Chapter # 20

FACILITATORS AND BARRIERS IN THE USE OF DIGITAL TOOLS FOR ADOLESCENTS AND YOUNG ADULTS WITH DISABILITIES OR TROUBLES, AN EXPLORATORY STUDY

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ABSTRACT

Digitalization changes in many ways how we connect to other people and how we live in society. Information and communication technology (ICT) carry a risk of marginalization, especially for people with disabilities or troubles. Also, ICT can mediate the relationship to other people and extend social ties. The study aimed to identify the psychological barriers and facilitators to the use of ICT by adolescents and young adults with disabilities or troubles. Participants were asked about their use of ICT and how they feel when they use it. Three major themes emerged: *Representation of ICT*, *Perception of available resources* and *Individual and environmental component*. For participants, using ICT makes their everyday life easier and provides moments of pleasure. For some, ICT are seen as a means of overcoming disabilities. Social support is a key facilitator to reduce the difficulties of ICT. The main difficulties were risk and lack of knowledge. This study shows that for adolescents and young adults with disabilities or troubles, ICT are important for their sociability and autonomy. It is therefore necessary to support them and facilitate their learning of ICT to encourage their use, so that they feel confident and secure.

Keywords: adolescent, digital divide, disabilities, qualitative study, ICT, troubles.

1. BACKGROUND

In France, as elsewhere in the world, digitization has made great strides in recent decades, increasing the use of information and communication technology (ICT). Although equipment rates are rising every year, particularly for smartphones, the difficulties associated with using ICT are also increasing (Conseil Général de l'Economie [CGE], Autorité de Régulation des Communication Electronique et des Postes [ARCEP], Agence Nationale de la Cohésion des Territoires [ANCT], 2021; CGE, ARCEP, Autorité de Régulation de la Communication Audiovisuelle et Numérique [Arcom], ANCT, 2022). A major risk of digitalization is therefore the marginalization of those who do not master ICT.

The difficulties associated with using ICT are known as the digital divide. The digital divide is generally described at three levels. The first represents the geographical and infrastructural limits of access to ICT. The second encompasses access to skills, while the third on how ICT impacts people offline (Van Deursen & Helpser, 2015). An alternative conceptualisation of the third-level digital divide is proposed by Drouard, Erhel, Jacob,

Lumeau, and Suire (2021), which considers problematic uses of ICT not as a matter of distance, but of proximity. Those most affected by the digital divide are those who are most vulnerable to discrimination in society, including those with low socioeconomic status, advancing age and disabilities (Scholz, Yalcin, & Priestley, 2017; Wilson-Menzfeld et al., 2024).

Younger people may be seen as more competent with ICT, it is the myth of "Digital Natives" and may underestimate their difficulties (Kirschner & De Bruyckere, 2017). What is more, digital technology is a means of connection, socialization and autonomy, all of which are necessary for the development of adolescents and young adults (Borca, Bina, Keller, Gilbert, & Begotti, 2015). Its involvement in the development of adolescents, both in terms of its positive aspects and in terms of problematic use (addiction, exposition to inappropriate content, etc.), is the subject of scattered studies and needs to be developed (Borca et al., 2015; Stavropoulos, Motti-Stefanidi, & Griffiths, 2022; Samhel, Wright, & Cernikova, 2022). While there does not appear to be a link between personality traits and the use of ICT, psychological troubles seem to encourage problematic use of ICT (Williams, Sindermann, Yang, Montag, & Elhai, 2023). More than the risk of marginalization, the use of ICT is a double-edged sword: on the one hand, it can promote the development of adolescents and their well-being, but on the other, it can also become a conduit for harm if misused (Lai et al., 2022). To manage the stress associated with ICT difficulties, Schmidt, Frank, and Gimpel (2021) noted the coping strategies implemented by teenagers in secondary schools in Germany. Understanding these strategies allows us to better understand the relationship with ICT, the adaptive capacities of adolescents and their limit beyond which they risk abandoning their use.

Disabilities digital divide corresponds to the specific digital divide (Dobransky & Hargittai, 2016; Scholz et al., 2017). Most adolescents with disabilities report daily access to the internet, but don't feel digitally included, especially women (Johansson, Gulliksen, & Gustavsson, C, 2021). Scanlan (2022) shows that, despite the utilisation of ICT by individuals with disabilities, some applications are less prevalent than in the general population (e.g. e-mail, shopping, hiring services). They also found a strong interest in online confidentiality and worries about being followed online after cyberbullying experiences. However, for certain activities, people with disabilities use ICT just as much or even more, such as using social networks, blogging or creating online content. (Dobransky & Hargittai, 2016; Scanlan, 2022).

For adolescents with disabilities, Caron, Maltais, Corriveau, and Rassy (2024) also find the double-edged aspect of ICT: it serves as a distraction, peer support or learning about their disorder, but can also expose them to inappropriate content that may exacerbate their difficulties. Adolescents with disabilities or trouble seem to have become accustomed to using ICT, yet they remain at risk of digital exclusion (Johansson et al., 2021; Scanlan, 2022; Caron et al., 2024). Understanding their use of ICT is one way of preventing this exclusion and enabling them to make the best use of ICT.

To the best of our knowledge, no study has used the psychological angle to study the relationship between ICT and adolescents with disabilities or troubles in France. This is the aim of the first phase of the NuméVie project. In this study, we will look at the relationship between adolescents and young adults with disabilities or troubles and ICT through a qualitative study. Our research forms part of the understanding of the second and third level digital divide among adolescents and young adults with disabilities or troubles. The aim of this exploratory study is to understand, through semi-structured interviews, the psychological barriers and facilitators of the use of ICT.

2. METHOD

2.1. Participants

Participants were recruited in Institute for Motor Education (IME) and Medical-Psycho-Pedagogical Centres (MPPC) in Tours, France. Inclusion criteria were: (1) being aged between 14 and 25, (2) being French speaker since minimum 5 years, (3) taking care in MPPC or IME. Exclusion criteria were (1) minor participant without parental or legal tutor authorization and (2) completion of the entire interview, with missing information excluding the participant. The interviewer presented the subject of the study to the participant and their rights. A consent form was read and signed by them, and they were informed about their rights and given the contact information of the search responsible in case they wanted to withdraw from the study. This approach was approved by the Tours-Poiters ethics committee.

2.2. Procedure

We used individual face-to-face semi-structured interviews with participants, either at the university of Tours or in a quiet place in the institute (MPPC or IME) that remained undisturbed during the interview to maximize comfort. At the end of the interviews, participants provided sociodemographic information. The interview guide was drawn up by the research team which consisted of experts and researchers with expertise in psychology and qualitative design.

The interview guide consisted of three parts. The first was to understand the representation and use of ICT by participants ("*When you hear the term 'digital tools,' what do you think of?*", "*Which digital tools do you personally use?*"), and then we asked them to detail their usage with each ICT they mentioned (frequency, context, perceived mastery, etc.). The second part asked them about the difficulties they encounter with ICT and the emotions generated in these situations ("*What difficulties have you already encountered with digital tools?*", "*How do you experience this situation?*"; "*What emotions does it arouse?*") or the reasons for not using certain ICT ("*Why don't you use this ICT?*"). The third part was interested in the facilitator who encourage or maintain use of ICT. This part asked participants about their ways of overcoming the difficulties encountered ("*In these situations, what could have helped you?*"), and what enabled them to take ownership of ICT ("*What made the use of (mention what is used) possible for you?*"). Once the interview had begun, the order of the questions could vary according to what the participant was saying. The interview was considered complete once the intergrality of the interview guide had been reviewed and the participant felt that there was nothing to add. To ensure accurate understanding of the terms in French for all the population considered in the study, the interview guide used the term "digital tools" (*outils numériques* in French) to refer to "*ICT*" and the latter is the term used systematically in the writing of this chapter. Interview were recorded on dictaphone and transcribed by two engineers (FH and DT).

2.3. Analysis

Content analysis was carried out by the first author (FH, engineer and expert in qualitative methodology) following a method proposed by Braun and Clarke (2013) using NVivo 12-QSR International software. The analysis focused strictly on the data that derived from the verbatim transcriptions.

3. RESULTS

3.1. Descriptive

Present sample included 9 adolescents and young adults (4 men and 5 women, from 14 to 22 years, Mean=17.1 years old; SD=2.3): 5 treated in MPPC for behavioural and learning troubles, 4 treated in IME for cerebral palsy and associate troubles. The interviews took place between June and October 2022. The interviews ranged in length from 30 minutes to 1 hours (Mean=45min). The ICT used by participants are smartphones, computers and tablets. The main uses were for communication, entertainment, and school. *Table 1* presents participants characteristics in terms of age, gender and institution.

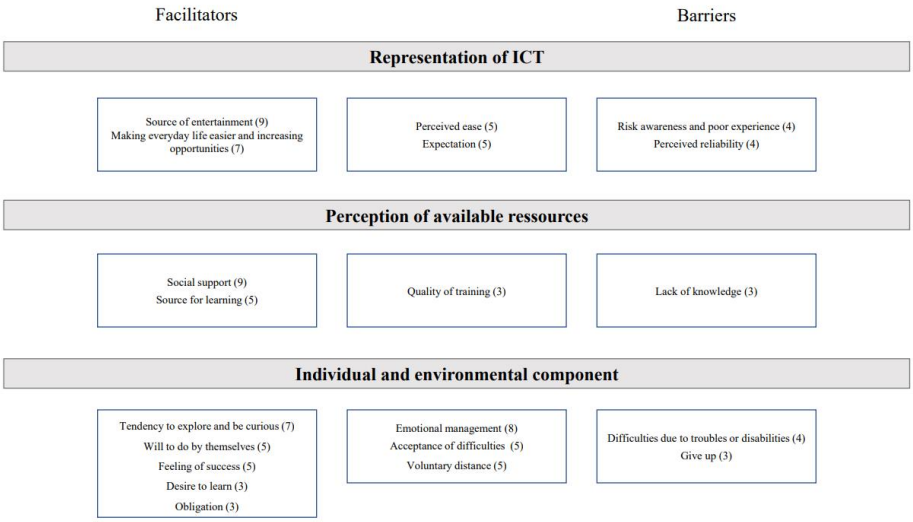
Table 1.
Participants.

Participant	Institution	Age	Gender
P1	IME	18	Man
P2	IME	18	Woman
P3	IME	22	Man
P4	IME	18	Man
P5	MPPC	17	Woman
P6	MPPC	15	Man
P7	MPPC	16	Woman
P8	MPPC	15	Woman
P9	MPPC	14	Woman

3.2. Thematic Analysis

In our sample, 3 majors themes emerged. *Figure 1* represents the themes and sub-themes identified in our analysis. The main themes are shown in grey boxes, and in the white boxes, the sub-themes related to the said main themes. The white boxes on the left are the sub-themes identified as facilitators, on the right the ones identified as barriers, and in the middle, either facilitators or barriers, depending on the individual or the context. For each of the three themes, sub-themes are facilitators, barriers or both. The facilitators group together the sub-themes that the participants perceive to promote and maintain their use of ICT. Barriers, on the other hand, group together sub-themes that they perceive as limiting or preventing their use. For each sub-theme, we have illustrated them verbatim in the following paragraphs, particularly those that may be facilitators or barriers, to give an idea of the contradictions they may represent in the participants' experience of ICT.

Figure 1.
Thematic map of psychological facilitators and barriers that influenced the use of ICT.



Note: In brackets the number of interviews where the theme is mentioned (N=9).

The first theme was the *representation of ICT*, understood as the perception of ICT linked to their experiences and expectations regarding ICT. The facilitators were considered as *making everyday life easier and increasing opportunities*, increasing the ability to communicate with family and friends, particularly for teenagers with disabilities, with devices such as voice assistance (“I write a bit better than when I was at primary school, by hand. (…) I'm dyslexic anyway, I can't write straight, that's why I got a computer.” P3; “I think it's great that we're dematerializing everything because it's much more practical.” P5). ICT were also seen as a *source of entertainment*, providing moments of pleasure and escape (“For me, what motivates me is watching videos, going on the Internet, seeing what interests me.” P1; “To watch videos on YouTube, that sort of thing. I use digital tools mainly for entertainment purposes.” P9; “I play a lot of Assassin's Creed, (...) a game based on adventure and old moments in history, which I think is wonderful.” P3).

For this theme, the factors that could be a facilitator and a barrier were *perceived ease* and *expectations of ICT*, respectively. *Perceived ease* varies according to the intuitiveness of ICT and their accessibility, but also their perceived complexity and therefore the effort required to master them (“I know how to use it, so now it's easy to search on Google or something.” P9; “It's a bit complicated to do the research and so on.” P7). *Expectations of ICT* represented the gap between what they perceived it would be possible to do and the tools currently available to them. These expectations ranged from simple improvements in the performance of existing equipment to the introduction of new equipment, in particular to overcome difficulties linked to disabilities (“I'd like, like, what I'm looking for in the future, I'd really like better voice recognition software that can, that can overcome my speech difficulties.” P4 “Tools that recognize requests and that, for example, I want to go, I want to go to a yoga class, what is the best way if I have to, if I can't walk or... what do you think is the best way to get there?” P4).

Lastly, the barriers linked to the first theme were *risk awareness and poor experience* and *perceived reliability* of ICT. ICT and online spaces are at risk of problematic behaviour, exposure to inappropriate content and cyberbullying. These negative experiences were a source of alienation from ICT (“You become too addicted. I know that social networking in general is very addictive.” P5; “Boys coming up to me when I'm not even their age (...) they're always coming up to me when I say 'no, I don't want to' and all that, and they don't really understand.” P9). Finally, *perceived reliability* was related to the risk of malfunctioning, which limited the confidence placed in the ICT (“Fear because, well, if it crashes, well, I'm afraid of losing my phone or of losing what's inside it, and even phones in general have value.” P7).

The second theme was the *perception of available resources*. The facilitators mentioned by the participants were the *social support*, provided a link with those around them to pass on knowledge, and the help they can give each other on the various ICT (“If I'm still discovering things today, that my father, he shows me little subtleties.” P7). Participants who reported a *willingness to learn*, which often translates into the possibility for ICT to provide sources for personal learning (“I'm going to help my Internet problems via the Internet (*laughs*).” P3).

The *quality of training* was a sub-theme that can act as both a facilitator and a barrier. For some, the training they received is comprehensive and enables them to make good use of ICT (“We have technology classes, so it's true that that helps a lot.” P8), while for others it was superficial, limiting their use (“I know we'd had very quick lessons on it, but pfft, it never goes into any depth.” P5).

The barrier mentioned for the second theme was the difficulties linked to their *lack of knowledge* (“I know I can do the basics, but other than that I don't necessarily know my way around.” P5).

The third theme was the *individual and environmental component*, which surrounds and influences their use of ICT. The facilitators were the *will to do by themselves*, the *tendency to explore and be curious*, the *desire to learn*, the *feeling of success* and the *obligation* to use ICT. The *will to do by themselves* and the *tendency to explore*, corresponded to a desire for autonomy, understanding and individual experimentation with ICT (“I like to be alone in my digital mastery.” P4; “I can do it, but you have to give me a bit of time, you can't force me to do it. The more you force me, the less I'm going to do it.” P9). Then, the *desire to learn* was a driving force for those who want to improve their ICT skills (“When there's the slightest thing that could be exciting, I go straight to it without necessarily thinking.” P3). Finally, the *feeling of success* was evoked by the participants when they manage to master ICT and overcome the difficulties they have encountered, which maintains their desire to use them (“Sometimes I discover things on my computer that I didn't know were possible and then I'm happy because I've discovered something, and I've made it work.” P7). Finally, for the participants, *obligations* correspond to the widespread presence of ICT, which makes them necessary in their daily lives, in their discourse, these obligations were not described negatively (“Because if I don't need it tomorrow, I'm not going to say today I'm going to take a spreadsheet course. Well, it's really, if I have them, I'm going to need them, well I'm going..., I'm going to learn how to use them.” P5; “Well, it’s something we need in high school because to do homework and research (...). So, the computer, it's true that it's a bit essential now and in higher education too anyway.” P7).

Subthemes that could be both facilitators and barriers, we identified *emotional management*, *acceptance of difficulties* and *distance from ICT*. *Emotional management* is how they handle their frustrations, annoyance, and irritation when the ICT don't work as they want it to (“Well, I don't get sad. Or stuff like that. Just sometimes I'm a little frustrated or

curious but that's all." P7; "I experienced it with a little difficulty and frustration sometimes, but when I succeeded, I was proud of myself." P4). *Acceptance of difficulties* comes from the attitude of recognizing one's own limits ("There are things that I might not always understand at first glance, but that's how it is. I said to myself "it doesn't matter, I'll do it better next time"." P3). And *distance from ICT*, a voluntary distancing from ICT to reduce the stress linked to use ("There were many times where I said to myself, "It's better to cut and come back calmly afterwards, and even stronger." And right now, I can't do it." P9). These three sub-themes refer to ways of managing and coping with the difficulties presented by ICT, but also entail a risk of detachment ("I will stop, or I will carry on and go even more crazy." P6).

Finally, for the third theme, the barriers were *difficulties due to troubles or disabilities*, which require specific support to overcome ("I still can't handle a mouse." P4; "It depends on my mood too. Whether I'm tired or not. Well, I'm tired all day anyway so." P8) and *give up* in the face of the difficulties encountered ("I will stop and move on. Or I give up for good and come back in a few months." P6).

4. DISCUSSION

The aim of this exploratory qualitative study was to identify the psychological facilitators and barriers to the use of ICT by adolescents with disabilities or troubles. Through thematic analysis, three major themes emerged, namely (1) *Representation of ICT*, (2) *Perception of available resources* and (3) *Individual and environmental component*. The majority of adolescents perceived ICT as beneficial for them, as it fosters a bond with their loved ones and could compensate for their difficulties. These ideas were expressed by the subthemes *source of entertainment* and *making everyday life easier*. For participants treated in IME, ICT are seen as a means of overcoming disabilities, but it makes them dependent on good performance from the ICT. These ideas are expressed by the subthemes of *expectation* and *perceived reliability.*

However, they were not unaware of the risks associated with ICT. These results support the idea of the double edge-sword (Lai et al., 2022; Caron et al., 2024). ICT is seen as a means of sharing and communicating with peers, which is necessary for the development of adolescents. The downside was that ICT can expose people to risks such as piracy or cyberbullying, leading them to move away from or abandon ICT, as expressed in the subtheme *risk awareness and poor experience* and *distance from ICT.* People with disabilities are more at risk of bullying and cyberbullying than the average person (Rose et al., 2015), so other users could become actors in their digital exclusion.

Social support from family and friends was one of the most important facilitators. Help from family and peers was a way of learning and coping with difficulties encountered with ICT. These results are consistent with those found in the literature, where people with disabilities are more involved in social media (Johansson et al., 2021; Scanlan, 2022). Support from adults, not only parents, with good digital literacy reduces the risks associated with ICT (Wright, 2017; Adigwe & Van der Walt, 2020; Schmidt et al., 2021). To facilitate the use of ICT by adolescents with disabilities or troubles, it is necessary to consider their difficulties and specific needs linked to their disabilities or troubles to provide them with appropriate help, and therefore consider the digital skills of the surroundings. Also, one obstacle mentioned was the *lack of knowledge* of ICT and the need to learn more, which links in with the generally positive view of ICT and the need to develop their digital literacy.

Finally, the development of autonomy is a feature of the transition from adolescence to adulthood (Noom, Deković, & Meeus, 2001). The adolescents interviewed expressed a desire for autonomy and self-sufficiency in mastering ICT as expressed in the subthemes *tendency*

to be curious and *will do by themselves*. Our results are in line with those of Borca et al. (2015) on the use of internet by Italian adolescents. They also identified that adolescents maintain their links with peers and their autonomy via ICT. It can therefore be said that supporting the proper appropriation of ICT by adolescents is a way of fostering their development and well-being (Borca et al., 2015; Smahel, Gulec, Lokajova, Dedkova, & Machackova, 2022).

In general, these results are consistent with those identified by Caron et al (2024) in their scope review in terms of benefit (distraction, social support, obtaining information) or risk (inappropriate content, cyberbullying**).** In addition, we were also able to identify ways in which adolescents with disabilities or trouble maintain or distance themselves from ICT. Supporting autonomy, arousing curiosity and developing adapted courses would seem to be ways of ensuring that people with disabilities continue to make good use of ICT. Finally, even though Scanlan (2022) notes that efforts to reduce digital exclusion seem to be working, we have shown that there are barriers that can be overcome with the right support and design, hence the need to maintain these efforts to continue to promote digital inclusion.

The limitation of this study was the interview sample. There is no consensus on the number of interviews to conduct to obtain a correct sample. It appears that sampling between 7 and 12 can yield the maximum amount of information (Guest, Bunce, & Johnson, 2006; Hennink, Kaiser, & Marconi, 2017). While more interviews would have been ideal, the current number can be considered acceptable for an exploratory study. The age gap between participants can be questioned, but studies on adolescents with disabilities or troubles are still few and far between, and there is no uniformity of samples in the literature (Caron et al., 2024). Another limitation of this study is the diversity of disability profiles in our sample, as the literature shows that use varies according to disability. (Tsatsou, 2019; Johansson et al., 2021). However, we can temper those limitation by the desire to illustrate psychological attitudes to ICT with qualitative method. Thematic analysis permits to show a range of psychological barriers and facilitators faced by adolescents with disabilities or troubles. The strength of this approach is that it allows us to understand the meaning given by individuals with a small sample. These limitations put our results into perspective and should be taken into account in future studies.

5. CONCLUSION

This study provides new knowledge on the relationship between ICT and adolescents with disabilities or troubles. We did not focus on the diagnostic criteria for disabilities or troubles to include them in this study. Adolescents in the IME all spoke of ICT as a concrete way of improving their daily lives and their expectations of more effective and better adapted ICT. Future research could explore adolescents' relationship with ICT using more precise diagnostic criteria to refine our knowledge and encourage the development of appropriate and effective tools.

In conclusion, the aim of this exploratory study was to initiate further studies to gain a deeper understanding of the relationship between adolescents with disabilities or troubles and ICT. We have shown that ICT are an important factor in the development and lives of today's adolescents with disabilities or troubles. We have shown, even that adolescents were interested in using ICT. Although there were risks involved, with the right support and the possibility of developing their digital skills, the use of ICT could be complete and more beneficial.

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