

Unveiling Digital Acceptability: A Pathway to Inclusion

**Dany Lussier-Desrochers, Karine Ayotte, Rosalie Ruel,
and Laurence Pépin-Beauchesne**

Université du Québec à Trois-Rivières (UQTR), Trois-Rivières, QC G8Z 4M3, Canada

ABSTRACT

This study explores the dynamic process of technology acceptability, acceptance, and appropriation among professionals working with autistic adults with/without intellectual disability in residential settings. Using a mixed longitudinal participatory design, quantitative data from the QTEU questionnaire and qualitative data revealed evolving perceptions over three stages. Results show an initial decline in perceived usefulness and attitudes after technology introduction, followed by significant improvement as usage stabilized. Ethical concerns decreased over time, while ease of use improved significantly. Triangulated findings highlight the importance of time, adaptability, and organizational support in fostering sustainable and meaningful technological integration in psychosocial interventions.

Keywords: Acceptability, Autism, Intellectual disability, Technology adoption, Psychosocial intervention

INTRODUCTION

Neurodevelopmental disorders encompass a range of conditions that appear early in a child's development, leading to lasting and significant impairments across various domains (e.g., cognitive, language, motor, behavioral, or social). Among these disorders are autism and intellectual disability (ID; American Psychiatric Association, 2022).

In the field of autism and ID, technologies have become commonly used intervention tools by professionals (Frielink et al., 2021; Jamwal et al., 2022; Siebelink et al., 2024). Scientific studies now highlight their potential to promote inclusive practices. For example, studies show that technologies support the development of new skills, foster independence, autonomy, and self-determination, and reduce the need for external assistance (Athorp et al., 2022; Cullen et al., 2017; Desideri et al., 2021; Morse et al., 2021; Park et al., 2019; Pérez-Fuster et al., 2019; Stierle et al., 2023). Moreover, they encourage engagement, lower anxiety levels, and enhance environmental safety (Golisz et al., 2018; Goo et al., 2019; Lancioni et al., 2015; Simões et al., 2018). These findings highlight the role of technologies in creating supportive and inclusive environments for individuals with autism and intellectual disabilities.

Despite the potential of technologies, simply making them available is not sufficient (Dupont, 2012; Lussier-Desrochers, 2017). Certain conditions need to be considered as they play an important role in the acceptability process.

The concept of technological acceptability has primarily been explored through models in the field of management. These models provide insights into various factors associated with the intention to use technologies or engage in usage behavior. Among these factors are perceived usefulness, performance expectancy, social influence, and facilitating conditions (Davis, 1989; Igbaria et al., 1994; Romero et al., 2016; Thompson et al., 1991; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). In certain models, such as the unified theory of acceptance and use of technology (UTAUT; Venkatesh et al., 2003), moderating factors are also included, such as gender, age, and user experience. Although existing models provide valuable insights, they require adaptation to fit the reality of interventions in the psychosocial field.

Recently, Dupont (2020) examined acceptability from a psychosocial perspective. This approach, complementing the one available in the field of management, adopts an interactionist view. This conceptualization of acceptability, grounded in a psychosocial perspective, better suits inclusive and participatory practices. The model proposed by Dupont (2020) states that the level of acceptability, presented on a continuum ranging from rejection to acceptance, is influenced by environmental factors (technical and clinical support, time for appropriation, technology availability, social influence, etc.) and factors related to the end-user (gender, perceived usefulness, social influences, experiences, knowledge, attitudes, etc.). Dupont also includes ethical considerations in the acceptability equation. This variable is even more important when technologies are deployed with vulnerable populations (Caouette, 2017). Finally, Dupont (2020) asserts that acceptability is not a fixed state but rather a dynamic process of adaptation, wherein individuals progressively adjust to the presence and use of new technologies.

Research in the field shows that the acceptability process can be conceptualized as a trajectory divided into three key stages. Time 0, known as “a priori acceptability,” refers to the representations an individual forms about a technology and its attributes even before using it (Bobillier-Chaumon & Dubois, 2009; Dupré et al., 2015; Février, 2011; Martin, 2018). Time 1, referred to as “acceptance,” occurs after the initial uses of the technology (Bobillier-Chaumon, 2016; Bobillier-Chaumon & Dubois, 2009; Dupré et al., 2015; Février, 2011; Schuitema et al., 2010). Finally, Time 2, “appropriation,” represents the individual’s perceptions once the technology has become an integral part of daily life (Barcenilla & Bastien, 2009; Dupré et al., 2015; Quiguer, 2013).

RESEARCH METHOD

The objective is to document the acceptability process within the framework of a pilot project conducted in a residential setting accommodating autistic adults with/without ID.

This study is an exploratory participatory action research (Desgagné & Bednarz, 2005). The longitudinal explanatory sequential mixed design (Fortin & Gagnon, 2022) combines both quantitative and qualitative data collection methods at three measurement points: Time 0 (prior to

the implementation of technologies), Time 1 (approximately 9 weeks after implementation), and Time 2 (approximately 24 weeks after implementation).

The research setting is a residence accommodating autistic adult residents with/without ID. The managers of this recently constructed home aimed to integrate technological solutions to support residents in performing their daily living activities. Through collaboration between the home's intervention team and the research team from UQTR, the residents' needs were identified, and technological solutions were proposed and implemented.

A total of 16 employees working in a residential setting that accommodates individuals with autism with/without ID participated in the entire research project. The participants were aged between 18 and 44 years ($M = 26.4$ years; $SD = 7.4$ years), predominantly female (87.5%), and primarily held full-time positions (75%). Among them, 87.5% held intervention roles, while 12.5% occupied managerial positions within the residential setting. Prior to the research project, 93.7% had already used at least one type of technology in intervention, most commonly a digital tablet.

For quantitative data collection, the tool used was the *Questionnaire Trajectoire Expérience-Utilisateur* (QTEU; Lussier-Desrochers et al., 2021), developed by the research team based on a review of models on technological acceptability. It aims to measure various factors that may influence acceptability. Its development is based on a review of several models related to the acceptability and acceptance of technologies. The QTEU includes a series of items rated on a 5-point Likert scale. At Time 0, seven factors were measured: perceived usefulness, attitudes, knowledge and skills, ease of use, ethical concerns, social influence, and organizational conditions. At Time 1 and 2, two factors were added: adequacy to needs and user experience. This tool was completed by the employees at three specific moments: before the use of technologies with residents (Time 0), a few weeks after the beginning of the experiences of using technologies with residents (Time 1), and at the end of the project, that is, after sustained use of technologies with residents (Time 2).

In parallel, qualitative data were also collected through interviews with intervention staff, observations during deployment, and notes from meetings held with intervention staff and managers during the process.

For quantitative data, descriptive analyses were first conducted on the various QTEU scales across the three measurement time points (mean, standard deviation). Subsequently, the nine scales measured at Time 1 and Time 2 were compared using the non-parametric Wilcoxon test to determine whether significant differences ($p < .05$) existed in the mean ranks. Qualitative data were subjected to thematic qualitative analysis.

RESULTS

Factors Related to End-Users and Stakeholders

Regarding factors related to end-users and stakeholders, five factors were quantitatively assessed at three moments. Among these, three exhibited significant changes over time. Firstly, for Perceived Usefulness, initially high

scores at Time 0 ($M = 4.00$; $SD = .66$) tended to decrease after initial usage experiences. This initial decline is likely attributable to the necessary adjustments and adaptation efforts required by new practices. However, this perception significantly improved ($p = .012$) between Time 1 ($M = 3.44$; $SD = .53$) and Time 2 ($M = 3.85$; $SD = .44$), suggesting that once the appropriation and usage stabilized, participants increasingly recognized the value and relevance of the technologies in their interventions. User Experience also showed a significant improvement ($p = .020$) from Time 1 ($M = 3.27$; $SD = .53$) to Time 2 ($M = 3.60$; $SD = .67$), indicating that over time, the technological experience of the stakeholders has proven to be more positive. A third dimension with notable variation concerns Ethical Concerns. Results indicated that prior to technology use (Time 0), participants anticipated several ethical challenges related to technology use in residential settings, such as risks of isolation and stigmatization ($M = 2.79$; $SD = .85$). However, scores on this dimension significantly improved between Time 1 ($M = 3.84$; $SD = .50$) and Time 2 ($M = 4.19$; $SD = .55$), with a statistically significant difference ($p = .011$). This suggests that repeated technology use with autistic residents, with/without ID, gradually alleviated initial concerns, providing reassurance regarding perceived risks at the project's outset.

Conversely, two factors related to end-users and stakeholders did not show significant changes. Firstly, regarding Perceived Competence, results suggest that participants did not initially perceive themselves as fully competent in integrating technologies into their practices with autistic residents with/without ID ($M = 3.33$; $SD = .73$). Although a slight improvement was observed after training and technology implementation (Time 1: $M = 3.41$; $SD = .99$; Time 2: $M = 3.56$; $SD = .67$), the non-significant difference indicates that, despite provided support, there remains a need for further development of knowledge and skills to foster effective technological intervention appropriation. Concerning Attitudes, at Time 0, participants displayed optimism, interest, and enthusiasm about integrating technologies into their professional practices ($M = 4.16$; $SD = .54$). Like Perceived Usefulness, a decline in Attitudes was observed after technology introduction ($M = 3.60$; $SD = .65$). Although Attitudes slightly improved between Time 1 and Time 2 ($M = 3.74$; $SD = .70$), this difference was not statistically significant ($p = .230$).

Factors Related to the Characteristics of Technologies

The perceived Ease of Use by participants significantly improved over time (Time 1: $M = 3.78$; $SD = 0.50$; Time 2: $M = 4.11$; $SD = 0.50$; $p = .002$). This result highlights the importance of the temporal factor in the adaptation process, allowing users to gradually develop benchmarks and strategies that make usage more fluid and intuitive. Regarding Adequacy to Needs (measured only at Time 1 and Time 2), participants already considered that the technologies adequately met the residents' needs (Time 1: $M = 3.82$; $SD = .50$), and this perception remained stable at the end of the project (Time 2: $M = 3.92$; $SD = 0.52$; $p = .691$). These results suggest that users quickly

perceived the relevance of the implemented technologies, and this assessment was maintained regardless of the duration or intensity of use.

Factors Related to the Characteristics of the Environment

Organizational Conditions initially exhibited a high score (Time 0: $M = 3.96$; $SD = .22$), reflecting a positive perception of institutional support prior to the implementation of technologies. A slight decrease was observed following the introduction of the tools (Time 1: $M = 3.75$; $SD = .57$), followed by an increase during the appropriation phase (Time 2: $M = 3.95$; $SD = .60$). However, the difference between Time 1 and Time 2 is not statistically significant ($p = .131$), suggesting that perceptions of organizational conditions have generally remained stable over time once the technologies were integrated for autistic residents with/without ID. At Time 0, Social Influence demonstrated a relatively high score ($M = 4.01$; $SD = .53$), indicating that participants felt supported and encouraged by their managers and colleagues. Following the introduction of technologies ($M = 3.98$; $SD = .45$) and at the conclusion of the project ($M = 4.15$; $SD = .55$), Social Influence scores remained consistently high. No significant difference was observed between Time 1 and Time 2 ($p = .137$), suggesting sustained support and encouragement from colleagues over time.

DISCUSSION

The quantitative data from the QTEU provide insights into the evolution of perceptions over time and facilitates the support of two residential projects in the deployment of technological solutions. However, this analyses gains depth when juxtaposed with qualitative data from interviews with employees and managers, field observations, and research notes. This triangulation of sources reveals that factors related to users, technological characteristics, and the implementation context indeed evolve over time, but they acquire full meaning when understood through the lens of lived experiences in various settings.

Firstly, in the context of using technologies with individuals presenting neurodevelopmental disorders, stakeholders expressed the need for adaptable, adjustable, and customizable tools capable of addressing the diversity of cognitive and adaptive profiles. These elements are recognized as important (Ayotte, 2022) and influence the degree of user adoption (Balasuriya et al., 2022; Davis, 1989; Flight et al., 2011; Salahshour Rad et al., 2018). This criterion is particularly critical given that few technologies are specifically designed for individuals with autism or ID. For many stakeholders with basic technological skills, simplicity and intuitiveness of the tools were essential conditions, considering the limited time available for training, experimentation, and appropriation. Technological integration added to already demanding clinical tasks, reinforcing the importance of ease of use and implementation support.

From an ethical standpoint, stakeholders raised concerns about the risk of isolation or reduced social interactions resulting from technology

use. According to several qualitative studies, these concerns are common and shared among employees working with more vulnerable populations (Sindhwani et al., 2025; Wolbring & Yumakulov, 2014). In the specific context of the project, where deployment was individualized, concerns related to justice and equitable access also emerged, with some actors fearing that differentiated use of tools could create new forms of inequality.

At the organizational level, several observations highlight the importance of time and resources as conditions for success. Those observations are consistent with the conclusions of Löppönen (2021) and Vaucher et al. (2020). The time required for training, coordination, and troubleshooting technical issues was largely underestimated. Managers had to plan additional sessions, provide collaborative work time, and absorb unforeseen costs (subscriptions, accessories, troubleshooting, etc.). Technical adjustments (configuration, account creation, password recovery) also demanded additional time and skills, often beyond the initially planned scope.

Finally, the collected data underscore the dynamic and temporal dimension of the implementation process. Stakeholders' perceptions are not static; they evolve as technologies integrate into practices and trust is established. These results emphasize that technology acceptability, acceptance, and appropriation represent successive phases of the same adaptive process, requiring continuous monitoring, recurring adjustments, and contextualized support to ensure sustainable and meaningful integration (Saghafian et al., 2021).

This study has several limitations that warrant consideration. First, the absence of standardized instruments to evaluate the interplay of individual, technological, and contextual factors necessitated the development of the QTEU. While this tool proved useful, this pilot experience required adjustments to the tool between Time 0 and Time 1, thereby limiting direct comparisons with subsequent phases and restricting the ability to assess the significance of observed changes over time.

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