

Evaluation of the Potential of a Mobile Application as a Clinical Support Tool for ADHD from the Perspective of Healthcare Specialists

Alexandre F. Arigoni¹, Caroline R. S. Jandre¹, Débora M. de Miranda²,
Cristiane N. Nobre¹

¹Pontifical Catholic University of Minas Gerais (PUC Minas)
Av. Dom José Gaspar, 500 – 30535-901 – Belo Horizonte – MG – Brasil

²Federal University of Minas Gerais (UFMG)
Rua Presidente Antônio Carlos, 6627 – 31270-901 – Belo Horizonte – MG – Brasil

arigonialexandre@gmail.com, caroline.jandre@sga.pucminas.br

debora.m.miranda@gmail.com, nobre@pucminas.br

Abstract. Introduction: Attention Deficit Hyperactivity Disorder (ADHD) involves challenges related to routine organization, treatment adherence, and continuous monitoring of children and adolescents. In this context, mobile technologies have been explored as supportive tools for healthcare professionals and caregivers. **Objective:** This study evaluates the potential of a mobile application as a clinical support tool for ADHD from the perspective of healthcare specialists. **Methodology:** A qualitative study was conducted with specialists related with the Faculty of Medicine of the Federal University of Minas Gerais (UFMG). Data were collected through a structured questionnaire with Likert-scale questions and open-ended responses, complemented by audio-recorded qualitative feedback. **Results:** The results indicate a broadly positive perception of the application as a clinical support tool, with high ratings across most items. Contributions highlight improved understanding of patient behavior, support for caregivers, and potential as a complementary clinical resource. Concerns include reward design and individual variability, along with suggestions for personalization, multimodal feedback, and usability improvements.

Keywords ADHD, Mobile health applications, Clinical support, Digital health, Expert evaluation.

1. Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by persistent patterns of inattention and/or hyperactivity-impulsivity, which may significantly impact individuals' social, academic, and daily functioning [Kessi et al., 2022; Silva et al., 2023; Weed, 2016]. It is one of the most prevalent childhood mental health conditions, with symptoms that often emerge before the age of seven and occur across family and school environments [Minder et al., 2018; Silva et al., 2023; Thennakoon et al., 2020; Weed, 2016]. Estimates indicate that between 3.4% and 14% of the global population has been diagnosed with ADHD, varying according to diagnostic

criteria and geographic regions [Ayano et al., 2023; Kessi et al., 2022; Mahendiran et al., 2019]. In Brazil, data indicate that approximately 7.6% of children and adolescents between 6 and 17 years of age exhibit symptoms of the disorder, highlighting its relevance in the public health context [Ministério da Saúde, 2022].

In daily life, children with ADHD face significant challenges related to routine organization, self-regulation, and the execution of everyday activities, such as personal hygiene, eating, and completing school assignments [Coghill et al., 2008; Irwin et al., 2021; Shuai et al., 2017]. These difficulties affect both children and family dynamics, often resulting in increased parental stress and dysfunctional parent-child interactions [Lee e Lim, 2015]. The literature indicates that routine organization and the implementation of structured strategies are essential factors in promoting the well-being and development of these children, improving emotional regulation and behavior [Coghill et al., 2008; Frisch et al., 2023; Marten et al., 2023; Slattery et al., 2016].

Interventions involving both children and caregivers have been shown to be more effective, particularly when they consider the bidirectional nature of family relationships [Silva et al., 2023]. Parental support, combined with consistent strategies for organizing and monitoring activities, promotes autonomy, motivation, and healthy development [Silva et al., 2023]. However, maintaining these strategies over time remains a challenge, especially due to difficulties in sustaining continuous family engagement [Alhasani et al., 2022; AlSlaity et al., 2022; Park et al., 2020].

Given this scenario, technological solutions have been explored to support routine management and activity monitoring in ADHD. Digital applications can assist in task structuring, the use of positive reinforcement, and mediating interactions between parents and children. However, previous studies indicate that many of these solutions still present limitations, such as low long-term adherence, limited personalization, and a lack of effective integration with the actual needs of users and healthcare professionals [Alhasani et al., 2022; Sonne et al., 2016a; Stefanidi et al., 2023].

Although several studies have investigated gamified applications for supporting children with ADHD, most evaluations have focused on usability, user engagement, or outcomes reported by children and their caregivers. Comparatively less attention has been given to the perspective of healthcare specialists regarding the clinical usefulness of the information generated by these applications. This study addresses this gap by evaluating a task-management application from the viewpoint of professionals involved in ADHD care, seeking to identify its potential as a complementary clinical support tool as well as opportunities for improving its design.

This study investigates the impact of an application for activity management in children with ADHD, focusing on health and routine organization. Unlike approaches focused exclusively on end users, this research seeks to understand the perceptions of healthcare specialists involved with ADHD, including professionals and students from different fields, such as psychology, pediatrics, physiotherapy, and medicine, regarding the potential of the tool as support in both clinical and everyday contexts.

Healthcare specialists affiliated with the Faculty of Medicine of the Federal University of Minas Gerais (UFMG) participated in an evaluation session in which the application was presented and demonstrated. Participants were then allowed to interact

with the application before completing the evaluation questionnaire and participating in an audio-recorded semi-structured interview. This procedure enabled participants to evaluate the application and provide quantitative ratings and qualitative feedback on its benefits, limitations, and possible improvements.

In the field of Human-Computer Interaction (HCI), research involving interactive systems in healthcare has sought to understand how digital technologies can support users in daily tasks and in managing clinical conditions through user-centered approaches. In this context, this study contributes by examining healthcare specialists' perceptions of a gamified task-management application designed for children and adolescents with ADHD, emphasizing its potential role as a complementary clinical support tool and identifying requirements for future improvements.

2. Related Work

Digital technologies have been widely explored to support health interventions, particularly for neurodevelopmental disorders such as ADHD. Mobile applications and interactive systems assist with routine organization, behavioral skill development, and the mediation of relationships between children and caregivers, contributing to improved well-being and quality of life [Batista et al., 2022; Cordeiro et al., 2018; Sonne et al., 2016a].

Several studies have investigated technologies for children with ADHD and their families. Sonne et al. [2016a] review solutions such as MOBERO [Sonne et al., 2016b], TangiPlan [Weisberg et al., 2014], and ChillFish [Sonne e Jensen, 2016a,b], highlighting strategies including reminders, task structuring, and gamification to support routine organization and emotional regulation.

Studies by Stefanidi et al. [2023] and Sonne et al. [2016a] emphasize involving family members, healthcare professionals, and other stakeholders in developing these technologies to better address users' needs. However, many studies still focus primarily on end users, with limited evaluation from healthcare specialists.

Applications such as MOBERO [Sonne et al., 2016b] and CoolTaco [Silva et al., 2023] integrate family participation by supporting daily routines, co-regulation, reward mechanisms, and activity monitoring. Despite these advances, challenges remain regarding long-term adherence, personalization, and integration with clinical practice.

Persuasive technology strategies, including reminders, rewards, self-monitoring, and personalization, are frequently employed to promote behavioral change and engagement [AlSlaity et al., 2022; Johnson et al., 2016; Taj et al., 2019]. However, these strategies are not always grounded in established theoretical models, which may reduce intervention effectiveness [Taj et al., 2019].

Another limitation is the limited use of contextual data, such as behavior patterns, routines, and well-being, which restricts more personalized analyses and interventions [Sonne et al., 2016a].

Considering these limitations, a gap remains in evaluating technological tools from the perspective of healthcare specialists regarding their potential to support ADHD management and routine organization. While most studies emphasize development and validation with end users, this study investigates healthcare specialists' perceptions of an

application for activity management in children with ADHD, contributing evidence to support solutions better aligned with both clinical practice and user needs.

3. Methodology

This study adopts a qualitative approach supported by quantitative data, aiming to identify healthcare specialists' perceptions regarding the use of a mobile application in the context of ADHD. The evaluated application is a task management system designed for children and adolescents with ADHD and their caregivers. Through the caregiver interface, parents can create, edit, and schedule daily tasks, assign deadlines, define task difficulty, and associate each activity with a specific number of reward points. Children access a personalized daily agenda where they can view assigned activities, record tasks as completed, partially completed, or not completed, and monitor their progress over time.

To promote engagement, the application incorporates gamification mechanisms based on positive reinforcement. Children earn points for completing tasks, which can later be exchanged for rewards previously defined by their caregivers. In addition, the application provides visual feedback on task completion and progress, allowing both children and parents to monitor routine adherence and performance history. The system also includes an automatic task organization feature that allows children to choose between two prioritization strategies for their daily agenda: maximizing the total reward points that can be earned or maximizing the number of tasks that can be completed. This flexibility enables children to select the motivational strategy that best matches their preferences and daily goals. Examples of the application's main interfaces are presented in Figure 1.

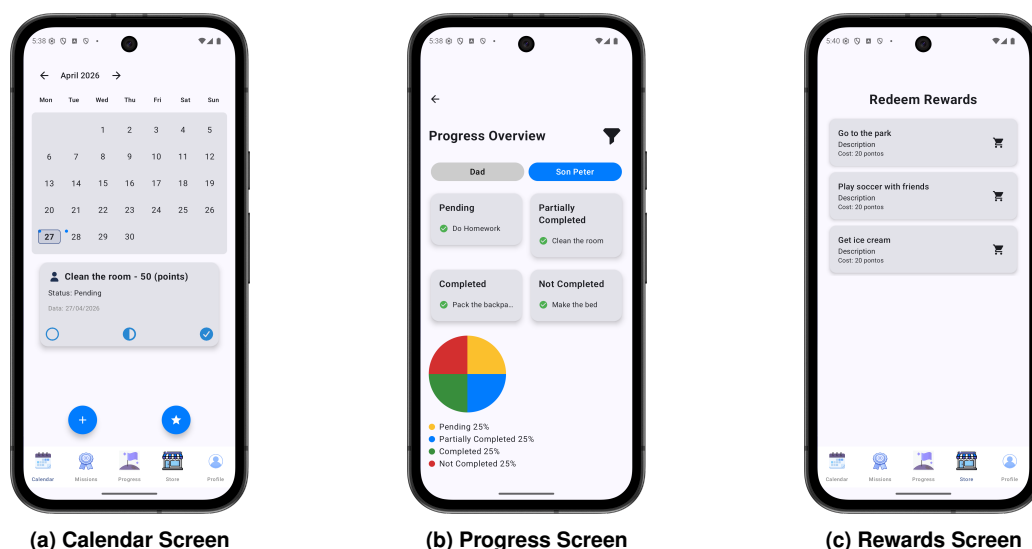


Figure 1. Examples of some of the screens of the application used in the study: (a) Calendar Screen, (b) Progress Screen, and (c) Rewards Screen

Qualitative methods are particularly well suited for investigating perceptions, opinions, and experiences, allowing for an in-depth analysis of the meanings attributed by participants [Nicolaci-da Costa et al., 2004]. In addition, the use of agreement scales makes it possible to complement the analysis with descriptive quantitative indicators.

The methodological objective of this study is to investigate how healthcare professionals perceive the potential of an application as a health support tool, especially regarding routine organization, treatment adherence, and support for clinical decision-making in the context of ADHD.

3.1. Participants and Research Context

Data collection was conducted with seven healthcare specialists affiliated with the Faculty of Medicine of the Federal University of Minas Gerais (UFMG). The sample included healthcare professionals and students in training from different health-related fields, with varying levels of experience in caring for individuals with ADHD.

Participants were recruited through a partnership with the School of Medical Sciences at the Federal University of Minas Gerais (UFMG), specifically with professionals involved in providing care to parents of children with ADHD. Recruitment was based on convenience, and all participants volunteered to take part in the study.

To characterize the participants' profiles, information was collected on: 1) Area of practice, including options such as Pediatrics, Psychiatry, Neurology, Psychology, Psychopedagogy, and others; and 2) Experience with ADHD, categorized as does not treat patients with ADHD, less than 3 years, 3 to 5 years, 6 to 10 years, and more than 10 years.

The sample included participants from different professional backgrounds, such as pediatrics, psychology, physiotherapy, medicine, and related areas, with experience ranging from less than three years to ten years working with individuals with ADHD. This diversity made it possible to obtain complementary perspectives regarding the potential clinical use of the application.

3.2. Instruments and Data Collection

Data were collected through a structured questionnaire, complemented by audio-recorded interviews. The instrument consisted of closed-ended questions using a Likert-type agreement scale (0 to 5), as well as open-ended questions, with the aim of collecting participants' qualitative perceptions.

Before answering the questionnaire, each participant attended an individual evaluation session. During this session, the researchers presented the application's objectives and demonstrated its main functionalities, including task creation, daily scheduling, progress monitoring, reward management, and the automatic task organization feature based on optimization strategies. Participants were then allowed to freely interact with the application and then the researchers answered questions regarding its operation.

For this study, only questions related to the healthcare context and the use of the application as a clinical support tool were considered. Table 1 presents the questions used in the study, organized according to their type.

The entire evaluation session was audio-recorded with the participants' consent, including the application demonstration, participants' interactions with the system, questionnaire completion, and the discussion that took place throughout the evaluation. Participants were encouraged to verbalize their impressions, perceived benefits, concerns,

Table 1. Questions Used in the Data Collection Instrument

ID	Category	Question
Q1	Profile	Specialty (Pediatrics, Psychiatry, Neurology, Psychology, Psychopedagogy, or Other)
Q2	Profile	Experience with ADHD (Does not treat patients, Less than 3 years, 3 to 5 years, 6 to 10 years, More than 10 years)
Q3	Likert (0–5)	The information generated by the application can contribute to helping professionals better understand the behavior and routine of children and adolescents with ADHD
Q4	Likert (0–5)	The application can assist in parent training
Q5	Likert (0–5)	The application can contribute to adherence to the care of children with ADHD
Q6	Likert (0–5)	The information generated by the application can be useful for clinical decision-making
Q7	Likert (0–5)	The application has the potential to be used as a complementary tool to clinical follow-up
Q8	Open-ended	Are there any risks, limitations, or concerns regarding the use of the application in the clinical context? If so, which ones?
Q9	Open-ended	In your opinion, what features or functionalities could be added to the application to improve its usefulness in the clinical context of ADHD?

and suggestions while exploring the application. These recordings were later used to complement the questionnaire responses and support the qualitative analysis.

3.3. Procedures and Ethical Considerations

The participation of the specialists was voluntary and contingent upon signing the Informed Consent Form (ICF). Participants were informed about the objectives of the study, the data collection procedures, and the exclusive use of the data for academic purposes.

Each evaluation session lasted approximately 10 to 40 minutes, depending on the participant's level of interaction and the depth of the discussion during the interview.

Participants' anonymity was guaranteed, as was the confidentiality of the collected information. The audio recordings were used solely for qualitative analysis and did not contain participant identification. The data were stored securely and used exclusively within the context of this research.

3.4. Data Analysis

The quantitative data obtained through the agreement scales were analyzed descriptively, allowing the identification of general trends in participants' perceptions of the application.

The qualitative data, derived from the open-ended questions and audio-recorded interviews, were analyzed using an interpretative approach, seeking to identify patterns, recurring themes, and relevant perceptions regarding the use of the application in the clinical context of ADHD.

The combined analysis of quantitative and qualitative data provided a more comprehensive understanding of the investigated phenomenon, making it possible to relate the observed levels of agreement to the justifications and reflections presented by the participants.

4. Results

4.1. Participant Profile

A total of seven specialists or individuals in training in the healthcare field participated in the study, all of whom had experience related to ADHD. Data collection was conducted in person at the Faculty of Medicine of the Federal University of Minas Gerais (UFMG), in an environment dedicated to the care and follow-up of children and adolescents with the disorder. Contact with participants was previously arranged with the support of a professional affiliated with the institution, who assisted in identifying and approaching individuals working in the clinical context. After the study objectives were presented, participants who agreed to collaborate completed the structured questionnaire and provided qualitative contributions through audio-recorded interviews.

Regarding specialty, a diversity of backgrounds was observed, including professionals and students from pediatrics, psychology, and other related fields, such as physiotherapy and medicine. This aspect contributes to a multidisciplinary perspective on the use of the application in the context of ADHD.

As for experience working with patients with ADHD, most participants had up to 3 years of experience ($n = 4$), followed by participants with 3 to 5 years ($n = 2$) and 6 to 10 years ($n = 1$). This profile indicates a sample predominantly composed of professionals with more recent experience in the field, which may influence how they perceive the use of technologies in the clinical context.

4.2. Evaluation of the Application in the Clinical Context

Overall, the results indicate a positive perception regarding the potential of the application as a support tool in the context of ADHD, as illustrated in Figure 2.

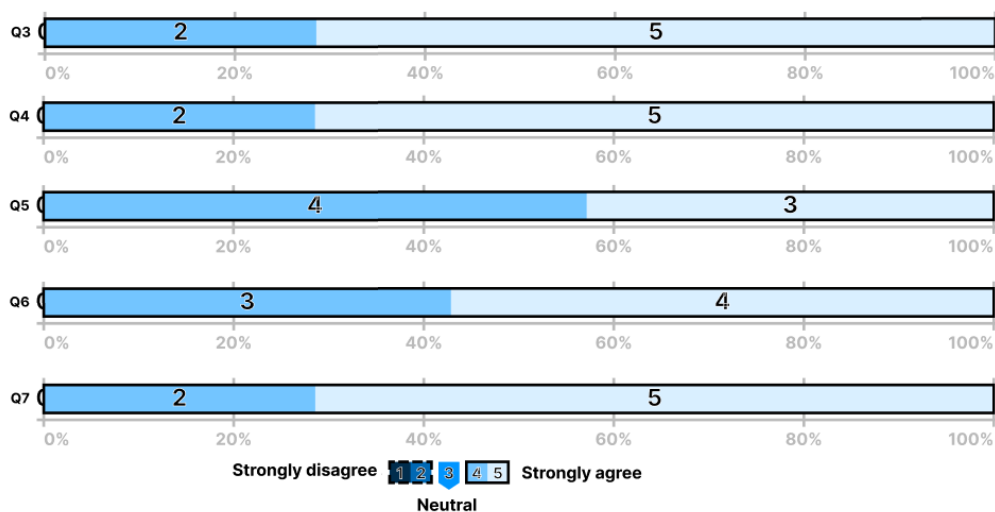


Figure 2. Distribution of specialists' responses to the Likert-scale questions (Q3–Q7) related to the evaluation of the application in the clinical context.

Regarding the contribution of the information generated by the application to understanding children's behavior and routines (Q3), all participants assigned high

ratings, with 5 responses at the maximum value (5) and 2 responses at 4. This result suggests that specialists recognize the tool's potential to provide relevant data for patient follow-up.

With respect to support for parent training (Q4), understood as the set of strategies and guidance aimed at enabling parents and caregivers to manage the behavior and routines of children with ADHD, the results were also positive, with 5 participants assigning the maximum score (5) and 2 assigning a score of 4. This finding reinforces the importance of tools that support not only the child, but also their caregivers, aligning with the literature on family-based interventions for ADHD.

Regarding engagement in care (Q5), a broadly positive evaluation was observed, with a predominance of score 4 ($n = 4$), followed by score 5 ($n = 3$). This result indicates that the application is perceived as a relevant resource for promoting continuous involvement in the care routine of children with ADHD.

The usefulness of the information for clinical decision-making (Q6) was also evaluated very positively, with 3 responses rated 4 and 4 responses rated 5. This result reinforces the potential of the application as a relevant support tool in the clinical context, providing information that can assist professionals in analyzing patients' behavior and routines, complementing traditional clinical assessment.

Finally, regarding its potential use as a complementary tool to clinical treatment (Q7), very high ratings were observed, with 2 responses rated 4 and 5 responses rated 5, indicating a strong consensus among participants about the role of the application as a support to clinical practice, rather than a replacement for it.

4.3. Perceived Risks and Limitations

Among the open-ended questions, only one participant identified possible risks and limitations in the use of the application. The main concern raised referred to the inappropriate use of rewards, especially when associated with potentially harmful elements, such as food, which could lead to negative associations in the long term.

In addition, it was highlighted that the application may not adequately consider natural variations in the child's behavior, such as mood fluctuations and varying energy levels on different days. This point reinforces the need for greater flexibility and personalization in the tool's features.

4.4. Qualitative Contributions and Suggestions for Improvement

The audio interviews provided relevant contributions to improving the application, highlighting aspects for its use in the clinical context.

Participants emphasized the importance of personalizing the experience by adapting features to individual characteristics, such as age group, behavioral profile, and family context. They also stressed the need to consider variations in the child's emotional state and energy levels over time.

Another recurring suggestion was automation to support routine creation, including automatically generated tasks, predefined templates by age group, and task repetition and organization similar to digital calendars.

The use of visual and auditory elements was recommended to increase engagement, especially among younger children. Suggestions included visual feedback upon task completion, visual rewards (e.g., medals or levels), and auditory alerts for the beginning and completion of activities.

Participants also suggested usability improvements, including simplified navigation, informational buttons, and better organization of completed tasks to reduce distractions.

For the clinical context, participants highlighted features for data analysis and monitoring, such as performance graphs, behavioral pattern identification, and integration with other tools (e.g., digital calendars), expanding the application's potential to support professional practice.

Finally, strategies were proposed to avoid negative effects associated with rewards through more appropriate and contextualized recommendations, reinforcing alignment with good clinical practices. These contributions are summarized in Table 2, which relates the current application features to the specialists' improvement suggestions.

Table 2. Summary of the application's features and the specialists' suggestions for improvement

Application Features	Specialists' Suggestions
Creation and organization of daily tasks	Automatic task creation, predefined tasks by age group, routine replication, and chained tasks for habit formation
Progress tracking (completed, partially completed, and uncompleted tasks)	Identification of performance patterns, more detailed graphs, and performance analysis over time
Points-based reward system	Avoid inappropriate rewards (e.g., food), use more visual and motivating rewards, and provide greater clarity in the scoring system
Engagement and feedback system	Use of sounds, visual effects, emojis, and immediate feedback upon task completion to increase motivation
Organization of the child's routine	Integration with calendar tools (e.g., Google Calendar) and alerts for activity overload
Parent-child interaction in task management	Improved support for parental monitoring, simplified progress visualization, and greater support for family decision-making
Application interface	Interface simplification, improved navigation, informational buttons, and better visual organization of tasks

5. Discussion

The results indicate a broadly positive perception of the application's potential as a clinical support tool for ADHD, with most ratings concentrated at the highest levels of the Likert scale (4 and 5).

Participants recognized the value of the generated information for understanding children's behavior and daily routines, as well as for supporting parent training and clinical monitoring, reinforcing the importance of family involvement.

Ratings related to engagement in care were slightly lower, suggesting that this aspect may depend on additional factors, such as family context and the child's

motivation. The application was also perceived as a complementary resource for clinical decision-making rather than a substitute for professional practice.

Responses to the open-ended question highlighted concerns about the inappropriate use of rewards, particularly when associated with unhealthy habits, and emphasized the need to account for children's emotional state and energy level, revealing limitations in adapting to individual characteristics.

Participants also suggested greater personalization, better integration with daily routines, and usability improvements. Features such as predefined tasks, behavioral pattern identification, calendar integration, visual and auditory elements, immediate feedback, structured reward systems, and improved interface organization were identified as opportunities to enhance engagement while maintaining clarity and ease of use.

6. Conclusion

This study investigated healthcare professionals' perceptions of an application as a support tool in the clinical context of ADHD. The results indicate that the application has strong potential to support behavior understanding, parent training, and clinical decision-making as a complementary tool to treatment.

Although the application was well received, its effectiveness depends on factors such as personalization, appropriate reward strategies, and consideration of individual variations among children and adolescents. Specialists' concerns reinforce the need for careful development that considers users' emotional and behavioral aspects while avoiding negative long-term impacts.

The qualitative contributions provide directions for the system's evolution, highlighting the need for adaptive features, greater integration with daily routines, and engagement strategies based on gamification and immediate feedback.

Limitations include the small sample size and its concentration within a single institutional context, which may limit the generalizability of the results. In addition, not all participants completed the questionnaire, although all provided qualitative contributions.

Future work includes expanding the sample to specialists from different contexts, validating the application with patients and caregivers in real-world settings, and incorporating the proposed features with greater emphasis on personalization and dynamic adaptation. These advances may contribute to a more robust, effective, and clinically aligned tool for supporting families and professionals in ADHD care.

Acknowledgments

The authors would like to thank the National Council for Scientific and Technological Development of Brazil (CNPq: 302516/2026-3), the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES - Grant PROAP 88887.842889/2023-00 - PUC/MG, Grant PDPG 88887.708960/2022-00 - PUC/MG - Informatics, and Finance Code 001), the Foundation for Research Support of Minas Gerais State (FAPEMIG: APQ-03104-24 and APQ-05058-23).

References

- M. Alhasani, D. Mulchandani, O. Oyeboode, N. Baghaei, e R. Orji. A systematic and comparative review of behavior change strategies in stress management apps: Opportunities for improvement. *Frontiers in Public Health*, 10:777567, February 2022.
- A. AlSlaity, B. Suruliraj, O. Oyeboode, J. Fowles, d. steeves, e R. Orji. Mobile applications for health and wellness: A systematic review. *Proc. ACM Hum.-Comput. Interact.*, 6 (EICS), June 2022. doi: 10.1145/3534525. URL <https://doi.org/10.1145/3534525>.
- G. Ayano, S. Demelash, Y. Gizachew, L. Tsegay, e R. Alati. The global prevalence of attention deficit hyperactivity disorder in children and adolescents: An umbrella review of meta-analyses. *Journal of Affective Disorders*, 339:860–866, July 2023.
- B. G. Batista, A. F. D. Rodrigues, D. M. Miranda, L. Ishitani, e C. N. Nobre. Developing an edutainment game, taboo!, for children with adhd based on socially aware design and vcia model. In *Proceedings of the 21st Brazilian Symposium on Human Factors in Computing Systems*, IHC '22, New York, NY, USA, 2022. Association for Computing Machinery. ISBN 9781450395069. doi: 10.1145/3554364.3559121. URL <https://doi.org/10.1145/3554364.3559121>.
- D. Coghill, C. Soutullo, C. d'Aubuisson, U. Preuss, T. Lindback, M. Silverberg, e J. Buitelaar. Impact of attention-deficit/hyperactivity disorder on the patient and family: results from a european survey. *Child and Adolescent Psychiatry and Mental Health*, 2 (1):31, October 2008.
- R. F. Cordeiro, W. S. Ferreira, Y. P. C. Aguiar, J. A. G. Saraiva, C. Tardif, e E. Galy. The brazilian challenge to accessibility and digital inclusion for people with autistic spectrum disorders. In *Proceedings of the 17th Brazilian Symposium on Human Factors in Computing Systems*, IHC '18, New York, NY, USA, 2018. Association for Computing Machinery. ISBN 9781450366014. doi: 10.1145/3274192.3274229. URL <https://doi.org/10.1145/3274192.3274229>.
- C. Frisch, E. Tirosh, e S. Rosenblum. Children with adhd symptomatology: Does poet improve their daily routine management? *Children*, 10(6), 2023. ISSN 2227-9067. doi: 10.3390/children10061083. URL <https://www.mdpi.com/2227-9067/10/6/1083>.
- L. N. Irwin, E. F. Soto, E. S. M. Chan, C. E. Miller, S. Carrington-Forde, N. B. Groves, e M. J. Kofler. Activities of daily living and working memory in pediatric attention-deficit/hyperactivity disorder (adhd). *Child Neuropsychology*, 27(4):468–490, 2021. doi: 10.1080/09297049.2020.1866521. URL <https://doi.org/10.1080/09297049.2020.1866521>. PMID: 33459154.
- D. Johnson, S. Deterding, K.-A. Kuhn, A. Staneva, S. Stoyanov, e L. Hides. Gamification for health and wellbeing: A systematic review of the literature. *Internet Interventions*, 6:89–106, 2016. ISSN 2214-7829. doi: <https://doi.org/10.1016/j.invent.2016.10.002>. URL <https://www.sciencedirect.com/science/article/pii/S2214782916300380>.
- M. Kessi, H. Duan, J. Xiong, B. Chen, F. He, L. Yang, Y. Ma, O. A. Bamgbade, J. Peng, e F. Yin. Attention-deficit/hyperactive disorder updates. *Frontiers in Molecular Neuroscience*, Volume 15 - 2022, 2022. ISSN 1662-5099. doi: 10.3389/fnmol.2022.925049. URL <https://www.frontiersin.org/journals/molecular-neuroscience/articles/10.3389/fnmol.2022.925049>.

- Y. Lee e Y.-k. Lim. Understanding the roles and influences of mediators from multiple social channels for health behavior change. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, CSCW '15, page 1070–1079, New York, NY, USA, 2015. Association for Computing Machinery. ISBN 9781450329224. doi: 10.1145/2675133.2685032. URL <https://doi.org/10.1145/2675133.2685032>.
- T. Mahendiran, J. Brian, A. Dupuis, N. Muhe, P.-Y. Wong, A. Iaboni, e E. Anagnostou. Meta-analysis of sex differences in social and communication function in children with autism spectrum disorder and attention-deficit/hyperactivity disorder. *Frontiers in Psychiatry*, Volume 10 - 2019, 2019. ISSN 1664-0640. doi: 10.3389/fpsyt.2019.00804. URL <https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2019.00804>.
- F. Marten, L. Keuppens, D. Baeyens, B. E. Boyer, M. Danckaerts, S. Cortese, e S. Van der Oord. Sleep parameters and problems in adolescents with and without adhd: A systematic review and meta-analysis. *JCPP Advances*, 3(3):e12151, 2023. doi: <https://doi.org/10.1002/jcv2.12151>. URL <https://acamh.onlinelibrary.wiley.com/doi/abs/10.1002/jcv2.12151>.
- F. Minder, A. Zuberer, D. Brandeis, e R. Drechsler. A review of the clinical utility of systematic behavioral observations in attention deficit hyperactivity disorder (adhd). *Child Psychiatry & Human Development*, 49(4):572–606, 2018. ISSN 1573-3327. doi: 10.1007/s10578-017-0776-2. URL <https://doi.org/10.1007/s10578-017-0776-2>.
- Ministério da Saúde. Protocolo clínico e diretrizes terapêuticas para o transtorno do déficit de atenção com hiperatividade (tdah). <https://www.gov.br/saude/pt-br/assuntos/pcdt/t/transtorno-do-deficit-de-atencao-com-hiperatividade-tdah/view>, 2022. Acesso em: 27 abr. 2026.
- A. M. Nicolaci-da Costa, C. F. Leitão, e D. Romão-Dias. Como conhecer usuários através do método de explicitação do discurso subjacente (meds). In *Simpósio Brasileiro sobre Fatores Humanos em Sistemas Computacionais (IHC)*, pages 47–56, 2004.
- D. E. Park, Y.-J. Shin, E. Park, I. A. Choi, W. Y. Song, e J. Kim. Designing a voice-bot to promote better mental health: Ux design for digital therapeutics on adhd patients. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*, CHI EA '20, page 1–8, New York, NY, USA, 2020. Association for Computing Machinery. ISBN 9781450368193. doi: 10.1145/3334480.3382948. URL <https://doi.org/10.1145/3334480.3382948>.
- L. Shuai, D. Daley, Y.-F. Wang, J.-S. Zhang, Y.-T. Kong, X. Tan, e N. Ji. Executive function training for children with attention deficit hyperactivity disorder. *Chinese Medical Journal*, 130(5):549–558, March 2017. doi: 10.4103/0366-6999.200541.
- L. M. Silva, F. L. Cibrian, E. Monteiro, A. Bhattacharya, J. A. Beltran, C. Bonang, D. A. Epstein, S. E. B. Schuck, K. D. Lakes, e G. R. Hayes. Unpacking the lived experiences of smartwatch mediated self and co-regulation with adhd children. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, CHI '23, New York, NY, USA, 2023. Association for Computing Machinery. ISBN 9781450394215. doi: 10.1145/3544548.3581316. URL <https://doi.org/10.1145/3544548.3581316>.
- L. Slattery, K. Crosland, e R. Iovannone. An evaluation of a self-management

- intervention to increase on-task behavior with individuals diagnosed with attention-deficit/hyperactivity disorder. *Journal of Positive Behavior Interventions*, 18(3):168–179, 2016. doi: 10.1177/1098300715588282. URL <https://doi.org/10.1177/1098300715588282>.
- T. Sonne e M. M. Jensen. Chillfish: A respiration game for children with adhd. In *Proceedings of the TEI '16: Tenth International Conference on Tangible, Embedded, and Embodied Interaction*, TEI '16, page 271–278, New York, NY, USA, 2016a. Association for Computing Machinery. ISBN 9781450335829. doi: 10.1145/2839462.2839480. URL <https://doi.org/10.1145/2839462.2839480>.
- T. Sonne e M. M. Jensen. Evaluating the chillfish biofeedback game with children with adhd. In *Proceedings of the The 15th International Conference on Interaction Design and Children*, IDC '16, page 529–534, New York, NY, USA, 2016b. Association for Computing Machinery. ISBN 9781450343138. doi: 10.1145/2930674.2935981. URL <https://doi.org/10.1145/2930674.2935981>.
- T. Sonne, P. Marshall, C. Obel, P. H. Thomsen, e K. Grønæk. An assistive technology design framework for adhd. In *Proceedings of the 28th Australian Conference on Computer-Human Interaction*, OzCHI '16, page 60–70, New York, NY, USA, 2016a. Association for Computing Machinery. ISBN 9781450346184. doi: 10.1145/3010915.3010925. URL <https://doi.org/10.1145/3010915.3010925>.
- T. Sonne, J. Müller, P. Marshall, C. Obel, e K. Grønæk. Changing family practices with assistive technology: Mobero improves morning and bedtime routines for children with adhd. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, CHI '16, page 152–164, New York, NY, USA, 2016b. Association for Computing Machinery. ISBN 9781450333627. doi: 10.1145/2858036.2858157. URL <https://doi.org/10.1145/2858036.2858157>.
- E. Stefanidi, J. Schöning, Y. Rogers, e J. Niess. Children with adhd and their care ecosystem: Designing beyond symptoms. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, CHI '23, New York, NY, USA, 2023. Association for Computing Machinery. ISBN 9781450394215. doi: 10.1145/3544548.3581216. URL <https://doi.org/10.1145/3544548.3581216>.
- F. Taj, M. C. A. Klein, e A. van Halteren. Digital health behavior change technology: Bibliometric and scoping review of two decades of research. *JMIR Mhealth Uhealth*, 7(12):e13311, Dec 2019. ISSN 2291-5222. doi: 10.2196/13311. URL <https://mhealth.jmir.org/2019/12/e13311>.
- A. Thennakoon, D. Perera, S. Sugathapala, S. Weerasingha, P. Samarasinghe, D. Dahanayake, e V. Piyawardana. Individualized edutainment and parent supportive tool for adhd children. In *2020 2nd International Conference on Advancements in Computing (ICAC)*, volume 1, pages 1–6, 2020. doi: 10.1109/ICAC51239.2020.9357207.
- E. D. Weed. Adhd in school-aged youth: Management and special treatment considerations in the primary care setting. *International Journal of Psychiatry in Medicine*, 51(2):120–136, 2016. doi: 10.1177/0091217416636561.
- O. Weisberg, A. GalOz, R. Berkowitz, N. Weiss, O. Peretz, S. Azoulai, D. KoplemanRubin, e O. Zuckerman. Tangiplan: designing an assistive technology to enhance executive functioning among children with adhd. In *Proceedings of the 2014 Conference on Interaction Design and Children*, IDC '14, page 293–296, New York, NY, USA, 2014. Association for Computing Machinery. ISBN 9781450322720.

doi: 10.1145/2593968.2610475. URL <https://doi.org/10.1145/2593968.2610475>.