

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

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Abstract

Introduction: Digitalization changes in many ways how we connect to other people and how we live in society. On the one hand, information and communication technologies (ICT) carry a risk of marginalization, especially for people with disabilities or troubles. On the other hand, 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. *Methods:* 9 adolescents and young adults (44% men, Mage=17.1 years; SD=2.3) were recruited in Educational and Medical Institute and Medical-Psycho-Pedagogical Centres. Semi-structured interviews were administrated, and a qualitative content analysis was performed using the recommendations of Braun and Clarke (2012). Participants were asked about their use of ICT, how they feel when they use it, what motivates them to use ICT and what kind of difficulties they have to deal with. *Results:* Preliminary results show that the main ICTs used are the telephone (9), computer (9) and tablet (7). The main uses are for entertainment, communication and schooling. 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. Then, they note that their curiosity and the autonomy that ICT gives supports their desire to use it. The main difficulty encountered is the lack of competence with ICT. In these situations, participants report feelings of anger, stress, and frustration. These feelings lead to a drop in self-confidence and self-esteem. Furthermore, the perceived risks of ICT are a hindrance. The main risks mentioned were addiction, inappropriate content, and piracy. *Conclusion:* This study identified both barriers and facilitators associated with the use of ICT by adolescents and young adults with disabilities or troubles. These results show that for them, ICTs are important for their sociability and sense of belonging. It is therefore necessary to support them and facilitate their learning of ICT to encourage their use, so that they feel confident and secure. Interviews show how they are motivated to use ICT. A good support could reduce the barrier and allow them to take full advantage of ICT.

Keywords: Adolescent, disabilities, qualitative study, ICT, troubles.

1. Introduction

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 ICTs are also increasing (Baromètre du numérique, 2021, 2022). A major risk of digitalization is therefore the marginalization of those who do not master ICT. 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; Samhel, Wright, & Cernikova, 2022; Stavropoulos, Motti-Stefanidi, & Griffiths, 2022). While there does not appear to be a link between personality traits and the use of ICT (Mark, & Ganzach, 2014) psychological troubles

seem to encourage problematic use of ICT. (Williams, Sindermann, Yang, Montag, & Elhai, 2023). More than the risk of marginalization, the use of ICTs 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 be a source of harm in case of misused (Lai et al, 2022). 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. 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 Educational and Medical Institute (IEM) and Medical-Psycho-Pedagogical Centres (CMPP) in Tours, France. Inclusion criteria were: (1) being age between 15 and 25, (2) being French speaker since minimum 5 years, (3) taking care in CMPP or IEM. Exclusion criteria were (1) minor participant without parental or legal tutor authorization and (2) completion of the entire interview and questionnaire, with missing information excluding the participant.

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 (CMPP or IEM) 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. 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.

2.3. Analysis

Content analysis was carried out by the first author (FH, engineer and expert in qualitative methodology) as proposed by Braun and Clarke (2012) 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, $M_{age}=17.1$ years; $SD=2.3$): 5 treated in CMPP for behavioural and learning troubles, 4 treated in IEM for cerebral palsy and associate troubles. The interviews ranged in length from 30 minutes to 1.5 hours ($M=45min$). 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.

3.2. Thematic analysis

In our sample, 3 majors themes emerged. The first theme was the *representation of ICT*, understood as the perception of ICT linked to their experiences and expectations with regard to 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*, who 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 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 the 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 the 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). Subthemes that could be both facilitators and barriers, we identified *emotional management*, *acceptance of difficulties* and *distance from ICT*. 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’ll stop or I’ll carry on and go even more crazy. (*laughs*)” 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) and *give up* in the face of the difficulties encountered (“I’ll stop and move on. Or I give up for good and come back in a few months.” P6).

4. Discussion and conclusion

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. 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). 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.

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. Support from adults with good digital literacy reduces the risks associated with ICT (Adigwe & Van der Walt, 2020). The main 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.

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

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 et al, 2022).

The main limitation of this study was the small interview sample. The aim of this exploratory work was to initiate further studies to gain a deeper understanding of the relationship between adolescents with disabilities or troubles and ICT.

Then, we interviewed adolescents being followed in CMPP and IEM. 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 IEM 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, ICT is an important factor in the development and lives of today's adolescents with disabilities or troubles. We have shown that adolescents were interested in using ICT. Although there were risks involved, with the right support, the use of ICT could be complete and more beneficial.

Table 1. Participants.

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

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