarding the use and purpose of DT. Generally, however, DT are highly relevant for them in their everyday lives, regardless of their level of knowledge and access.

The most known and accessible DD for children are smartphones, tablets, smart TVs, video game consoles (e.g., PlayStation, Xbox, Nintendo Switch), smart speakers, laptops and desktop computers. Although they know about it, less common for children is to have their own smartwatches, and only a few of them know about such devices as e-readers and drones. In some cases, children from disadvantaged backgrounds did not recognise as many DD as other children, but at the same time these children seem to have a greater knowledge about the digital world compared to their parents (Barbuta et al., 2022), which might lead to specific vulnerabilities of these children (see Chapter 5.5). Children in the age groups at study use DT mostly for playing games, consuming video and audio content, seeking all kinds of information, communicating and as an assistant in everyday family life. The most popular apps children use in this age group comprise games like *Roblox*, *Minecraft*, *Fortnite* and *Among Us*. For videos, they use YouTube and TikTok. Children often get their first experiences through gaming and videos, followed by social media, such as TikTok or Instagram. The children also mentioned the use of DT for safety reasons, for example, to be able to call for help if needed. DT contributes to feeling secure, not only for children but also for parents.

Children in the age of five to ten years differ not only regarding their individual family situation and (social) context they are living in but also in terms of their age. There are clear differences between the knowledge and use of DT and whether a child owns devices or not. If children have their own devices, their access is less limited and their knowledge is based on their own practical experiences, less on observing others. In general, the COVID-19 pandemic has increased children's access to and knowledge about DT and their screentime, especially for school-aged children, since digital home-schooling was partly in use.

In the **age group of five- to six-year-olds**, children's use of DT is strongly connected to other family members. In most participating countries, preschool children use their parents' or older siblings' devices, and families often have a 'family laptop' that is set up in a child-secure way. Estonia represents an exception among the participating countries. In Estonia, it is common for a preschool child to own a tablet, and in Norway some already own an own tablet as well. However, regardless of whether kindergarten children have their own DD, data of all countries reveals that they are familiar with many terms, technologies and functionalities of different devices. For example, they know how to use game apps or how to download new games. Even if they might not fully understand its use, meaning or functionality, they are fascinated by the digital world and interested in it. Their most common digital activities comprise listening to music or stories, watching YouTube videos or watching (smart) TV. However, in their daily lives, they rather focus on analogue interaction and games together with friends. Children of this age group gain large parts of their knowledge predominantly by watching other family members using devices, talking with other family members about the devices and functionalities and borrowing and being allowed to use others' devices. They like watching others using DT. Kindergarten children have more digital co-activities with older siblings than with parents or other family members. In general, parents greatly shape and orchestrate the availability of DT for children in this age group. Moreover, the perspective of kindergarten children often mirrors their parents' attitudes and assessment.

Generally, in the group of **8- to 10-year-olds**, DT is widely integrated into children's daily lives. They are used to using DD, which makes life without DT almost unthinkable for them. It is more common for children in this age group to have a device on their own; this increases the possibilities of how they are able to use them and clearly influences DT's relevance in their daily lives. Their main digital

activities revolve around leisure, pleasure, fun and entertainment activities on different devices they are using. These activities range, for example, from watching or making videos by using diverse apps or watching regular TV channels, to taking photos, playing various games with friends or being creative, for example, by using drawing apps or when writing stories, to listening to music or stories. Moreover, their digital activities are increasingly focused on educational purposes, for example, searching the Internet for specific information, gaining new knowledge and of course for education at school. Compared to kindergarten children, the knowledge about DT of 8- to 10-year-old children seems to be much more based on real experiences and more important to them to share. They have increased skills regarding DT and more detailed knowledge. The perspective on DT of this age group is markedly shaped by parents' assessment and the family context, but also by their peers' attitudes and their interactions with friends. Their access and use of DT strongly depends on the rules in their families, even though in some families there are no strict rules and they can use DT independently and whenever they like. Compared to kindergarten children, primary school children start to question rules and the ways DT are integrated into daily family life and rather are involved in the co-creation of rules. They show greater awareness and understanding regarding positive effects but also regarding potential risks and dangers of DT.

5.2. Doing Family is supported by DT in multiple ways and by diverse activities

There is comprehensive evidence that DT contributes to 'doing family' in several dimensions (for more information on that approach, see Chapter 2.5), as already described in the literature review for WP as DigiGen Working paper (Lorenz & Kapella, 2020). Regarding the effects of co-using activities on family dynamics, the following findings from the literature can be highlighted. Experiencing DT actively together can shape family identity and create a feeling of we-ness. While parents can learn from their children's digital experience (Sobel et al., 2017; Ulicsak & Cranmer, 2010; Aarsand, 2007), children enjoy their parents showing interest in things that are important to them (Wang et al., 2018; Sobel et al., 2017; Coyne et al., 2014; Ulicsak & Cranmer, 2010; Volda & Greenberg, 2009). Co-use can also serve as a springboard for conversations regarding (sensitive) topics and is, therefore, a way to put parental mediation into practice, which can also strengthen children's resilience (Coyne et al., 2014; Ulicsak & Cranmer, 2010). Further, the quality and the amount of communication might be affected during active co-use (Hiniker et al., 2018; Lavigne et al., 2015).

As a result of using DT for everyday communication purposes, organisation issues in families have become more comfortable, as the results in the literature show. For example, parents feel less worried when their children can be reached on their phones in the case of emergencies, which is also appreciated by children as long as parents do not proceed in a very controlling way (Hänninen et al., 2018; Devitt & Roker, 2009). Moreover, digital technologies can make communication for families with children who have special needs more accessible (Insenson, 2020) and help divorced parents to organise parenthood more easily (Ganong et al., 2012).

Next to the effects of everyday mobile phone communication, more recent developments like video calls have led to significant changes for families with non-resident family members. For these families, live video calls give them a chance to actively take part in family life (Taipale & Farinosi, 2018; Nedelcu & Wyss, 2016; Rudi et al., 2014; Gonçalves & Patrício, 2010; Tee et al., 2009). Consequently, non-resident family members are likely to feel more integrated into the everyday family life (Charalambides, 2019; Mickus & Luz, 2002). However, for family members who do not have access to DT or who lack the skills required to apply the technology used for communication, online family communication might cause them to feel socially excluded rather than promote family cohesion (Hänninen et al., 2018).

In our qualitative data, not all above-mentioned aspects from existing research occur, but there is strong evidence that DT supports processes of 'doing family' on a daily basis, as will be presented in

the following chapters.

5.2.1. From heavy users to highly sceptical families—Integration of DT into families

Family lives today can be understood as mediatised, and digital technology is part of children's everyday lives, whether they have access to it or not. Furthermore, children spend more and more time online (Lange, 2020; OECD, 2019; Ofcom, 2018). These facts have been reinforced by the COVID-19 pandemic since home-schooling and keeping in contact with (not co-resident or transnational) family members through the use of DT was a viable alternative to contact in person.

Although families in our data represent a great variance in using DT, **three distinct types regarding how families in Europe assess and integrate DT** have been identified. We identified these distinct types by, first, triangulating the perspective of different family members and second, by integrating the country-specific results in a comparative analysis.

(1) Families of the first type can be labelled as comparatively heavy users of DT. They are proud of their way of using and appreciating DT. Some families even glorify these technologies and describe them as belonging to their identity and as ensuring family members' well-being. Families of this type often own many digital devices and digital activities seem to be central in their daily lives and used purposefully. Their digital activities are manifold and comprise leisure and fun activities (e.g., watching and creating videos, games, shopping, drawing, 'playing' with smart speakers), activities for education and work (e.g., school, learning apps, emails) and activities to organise family life (e.g., controlling of screentime, online-shopping lists, shared music streaming, online-calendar, tracking of family members). In their positive, almost glorifying, assessment of DT, there is a high level of convergence, dominated by highlighting the advantages of DT, while disadvantages (and also conflicts around DT) appear as a side issue.

(2) Families from the second type seem to have a more neutral, relaxed way but use DT frequently and own various devices. DT appears a natural and welcome part of daily family life beside other activities, but not as a central fixture that lives or identities are built around. It appears rather as a taken-for-granted part of their daily life. Family members value digital activities and games similar to analogue ones. Children aged 5–10 years in these families might even forget about DT. Their assessment of DT seems to be differentiated and they share among each other and with us as researchers the positive and negative effects of DT. Parents seem to be satisfied with the way DT is integrated into the family.

(3) Families of this type seem to be comparatively anxious, insecure, frustrated and highly sceptical about DT. They use the technology at the minimum necessary level and, compared to other families, only a small variety of devices and applications are owned and used, for example, one smartphone and/or TV. They often have a convergent negative attitude and share anxious and sceptical views, which in some families are even transmitted intergenerationally. Parents who think that the effect of DT is negative at the same time cannot escape their use. Therefore, the use and access are regulated very strictly and clear limits are set. In some families, this sceptical view on DT can lead to a divergent assessment of DT and entail a lack of rules. This in turn can result in conflicts and negotiations on the use of DT.

In sum, regardless of the pattern of the integration and the attitude towards DT, the family-specific way supports doing family in the sense of building up and maintaining a feeling of 'we-ness' and family identity. Often, one parent or family member takes and is ascribed a leading role in introducing, assessing and integrating DT in family life. This person is either the one who has the most knowledge, most interest, clearest standpoint towards DT or the most agency, for example, as the primary

caregiver.

5.2.2. Parents as role models, children as instructors regarding DT—Roles ascribed to family members

One way of constructing a family appears in how roles are ascribed to individual family members. Our data reflect different roles that individual family members take on in relation to integrating and dealing with DT in the family. These roles in the family range from parents as role models for their children to children as instructors who take on the task of introducing and explaining DT to their parents.

The case study from Estonia, for example, demonstrated the different roles parents can assume when integrating DT into their children's everyday lives (Sisask et al., 2022), but this is also reflected in the findings from the other case studies. A parent can act as a

- role model,
- guide and supervisor in online and offline activities ('gatekeeper'),
- supporter in the use of DT by providing children with a suitable environment,
- home-teacher and learning facilitator (this aspect has become truer during the COVID-19 pandemic),
- explanator and preparer for the digital world in an age-appropriate way,
- prohibitor, controller and decision-maker in monitoring and mediating children's access and use of DT and
- filter for the content that should not reach the child, for example 'nonsense' and violating content.

Children mirror and adopt their parents' behaviour also with respect to their DT use and access—parents generally appear as role models for their children. The time parents spend online, the DD they are using and the games they are playing, for example, correlate with their child's daily Internet use and use of DT (e.g., Chaudron et al., 2018; Nevski & Siibak, 2016; Livingston et al., 2011). Our results also confirm these findings for children aged 5 to 10 and their families. Most parents are aware of their function as a role model or—as a father in Austria describes it: 'A fish also rots from the head down (AT_F3_father)'. For example, they limit their personal screentime and the locations where they use DD if children are present. This endeavour can concern the leisure time they spend with DT, but also the blurred boundaries between using DT for leisure and for work. Parents, for example, avoid using their smartphone to keep their distance from job messages or emails during leisure time. Some parents are also aware and admit that they are not good role models for their children. They consider certain habits of using DT as not good, but find it hard to change these habits (e.g., scrolling through the smartphone too often, wearing headphones while the family is at home, getting caught when playing games, using DD while eating):

They see me going around with headphones all the time and I ... all the time they realise that I can't hear what they're saying, then I try to stop this behaviour and to be more aware. (ET_F3_mother)

Once I am honest to them and admit my own weakness, it works and we have less conflicts. (AT_F4_mother)

In fact, I am floating in front of the TV in the evening. Inevitably. And then in the case of children, I sometimes remind them to sit more straight ... Posture, that it is already visible how the physique is affected. (ET_F2_mother)

Irritating to see parents who just sit there with their heads facing down on their phones and their

kids are just running around their field try to gain their parents' attention. (NO_father)

Children are also ascribed to different roles regarding DT in the family. Most commonly, the learning process appears as reversed when children assume or are ascribed the role as teachers or instructors for DT. Children often have a greater or more specific knowledge about DT or feel more comfortable with it. They therefore often get into a position where they explain to parents, siblings (especially younger siblings), grandparents or other family members how certain DD or software work or help them to find content on the Internet. This can be understood as an intergenerational contribution for doing family.

By passing on their knowledge and their way of navigating through the digital world, children also help to shape the digital competences of other family members. For example, younger children can observe their older siblings' competent use and critical approach to DT. The results demonstrate that children in kindergarten who have older siblings tend to have a more extensive knowledge regarding DT.

However, our data also reveal a negative aspect regarding this instructing role of children. In some families, children often manage family life regarding DT when parents do not manage either because of lack of responsibility or knowledge. Children can then find themselves in a situation where they are overburdened and confronted with tasks and responsibilities that are not appropriate for their age.

Another role that appears for children in our data is their role as a companion and playmate for gaming, content creation, searching for information, simply watching movies and videos together and enjoying time. Children and parents report that children are partners in joint digital activities, for example, watching TikTok or producing video clips for it.

Children also take on and are ascribed to the role as a controller of DT use and activities of parents as well as of siblings. Children often control and criticise parents' DT behaviour, for example, when parents use DD while driving a car, when they use it too long or when they play games on the smartphone during dinner time or especially in the evenings. Some children judge parents' behaviour in relation to its reason. For example, when DD are used at the dinner table for reasons of work, it seems to be rather accepted by children. Children draw the attention to their parents' behaviour. On the other hand, some parents try to involve their children actively as controllers and prohibitors to help them to change their habits regarding the use of DT. For example, one mother in Austria asks her children to control her screentime while playing on the smartphone. One Estonian mother recounts:

Children check all the time: 'Mom, do not use the phone in the car' or whatever. It's bad. It's very disciplining. (ET_F7_mother)

The different roles of children thus can be subsumed under several patterns of behaviour. One pattern comprises parent-like behaviour, for example, when children in their roles as a controller observe, notice, control and make comments on parents' unlimited use of DT. Another pattern can be described by adult-like behaviour in general, for example, when children manage DT in the family and argue about positive and negative effects of DT. A third pattern involves more child-like behaviour, for example, when children explore DT spontaneously and curiously and enjoy activities with DT, like watching cartoons together. These behavioural patterns are not understood as static; children may switch in their behaviour between these patterns, which also could be interpreted as part of their development and increasing individualisation.

5.2.3. Building up and maintaining 'we-ness' and a family identity by DT

In social sciences, families are increasingly seen as being formed by ties other than biology and law. The trinity of coinciding biological, legal and social parenthood has fallen apart and family and its constitutions are more diverse (Greil & McQuillan, 2018; Golombok, 2015; Galvin & Braithwaite, 2014). 'Therefore, many members depend, in part or whole, on communication to define themselves for themselves with respect to their family identity as they interact with outsiders, and even with one another'. (Galvin & Braithwaite, 2014, p. 103). Similarly, Fitzpatrick and Vangelisti (1995) define families as a unit of intimates 'who generate a sense of home and group identity, complete with strong ties of loyalty, emotion, and experience' (1995, p. 254).

Members of a family might experience the identity and solidarity of their family in a feeling of 'we-ness'. This concept focuses on interpersonal bonds characterised by an undifferentiated psychosocial identity. It refers to the degree to which people identify themselves as a member of a family or group. It emerges from the individuals' close interactions and mutual understanding and thus must be understood from a systems perspective rather than as a stand-alone concept (Topcu-Uzer et al., 2021; Markham et al., 2014; Reid et al., 2006). According to Reid et al., 'we-ness' refers to the identity that each family member establishes in relation to the others. It becomes evident in language, for example when members freely use words like 'us', 'we', and 'our' (Reid et al., 2006, p. 243). The concept of 'we-ness' is understood as a cognitive conceptualisation of internal working models¹¹ that serve to create secure relationships (Reid et al., 2008). DT and its assessment undoubtedly support family members in creating and maintaining a sense of 'we-ness' and family identity. Various family practices help to establish this mutual understanding and bond with each other by using DT as an instrument in doing family:

The general assessment of DT and how it is integrated into the family provides space to discuss and share the same attitudes and approaches to DT, also across generations. In sharing and discussing their attitudes towards DT, families underline their values or start a process to create mutual values or accept and cope with different values in the family. Therefore, for creating a 'we-ness' and family identity, it does not seem to be relevant whether DT is assessed in a positive or negative way. For example, a family that has a highly sceptical approach to DT and almost demonise their use still integrate DT into their family identity and manage through their negative attitudes towards DT to create a feeling of 'we-ness'. This is similar in families in which DT are positively assessed and deeply integrated (see Chapter 5.2.1).

DT is used by families and their individual members to initiate co-activities together. This collective consumption of digital content supports building up and maintaining family ties. Digital activities of children aged between 5 and 10 years and their families often concentrate on and evolve around leisure and fun, such as watching videos, series or movies, playing games or listening to music, audio books or blogs. Some digital content allows families to be active together and move around as part of the activity, such as video games with bodily movement as input, karaoke and *Pokémon Go*, which involves walking with mobile devices. Another form of co-activity is using DT for communicating with family members. This is particularly important in the context of transnational families, families after a divorce or separation and patchwork families. Children, especially the younger ones, and parents emphasise offline activities as a central aspect of building up and maintaining family ties. Parents even seem to favour offline and analogue activities as family time compared to online activities.

Families use DT for co-activities also when they co-create content in various ways. For example, families act creatively together in designing and making birthday presents, creating video clips to upload to TikTok, searching for information on the Internet, drawing pictures, uploading music in a shared music storage place and creating games together.

The feeling of 'we-ness' and—consequently—secure relationships are not only established through being active together; security also results from co-presence or, in other words, 'being alone together'. This passive co-presence of other family members during digital experiences of single-

¹¹ The construct of internal working models is referring to Bowlby's attachment theory and describes a mental representation of the self, others and important relationships through early experiences.

family members is especially valued by children. Several families describe how ‘being alone together’ is an increasing part of family life. It is considered reasonable to put on earphones and listen to music, read audio books, browse on the web or play games while at the same time sitting next to some or all family members. Both children and parents describe this co-presence as a way of relaxing. Research and our data also show that the older children get, the more they use DT for individual activities alone (European Commission, 2019a; Livingstone et al., 2017a; MPFS, 2016a). Being co-present also enables parents to monitor their children’s DT use and gives children and parents the chance to communicate in the case children do need support or help.

Furthermore, families use DT to store and share memories with photos, videos or other content from family events like birthdays, joint events, trips and family vacations or life events like the first school day. By sharing or viewing pictures or videos together, also with family members not living in the same household, these stored memories help to create a family identity or group identity.

When families communicate about and share their individual devices, but also their desires and habits in the use of DT, they enhance mutual knowledge, understanding and interest for each other’s digital and online activities. This again contributes and evokes feelings of ‘we-ness’.

DT furthermore can serve to anchor the family in certain cultural groups (global, national or local). This becomes important for marginalised family forms, for example in families with a specific ethnic background (e.g., Roma), families with a particular religious affiliation or children with same-sex parents. Anchoring the family is not only contributing to the aspect of ‘we-ness’ but also to the aspect of ‘displaying family’ to others and to the world outside.

5.2.4. DT supports the management of balance within the family

Families often face challenges with the task of managing balance in their family on different levels. On the one hand, managing balance in the family is understood as an organisational task when it concerns the organisation of daily family life. On the other hand, it also includes the emotional and mental balancing of different individual lifestyles that occur within one family. Then it appears as interlocking, aligning, coordinating and synchronising tasks, as well as a process of distributing rights and duties within one family (Jurczyk et al., 2020). In practical family life, this would also include the need for balancing different perspectives in conflicting situations and thus balancing emotions and creating harmony.

On a **structural and organisational level**, participants report various ways they use DT for organising daily family life and how DT supports this task. At this organisational level, it is also about maintaining or creating balance in the family in a very practical way. One aspect of organising a family is to keep track of and manage the balance between different activities of family members and of the family as a whole. Online calendars, often shared with one another, are a good way for families to maintain an overview of children’s educational and leisure activities and work or leisure activities of other family members. DT supports families and eases family life also in the area of shopping and food. Families report keeping online shopping lists for groceries, for example, or to order food and meals online and to shop for clothing online. For managing food and meals, families find broadcasts about cooking inspirational, for example, videos on YouTube or other websites. DT also makes it easier for families to keep the house safe and clean. Families report on using robot vacuum cleaners to support them in home maintenance and families put different ‘smart’ solutions in place for home safety.

Doing family generally is rooted in the interactions and communication among each other. On a **communication level**, DT helps and supports maintaining communication in the family. It helps in balancing family members’ individual interests and needs for communication and the private and

public sphere and different needs for privacy or publicity when sharing and displaying family insights and intimacies. For example, WhatsApp groups with different family members, but also with friends and extended family members, are mentioned as important to stay in touch and organise meetings, etc. In terms of communicating aspects in and about family, the phenomenon of ‘sharenting’ was mentioned by children and parents in our study. ‘Sharenting’ is a practice that may violate the rights of the child. This phenomenon is understood as a practice where parents disclose detailed information about their children online. This has the potential to harm children’s long-term safety and the parent-child relationship (e.g., Williams-Ceci et al., 2021). As Sarkadi et al. (2020) show, children want parents to ask for permission before they practice their ‘sharenting’. In our data, children report that parents ask permission before sharing a picture of them. Some parents seem to be aware of this issue and act sensitively in this regard.

Creating harmony in the family often concerns managing and **balancing various emotions, and in conflicts, managing a balance between different attitudes and views**. In our results, this often appears as challenging for families, specifically in the area of DT and its integration in family life. Several family practices support families in their task to manage the balance in this regard. Rules regarding access and use of DT appears as a central and favoured way to manage a balance in the family members’ diverse needs for and assessment of DT. Since rules are a dominant topic in our data, this aspect is analysed in detail in the chapter 5.3.1. Closely related to the topic of rules is parents’ position as role models, which they often use to balance conflicts and emotions. Parents are well aware of their role model function towards their children, even if they admit that they do not always fulfil it in everyday life (see also Chapter 5.2.2). Some families establish a balance of emotions by ignoring differences in family members’ perspectives, use and attitudes, preferring to avoid conflicts. When families are characterised by highly divergent attitudes towards and interest in DT, an urgent need to balance these different views within one family arises. In some families, members deal with conflicts by sharing and discussing differences openly and transparently. In other families, conflicts might be suppressed—a strategy that might bear the risk of being a rather destructive family practice (for more on conflicts see Chapter 5.4).

Regarding the task of managing balance in the family, another level is challenging for families and has increased due to the COVID-19 pandemic: the level of the **distribution of rights and obligations/duties**. This level includes several aspects, such as balancing between work and educational activities and leisure time, balancing children’s rights, particularly their right to protection (online safety, etc.) and their right to provision (access to information, playing, etc.). Since children were given their own rights in 1989 (UN Convention on the Rights of the Child), our world and the world children and young people are living in has changed in manifold ways. In March 2021, the United Nations Committee on the Rights of the Child¹² has made a general comment on children’s rights in relation to the digital environment. They understand the digital environment children are living in as constantly evolving and expanding, encompassing information and communications technologies, including digital networks, content, services and applications, connected devices and environments, virtual and augmented reality, artificial intelligence, robotics, automated systems, algorithms and data analytics, biometrics and implant technology (see General Comment No. 25, Introduction, para. 2). Children’s rights have to be respected, protected and fulfilled in the digital environment to ensure that the UN refers to general principles like (a) non-discrimination, (b) best interest of the child, (c) right to life, survival and development and (d) respect for the views of the child. Children understand their digital rights as closely intertwined with their human rights more broadly. They do not readily distinguish between the online and the offline world. The digital space is just another setting in which they carry on with their lives (Third et al., 2014, p. 8).

Children are highly aware of their different position compared to their parents or other adults; for example, some children assess YouTube as something for adults although being allowed to watch videos on the YouTube Kids. They also start to voice critique regarding this inequality, for example

¹² UN General Comment No. 25 (CRC/C/GC/25). Download: <https://www.ohchr.org/EN/HRBodies/CRC/Pages/GCChildrensRightsRelationDigitalEnvironment.aspx>

assessing it as unfair that adults are allowed more. When children imagine an ideal world, they talk about ideal rules like being allowed to play with DT longer, without any restrictions or bans (e.g., Schmidt et al., 2022). In terms of the distribution of duties, families are especially challenged in the reconciliation of family, work and educational activities. Especially during the COVID-19 pandemic, home-schooling and home office use have shown very clearly how DT can support a balance here, but also blur the lines between home, work and education.

5.2.5. Care practices in families become diverse through DT, not only reduced to physical co-presence

Within care practices in families, family members express their concern for each other's individual well-being, as well as the well-being of the whole family. As the topic of care is a wide field of extensive research, some theoretical aspects will be introduced in order to clarify what we understand as care practices in the family in the context of DigiGen's WP3.

With their pioneering work on care practice in the family, Finch and Mason (1993) offered a broad definition of care practices in the family by identifying five types of caregiving or mutual support that are exchanged between family members: 'hands on' caring through economic provision and providing a place to live, personal care, practical and child care, emotional care and moral care. Consistently, DigiGen applies a comprehensive definition of family care practices that cannot be reduced to practices only depending on co-presence, as caring practices also sustain after phases of co-presence and families might encompass, for example, family members in multiple households or countries (transnational families). Care is possible despite a physical distance between different family members, as Baldasser and Merla (2014) describe it in the context of transnational families. They identify all of Finch and Mason's caring types as potentially being exchanged 'in transnational settings but to varying degrees and subject to a variety of factors, including gender, ethnic, class and power hierarchies as well as the cultural and structural histories of welfare regimes' (Baldasser & Merla, 2014, p. 12). In line with Baldasser and Merla, we therefore suggest a broad definition of care, that

includes a wide variety of care exchanges, from the direct provision of support described as 'hand on' or 'caring for' that can only be delivered when people are physically co-present, to the more emotional support of 'caring about' [...] as well as the coordination of support provided by others [...], both of which can take place through virtual forms of communication and co-presence (Baldasser & Merla, 2014, p. 12).

Fisher and Tronto (1990) have reconceptualised caring in a comprehensive and integrative way, by including forms of private and public care as well as by defining care as a disposition (Fisher & Tronto, 1990; Tronto, 2013; see also Schmidt, 2017). Caring, in their general definition, is thus defined as

everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all of which we seek to interweave in a complex, life-sustaining web (Tronto, 2013, p. 19).

Care is understood as a multidimensional concept, as Mason (1996) already pointed out by defining care as a pure exchange of material and practical support that is closely intertwined with thoughts and feelings that are inherent components of both. Her concept of care considers thinking and feeling as an activity of care. Caring practices involve for example noticing the needs of specific others and worrying about the well-being of family members (Mason, 1996; see also Gréen & Melander, 2018). The multidimensionality of care is also clarified as the four steps in the process of care, as Fisher and

Tronto (1990) described, and a fifth step added by Tronto (2013, p. 22f):

1. *Caring about.* At this first phase of care, someone or some group notices unmet caring needs.
2. *Caring for.* Once needs are identified, someone or some group has to take responsibility to make certain that these needs are met.
3. *Care-giving.* The third phase of caring requires that the actual caregiving work be done.
4. *Care-receiving.* Once care work is done, there will be a response from the person, thing, group, animal, plant or environment that has been cared for. Observing that response and making judgments about it (for example, was the care given sufficient? Successful? Complete?) is the fourth phase of care. Note that while the care receiver may be the one who responds, it need not be so. Sometimes the care receiver cannot respond. Others in any particular care setting will also be in a position, potentially, to assess the effectiveness of the caring act(s). Further, in having met previous caring needs, new needs will undoubtedly arise.
5. *Caring with.* This final phase of care requires that caring needs and the ways in which they are met need to be consistent with democratic commitments to justice, equality and freedom for all.

Often, a caring relationship is conceived as a relationship characterised by dependency and ingrained in a power imbalance to the detriment of the care receiver (DeSao, 2016). As DigiGen acknowledges both children's and young people's agency and their inherent vulnerability as human and social beings (see Chapter 2.2), we want to stress their agency also in care practices within their families. Caregiver and care-receiver are both embedded in an individual context, having agency and being vulnerable. Based on a conceptual literature review, DeSao proposed a new unified definition for care for elderly people, which inspires us to think about care practices in families—family care for children and young people—in a similar and comprehensive way:

Care is both a disposition and an activity, materialised in a process involving at least one caregiver and one care-receiver, both having their own social identities. Care is intrinsically relational, as it is an action oriented to the other, usually with the ultimate purpose of promoting his/her well-being. The care relationship is based on interconnectedness and interdependence, can be anchored in kinship and/or other kinds of social relations, can take place in the state domain and/or other social domains and in different locations or settings. Care can be founded in love, duty or other rationales and, as an activity, may include different kinds of tasks, which are carried out under certain working conditions and by using a certain approach. The activity of care, as well as the caregiver and the care-receiver, are embedded in contexts of different nature and different levels of proximity, which shape the care process, the care practices and the meaning of care for all the actors involved. The consequences of care, for both the caregiver and care-receiver, can be positive or negative. Finally, care can be analysed at the micro, meso and macro-level of the reality. (DeSao, 2016, p. 68)

In analysing the DigiGen data of WP3, several **care practices within families** could be detected on the following levels:

Several care practices can be subsumed under the aspect of supporting each other in obtaining and maintaining digital and media competences and supporting others' well-being, for example, by co-activities, communication and negotiations about access and use of DT. This support is not only directed towards the child from a parent or significant other, but also from children to parents or other family members. Thus, it can be conceptualised as an intergenerational care exchange. Empirical examples comprise siblings playing together and learning from each other, or children teaching grandparents how to use DD. Caring for other family members' digital competences occurs on several levels and support children's well-being in different dimensions (see Lorenz & Kapella, 2020; European Commission, 2019b): (1) information and data and/or ICT literacy¹³, (2) communication and

13 ICT Literacy can be defined as: 'using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society' (ETS, 2007, p. 2), for example, articulating a need for information, extracting and organising information and media content and understanding the role and functions

collaboration (e.g., interacting and collaborating through DT, developing and managing identity), (3) new skills and content creation and (4) safety (e.g., of personal data and privacy, psychological and physical well-being, health) and (5) problem solving (e.g., identifying needs and problems in digital environments and solving them).

Strengthening digital competences supports and protects children's well-being by developing and maintaining children's resilience. The ways families engage with DT are manifold (see Chapter 4.1) and so are the consequences. Parents' care through mediation (or mediation through significant others like educational staff) can support enhancing children's digital competences and mitigating potential adverse effects of children's and young people's digital activities.

The manifold possibilities of communication through DT allow families to stay in contact, to be connected with one another and to be able to update each other. This aspect is particularly true for care in alternative family forms and living arrangements, like transnational, extended and multi-household families. Moreover, care aspects become dominant and are enabled through DT in specific transitions of family life or specific circumstances that families face, for example, when elderly parents are not living in the same household, or even the same country.

DT contributes to a feeling of security and of being cared for. The aspect of security shows up in two ways for children and parents or significant others. On the one hand, parents are less worried about their children beginning to move independently between home, school and friends or family members when they are able to stay connected via DT. Parents feel relieved if they know where their child is, for example, via a tracking app on a smartphone. They also feel relieved knowing they are able to contact their child anytime. On the other hand, children who use DT when they leave their parents or homes also feel safe, secure and cared for if they know that their parents are aware of where they are and that they themselves have the possibility to call for help if needed. Children report that a smartphone or a smartwatch is good for safety reasons, because they can use it for asking their parents for help or calling the police, ambulance or rescue service if needed.

Consequently, DT contributes to the deconstruction of care in terms of a physical co-presence. In the digital world, co-presence can be detected without being physically present. When parents are able to care about their child's digital activities, they do not necessarily have to be physically co-present, for example, when they digitally monitor what their child is doing online or decide about permitting a game download through connected devices. By being co-present either in a physical or in a digital sense, parents and older family members care for and monitor their children, help them navigate through the digital world and can intervene if needed.

As another digital care practice in families, we were able to identify a 'babysitter function' of DT. Data reveal how parents delegate caring responsibilities partly to DD. They might keep children occupied in situations where they cannot take children with them or the child has to wait for a parent, for example, while visiting a shop or while driving or travelling, as well as while waiting for a doctor's appointment. Moreover, parents use DT as a substitute for reading books in telling the child goodnight stories. Parents also mention that it calms them when they know that the child is engaged with DD (e.g., TV, computer) and that they do not have to worry about what the child is doing while they are busy with something else (e.g., cooking dinner).

5.3. Parental mediation on DT

Parents' concerns about digital media and their children's use as well as their strategies to cope with these concerns have been studied well. In this context, the term of parental mediation is employed to recognise their active role in managing and regulating their children's experiences with DT. Common parental mediation practices (e.g., Chaudoron et al., 2018; Nikken & Jansz, 2014; Clark, 2011;

of media and its conditions (see also Carlsson, 2019). For more on digital literacies in early childhood, see Erstad et al. (2019).

Livingstone & Helsper, 2008; see also Lorenz & Kapella, 2020) comprise for example:

1. Restrictive mediation: general restrictions like screentime limits or restricted content and software
2. Mediation through monitoring: parents monitor children's digital activities, for example, through being co-present or co-active or after children's use
3. Active mediation: actively discussing, negotiating and explaining DT in order to help children to understand DT
4. Mediation through co-use: using DT together, for example, looking for information on the Internet or gaming together
5. Active distraction: extends parental mediation to more positively connoted strategies such as suggesting alternative non-digital activities, rather than setting restrictions

In regard to parental mediation practices, Clark suggests focusing more on participatory learning, emphasising the interactions that occur between parents and children with and through digital technologies (2011).

Parents are challenged with the mediation of digital technologies, since they require a certain level of know-how while the rapid development of DT demands that parents constantly adapt to new situations, information, devices, etc. Mediation also requires parents to be constantly informed about the digital activities of their children (e.g., Haddon & Vincent, 2014; ETS, 2007). Parental mediation can be seen as a key strategy to develop and enhance children's digital competences (Nikken & Schols, 2015). Most of the parents and children in our data appreciate a set of rules and regulations on DT in the families. Moreover, the Romanian case study (Barbuta et al., 2022) has revealed that parents might be confronted with tensions in their parental mediation practices, particularly when it comes to inconsistencies between the right to protection (online safety), the right to provision (children's right to have equal access to devices and an Internet connection) and the right to participation (to access information, to express their voices, to establish connections via social media, to choose how they spend their free time, to participate in civic movements).

5.3.1. Rules setting as a dominant mediation style of parents

Our analysis of focus group data and family interviews revealed various mediation styles and confirms the literature discussion about different mediation styles of parents regarding DT in the family. However, setting rules seems to be the dominant mediation style of parents regarding DT, as our qualitative research demonstrates. Generally, the results in our data illustrate that mediation styles, being in force within one family context, strongly depend on respective parents' assessment, which, in turn, is based on their own interest, their own experiences, knowledge and competence regarding DT, their fears and subjective benefits. Of course, their parenting style in general, such as being more participative or restrictive, is reflected in their style of mediation and setting rules as well. This impacts their ability to mediate with consistency, firmness and gentleness to ensure the safety and the well-being of children.

The different mediation styles or mediation practices that parents put into practice to integrate DT in daily family life can generally be described in relation to two poles: (1) parents' mediation is characterised by very precise and clear rules regarding the integration of DT into family life and (2) parents' mediation is characterised by different mediation styles and is less focused on rules. Rules sometimes do not exist at all or are rather vague and changeable (for details on country-specific descriptions, see DigiGen working paper, Kapella & Sisask, 2022). Thus, the dividing line between the poles runs along the aspect of whether clear rules are in place or not.

Regarding (1), in this type of parental mediation, parents set clear and strict rules on access, use of DT and content. The regulation of screentime is one of the most common rules in these families.

Regulations of screentime for children between 5 and 10 years differ in their specifics, between 10 minutes a day and up to one or two hours per day. Rules often differ in their design depending on whether it is a weekday or a weekend or holiday. In Austria, data reflect that clear rules might include that DD are banned in specific situations or specific places. In some families, for example, DD are not allowed at the dinner table or right before bedtime. Some families in Austria define some exceptions regarding specific digital activities, for example, they do not count listening to audiobooks as a digital activity or as part of the allowed screentime. In Romania, the qualitative data indicate that families with strict rules also specify sanctions when rules are not obeyed and benefits when children comply with rules. Romanian parents tend to permit their children access DT before they necessarily need it, from their point of view, or should have to use DT. Similarly, participating parents in Norway were found to set strict rules on content and screentime as well, however, they seem to be very ambivalent regarding their strictness: They find it challenging to regulate digital content and are unsure of what to choose on behalf of their children. At the same time, they are worried that if their children spend too much time online, they will miss out on other important knowledge like crafting and developing their social competences.

Regarding (2), in families assigned to this pole, different parental mediation practices can be observed and are applied, such as active mediation by communicating about digital activities or monitoring in co-use and co-presence. Generally, the topic of rules and how parents deal with them seems to be key parameter to describe these families. Some families in this category clearly state that they do not have rules regarding DT and others have vague and rather unpredictable rules that are not clear and transparent to family members. In Estonia, for example, some families put the emphasis on talking to each other, rather than expressing clear rules, and therefore can be assigned to this category as well. Parents like these are convinced that reaching an agreement about rules works better than simply prohibiting DT use. The child is then recognised as an independent personality and if rules have to be set, they are based on a mutual agreement between parents and children. In Norway, families in this category mentioned more often that they consider DT as something that belongs to the world they are living in and therefore do not assess DT as something special or unique. Rather, issues like work-life balance or a balance of online and offline activities are stressed. Some Romanian families related to this pole impose rules to a certain degree but do not enforce them. Furthermore, some families in this category generally take a rather passive approach in imposing restrictions on DT. This does not mean that these parents do not introduce DT without guidance or educating practices, but put other mediation styles into practice, for example, monitoring practices, similar to the communication practices about digital activities in Estonia. Some Romanian children, however, mention that it would be good to have rules for children and adults. In Austria, similar to Norway, families aim at a balance between digital and other activities. Rather than abstract rules, permission for digital activities in Austrian families of this category sometimes is connected to a specific task. Thus, the use of DD serves as a kind of reward for 'good behaviour' like, for example, tidying up or brushing teeth.

5.3.2. Genesis of rules in families: Discussion processes, experts' advice and children as co-creators

Parents in our study pursue different strategies in the development of rules. These strategies also depend on the level of parental digital skills and knowledge. Regardless of the strategy parents are applying to design rules, they aim for maintaining communication with their children on how to integrate and deal with DT in the family and what they are allowed to do in the digital world.

First, rules might be developed in long discussion processes between parents. Often, these discussions are oriented to the DT behaviour or assessment of one parent, mostly the one who is more experienced with DT (for example, because of work, personal interest or gaming experiences).

In Austria, for example, it appears that, mostly, one parent introduces rules and defines how to deal with DT in the family context, while the other parent often is more responsible for managing, monitoring, enforcing and controlling DT activities and rules about it (see Schmidt et al., 2022). In contrast, in some families, rules are made by one parent exclusively, for example, in Romania, where rules basically were made by mothers while fathers had not been involved in making or negotiating rules.

Second, the definition of rules might be strongly based on the advice of experts. Parents are aware that they themselves do not have first-hand experience with or knowledge about all possibilities, potential dangers and content children have access to with DT. They find it hard to search for qualified knowledge on how to deal with DT in their family and the consequences for the upbringing of their children. Parents are sceptical about making rules and regulations based on unproven notions and thus might trust in the advice of experts. These experts can be medical doctors, psychologists, teachers or websites that give advice to parents. For example, in Norway, many of the parents seek information about DT through websites, especially one very popular website, *barnevakten.no* (see Broch Wilhelmsen et al., 2022). In a cross-country comparison of our data, this phenomenon seems to be specific to Norway, although such websites exist in other participating countries as well.

Third, parents often follow a general 'gut feeling' for integrating and regimenting DT in the family. They adjust rules to specific circumstances in their everyday life and are oriented towards their own experiences and use or the rules in their own or their children's peer group (other parents, friends). Furthermore, they consider children's wishes and act flexibly, for example, regarding the limit of screen or media time. Consequently, rules then are set in an ad hoc or case-by-case way.

In the process of developing rules for the family, parents often include their children and negotiate and co-create family rules with them. They integrate specific topics regarding DT use to increase the children's awareness and competence and to enhance a mutual understanding. In this co-creation process, many parental mediation styles are applied, such as active mediation and co-use. Furthermore, the need to establish rules is explained and discussed with children. Estonian data, for example, reveal kinds of age-appropriate approaches by some parents in this co-creation process with children. Although the rules regarding DT in Estonia are primarily created by parents, some parents in Estonia prefer a step-by-step approach to introduce the possibilities and functionalities of DT to their children. While they still define rules without integrating the younger children, they increasingly consider children's perspectives in these negotiations the older they get. Generally, setting rules as one mediation style is often applied by parents and seems to be accepted to a large extent and not questioned very much by children at the ages of 5 to 10 years, but especially by younger children. However, as children grow older, they start to question family rules regarding DT more often and compare them with those of other families and peers. These children, therefore, might actively engage in defining and adjusting rules in their families.

5.3.3. Rules often focus on limiting time for digital activities

In everyday family life, rules seem to be a good way to mediate and regulate the handling of DT in the family. Although parents apply different rules regarding the integration, use and handling of DT in the family, rules in families often focus on setting **time limits regarding the access and use of DT**. Most of the children mention that they are not allowed to engage in digital activities as long as they want. One of the most prevalent methods for setting and monitoring the set time limits are physical interventions that need active control and co-presence. However, these interventions are often outsourced by parents to digital solutions such as, for example, screen blockers or timers. Many factors seem to determine the design of rules regarding the digital activities of children and young people in the family. These factors range from the specific time allocated for digital activities, taking

the age of the child, their personality or the specific day of the week into account. Importantly, they are not all applied simultaneously in the families, varying in their combination in individual families (for more details on country specifics, see Kapella & Sisask, 2022).

The following brief overview illustrates the different factors and strategies that are applied in restricting time for digital activities.

- Predefined duration of digital activities: The duration for children being allowed to engage in digital activities differs widely between the participating families, ranging from 15 minutes to several hours per day. Some children report some flexibility in the time they use for digital activities. In Estonia, for example, one pattern involves a joint time limit that is divided equally between siblings.
- Predefined time period for digital activities: Some rules regarding media time concern specific time periods during the day, for example, the afternoon after homework is done, before dinner or after lunch. Regulations are often stricter when they concern the evening than periods during the day. Time regulations may also differ between weekdays and weekends. For example, in some families, digital activities can be extended on the weekend; in other families, the weekends are rather reserved for analogue activities of the family and, thus, fewer digital activities are possible. Or in Norway, for example, children mentioned that they are allowed to spend more time with digital activities when it is raining. In Estonia, some children report having to have one 'smart-free day', a day without a smartphone, per week.
- Depending on the child themselves: In some families, time limits apply to all children in the same way; in other families only to those children who cannot control their use of DT themselves.
- Depending on the children's age: The younger the children are, the less time they get for digital activities; they can use DD in a more controlled way and are closely monitored during their use. Children between the ages of 8 to 10 years seem to have more time for digital activities than children aged five to six.
- Predefined places or situations: In some families, DDs might be banned at certain places, for example, at the dinner table or in bed. In contrast, they might be always allowed during long travels in cars or trains or when one parent is cooking.
- Exceptions for specific devices: Some families adjust the rules regarding time for digital activities by defining exceptions for specific DD, such as, for example, reading on e-book readers or listening to audio books not counting as digital activities and therefore not being included in the time limits for digital activities.
- More time as a reward: Children might be able to negotiate for more time when they, for example, have done analogue or physical activities, finished a specific task or duty or simply when they want to read a book to the end.

In some families, no time limits for digital activities exist. For example, in Estonia and also in Austria, some children report that they do not feel that rules exist at all and feel free to use DT as much as they want and regulate their timing themselves. They put DD aside when they no longer want to use them. Parents often similarly report that there is no need to set time limits for digital activities since children stop using DD after a while anyway. Some families in Austria have no fixed rules and adjust dealing with DT to individual family members' desires and needs.

In many families, rules do not only exist in regard to the time that is spent with digital activities, but also in regard to the **content** that is consumed. Parents then still control and monitor what exactly children are doing digitally, rather than for how long they engage in digital activities. Parents often judge the content in terms of what they think seems to be inappropriate for children and young people. These rules often relate to specific games children should or should not be allowed in that age group. Furthermore, certain TV series, YouTube videos or other content that could be harmful or frightening for children might be banned by parents. These aspects also become obvious and relevant regarding the aspect of potential harmful effects of DT; parents talk about stopping children from being exposed to too much 'nonsense' through their digital activities (see Chapter

5.6). To control and monitor the content of digital activities, parents often apply digital solutions as well, like installing control software or using family-friendly solutions on DD such as, for example, YouTube Kids. With these outsourced control mechanisms through software, parents monitor apps, software, games, etc. that their child is using. When children, for example, have to ask permission to download apps or games, this might be managed online via an app or software, but also in face-to-face communication with parents. Some parents apply rules or apps for security, for example, for opening unknown links or downloading apps.

5.3.4. Perspectives on rules from children and parents

Children in kindergarten present it as normal that rules exist and have to be obeyed. At this age, they generally do not question the rules of parents or other adults, like kindergarten teachers, for example. These adults are generally accepted as authorities who set and enforce rules. At the same time, children's knowledge about specific rules is rather vague. Among kindergarten children, there are tendencies of perceptions of unfairness when they criticise the notion that 'only adults should have such things'.

Children in primary school show greater awareness, level of reflection and understanding, but also a greater probability of questioning existing rules and, furthermore, parents' assessment and roles in the process of defining and controlling rules. Eight- to 10-year-old children tend to observe, question and criticise parents' digital behaviour and the different rules, as they start to compare them with those of other families and peers. Compared to children in kindergarten, children in this age group seem to understand rules and their necessity and often presented them in a compliant way. Austrian data showed that children in this age group often have co-constructed family rules and participated in their development and negotiation processes, often in a trustful and anti-hierarchical relationship with their parents. In families where children cannot participate in defining rules and children's relationship to their parents is rather based on hierarchy, conflict, distrust or misunderstanding, rules are rather ignored and actively opposed. These children perceive rules as unfair and not fully comprehensible in their content and necessity.

Children, in general, believe that rules are necessary. In particular, they believe they are important in order to avoid the negative effects of DT. The Romanian country report points out (see Barbuta et al., 2022) that some children who live in families without rules regarding DT even wish for rules concerning children's and adults' DT use. For children, it is clear that DT plays an important role in their daily lives, but it is also clear that they have other needs and wishes and enjoy other activities that are not necessarily linked to being online or using digital technology.

Another general observation regarding the perspective of children on rules indicates that children are aware of how to evade or avoid rules. Some strategies children apply comprise, for example, hiding DD and using them secretly or using their acting skills when they pretend to study. The children liked to share their experiences of outwitting parents or adults and their secret knowledge, for example, how to manipulate devices in order to get access to content their parents have restricted through rules or technology. One child in Norway mentioned 'If my parents can Google how to put on parent controls, I can Google how to remove it.' In some cases, children also criticise their parents for their extensive or excessive use of DT.

As already demonstrated, **parents** are aware of their position as role models (see Chapter 5.2.2) and, therefore, aim to limit their personal time for digital activities as well, especially when children are present. Most parents find it on how to deal with DT, how to regulate digital activities in the family and what is acceptable or not. For some parents, it is even harder to deal with the topic of DT because they have no experience at all, most DD are unfamiliar to them and they need the support of their

children to learn how to handle DD and enter the digital world (see, for example, country report of Romania about some parents of the Roma community, Barbuta et al., 2022). Parents cope in different ways with such uncertainties; for example, through discussions with their partner, negotiations with children and other family members, by gathering experts' advice or by talking to other parents and family friends to get more information. They also express their need for more information and discussions among parents, for example, at parental meetings in school. The Norwegian data (see Broch Wilhelmsen et al., 2022) reveal that parents, for example, organise Facebook groups with other parents from school and discuss the topic of DT and what parental practices are applied in their families.

Parents are convinced that they should maintain control over their children's use of DT because they expect children themselves not to have control over their behaviour. Furthermore, they consider themselves as being responsible for setting rules as part of their responsibility as parents. Parents often recount that they are the ones who normally set the rules, and, as already mentioned, that their children agree with that arrangement and that some children in families without rules even think it would be good to have rules. When they explain the necessity for establishing rules, they often cite the need to protect the child's health and well-being and to protect them from getting in contact with violent or other inappropriate content.

5.4. Conflicts around DT arise but are primarily described by parents and less by children at the ages of 5-10 years

Disagreements, conflicts and negotiations are a general part of daily family life; thus, managing a balance is a key function in doing family (see 4.2.4). DT opens up an area for various conflicts and negotiations in the family (see Lorenz & Kapella, 2021). Our results demonstrate that one of the biggest sources for parent-child conflicts is the child's amount of time spent on digital activities or the use of DT while other family members are present. As described already in Chapter 5.3, one way that parents mediate the use of DT in the family is to start negotiation processes, for example, on the need for and design of rules. These negotiation processes can take place between parents, parents and children, parents and experts, parents and other parents or parents and friends.

For the process of negotiation within the family, Finch and Mason (1993) used the concept of 'doing family', comprising the aspect of negotiation, to emphasise the emergent agential dimension of family relationships (see also Chambers & Graham, 2009). Family life is lived in a diversity of styles and, therefore, negotiation processes of adjusting and changing these styles become even more important in daily family life. Based on previous interactions, it becomes a routine in family relationships to process family ties by negotiations and to negotiate kinship relationships. According to Finch and Mason (1993), negotiations can be managed in different ways, both within and across family relationships and also networks. Negotiation can occur in an explicit or implicit way or can contain elements of both. Families and their members can apply a range of different negotiation strategies. Finch and Mason specify three broad modes: (a) open discussions, (b) clear intentions, in which individuals determine how they are going to act and convey this to others, and (c) non-decisions, as a more implicit mode of negotiation where no one has discussed or formulated a clear intention but in a way, the decision becomes obvious to all family members.

Unsurprisingly, our data revealed conflicts in families regarding DT. However, interestingly, **it was primarily parents who reported conflicts** regarding DT in the family, not necessarily children between the age of 5 and 10, and especially not the children between the ages of five to six years. Even when children were asked explicitly, they seldom reported conflicts with parents about DT, rather mentioning more general arguments with parents. It can be assumed that this would be different if adolescents or older children had have been interviewed in the qualitative research of DigiGen's WP3.

The fact that conflicts are primarily described by parents and less by children, especially those in the ages of five to six years, can, in our view, be explained as a developmental psychological aspect rather than as a socially desirable response behaviour of children. From a developmental perspective (e.g., Ahnert, 2014; Keller, 2011), a central part of human development is the gradual separation and individualisation of children from their parents or significant others, as described and discussed in developmental psychology. 'Children progress from imitating others and attending to others' goals and intentions to understanding that others have different emotions, different knowledge, and different beliefs during early childhood' (Barr, 2008, p. 190). Within the developmental task of identity building and autonomy (see Chapter 2.4), conflicts also play an important part as a kind of 'playground' for the development of children. However, for children, the benevolence of parents or significant others is important; thus, accepting parental authority is a central way to establish and maintain security and well-being. For example, Omer et al. (2013, see also Lebowitz & Omer, 2015) have introduced a concept on the 'anchoring function of parental authority'. On the basis of well-established theories in developmental psychology, they present a model in which parents foster a secure parent-child bond by fulfilling not only a haven (referring to a secure attachment in the sense of the work of Ainsworth and Bowlby on attachment theory) but also an 'anchor' of the parent-child bond. This is done in the self-anchoring of parents and in the anchoring of the child. Self-anchoring of parents manifests, for example, in creating a structural framework that allows for a protected and stable family life, staying present and stable as a parent or significant other in the child's life and providing a steady, supportive network. From children's perspective, the 'anchoring function' is manifested in three major ways: '(1) by contributing to the child's sense of security through safe and protective limits; (2) by offering the child a stable and non-controlling relational frame; and (3) by furthering the internalisation of self-care skills and of a positive working model of relating' (Omers et al., 2013, p. 202).

When **children reported** on conflicts, they spoke about conflicts that occur with their siblings, for example, about a joint decision on DT content. They also reported on conflicts within the family when only one DD is available and has to be shared.

Parents, in contrast, reported on conflicts and negotiations regarding DT on different levels: on the one hand, they reported on conflicts among parents or with other adult family members, for example, on devices in general, on content, new games or time for digital activities. On the other hand, they reported on conflicts with the child, for example, about the time they spend with digital activities or their screentime or when there is not enough distance between DD and children's eyes. From parents' perspective, conflicts between parents and their children are often a consequence of parents insisting on rules.

By pursuing a triangulation perspective through the family interviews and interviewing at least three different members of one family, several **coping strategies of families** became obvious. In some families, members deal with conflicts openly. In other families, conflicts might be suppressed, which can be acknowledged by us as a rather destructive family practice. Some parents develop strategies to avoid conflicts with their children, especially when they do not have time or energy. Other parents try to prevent the occurrence of conflicts by giving extra time for finishing the ongoing digital activities or making additional agreements with the child for using DD. Regarding the parental mediation strategy of active distraction, parents also try to solve conflicts by directing the attention of the child to other actions or activities.

Generally, the occurrence of conflicts seems to be less likely when rules are based on mutual control, mutual critique and mutual understanding within families, although at the same time, the necessity of explanations, discussions and negotiations is greater. Often, the conflicts within the family are solved by the initiative of an adult family member, for example, by removing the DD. Particularly in a reconstituted family system and complex family situation, for example, in patchwork families, challenges and conflicts might be shaped by the relationship between the biological parents or the relationships between child and biological parents who might handle DT use in daily lives differently

or who have a daily life with their child(ren) to a very different extent.

5.5. Decreasing, increasing or developing new vulnerabilities through DT

To address some of the overall goals of the DigiGen project (see Grant Agreement¹⁴) and to answer some of the research questions of WP3 (see Chapter 3.1), the cross-country analysis for this final report applied some theoretical approaches as a framework (see Chapter 2). This framework enabled us to increase our understanding of children's vulnerability and assess positive and negative effects of children's well-being. Children and young people are understood both in their agency, that is, as active agents in their own development and, at the same time, as vulnerable. WP3 has applied a concept of vulnerability that considers human beings as generally vulnerable, since humans are social beings depending on the care of others. This is particularly true for children. This broad concept of vulnerability allows us to see children and young people as inherently vulnerable and also defines other forms of vulnerabilities, like situational, pathogenic or discretionary (imposed or assumed) vulnerability. Moreover, it allows us to analyse children in their agency and also to reflect on children's vulnerability and, consequently, how DT impacts children's vulnerability. The effects of DT may contribute to new or increased vulnerabilities of children and young people but can also contribute to decreasing the vulnerability. Building on our respective theoretical conceptual considerations (see Chapter 2), resilience-enhancing factors and the development of autonomy of children play a central role in whether children's vulnerability increases or even decreases. Effects of DT can be understood as factors that contribute to children's resilience and that maintain or cause changes in children's and young people's well-being. In the course of analysing the state of research with regard to the impact of DT on different dimensions of well-being for WP3, we merged the well-being framework of the OECD (2019) with the Digital Competence Framework of the European Commission (2019). As a result, we created a well-being framework with five dimensions: DT access, information and data literacy, communication and collaboration, new skills and content creation and safety. Some of these dimensions include further sub-dimensions; for example, the dimension 'communication and collaboration' includes interacting through digital technologies, collaborating through digital technologies and developing and managing identity (for more details, see Lorenz & Kapella, 2020).

The aspect of vulnerability gives rise to specific moral and political obligations to support and strengthen vulnerable individuals and to reduce the risk of avoidable vulnerabilities (Rogers et al., 2012). A central aim in supporting families and children is to maintain their well-being under adversity or stress and/or help them to recover. In this regard, resilience of individuals plays an important role (see also Chapter 2.3 on resilience). Even if there is no single agreed-on operational definition of resilience, Fisher and Ragsdale (2019) reviewed existing literature and suggest following the definition: 'the process by which individuals are able to positively adapt to substantial difficulties, adversity, or hardship' (ibid, p. 592). Similarly, Lotz proposed a definition that does not restrict resilience to the overcoming of significant adversity or trauma, but sees it as essential for every human agent, being 'a capacity to confront, absorb, withstand, accommodate, reconcile, and/or adjust to conditions of adversity, setback, and challenge in the pursuit of desired or desirable goals and states [...] not a single trait or attribute but, rather, a suit or cluster of skills, attitudes, and resources, the possession of which constitutes a general kind of disposition and orientation towards the world and one's place and condition within it' (Lotz, 2016, p. 50).

This theoretical framework, and especially the broad concept of vulnerability, seems particularly suitable for WP3 as it addresses different aspects of children's well-being and their potential need for

14 Goal No. 3: To identify at-risk groups with regard to health, well-being and social participation. No. 4: To examine systems of social disadvantage and how they determine access, taking into account diversity in terms of gender, age, culture, disability and social and economic background. No. 7: To enhance our understanding of why and how some children and young people use ICT and what impact it has on them by accessing viewpoints from children and young people, parents, teachers and other stakeholders.

special attention, support, encouragement or help to maintain or enhance their well-being or to avoid risks. The well-being of children is linked to the quality of the environment, their interactions and relationships across several ecosystems (Newland et al., 2014; Bokhorst et al., 2010). In the applied framework, gender, ethnic or socio-demographic aspects can be addressed, as well as aspects of being at-risk or disadvantaged. Furthermore, different styles of implementing DT in families, as well as different family practices and their impact on children's vulnerability and thereby on their well-being, come into sight. With the concept of vulnerability, being in socio-economically disadvantaged population groups can, for example, also be interpreted as a situational vulnerability, similar to groups defined as being at-risk.

Our data reflect that children's or families' use of DT has the potential to affect the vulnerability of children in different ways. On the one hand, DT can contribute to exacerbating the vulnerability of children or to the emergence of new vulnerabilities. On the other hand, the use of DT by children can also help to reduce children's vulnerability.

Children can be characterised as digitally competent, when they, for example, are aware of certain risks (e.g., surveillance, hate comments, fake friends, data protection) and when they, in turn, value aspects they can benefit from. As already mentioned, having access and knowledge does not automatically contribute to children's digital competences (see also Schmidt et al., 2022). In particular, a lack of digital competences has harmful consequences for children and tends to manifest children's vulnerable status and/or increases the risk of further vulnerability. When children, in contrast, are empowered, learn how to handle risks and know where to get help, the risk of facing further vulnerability even decreases, as this empowerment and competence contribute to the resilience of children in a positive way. Consequently, this competence enables maintaining or raising children's well-being. In the context of reducing the vulnerability of children and young people by enhancing their resilience through digital competences, resilience cannot be understood as a unidimensional construct. Rather, according to Robertson and Cooper's (2013) psychobiological perspective, it can be described by comprising key attitudinal and behavioural factors like a positive attitude (optimism and sense of humour), active coping, cognitive flexibility, moral compass, physical exercise and social support and role models. Furthermore, resilience comprises, for example, components such as adaptability, confidence, social support and purposefulness. It is not understood as a fixed trait or a 'fixed personal characteristic'. Rather, it can be changed and developed and its origins lay in both experiences as well as in underlying psychological makeup (Robertson & Cooper, 2013; see also Chapter 2.3 on the concept of resilience). Consequently, resilience is a central part in maintaining well-being. Thus, building up digital competences of children, young people and families can contribute to resilience and well-being of individuals and systems like the family.

Based on our data and the corresponding cross-country comparison, the following effects of DT on exacerbating vulnerabilities and/or emergence of new vulnerabilities of children can be described and should be discussed and elaborated in further research:

- a) Children's lack of digital competences
- b) Age of the child
- c) The 'lonely child'/excluded child in the family
- d) Overprotection of parents
- e) Children in the role of main instructor and mediator on DT in the family
- f) Belonging to an ethnic minority group in the country (e.g., Roma)
- g) Gender aspects
- h) Exposure to specific content, context or experiences

a) Digital competences of children and adolescents play a central role when it comes to influencing vulnerability positively or negatively and thus influencing children's well-being. A **lack of digital competences** can increase children's vulnerability or raise even new vulnerabilities. Children are affected differently contingent on their family background, which in turn has an impact on the extent

to which they profit or are negatively affected by DT and are pushed into a vulnerable position. Importantly, circumstances such as having comprehensive access, sufficient skills and broad knowledge about DT do not automatically entail children's sufficient digital competence. At the same time, our results show that children with very limited access might be vulnerable as they, firstly, are not able to develop digital competence and, secondly, face exclusion in their peer group.

Different mechanisms result in a lack of children's digital competences: (1) restricted access is contingent on their parents' parenting style and limited parental mediation, support and explanation. For example, if parents try to avoid the integration of DT into the family as much as possible (see Chapter 5.2.1) and are highly sceptical about DT in general, the development of digital competences in the family may be very limited for children and children may also be excluded in their peer groups; (2) in contrast, children who are able to be engaged in digital and online activities in a highly unrestricted and, particularly, in an unmediated way could lack digital competence as well, experience harmful content online and develop risky (online) behaviour, even though they might have gained extensive skills and knowledge. Parents' way of caring or not caring about—or monitoring or not monitoring—their children's DT use, or of actively negotiating or rather avoiding conflicts, can be seen as tipping points regarding the development or lack of digital competence among children; (3) general access to DT depends on the family's socio-economic and financial background on the one hand and on the integration of DT in the family on the other hand, when DT is affordable. In this sense, it is not only a question of being able to buy DDs, but also a question of maintaining of DDs, electric power and an Internet connection, which all depend on the financial background of families as well.

(b) Access, knowledge and use among children and their families differ according to the **age of the children** and influence children's vulnerability. For five- to six-year-old kindergarten children, owning devices tends to be rare. Thus, knowledge about and relevance of digital devices is strongly related to their accessibility as facilitated and orchestrated by their parents. They gain a large part of their knowledge by watching others use devices (e.g., parents, siblings, peers). In contrast, for primary school children at ages 8 to 10, the relevance of DT is greater but is still significantly related to their possibilities within their families and particularly related to the relevance DT has in their peer group. Some children already have their own devices, and for them, it is nearly unthinkable to live without DT. They have more skills regarding DT and detailed knowledge. At the same time, children in this age group differ regarding their higher level of empathetic, insightful, analytic, differentiated and critical assessment and, consequently, their extent of competent use, which is much more crucial than in the age group of five to six years. Apparently, the older children get, the more important is their interaction with peers through the use of DT and the less important are family activities through DT.

(c) A very specific concept for vulnerable children within the context of families and DT is captured by the figure of the **lonely child**, in the sense of not getting enough attention from parents, siblings or other family members. Particularly, the data from Norway revealed this specific kind of vulnerability in children (see Broch Wilhelmsen et al., 2022). It depends on how (older) family members include or exclude the child in digital activities in daily family life. Children, due to their age and role in the family are per se vulnerable, depending on how parents, (older) siblings and other family members include them or exclude them in daily activities. However, this is particularly true for digital activities and the use of DDs as DT is highly interesting and relevant from children's perspective. Especially among the five- to six-year-olds, this entails a feeling of being left out or even a sense of loneliness when these children's parents, siblings and other family members are busy with their DDs. This feeling is also reflected in the complaint of kindergarten children about the unfairness that adults and older siblings can use and own DDs in contrast to themselves. Primary school children perceive differences between adults and parents rather as necessary. They are far more aware that adults are allowed to use DT longer, use other content and apps they cannot and make independent decisions

on their use. Still, in this way, these children experience themselves as underprivileged compared to adults. Next to feelings of exclusion and loneliness, children also may miss out on starting early learning about digital competences, which would in the long run support resilience and well-being.

A 10-year-old girl from Romania expresses technology's impact on the parent-child relationship and the respective risk of being neglected in situations where parents overuse DT in this way:

I believe that just as animals need attention, children also need attention, and parents need to take care of their children. Many times, parents stay on the phone for a long time and do not feed their children. They do not take care of them. (RO_F11_2).

In addition to children's perspective, parents themselves also reflect on that specific kind of vulnerability and confess that they probably misuse the smartphone while being engaged in other family activities or are occupied with DDs for too long, when, for example, playing games on the smartphone. Some parents, in contrast, argue that it is more a question of creating a balance between individual and collective needs in the family, and less a question of vulnerability.

(d) Our data revealed that the patterns of integration of DT into families are diverse (see Chapter 5.2.1) and parents apply different mediation styles and techniques to deal with DT in family life (see Chapter 5.3). With regard to vulnerability, this specific effect might potentially be exacerbated when **parents engage in overprotection** or have a non-transparent, non-participatory and hierarchical parenting style. Further, if children, through the lack of parents' protection, interest and care, have negative attitudes towards DT, could be interpreted as vulnerability. Parents' way of caring or not caring about—or monitoring or not monitoring—their children's DT use, or of actively negotiating or rather avoiding conflicts, can be seen as tipping points regarding the development or lack of digital competence among children. Consequently, parents' ways of introducing, carefully monitoring and mediating how children use and deal with DT is decisive for questions as to whether children's vulnerability is increased or new vulnerabilities are created, or whether children's vulnerability is weakened by lack of resilience and their digital competences. In general, there has been a shift in the intensity of parenting (Doepke & Zilibotti, 2019). Parents today engage in much more intensive parenting styles compared to a few decades ago. They supervise their children more closely, spend more time interacting with them and place more emphasis on educational achievement, for example, by helping them with homework. Intensive parenting can increase pressure on children and may be associated with anxiety and depression (Doepke & Zilibotti, 2021). Dinsmore et al. (2021) come to a similar conclusion by describing the 'paradox of constrained well-being'. They describe a broad consensus in childhood scholarship of children's decreasing autonomy and their increasing well-being. For example, they highlight that young people with parents who engage in high levels of monitoring and control behaviours are more likely to develop drug and alcohol problems or to engage in other delinquent behaviour compared to young people with parents who balance autonomy and responsiveness (Murray & Farrington, 2010; Stone et al., 2012; cited after Dinsmore et al., 2021, p. 456). Trusting relationships with adults thus place children at lower risk.

(e) When children know significantly more about DT and are more familiar with their use than adult family members, there is a risk that children find themselves in the **role as the main instructors and technological mediators of the family**. This bears the risk of overburdening these children and might raise new vulnerabilities for children and young people. When children, for example, have to take over all online tasks for the family, as parents cannot handle it, children might be overwhelmed with topics and tasks that are not appropriate for their age and understanding. In the Romanian case study, some participating parents in disadvantaged families, for example, still owned phones without touchscreens. These parents do not understand how to operate touchscreen devices, so they give their children maximum freedom to browse the Internet without any form of censorship. As Norwegian data show, some children have more knowledge than parents and as such can be

considered as more vulnerable in this way.

(f) Our data also reveal that families belonging to an **ethnic minority group** may also experience increased vulnerability or be confronted with new forms of vulnerability in the context of DT and their integration into daily family life. The Romanian case study (see Barbuta et al., 2022) included **Roma families** in their fieldwork. Data show that children in disadvantaged Roma families had few experiences with DDs other than mobile phones. Furthermore, devices owned by families were also a vehicle to create solidarity between the family members. This lack of DD in these families brings more difficulties and stress as family members need to negotiate who is allowed to use the device and for how long. This can also result in a lack of space and time for digital home-schooling activities. Often, the precarious economic situation of disadvantaged families can lead to trading the families' DD for food or other necessities in case of hardship. In other cases, it is simply a problem to charge or maintain DDs.

Generally, Romania can be characterised as a country with a lower level of access to DT (see Barbuta et al, 2002; Ayllón et al., 2021). Due to the COVID-19 pandemic, local governments and NGOs have started to distribute DD via schools to disadvantaged families to keep them in touch with the education system during the lockdown. Our data show that these digital devices have contributed to the prevention of school abandonment, although this action has yet not been scientifically evaluated.

(g) **Gender aspects** contribute to decreasing or increasing children's vulnerability. Some participating countries could detect gender differences in their data, while others did not, or only to an insignificant extent. With the presentation of the results regarding gender aspects, we are aware and cautious of not contributing to a (further) consolidation of already-existing gender stereotypes, but at the same time, we do not want to withhold the results that some of the participating countries revealed.

For children identified as boys, DT seem to be more important and integrated as part of their lives to a greater extent. Furthermore, their reports reflect more clearly their suffering when they are not able to use DD compared to children identified as girls. In terms of using DD, children identified as girls seem to prefer to use smart TVs and smartphones, while children identified as boys prefer to use smart TVs and laptops. Moreover, gender differences in terms of digital activities were observed in some countries' data: Children identified as girls tend to use a smart TV and smartphone, for example, to watch cartoons or YouTube, play Roblox, take pictures or make short videos for TikTok. Digital activities of children identified as boys seem to rather concentrate on playing games or connecting a console to a smart TV, but also on watching YouTube. The perception of the benefits of certain DDs and of applications also reflects gender differences. Children identified as girls were more oriented towards the impact of DT on educational outcomes than were children identified as boys. Children identified as boys rather consider the relational and communication dimension to be impacted by the daily use of digital technologies.

These gender differences may contribute to the vulnerability of children in a gendered way. Certain digital competences might be more likely to be increased or less likely to be supported contingent on the gender difference in the use of DT. For example, when children identified as girls have a stronger tendency to make video clips to upload them to TikTok, they may learn more about content creation and build up different skills than through gaming. In assessing these gender differences and their impact on vulnerability, one has to be also aware that children and young people are not 'tabula rasae' when it comes to DT. In their process of socialisation, the social context and background in which they grow up play an important role. Children's perception and use of DT is developed in this social context and gender stereotypes will be passed on. To a certain degree, our findings, thus, also may reflect an intergenerational transmission of gender stereotypes. However, they can also be understood as a call or encouragement to consciously counteract gender stereotypes in the discussion and work with children and young people.

(h) **Exposure to specific contexts or experiences** in children's and young people's lives may also lead to increasing or even new vulnerability of children. Children may be confronted with content that frightens or harms them, contacted by strangers or find 'fake' friends. Children mentioned these possible negative effects of DT themselves (see also Chapter 5.6). Furthermore, some children and parents referred to 'sharenting', a phenomenon in which parents disclose pictures or other detailed information about the child (see communication level in Chapter 5.2.4). This practise may even risk children's long-term safety (Williams-Ceci et al., 2021) and thereby increase the vulnerability of children as well.

Our data also reveal some hints as to which way DT can contribute to **reducing the vulnerability** of families and children. The central aspect regarding the question of whether using DT tends to create further vulnerability or **reduce the vulnerability** of children can be located at the level of **digital competence**¹⁵ children have or are able to gain. This competence can be built up and maintained through one central family practice, namely parental mediation. Sufficient parental mediation is reflected in accompanying and monitoring children's digital activities, which takes place in co-activities and is manifested in explanations and differentiated engagement in their digital lives (see also Chapter 5.3 on parental mediation). Moreover, co-activities with or simply watching (older) siblings offer great opportunities for developing digital competences by creating a situation in which both parties can learn from each other and apply digital competences. Children in families thus might mutually shape each other's and other family members' digital competences in being a companion, expert and playmate (see more on this aspect in Chapter 5.2.2). This means that children are able to achieve digital competence and reduce potential vulnerabilities.

Furthermore, children's vulnerability might be reduced, when, for example, DT help to stay in contact with or to care for family members who are not in the same household. With the possibility to stay connected without a physical presence, family identity is supported and strengthened, and so is the resilience of families. Moreover, through the possibility of displaying one's own family to others, for example, by sharing family memories, DT support the feeling of 'we-ness'. DDs might, furthermore, contribute to establishing a solidarity among the family members, for example, by sharing of DDs in the family (see Barbuta et al., 2022). According to recent literature, DT supports the development and management of children's identity, for example, when they experiment with their (online) identity through social networks but also through playing games in teams or when searching for information (Borca et al., 2015; Lorenz & Kapella, 2020). Furthermore, children and parents report effects of DT that positively influence the well-being and the health of individuals and families (see Chapter 5.6). All these aspects empower children and families, provide resources and strength and therefore contribute to children's well-being in their role as resilience-enhancing factors (see Chapter 2.3) to the well-being of children. To determine longer-term effects on children's vulnerability, a different methodological approach would have been necessary. Thus, these results on vulnerability should be taken as initial findings that need to be confirmed by further studies.

5.6. Children aged 5-10 and their families are aware of multiple beneficial and harmful effects of DT

Children aged five to ten years and their parents report multiple beneficial and harmful effects of DT. Not all of the effects they mention are experienced by children themselves, especially some of the harmful effects. For discussing potential effects on children's well-being, we suggest adopting a mechanism-based concepts of analysis and explanation (e.g., Hedström & Bearman, 2009). By

¹⁵ Digital competence thus comprises the ability of children to assess and carefully reflect on positive and negative aspects of DT, and on their own ways of using DT and integrating them into their everyday lives in their family and peer group. If children are able to critically and carefully reflect on questions of, for example, where to get reliable information, whether their own use can be limited, why they have to do this, how they can assess and handle potential dangers in the digital and online world and how they can cope with peer pressure, they increase their confidence, maturity and safety in using DT (see also European Commission, 2019b; OECD, 2019).

focusing on mechanisms, we move away from mono-causal explanations based on single factors or specific parental practices towards a more nuanced understanding of underlying mechanisms and relations that shape outcomes of a specific phenomenon in children's lives, similar to research on violence on children in families (see Kindler, 2017). This approach will do more justice to the complexity of the interplay between DT and their effects on children and young people.

In general, we observed many outcomes evoked by the integration of DT in children's lives, but at the same time, we observed a high level of contingency. Observations were not comprehensible through mono-causal explanations. Rather, we were able to understand and explain an observed outcome in one specific family or in one child's use and assessment of DT by referring to an underlying mechanism (for more, see Austrian case study Schmidt et al., 2022). Such a mechanism, in this case, consists of several entities, for example, children's developmental stage, their digital competences and level of resilience, the family background such as economic possibilities, living environment, available digital devices, parents' educational level, family size and structure (e.g., siblings, multi-generational or multiple households), parents' attitudes, their own experiences and own interest, the child's and parents' peer group, teachers and school context and regional or cultural contexts. Further, we examined the activities that these entities are part of and engaged in, either by themselves or in concert with other entities. A mechanism, thus, refers to a constellation of entities and activities that are organised in a way that they regularly bring about a particular type of outcome. Consequently, we explain an observed outcome by referring to the mechanism that brings about such outcomes regularly (Hedström & Bearman, 2009, p. 5). Change, therefore, is evoked by these activities, which themselves depend upon the entities' properties and the relations between them. In turn, differences between mechanisms are evoked by changes in the entities, either in their properties or activities or in their relations to each other (see examples in Schmidt et al., 2022).

A different view on beneficial effects of DT, but also fitting into the holistic approach of WP3 in DigiGen, was chosen by the team of the Estonian case study (see Sisask et al., 2022). Their data showed that it is self-evident that DT have become an essential part of normal everyday family life and therefore is also a part of children's normal daily life. The way we interact has changed and it is a norm today that we use DT to mediate and facilitate communication. It can even be said that DT contribute to providing human needs as described in the classic pyramid by Abraham Maslow:

- **Physiological needs:** online shopping, ordering food, rest and entertainment
- **Safety needs:** calling for help, getting all sorts of information, staying informed of the COVID-19 situation, working from home, distance learning
- **Love and belonging:** staying in touch with extended family and sharing life events, feeling satisfied and safe knowing one is not alone, preserving history and memories, communicating with friends living far away
- **Esteem:** exchanging information, posting life pictures, seeing what your acquaintances and friends are doing
- **Self-actualisation:** learning new things, activities that support development, working out, meditation

Five- to ten-year-old children and their parents have reported manifold beneficial and harmful effects of DT in different areas of children's and family life: their health and development, their social and emotional life, their safety, including the topic of violence, their digital competences and doing family. Children and their parents often connect the risk of harmful effects of DT to the amount of screentime. In regard to screentime, there is a large body of research indicating that high levels of engagement with digital screens by children are associated with a number of harmful effects on children's physical, emotional and mental health, as well as educational problems (for example, see Lorenz & Kapella, 2020). Empirical results link screentime exposure, for example, with issues like adiposity and lack of cardiorespiratory fitness, behavioural problems, depression, lower academic achievement, lower quality of life and psychosocial health problems. However, this large body of research has some limitations. Usually, the effects of screentime are correlational, rather than causal, because many

of these studies use a cross-sectional design. In most studies, it is not determined whether, for example, children use digital screentime to cope with stress, anxiety and/or personal problems or if a high level of screentime causes depression. Longitudinal studies also show no effects or identify positive ones (Orben, 2020; Lorenz & Kapella, 2020; Saunders & Vallance, 2016; Paulich et al., 2021). For example, a recent Australian longitudinal study, working with the less-is-better hypothesis, demonstrated that the amount of screentime only has small effects. Rather, the type of screentime seems to be more important: passive screentime, for example, watching TV, has mostly detrimental effects, while educational screentime shows light benefits in school achievement and persistence (Sanders et al., 2019).

In the following, to summarise these results, Table 1 gives an overview of the different effects parents and children have reported. Importantly, these are not causal effects resulting from our research, but effects children and parents mentioned based on their observations, knowledge or what they had heard about. It also contains the manifold effects of DT described in other chapters of this report, for example on 'doing family' (Chapter 5.2), conflicts in families (Chapter 5.4) or influence of DT in terms of vulnerability of children (Chapter 5.5). In the following table, the perspectives of children and parents are deliberately summarised because they were often very similar and in order to highlight the diverse effects of DT, which were mentioned by parents and children. To avoid losing the voice of children, some expressions are shown in italics, which is the exact wording of children at the ages of 5 to 10 years. It also has to be mentioned that the allocation of the different effects to areas sometimes overlap, since they are not exact and are not meant to be exact, for reasons of a better overview.

Table 1: Beneficial and harmful effects of DT, reported by children aged 5 to 10 years and their parents

| Area | Effects (italics = expression of children aged 5-10 years ^{3,6}) | |
|----------------|--|--|
| | Beneficial effects | Harmful effects |
| Health effects | <ul style="list-style-type: none"> • Support for practical everyday activities, like ordering food, looking for recipes, working from home, robots for helping with work in the house • Motivator and observer of physical activity, e.g., more fun doing sports with music • Relaxation and meditation • <i>'Calling the ambulance when in health need'</i> • <i>'You can have fun when you are sad'</i> | <ul style="list-style-type: none"> • Generally feeling ill and further health problems, physical and mental • Bad eyes/sight problems may occur/'damage to the eyes' • Not getting enough fresh air • Lack of movement • <i>'Addiction can be caused'</i>/digital addiction and overuse • Extra stress • Harmful for the brain (development)/'getting dumb' • Anxiety and nervousness • Can cause insecurity in children • Poorly controlled emotions, for example, anger • <i>'Sleep problems'</i> and general fatigue • <i>'Forgetting to sleep and eat'</i>, being tired during the day • Disturbing car driving or as attention in traffic • Children constantly looking at their smart phone (e.g., walking on the street, during meal times) |
| Social effects | <ul style="list-style-type: none"> • DT facilitates keeping in touch with already existing relationships/'<i>staying in contact with friends and family</i>'/Possibility to stay connected to their peers independent of physical location/'<i>you can keep in touch with family</i>' • Creating new relationships/finding friends/'you can make new friends' • Joint activities and shared time using digital tool • <i>'Having fun'</i>/entertainment • Apps ease communication processes • DT expand boundaries of space and distance in relation to different spheres of family life such as work, study, communication and playing games • DT helps parents to be informed of the child's life outside the home by enabling them to participate in kindergarten or school activities via Facebook group or telephone and to be in contact with other parents • Mediation for family relations | <ul style="list-style-type: none"> • General negative effect on family life [Remark: was mentioned like this and not described in detail] • <i>'Losing contact with reality'</i> with real life/Converts the perception of reality or distorts contact with reality/Danger of developing skewed picture of reality • Losing contact with friends/ Losing contact with others when only using DT alone • Getting in contact with fake friends or strangers • <i>'Losing interest in analogue games with friends'</i> • <i>'Little time to spend with the family'</i> • Can destroy relationships and create a sense of exclusion • Steals time and attention |

| | | |
|-------------------------|---|---|
| | <ul style="list-style-type: none"> • Anchoring the family in certain cultural groups (global/national/ local) • ICT can be beneficial for building family ties through the collective consumption of digital content (e.g., watching series/movies together within the family with some regularity). • For transnational families, DT remain a catalyst in maintaining family relationships and in virtualising family practices. For these families, the lack of digital devices would mean the interruption of communication with family members who migrated. | |
| Emotional effects | <ul style="list-style-type: none"> • Simply killing time and warding off boredom • <i>'More comfort through special DD, for example, Alexa, smartwatch'</i> • DT as giving a feeling of familiarity and taking advantage of the expressive mechanisms of socialisation related to applications dedicated to beginnings such as emoticons | <ul style="list-style-type: none"> • <i>'Being annoyed by too much advertisement'</i> • <i>'Being bored when games are played too often'</i> • <i>'Being annoyed about low battery status'</i> • Negative emotions like fear or stress from the content • Becoming more violent/aggressive (especially children if they play inappropriate games) |
| Safety effects/violence | <ul style="list-style-type: none"> • Opportunity to observe the child's travel with DT, in addition to calling while in trouble • DT also help to know the child's location using a monitoring device • <i>'Being able to call for help if in danger'</i> | <ul style="list-style-type: none"> • Being confronted with content that is not appropriate for the age or stage of cognitive development of the children • Bad things on the Internet, for example, threats, meaningless things • <i>'On the Internet we can see content that can cause us fear and negative emotions'</i> • Bullying and especially cyber-bullying/experiencing hate comments on social media • Provoking suicides, for example, while playing games (other players encourage you to commit suicide) • Using pictures of oneself can cause one to be identified on the Internet and can put lives in danger • Privacy—on the one hand to keep it and on the other hand the risk of losing it • <i>'Getting in touch with perverse videos'</i> • <i>'Receiving chain letters'</i> • <i>'Fake friends'</i> |



| | | |
|-----------------------|---|--|
| Developmental effects | <ul style="list-style-type: none"> • By some games, etc., creativity is triggered • The integrative aspect of using several types of media on a single device indicates that children can handle complex actions, by taking advantage of and integrating more facilities offered by digital devices | <ul style="list-style-type: none"> • (excessive) Use of DT can negatively influence child's development • Lose creativity • Insufficient development due to losing the ability to speak language properly (mother tongue) |
| Educational effects | <ul style="list-style-type: none"> • Obtain information quickly and find necessary content/gaining knowledge/easy contact with content, information and knowledge/on the Internet you can find additional information on a specific topic/access to information • Both children and parents acquire new knowledge and skills through DT • Opportunity to learn, e.g., playing educational games • Extended educational offers • To be familiar with child's homework • 'You can learn a new language' | <ul style="list-style-type: none"> • Not being able to focus on learning properly • Lack of reading (skills) • 'Distraction from school related work'/'not being able to focus on learning properly' |
| Digital competences | <ul style="list-style-type: none"> • Finding a balance and being a good role model • A reverse learning process can be observed when children, particularly 9- to 10-year-olds, show their parents how the devices work and help them find content that interests them | <ul style="list-style-type: none"> • Being confronted with stupid content • Information overflow • Fear that children cannot cope with everything they experience or see digitally and online |
| Doing family | <ul style="list-style-type: none"> • Helps to organise family's daily life • To pay the bills online without having to go to town | |
| Other effects | | <ul style="list-style-type: none"> • 'Humans could be replaced by robots; they would not have money to raise their children and there will be more and more very poor families' |

Source: DigiGen WP3

6. Summary and Recommendations

6.1. Summary

The main focus of WP3 in DigiGen was on the question of how family life is shaped by technological transformation and how the lives of 5 to 10-year-old children are affected by DT and the corresponding family dynamics. In this project, family is understood in a broad definition and not limited to the nuclear family, as one example among other diverse family and living arrangements. The results are based on qualitative data, comprising multiple perspectives and methods in four European countries: Austria, Estonia, Norway and Romania. The main focus was laid on the perspective of children, aged five to six years and still attending kindergarten, and children in primary school, aged 8 to 10 years and their families. By conducting family interviews with children in the relevant age group and at least two other members of the child's family, we could triangulate these perspectives and explore the unique views of respondents on DT in their interdependency and in their relevance for family life and practices of 'doing family'. Despite the difficulties in recruitment and data collection caused by the COVID-19 pandemic, the final sample reflects a variety of different family forms and living arrangements, diverse backgrounds in terms of highest parental school education and in terms of rural and urban areas. Overall, WP3 conducted 42 (N) focus groups with a total of 176 (N) children in the age of 5 to 10 years and 42 (N) family interviews with a total of 124 (N) interview partners of families in the participating countries. Fieldwork was conducted between October 2020 and June 2021 (see Chapter 3).

With the focus on the well-being of children and young people, the cross-country analyses and results are based on several theoretical assumptions and concepts (see Chapter 2). In line with new childhood sociology, DigiGen acknowledges the specific status of children and young people of both having agency and being vulnerable at the same time. The vulnerability of children and young people or individuals, in general, is not understood as an exceptional state, nor even as a necessarily regrettable one. Rather, we understand vulnerability as a notion of universal or 'ontological' vulnerability. Based on the fact that all human beings are embodied and social beings, depending on care, all human beings are vulnerable. Furthermore, to contribute to and maintain the well-being of children and young people, the concept of resilience plays a key role. Resilience is understood as a process and a result of the interaction between an individual and his or her environment. Its acquisition depends on both personal characteristics and the characteristics of the environment. In this context, resilience-enhancing factors play a crucial role in the contribution to the well-being of children and young people and their development of autonomy. A child's development is understood as a complex system of the child's relationships with different actors and respective surrounding environment, whereby WP3 focuses on the family's environment. In this context, family is not understood in a static way but in line with a social constructive approach as a daily practice in the form of 'doing family'.

In general, our data confirm that children today are living in media-rich households with access to a variety of different devices and DT are part of children's everyday lives (see Chapter 5.1). The most known and accessible DDs of children aged 5 to 10 years are smartphones, tablets, smart TV sets, video game consoles (e.g., PlayStation, Xbox, Nintendo Switch), smart speakers, laptops and desktop computers. Although they know about them, it is less common for children to have their own smartwatches, and only a few of them know about such devices as e-readers and drones. Children in this age group use DT mostly for playing games, consuming video and audio content, seeking all kinds of information, communicating and as an assistant in everyday family life. The most popular apps children use in this age group comprise games like Roblox, *Minecraft*, *Fortnite*, *Among Us*, and video apps like YouTube and TikTok. Children at the ages of five to ten years differ not only regarding their individual family situation and (social) context they are living in but also in terms of their age. There is a clear difference between the knowledge and use of DT and whether a child *owns devices* or not. If children have their own devices, their access is less limited and their knowledge is based

on their own practical experiences, less on observing others. The use of DT by children at the ages of five to six years is strongly related to other family members. Estonia represents an exception among the participating countries. In Estonia, it is common for a preschool child to own a tablet. Generally, DT are widely integrated into the daily lives of children at the ages of 8 to 10 years. For children in this age group, it is more common to have a device on their own.

DT are integrated very differently into families and their daily lives (see Chapter 5.2.1). The spectrum ranges from families with a very positive approach and attitude towards DT and a comprehensive integration of DT into everyday family life to families that are characterised by a rather sceptical approach and a rigidly regulated access to DT, almost avoiding its use. With regard to the specificities of how to handle DT in everyday family life, family members assume or are relegated different roles. On the one hand, parents function as role models for their children. Mostly, they are aware of this role, although they also admit to not complying with these expectations all the time. Moreover, they are often insecure about how to deal with and handle DT in everyday life. Next to being a role model, parents also function as guides and supervisors, supporters, home teachers and learning facilitators regarding DT, their use and integration into the family, but also as prohibitor, controller and filter of content that should not reach children. On the other hand, children also adopt different roles that occur in multigenerational ways. They might concern siblings, parents or grandparents. For example, children help to shape the digital competences of other family members, often for younger siblings, but they also act as controllers of DT use and activities, not only for siblings but also for adults.

As children's development in this regard is understood as a complex system of relationships with different actors and a specific surrounding environment, family occurs as one key dimension. In our case studies and the cross-country analyses, it becomes obvious that DT contributes in different ways to producing family on a daily basis. Many family practices related to DT support the different aspects of 'doing family' (see Chapters 2.5 and 5.2) by playing a part in (a) building and maintaining a family identity, (b) in creating a feeling of 'we-ness', (c) managing balance within the family on different levels and (d) supporting family in their care function.

Regardless of how DT is integrated into the family, whether with a positive or rather sceptical attitude, this integration contributes to the formation and maintenance of a family identity. A central aspect of 'doing family' is to create and maintain a feeling of 'we-ness'. Families use different practices to create and maintain this 'we-ness' with DT, for example:

- through digital co-activities, or
- digital co-creation of content,
- by co-presence, in the sense of 'being alone together',
- in storing and sharing memories with DT,
- through communication about individual access and use of DT or
- by anchoring the family in certain cultural groups.

DT supports families also in managing balance in the family in different ways and levels. To manage balance, families apply different practices:

- On a **structural level**, families keep track via DT of the different activities of the family and/or family members, organise shopping or order food and keep the house safe and clean by the use of DT. At this organisational level, it is also about maintaining or creating balance in the family in a very practical way.
- On the **level of communication**, DT supports families in keeping communication going and staying in touch with all family members and friends according to the individual needs. This becomes especially true for specific family forms and living arrangements, for example, transnational families.
- On the **level of balancing emotions**, families are often challenged by balancing, for example, conflicts, different attitudes and views on DT. Families apply several practices to support this

balancing function: they install rules on the use and access of DT, put learning via role models into practice, apply different mediation styles and simply ignore differences within the family. In some cases, this level also involves the balance between online and analogue activities.

- On the **level of the distribution of rights and obligations or duties**, balance is managed within the family and its different members. In terms of the distribution of duties, families are especially challenged in the reconciliation of family, work and educational activities. Especially during the COVID-19 pandemic, home-schooling and home office use have shown very clearly how DT can support balance here. In terms of rights, families are challenged by putting different mediation styles into practice that can have a positive or negative impact on the rights of children in the context of DT, for example, active mediation of parents versus a very restrictive mediation style with very limited access to DT.

Care, as one of the central functions of families, is supported by DT as well. Our data revealed several care practices of families using DT. The care function of families occurs, for example, when children are supported in acquiring and maintaining digital competences in order to contribute to the well-being of their children. Care is also expressed when family members strive for staying in contact and being connected through DT, particularly when family members are not living in the same household. From the perspective of parents and children, DT also contributes to a feeling of security and being taken care of. Children, for example, mention that it is good to know they are able to call for help if needed. Parents report that they feel relieved and secure knowing that they can reach their child or know where they are by using a tracking function. Generally, DT deconstructs the care function to a certain degree, particularly hands-on care, as physical co-presence is not necessarily a prerequisite for fulfilling the care needs of families and their members.

Parents' mediation style regarding DT in the family mainly evolves around setting rules and regulations (see Chapter 5.3). Generally, results reflect that mediation styles that are applied within one family context strongly depend on the respective parents' assessment. This, in turn, is strongly based on their own interests, experiences, knowledge and competence regarding DT, their fears and subjective benefits. Additionally, their parenting style in general, like being more participative or restrictive, is also reflected in the style of mediation and of setting rules. How parents set rules can basically be described as relating to two poles: (1) a parent might set very precise and clear rules and (2) they are less focused on rules, or these are rather vague and changeable. In designing these rules, parents pursue different strategies; for example, they build upon long discussions among parents or they leave it to one parent alone, base rules on the advice of experts or on a general gut feeling or they might involve children in negotiation processes and in co-creation of rules. **Rules often focus on limiting time for digital activities and less on content that children consume in the digital world.** Furthermore, several factors are defined as key by parents, for example, the exact time for digital activities, the time period where digital activities are allowed, depending on the age of the child, or specific places or situations where digital activities are allowed or not. Children at the ages of 5 to 10 years widely accept rules set by parents and believe that rules are necessary. The older children get, such as at the age of 8 to 10 years, the more they question existing rules in the family, as they increasingly start to compare them with other children and families they know.

In family life, disagreements, conflicts and negotiations are part of daily life. Thus, management of balance is a key function in doing family in this regard. DT opens up a topic for manifold conflicts and negotiations in the family. In our data, it was primarily parents who reported conflicts regarding DT in the family, rather than the participating children between the ages of 5 and 10 years (see Chapter 5.4). Even when children were asked explicitly, they seldom reported conflicts with parents about DT, especially the five- to six-year-old children. It can be assumed that this would be different if adolescents or older children had been interviewed. The fact that conflicts are primarily described by parents and less by children, in our view, can be explained from a developmental psychological perspective, rather than assuming a response behaviour of children that reflects social desirability. Some families deal openly with conflicts, while in others, conflicts might be suppressed. When rules are based on mutual control, mutual critique and mutual understanding within families, conflicts

seem to occur less often even though the necessity of explanations, discussions and negotiations is much higher.

Children and parents are aware of various beneficial and harmful effects of DT in different dimensions. They describe these effects of DT in regard to their health and development, their social and emotional life, their safety, including the topic of violence, their digital competences and doing family (see Chapter 5.6). DT in general and these manifold effects have the potential to affect the vulnerability of children and young people in different ways. On the one hand, DT can contribute to exacerbating the vulnerability of children or can contribute to the emergence of new vulnerabilities. On the other hand, the use of DT by children can also help to reduce the vulnerability of children, especially by enhancing the digital skills of children and young people. Our results reflect how DT contributes to exacerbating vulnerabilities and/or to the emergence of new vulnerabilities of children and their families, for example:

- **A lack of digital competences** can increase children's vulnerability or raise even new vulnerabilities.
- Access, knowledge and use among children and their families differ according to the **age of the children** and influence children's vulnerability.
- **'Lonely child'**: Children's vulnerability might increase through a feeling of being left out or even a sense of loneliness when these children's parents, siblings and other family members are busy with their DD.
- **Overprotection of parents** and their non-transparent, non-participatory and hierarchical parenting style might cause further vulnerabilities.
- Children in the **role of main instructor and mediator** on DT in the family bears the risk of overburdening these children and might raise new vulnerabilities for children and young people.
- Belonging to an **ethnic minority group** in the country, for example Roma, might leave families with increased or new forms of vulnerability.
- Gender aspects contribute to decreasing or increasing children's vulnerability.
- **Exposure of the child to specific content** or experiences might increase or even add new vulnerabilities for children.

However, DT might also help to **reduce children's vulnerability**, particularly when their level of **digital competence** contributes to new autonomy, resilience and agency of children.

6.2. Recommendations

Based on the analyses of our data and the theoretical framework for WP3 of the DigiGen project, the following four recommendations can be derived. These recommendations are considerations to support families with regard to DT in different ways and comprise, for example, suggestions with regard to policies, to offers for parental education, schools and kindergartens, to suggestions for a more general counselling of children and the family itself, for example, for parents or significant others.

Recommendation 1: Building and improving children's digital competences¹ from an early age onward to ensure their well-being and to avoid increasing and creating (new) vulnerabilities of children

Digital competences of children and young people are the key element in maintaining and building up their well-being and to avoid increasing or creating vulnerabilities. Furthering digital competences will help children to explore the online world safely and, thus, will contribute to mitigating or decreasing their vulnerabilities.

¹ Digital competences are understood as a set of attitudes, knowledge, skills, awareness and values that refer to the confident and critical usage of the full range of digital technologies (for more, see introduction of present report).

Children can be characterised as digitally competent when they are comprehensively aware of both certain risks and aspects they can profit from and when they are able to adapt their digital behaviour accordingly. Depending on their level of digital competence, resilience and their strength and resources, children's way of being confronted with and using DT has an effect on their well-being. Digital competence, moreover, might function as a resilience-enhancing factor (see Chapter 2.3) and might have an effect on their vulnerability. As social beings, humans generally can be described as vulnerable due to their dependency on other persons, and this is especially true for children (see Chapter 2.2). However, besides being inherently vulnerable, children are also agentic. Regarding this relation, our data revealed several aspects that tend to exacerbate vulnerabilities and/or contribute to the emergence of new vulnerabilities. These aspects comprise children's lack of digital competences, their age, their parents' overprotection, gender aspects, their exposure to specific content, or whether children are overburdened by assuming the role of the main instructor and mediator on DT within their family. Nevertheless, data also give hints on how DT can contribute to mitigating or decreasing children's vulnerability, for example, by supporting family members in their caring practices, or by enhancing the family's resilience through a feeling of 'we-ness' and solidarity (see more in Chapter 5.5).

Digital competences thus help to ensure and prepare children to navigate safely in the digital world. As our data and a literature review reflect, most children today are living in media-rich households with access to a variety of different devices, and DT are part of children's everyday lives (e.g., Ayllón et al., 2021; OECD, 2018; Ofcom, 2019; Eurostat, 2019; Lorenz & Kapella, 2020). In our data, children aged 5 to 10 years report different levels of knowledge and access, but also show differentiated and critical assessment of DT. It is obvious that DT play a crucial role in their lives and in every family we were in contact with. However, in general, results reveal that having access, comprehensive skills and knowledge about DT does not automatically entail children's sufficient digital competence. Conversely, children's digital competence is not necessarily based on access to and use of different DT, but can also be developed in families with restricted access to and limited use of DT.

To ensure the well-being of children, resilience-enhancing factors play an important role, for example, cognitive factors, factors that regulate emotions, family cohesion, parental support, social networks and belief systems. These are understood as the resources and strength of living systems like individuals or families to protect and support development. In the context of children, young people, families and digital technology, digital competences can be considered in many ways as a resilience-enhancing factor contributing to the well-being of children and young people. Using DT is more likely to entail beneficial effects for children when they have digital competence.

Results reflect that the development of digital competence is related to several aspects in the family. First and foremost, children's digital competence in the age groups under study depends on the parents' background and family practices. When parents have a higher education, are responsible users themselves and generally assess DT positively, children seem to develop a more competent and reflected way of integrating DT into their daily lives. In addition, when children can participate in negotiations about and in using DT and when family practices of regimenting DT occur in an atmosphere of mutual understanding and interest, it is more likely that children develop competent ways of using DT in their daily lives. In this regard, the parent-child relationship is also highly relevant for the development of digital competence in the sense of being more likely when these relationships are close and trustful. Further, family structure is relevant for establishing digital competence; for example, whether children have older siblings or close relatives, they can observe their competent use and critical and prudent engagement with DT. For children's digital competence, peer group dynamics and the family's peers are particularly crucial, as parental assessment and children's digital activities might also be adjusted to a child's friends and their parents. Other socialisation contexts, like kindergarten, school, other institutions or even the Internet itself, also impact the development of digital competence and how in these institutions DT are integrated, explained or mediated. Finally, digital competence seems to be developed more easily when digital activities for

the children are similarly relevant as offline or analogue activities like sports, hobbies, interaction or communication or other games.

To strengthen digital competences of children and young people, several practices should be supported:

- Parents should be encouraged to use different styles of mediation in relation to DT and not only focus their mediation on rules that regulate or limit their children's screentime. Next to general restrictions, other mediations styles are monitoring, active discussions and negotiations, co-use and active distractions. Parental mediation and monitoring should be complemented by, for example, co-activities and communication about DT and its content in order to develop, maintain and enhance children's digital competences. Strengthening the general communication on DT within the family will strengthen the relationships between family members (e.g., parent-child relationship, relationship between siblings or relationship with grandparents) and consequently train digital competences of children.
- Building up digital competences in the family context should not be understood as a top-down strategy from parents to children only. Rather, learning-by-teaching can occur for all family members, from which all could benefit and enhance their digital competences. Parents, for example, can learn from their children through digital co-activities, or all family members can try to learn new digital skills together, and can thus understand DT and their effects in a better way.
- To a certain degree, parents seem to be insecure about how to deal with DT in the family, especially in families with younger children. Easily accessible, evidence-based information for parents, children and young people about the effects of DT would help to reduce myths and fears in this area and would contribute to parents' self-confidence in handling and integrating DT into family life. Parents strongly rely on experts' opinion and recommendations. However, information for and counselling of parents should cover more aspects than screentime issues; for example, information on different mediation styles, parenting practices in the digital world, risks and benefits, negotiations with and explanations for children and how to increase digital competences. Information should be available in different languages and adequate for children and parents in general.
- Parents should be encouraged and enabled to cooperate with other persons in relevant systems of the child (e.g., kindergarten, school, peers) in order to be supported and relieved from the responsibility to foster children's digital skills and to pull together to be consistent.
- Parents and other significant others of children should be encouraged to balance the relevance of online activities with the provision of offline activities. This can support children in building up their digital competences and self-efficacy.
- Parental and other educational interventions and mediation of DT's use in family life should comprise the participatory co-creation of clear rules, a trustful relationship and an atmosphere of constant communication and negotiation with children. This consequently might decrease the risk of facing potential harms through using DT.
- Parents are the most important role models for children in the age groups under study and they are aware of their role. Thus, their knowledge, security and capacities should be strengthened and they should aim for a trustful and understanding parent-child-relationship. Both aspects will help to enhance their function as role models and will help children to acquire digital competences.
- Parents and other significant adults in children's everyday lives, as well as research and policies, should focus less on the question of whether children should use and are using DT, instead concentrating and understanding how and why children and families are using DT and what effects can be expected or avoided (see also George & Odgers, 2015).
- Families should avoid the situation of a 'lonely child'/excluded child in the family. Children's feeling of being left out or even a sense of loneliness depends on how (older) family members include or exclude the child in their digital activities.
- Families should focus more on the positive effects of DT and on their potential to reduce children's vulnerability, rather than concentrating on potential harms and risks—without ignoring the later entirely, and children should be encouraged in that. For example, DT offer enlarged possibilities to

connect with other families and people in similar situations, especially in the context of minority groups like families or migrant families. Further beneficial effects of DT involve increasing children's and adults' well-being and health as well as increasing possibilities to stay in touch and fulfil care responsibilities within families.

Recommendation 2: Promoting to exploitation of the full potential of DT as one way to support 'doing family' in everyday family life

Family is constructed and exhibited on a daily basis through joint practices like managing balance on different levels (organisational and emotional, for example), constructing commonalities and interactions, creating a feeling of 'we-ness' and building a family identity and caring for each other (see Chapter 2.5). This is understood as 'doing family', and digital technologies contribute and support these practices in several ways. Our data reveal that this does not only concern families with intensive use, highly positive assessment and less strict rules regarding DT, but also is relevant for families that are far more sceptical about the integration of DT in family life. Doing family is connected to different ways of sharing attitudes and values towards DT within a family, regardless of being positive, negative or rather neutral. Some families in our data even demonstrate how these attitudes and values are passed on through intergenerational transmission. Different family practices of using and integrating DT in families contribute to 'doing family', for example, co-activities with DT, discussions on different attitudes and values around DT and its use, shared and stored family memories, co-creation of digital content, support in balancing daily family life by DT (e.g., online shopping list, outsourcing of control and monitoring digital activities to digital solutions) and supporting care practices in the family through DT.

In order to enable families to fully profit from the positive and supportive effects of DT on 'doing family', we recommend support for families in the following aspects. This support could come from different players, for example, policymakers, parental support centres and persons from other systems like school or kindergarten:

- Families should engage in co-activities using DT and value it as family activities. They also have the potential to create a feeling of 'we-ness' and family identity. Still, the diversity of families' attitudes towards DT and its integration in family life needs to be respected. Some families may need encouragement, ideas and support in balancing online and offline (co-)activities and in valuing both as family time. Co-activities comprise, for example, playing games together, creating digital content for apps together or systematic and transparent communication about individual and family access and use of DT. These co-activities will also support children's digital competences.
- The integration of DT in families allows different spheres of life, such as work, study and further training or leisure, to come together simultaneously or to be merged in daily family life. It is therefore important that families and individuals discuss and set boundaries in order to handle the crossover or transition from one sphere to another carefully. Children especially may need support in organising and managing these transitions smoothly.
- Parents or children's significant others should be guided and secured in dealing with upcoming conflicts regarding the handling of DT within the family. The integration of DT in the family often goes along with conflicts on different levels, for example, among parents themselves, among children and parents, among siblings, but also conflicts with extended family members like grandparents. Some families deal with conflicts openly; in other families, conflicts might be suppressed or avoided, which can be seen as a rather destructive family practice. From a developmental perspective, a central part of human development is the gradual separation and individualisation of children from their parents or significant others. To master this developmental task, the child needs a secure base. One aspect of such a secure base is the 'anchoring function of parental authority' (Omer et al., 2013), which entails a protected and stable family life and allows parents to stay present and children to be steady themselves.

- Children should be enabled to participate in the co-creation of rules in a developmental- and age-appropriate way. Parents could, for example, apply a step-by-step approach in which children, as they grow older, get more and more involved in the co-creation process of rules. For parents, rules seem to be a good way to organise and manage family life around DT. Rules are highly accepted by children. However, as children grow older, they start to question the rules parents have defined and compare them with rules of other families. Conflicts can arise when parents often focus the rules on screentime and when they judge content in terms of what they think seems to be inappropriate for children. When parents manage to negotiate clear rules with children and increase their awareness and understanding, they might contribute to a greater balance of emotions and different family members' interests regarding DT. When digital activities and respective rules are based on intergenerational and mutual understanding, transparency, communication and participation, this might ease the establishment of anti-hierarchical family relations and mutual learning.
- Families could employ care practices beyond physical co-presence. Care practices in the family are a central aspect of 'doing family' and daily family life (e.g., Jurczyk, 2020). Care is understood in DigiGen's WP3 as a multidimensional concept (Tronto, 2013; Mason, 1996), encompassing dimensions like caring about, caring for, care giving, care receiving and caring with. Care-giver and care-receiver are both embedded in an individual context, having both agency and being vulnerability (see Chapter 5.2.5). Similar to the comprehensive definition of family, care practices cannot be reduced to practices that depend on co-presence, as caring practices also sustain before or after phases of co-presence and might encompass, for example, family members in multiple households or countries (transnational families) and can tighten contacts and facilitate interactions between the generations (e.g., with grandparents). By means of DT, care is possible despite a physical distance between different family members (Baldasser & Merla, 2014). Our data reveal several care practices in the family that are supported by DT and contribute to the well-being of family members, including, for example, supporting each other in obtaining and maintaining digital and media competences, protecting children's and parents' well-being and security, using DT as a 'babysitter', staying in contact with each other, and being able to update each other (despite a physical distance). By these family practices of care, it becomes obvious that DT also contribute to the deconstruction of care with regard to the necessity of physical co-presence.

Recommendation 3: Supporting all children in having access to the digital world to ensure children's rights

The 20th century has brought a paradigm shift in the view on children: childhood increasingly was considered as an independent phase of life and as a social phenomenon, rather than a natural one, but children nowadays are seen as active agents in their own rights, development and socialisation (James, 2013; Prout, 2011; Zinnecker, 2000; see also Chapter 2.1). Their agency has been also reflected legally in the United Nations Convention on the Rights of the Child (1989)², and transformed the child from a legal object into a legal subject (Schmahl, 2017).

In a recent commentary on children's rights, the UN Committee on the Rights of the Child explains how States' parties should implement the Convention of the Rights of the Child in relation to the digital environment³. The Committee states: 'The digital environment is constantly evolving and expanding, encompassing information and communications technologies, including digital networks, content, services and applications, connected devices and environments, virtual and augmented reality, artificial intelligence, robotics, automated systems, algorithms and data analytics, biometrics and implant technology. The digital environment is becoming increasingly important across most aspects of children's lives, including during times of crisis, as societal functions, including education, government services and commerce, progressively come to rely upon digital technologies. [...]

² For all children's rights, see: <https://www.unicef.org/child-rights-convention/convention-text-childrens-version-and-https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>

³ UN General Comment No. 25 (CRC/C/GC/25). Download: <https://www.ohchr.org/EN/HRBodies/CRC/Pages/GCChildrensRightsRelationDigitalEnvironment.aspx>

The rights of every child must be respected, protected and fulfilled in the digital environment' (UN Comment No. 25, Introduction, No. 2-4, 2021).

To respect children's rights, the Committee on the Rights of the Child refers to general principles such as (a) non-discrimination, (b) best interest of the child, (c) right to life, survival and development and (d) respect for the view of the child (UN General Comment No. 25, 2021). For children, the digital space is just another setting in which they carry on with their lives (Third et al., 2014, p. 8). Literature has recognised that those who have a low position in society are prone to exclusion and marginalisation in the digital arena (Helsper & Reisdorf, 2017; Scheerder et al., 2017). Correspondingly, Allyón et al. (2021) shows the wide range of digital deprivation within European countries. The percentage of children who live in a household that cannot afford a computer and/or cohabit with adults who cannot afford an Internet connection is high across all countries in Europe, although data show a certain north-south divide in Europe.

Our results give some hints as to some situations in the family and to some contexts families live in and have to cope with that have a potential to harm rights of the child regarding the digital area. These occur when, for example, families live under precarious conditions that do not allow access to DT, when parents have the tendency to overprotect children by permitting or limiting children's access to DT or when they tend to engage in 'sharenting' practices. Consequently, the following recommendations can be made:

- Interventions in families should increase the awareness of the diverse ways in which DT can contribute and ensure children's rights in the digital world, for example, in forming their own identity, their access to information, protection from violence and sexual abuse, being offered the best health care possible and having access to education in times of digital schooling.
- Across Europe, there are still families and children who cannot take part in the digital world for various reasons. To ensure children's right to participate in the digital world, this gap needs to be closed, regardless of the reasons that keep children from participating, which might stem from the socio-economic situation of the family, strict parental mediation practices prohibiting access to DT or schools not able to equip children with DDs they need to be prepared for home-schooling.
- We recommend easily accessible support for parents who experience insecurities and tensions in their parental mediation practices, particularly when it comes to inconsistencies between the right to protection (online safety), the right to provision (children's right to have equal access to devices and an Internet connection) and the right to participation (access to information, to express their voices, to establish connections via social media, to choose how they spend their free time, to participate to civic movements) of children.
- Although our data show clearly that DT can be a positive enriching factor for 'doing family', parents and other family members should be cautious about sharing private information in the digital world and to not violate children's rights. This occurs, for example, through the practice 'sharenting', that is, when parents disclose information or photos about their children online. Parents should be informed and supported to be able to ensure children's rights in this regard.

Recommendation 4: Researching young children through participatory and multiple-perspective approaches

The methodological recommendations from this project are twofold: on the one hand, they concern multiple-perspective interviews, and on the other, focus groups with children.

Regarding the multiple-perspective interview research, it has proven very valuable to triangulate perspectives for more nuanced understanding of shared knowledge and family practices. Furthermore, comparing the different perspectives within one family allows for new insights. Triangulating means comparing, relating and integrating perspectives—not validating. This allows for a more comprehensive understanding of family dynamics and practices. Another triangulation

exercise was integration of different disciplinary perspectives amongst researchers. Practically, we triangulated perspectives during the entire research process in conducting and analysing interviews. On the one hand, we interviewed several members of one family separately, and on the other hand, several members of the research team participated in the analysis of one family and adopted one interviewee's perspective. This approach allows for a more nuanced understanding of the research phenomenon, as it not only triangulates different perspectives of respondents but also the perspectives of different researchers with distinct disciplinary backgrounds. These were valuable for diverse readings and enhancing the understanding of the phenomenon of interest and generating new insights and communicative validation of interpretations.

Additionally, our approach to focus groups turned out to be very fruitful, even with very young children. We successfully conducted focus groups with children from five to six and from 8 to 10 years. Generally, focus groups with children are characterised by children's short attention spans. Furthermore, they require more directive moderator behaviour. The added value of focus groups with pre- or primary school children lies in the inspiration they give each other in talking about certain topics and remembering experiences but also how they refer to some aspects with more enthusiasm and potentially without the moderator's interventions. However, researchers should expect that focus groups with children generate neither one coherent peer opinion nor discussions in terms of exchanging arguments. Furthermore, the group dynamic can hamper the communication process, for example, by issues of dominating others, unruly behaviour, or silent participants.

A duration of 30 to 40 minutes is ideal for children of both age groups, although older children might be able to concentrate for slightly longer. The group size of three to five turned out to be ideal for a productive focus group. Real-life groups in which participants know each other beforehand are helpful, but strong friendship between two participants might imbalance the focus group.

7. References

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8. Appendix

8.1. Overview of focus groups and interviews (Sample)

Table 2: Overview of conducted focus groups with children age 5 to 6 years

| Age 5 to 6 years (kindergarten) | | | | | | |
|---------------------------------|----------|------|-------|----------|-------|--|
| Country | Children | | Area | | | Family Background |
| | girls | boys | urban | suburban | rural | |
| Austria | 2 | 1 | ✓ | | | Children living in diverse family forms and living arrangements, e.g. single-parent, two-parent and rainbow families, families with migration or binational background or Roma families. |
| | 1 | 2 | ✓ | | | |
| | 3 | 1 | ✓ | | | |
| | | 4 | | ✓ | | |
| | 2 | 2 | ✓ | | | |
| | 4 | 2 | ✓ | | | |
| Estonia | | 5 | ✓ | | | |
| | | 6 | ✓ | | | |
| | 3 | | | ✓ | | |
| | 3 | | | | ✓ | |
| | 2 | 2 | | | ✓ | |
| Norway | 1 | 2 | | ✓ | | |
| | 3 | | | ✓ | | |
| | 1 | 2 | ✓ | | | |
| | 2 | 1 | | ✓ | | |
| | 2 | | | ✓ | | |
| | | | | | | |
| Romania | 2 | 3 | | ✓ | | |
| | 1 | 3 | | ✓ | | |
| | 2 | 2 | | ✓ | | |
| | 2 | 2 | ✓ | | | |
| | 2 | 1 | ✓ | | | |
| Total 21 | 38 | 41 | 10 | 9 | 2 | |

Source: Own illustration.

Table 3: Overview of conducted focus groups with children age 8 to 10 years

| Age 8 to 10 years (primary school) | | | | | | |
|------------------------------------|----------|------|-------|----------|-------|--|
| Country | Children | | Area | | | Family Background |
| | girls | boys | urban | suburban | rural | |
| Austria | 1 | 2 | | ✓ | | Children living in divers family forms and living arrangements, e.g. single-parent, two-parent and rainbows families, families with migration or binational background or Roma families. |
| | 2 | 2 | | | ✓ | |
| | | 4 | ✓ | | | |
| | 1 | 2 | ✓ | | | |
| | 3 | 1 | ✓ | | | |
| Estonia | 6 | | ✓ | | | |
| | 6 | | ✓ | | | |
| | | 9 | ✓ | | | |
| | | 4 | ✓ | | | |
| Norway | 3 | 3 | | | ✓ | |
| | 4 | | | ✓ | | |
| | | 3 | | ✓ | | |
| | 2 | 2 | | ✓ | | |
| | 4 | | ✓ | | | |
| Romania | | 4 | ✓ | | | |
| | 4 | 2 | | ✓ | | |
| | 2 | 3 | ✓ | | | |
| | 3 | 2 | ✓ | | | |
| | 2 | 2 | ✓ | | | |
| | 1 | 4 | ✓ | | | |
| | 1 | 3 | ✓ | | | |
| Total 21 | 45 | 52 | 14 | 5 | 2 | |

Source: Own illustration.

Table 4: Overview of conducted individual interviews (family interviews) with children age 5 to 6 years

| country | child (5-6) | | | Interview partner | | | | | Educational background of parents | area | | | family form/ living arrangement |
|---------|-------------|-------|------|-------------------|--------|---------------|-------------|------------|-----------------------------------|-------|----------|-------|---|
| | age | girls | boys | mother | father | Sibling (age) | grandparent | Aunt/uncle | | urban | suburban | rural | |
| Austria | 6 | | ✓ | ✓ | ✓ | ✓ | | | H | ✓ | | | Two parents with children |
| | | | | | | (9) | | | | | | | |
| | 6 | | ✓ | ✓ | ✓ | | | | M | | | ✓ | Large family, three children |
| | 6 | ✓ | | ✓ | ✓ | | | | H | ✓ | | | Two parents with children |
| | 6 | ✓ | | ✓ | | ✓ | | | L | | | ✓ | Two parents with children |
| | 6 | ✓ | | ✓ | ✓ | | | | H | | ✓ | | Multi-generational household – grandparents in the same house |
| Estonia | 6 | | ✓ | ✓ | | ✓ | | | H | ✓ | | | Two parents with three children, private house |
| | | | | | | (8) | | | | | | | |
| | 5 | ✓ | | ✓ | ✓ | | | | H | ✓ | | | Two parents with two children, private house |
| | 6 | | ✓ | ✓ | ✓ | | | | H | ✓ | | | Two parents with two children, apartment |
| | 5 | ✓ | | ✓ | ✓ | | | | H | | ✓ | | Two parents and one child, private house, grandparents are neighbours |
| | 6 | | ✓ | ✓ | | ✓ | | | H | ✓ | | | Two parents with two children, apartment |
| | | | | | | (9) | | | | | | | |
| Norway | 5 | | ✓ | ✓ | | ✓ | | | M/L | ✓ | | | Divorced parents and large family with three children |
| | | | | | | (11) | | | | | | | |
| | 6 | | ✓ | ✓ | | ✓ | | | H/M | | | ✓ | Patchwork family: father has two children from a former relationship, which have moved out already, multicultural |
| | | | | | | (9) | | | | | | | |
| | 6 | ✓ | | ✓ | ✓ | | | | H | | | ✓ | Only-child family |
| | 6 | ✓ | | ✓ | | ✓ | | | H | ✓ | | | Two parents with two children |
| | | | | | | (8) | | | | | | | |
| Romania | 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 | ✓ | | ✓ | | ✓ | | | M | | | ✓ | Two parents with children |
| | | | | | | (9) | | | | | | | |
| Total | 20 | 11 | 9 | 20 | 10 | 9 | | | | 12 | 2 | 6 | |

Source: Own illustration. 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.

Table 5: Overview of conducted individual interviews (family interviews) with children age 8 to 10 years

| country | child (8-10) | | | interview partner | | | | | Educational background of parents | area | | | family form/ living arrangement |
|---------|--------------|-------|------|-------------------|--------|---------------|-------------|------------|-----------------------------------|-------|----------|-------|--|
| | age | girls | boys | mother | father | Sibling (age) | grandparent | Aunt/uncle | | urban | suburban | rural | |
| Austria | 9 | | ✓ | ✓ | | | | ✓ | M | ✓ | | | Two parents with children |
| | 8 | ✓ | | ✓ | | | ✓ | | M | | | ✓ | Multi-generational household – grandparents in the same house |
| | 8 | | ✓ | | ✓ | | ✓ | | M | | ✓ | | Divorced parents: child lives with mother, grandmother is father's mother |
| | 8 | | ✓ | ✓ | ✓ | ✓ (6) | | | H | | | ✓ | Multi-generational household – grandparents in the same house |
| | 10 | | ✓ | ✓ | ✓ | | | | L | | ✓ | | Two parents with children, but father main caregiver |
| Estonia | 9 | ✓ | | ✓ | ✓ | | | | H | ✓ | | | Two parents with two children, apartment |
| | 9 | | ✓ | ✓ | | ✓ (11) | | | M | ✓ | | | Two parents with two children, apartment |
| | 8 | ✓ | | ✓ | | ✓ (10) | | | H | ✓ | | | Single mother (divorced) with two children, Russian minority background |
| | 8 | | ✓ | ✓ | ✓ | | | | M | ✓ | | | Two parents, three children (one of them adult), private house |
| | 9 | | ✓ | ✓ | | | ✓ | | H | ✓ | | | Two parents and one child, apartment, Russian minority background |
| Norway | 8 | | ✓ | ✓ | ✓ | | | | M | ✓ | | | Two parents with children |
| | 8 | | ✓ | ✓ | ✓ | ✓ (6) | | | H | | ✓ | | Two parents with children |
| | 8 | ✓ | | ✓ | | | | ✓ | H | | ✓ | | Two parents with children |
| | 9 | ✓ | | ✓ | ✓ | | | | H/M | | ✓ | | Divorced parents: children have to homes, since parents are divorced |
| | 8 | | ✓ | ✓ | | ✓ (12) | | | H/L | | ✓ | | Two parents with children |
| | 9 | | ✓ | ✓ | | ✓ (6) | | | H | ✓ | | | Two parents with three children, mother from other European country |
| Romania | 9 | ✓ | | ✓ | | | | | L | | ✓ | | Divorced parents, the living conditions are poor, below a normal and a decent living. |
| | 9 | | ✓ | ✓ | | | | | L | | ✓ | | Divorced parents, the child lives with his stepmother. The living conditions are poor, below a normal and a decent living. |
| | 10 | ✓ | | ✓ | | | | | L | ✓ | | | Two parents with children |
| | 8 | | ✓ | ✓ | ✓ | | | | H | ✓ | | | Two parents with children |
| | 9 | ✓ | | ✓ | | ✓ (6) | | | M | | ✓ | | Two parents with children |
| | 8 | | ✓ | ✓ | | ✓ (13) | | | H | ✓ | | | Two parents with children |
| Total | 22 | 8 | 14 | 21 | 9 | 8 | 3 | 2 | | 11 | 9 | 2 | |

Source: Own illustration.

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.

8.2. Templates for Consent and Information sheets

For recruiting of parents and children consent and information sheets have been developed. Each participating country could use those templates and could translate them into their country language. Within the DigiGen project we do consider children as co-constructors, active participants and experts in their own rights and life's and for that we actively need their consent in participating in the research. Parents could agree from their point of view, that their children can participate in the research, but cannot replace the consent of the child itself, even if not legally necessary. If younger children cannot write their name, they are welcome to sign the consent form in any way they like.

We developed two different consent and information sheets: One for participating in the focus group and one for participating in the family interviews.

8.3. Information and consent sheets for parents



Information for Participation in the study [focus groups]
DigiGen - The impact of technological transformations on the Digital Generation
A Project of Horizon 2020 Program, European Commission

Dear [participant/parent],

We would like to invite you to participate in the study *DigiGen*.

This information contains important information about the study and what to expect, if you decide to participate yourself or allow your child to participate.

What is the purpose of the study?

The study is part of a bigger international project funded by the European Commission: We research the impact of technological transformation on the digital generation (DigiGen) and their families. It focuses on different areas of children's and young people's lives like family, school, leisure time, and civic participation. More specifically, we will investigate the use and experience of children and their families with digital devices, such as smartphones, tablets, and computers. The study will focus on children's digital technological engagement, their experiences, negotiations within the family, as well as the potential benefits and risks associated to the digital interactions for children, young people, and their families.

For a general overview of the project you can visit the project website www.digigen.eu.

Who participates?

Our research focusses at children age 5 to 6 and 8 to 10 years and partly their families. We would like to reach out to the diversity of families in terms of diverse family forms, cultural

background, etc. In some cases, some groups of children meet with a researcher to discuss digital technologies, in other cases we conduct individual interviews with the child and two other family members.

We would like to ask your child to participate in our study. We would appreciate your support and consent as this would contribute to a better understanding of technological transformations and the effect on children and their families.

If you decide that your child can participate, you will be asked to sign the consent form. As a sign of appreciation, your child will also receive a short version of the information sheet and we will explain the project and participation in person. We would like to ask your child as well to sign a consent form.

What does participation imply?

The group discussions will be conducted in fall and winter of 2020/2021. Your child can take part in a focus group with around 4 to 6 children at the same age. During the focus group the children are invited to talk about their thoughts and experiences with digital devices like smartphones, tables and computers in a child-friendly and playful way. The focus groups will last around 45 minutes and, ideally, will take place in your child's [Name of school/nursery] during opening hours.

The focus group will be video-recorded. The recording is necessary for the analysis but will not be published or shared with anybody outside the research team.

Notice COVID-19-pandemic: Due to the current situation, we will consider some precautionary measures for our study. As far as possible, the group discussions will take place outdoor. We will work with smaller groups. Group discussions will only take place, if the minimum distance of one meter can be guaranteed. All materials that are used during the group discussion will be disinfected regularly.

What are the benefits and risks of a participation?

Families can benefit from the discussion with our researchers and reflect on their own use of digital technologies. If you decide for a participation, we further will provide comprehensive information material on digital media in families [if possible], and if you are interested, we can share short reports on the project results with you.

We don't anticipate any physical, social, economic, psychological or legal harms in this study, neither for you nor your child or other involved family members.

How will your personal data be warranted (confidentiality)?

We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). All collected information will only be used for research purpose and scientific publications. In our publications, we remove all real names and other information that could identify you or your family and replace them by pseudonymous. All audio and/or video recordings will be stored encrypted in a secure storage for the duration of max. 5 years after the projects ends.

What are your rights?

Participation in the study is voluntary. You and your child can refuse to participate at any time, without giving a reason. There will be no negative consequences for you or your child if you withdraw from the study.

In terms of data protection, until the project ends in fall 2022), you have the right to, e.g.:

- Access the personal data that is being processed about you (audio and/or video recording), as long as it does not concern rights of other participants.
- Request that your personal data is deleted.

Who is responsible for the research project? [Adapted for each country]

The Austrian Institute for Family Studies at the University of Vienna conducts the study in Austria [Adapted for each country]. The project leader is [Name of leader] and you can ask him for more information and details:

Telephone: [Adapted for each country]
e-mail: [Adapted for each country]

If you decide to support us in conducting this research, we ask you to either give us your contact details or to contact us directly. In the course of a first telephone call, our researchers will give you further details about the project and your participation. You will also have the opportunity to ask any question you may have. You and your child will have the possibility to ask questions at any time.

Thanks for considering to participate in our study.

Kind regards,

[Adapted for each country]

**Information for Participation in the study** [interviews]***DigiGen - The impact of technological transformations on the Digital Generation***

A Project of Horizon 2020 Program, European Commission

Dear [participant/parent],

We would like to invite you to participate in the study DigiGen.

This information contains important information about the study and what to expect, if you decide to participate yourself or allow your child to participate.

What is the purpose of the study?

The study is part of a bigger international project funded by the European Commission: We research the impact of technological transformation on the digital generation (DigiGen) and their families. It focuses on different areas of children's and young people's lives like family, school, leisure time, and civic participation. More specifically, we will investigate the use and experience of children and their families with digital devices, such as smartphones, tablets, and computers. The study will focus on children's digital technological engagement, their experiences, negotiations within the family, as well as the potential benefits and risks associated to the digital interactions for children, young people, and their families.

For a general overview of the project you can visit the project website www.digigen.eu.

Who participates?

Our research focusses at children age 5 to 6 and 8 to 10 years and partly their families. We would like to reach out to the diversity of families in terms of diverse family forms, cultural background, etc. In some cases, some groups of children meet with a researcher to discuss digital technologies, in other cases we conduct individual interviews with the child and two other family members (e.g. parent, older sibling, grandparent, uncle).

We would like to ask you, your child and another family member to participate in our study with individual interviews. We would appreciate your support and consent as this would contribute to a better understanding of technological transformations and the effect on children and their families.

If you decide that you, your child and another family member can participate, you will be asked to sign the consent form. As a sign of appreciation, your child will also receive a short version of the information sheet and we will explain the project and participation in person. We would like to ask your child as well to sign a consent form.

What does participation imply?

The individual interviews will be conducted in fall and winter of 2020/2021. After you have had the possibility to ask questions and the procedure is fully clear to you, we will make an appointment for a personal interview with you, your child and another family member (e.g. older sibling, grandparent). The interviews can be conducted at your home or at another place you prefer. Every family member is interviewed individually and, if possible, simultaneously. The interviews with adults will take around 45 minutes and with children around 30 minutes. The interviews will be audio-recorded. The recording is necessary for the analysis but will not be published or shared with anybody outside the research team.

In the interview, your child will be invited to talk about his or her thoughts and experiences with digital devices like smartphones, tablets and computers in a child-friendly and playful way. Although it is planned as an individual interview face-to-face, it is possible that it will take place in proximity or within the parents' view.

Notice COVID-19-pandemic: Due to the current situation, we will consider some precautionary measures for our study. As far as possible, the interviews will take place outdoor. They will only take place indoor, if the minimum distance of one meter can be guaranteed. All materials that are used during the interviews will be disinfected regularly.

What are the benefits and risks of a participation?

Families can benefit from the discussion with our researchers and reflect on their own use of digital technologies. If you decide for a participation, we further will provide comprehensive information material on digital media in families [if possible], and if you are interested, we can share short reports on the project results with you.

We don't anticipate any physical, social, economic, psychological or legal harms in this study, neither for you nor your child or other involved family members.

How will your personal data be warranted (confidentiality)?

We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). All collected information will only be used for research purpose and scientific publications. In our publications, we remove all real names and other information that could identify you or your family and replace them by pseudonymous. All audio and/or video recordings will be stored encrypted in a secure storage for the duration of max. 5 years after the projects ends.

What are your rights?

Participation in the study is voluntary. You and your child can refuse to participate at any time, without giving a reason. There will be no negative consequences for you or your child if you withdraw from the study.

In terms of data protection, until the project ends in fall 2022), you have the right to, e.g.:

- Access the personal data that is being processed about you (audio and/or video recording), as long as it does not concern rights of other participants.
- Request that your personal data is deleted.

The institutional Ethics Committee at [Name of Institution] approved this research to be in-line with national and European legislation as well as the University's policies for data protection and welfare of participants.

Who is responsible for the research project? [Adapted for each country]

The Austrian Institute for Family Studies at the University of Vienna [Adapted for each country] conducts the study in Austria. The project leader is [Name of leader] and you can ask him for more information and details:

Telephone: [Adapted for each country]

e-mail: [Adapted for each country]

If you decide to support us in conducting this research, we ask you to either give us your contact details or to contact us directly. In the course of a first telephone call, our researchers will give you further details about the project and your participation. You will also have the opportunity to ask any question you may have. You and your child will have the possibility to ask questions at any time.

Thanks for considering to participate in our study.

Kind regards,

[Adapted for each country]



Declaration of consent to participate in the study *DigiGen - The impact of technological transformations on the Digital Generation*

I confirm that I have received and understood the information about the study *DigiGen*. I was provided with clear and detailed information about the objectives, significance and scope of the study as well as requirements resulting from participating in the study.

I have been given the opportunity to ask questions about the study and my participation. All my questions have been answered sufficiently and in a comprehensive manner. I am aware I can raise questions at any time.

I agree

- to participate in a personal interview.
- for my child to participate in a personal interview.
- Name of the child*: _____
- for my child to participate in focus group.
Name of the child*: _____

- that my and my child's data collected in this study are recorded and analysed.
- that my and my child's data are saved electronically in anonymised form for max 5 years after the project ends. The data is saved in a form that is only accessible to the project management and is secured according to current standards. All information is strictly confidential.

If I want my or my child's data to be deleted at a later point in time, I can arrange for it by contacting [Name of contact person and contact details] either in writing or via telephone, and without having to give a reason (before the end of the project in fall 2022).

I reserve the right to withdraw my consent for [my or my child's/my child's] voluntary participation at any time, without any disadvantage or repercussion. If I want to withdraw, I can do so at any time by contacting [Name of contact person and contact details], either in writing or verbally.

I have received a copy of this information for participants and declaration of consent. The original remains with the study coordinator.

Signature of [parent/participant]

Date

Signature of study coordinator

Date

*Name of the child is only used to validate your consent and never linked with [the interview/focus group].



8.4. Information and consent sheets for children



Be part of our research!
Some information for you to make up your mind

Who are we?



We are researchers from [Name of Institution] and we would like to understand and learn from you how you and your family use digital devices like smartphones, tablets, computer, etc. For this we need your help!

What is the study about?

- We ask children [and parents] about how they use digital devices like smartphone, tablets, computer or something similar.
- It is important to talk to children like you. You are the expert! Only you can tell us about what you do and what you like or don't like.



How are you able to participate in the study? [Choose if interview or focus group, delete other!]



A researcher will visit you and talk to you about how you and your family uses smartphones, tablets, computers and other similar devices.

This will take about 20 - 30 minutes.



A researcher will come to your [name of school]. Together with other children you will talk about using smartphones, tablets, computers and other similar devices.

This will take about 45 minutes.

We would like to audio or video tape our conversation.



To help us remember what we have said we would like to tape our conversation. Then we can listen to it later and make sure we do not forget anything. We will not share this recording with anybody else.

We would like to write about what we have learned.



At the end of our research, we would like to write a report on what we have learnt from children and parents who talked to us.

We will not tell anybody.



We will not tell others what you have told us. When we write about what we have learnt from all children and parents we will not use your name. Nobody knows what exactly you said.

Do you have to take part in the study?



- You decide if you want to take part. If you don't want to, this is ok too. You can speak with your parents, friends or other persons you trust.
- We also ask your parents if it is ok for them if we talk to you. You can only participate if all of you agree.
- If you don't want to talk to us anymore it is ok. We can stop at any time. If you do not want to answer a question, it is fine to tell us.
- If we say something you don't understand, please ask and we will explain.

If you have any questions you can ask us anything you want or you can call [Name of contact person] who is responsible for this study [contact details].



Do you agree?

We are researchers at the University of Vienna. We would like to understand the use of digital devices like smartphones, tablets, computer, etc. by yourself and your family. For this we need your help! It would be great if we could learn about your use of digital devices and what you think about them. Therefore, we invite you to participate in our research.



Do you understand what the research is about?

Yes

No



Were you able to ask all your questions? Were they all answered?

Yes

No



[Choose if interview or focus group, delete other!]
Would you like to talk to us about your use of smartphones, tablet, computer and other devices?

Yes

No



Would you like to talk with us and other children about smartphones, tablets, computer and other devices?

Yes

No



Can I tape our conversation so I can better remember things we said?

Yes

No



Can I write about what you have told me? I will not be using your real name so nobody knows that it was you.

Yes

No



You can stop at any time when you feel uncomfortable or do not want to continue. If you do not want to answer a question, it is fine to tell us that. If we say something you don't understand, please ask and we will explain.

Yes

No

Your name: _____

My name _____

Date: _____

8.5. Show cards for focus groups and interviews with children

To ensure that data is collected in a similar way and to allow a cross country analyses, show cards have been developed for the field work in WP3. Christer Hyggen of the Oslo Met team and consortium member of DigiGen, has developed in cooperation with the Team of WP3 different pictures cards which were used in the field work of WP3 within the DigiGen project. The copyright of the show cards are by Christer Hyggen and a very special thanks to his patience and great creativity in the process of developing the cards and the method for the field work in WP3.

Two kinds of show cards as visual props have been developed for the field work:

1. Different devices and software (apps) to gain insight in what experiences and knowledge 5 to 10 year old children have. Research interest here was basically the use of digital technology and the assessment of children.
2. Scenes which allow multiple readings to be assessed with stickers or discussion with children. Main research interested was on the assessment, advantages and disadvantages of the use of digital technology and on rules about the use of digital technologies in families. Different scenes have been developed:
 - a. Table Situation: People (may be a family) is sitting on a dining table. The adults talk, one child watches something on a table. The child's face is not visible.
 - b. Siting in a circle: Four people (children) with a neutral expression are sitting in a circle and each child is doing something on their smartphone, only one person is not holding the smartphone in the hands. They are not looking at each other.
 - c. In front of a laptop: An adult and a child are sitting in front of a laptop. They are both looking at each other. It could be a home schooling situation, research, a skype session, etc.
 - d. Bed situation: A child is in his bed and using a smartphone. This show card could be replaced by a role ply, where the moderator of the focus group was playing a child going to bed and taking secretly the smartphone to bed.

All show cards have been developed with neutral expressions and faces and open to the age and gender.

8.5.1. Devices and software as show cards



Handheld game console



E-reader, e.g. Kindle



Laptop



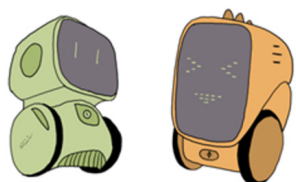
Smart Bluetooth speaker
(Alexa and others)



Smart TV



Smart watch



Smart toy (robot)



Smartphone with TikTok
app



Tablet with YouTube app



Smartphone with
Facebook app

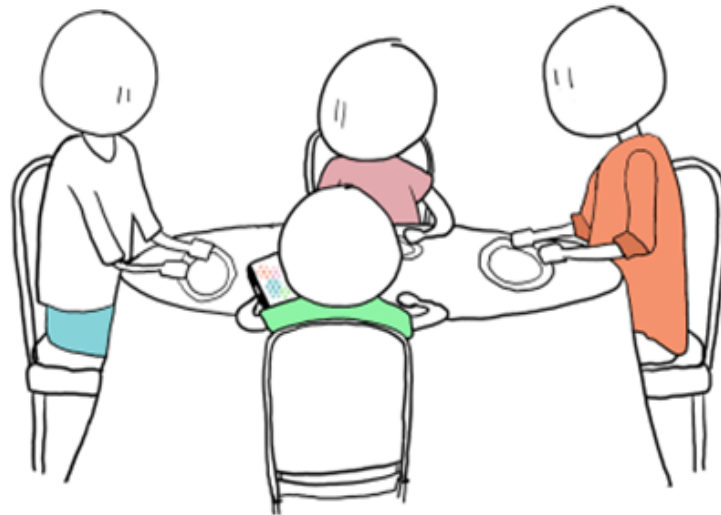


Smartphone with Spotify
app

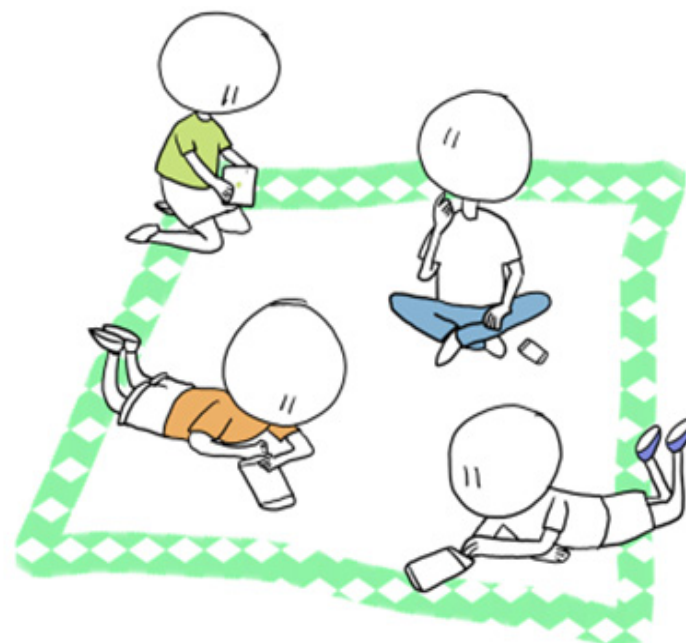


Smartphone with a chat
in a messenger (e.g.
WhatsApp)

8.5.2. Scenes as show cards



Dinner Table situation



Sitting in a circle



In front of a laptop



Bed situation



DigiGen

www.digigen.eu

OSLOMET

PANTEION UNIVERSITY
DEPARTMENT OF
SOCIAL POLICY

UNIVERSITY OF
LEICESTER

Universitat
de Girona

 Österreichisches Institut für Familienforschung
Austrian Institute for Family Studies

 universität
wien

 PADERBORN UNIVERSITY
The University for the Information Society

 UNIVERSITATEA
BABES-BOLYAI

 THE INNSBRUCK UNIVERSITY
School of Governance,
Law and Society

 FAMILIES
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