Games Inclusion Lab: Accessible Games with Neurodivergent Adults Through Iterative Play and Design

Filipe Luz[1], Cátia Casimiro[2], Pedro Fernandes[1], Pedro Gouveia[1], João Freire[1] and Carla Sousa[2]
[1]HEI-Lab, Lusófona University, Lisbon, Portugal
[2]CICANT, Lusófona University, Lisbon, Portugal

filipe.luz@ulusofona.pt
catia.casimiro@ulusofona.pt
pedro.miguel.fernandes@ulusofona.pt
pedro.gouveia@ulusofona.pt
joao.freire@ulusofona.pt
carla.sousa@ulusofona.pt

Abstract: The benefits of games, widely studied and described today, extend to audiences with specific accessibility needs. However, for these people, their therapeutic function tends to be prioritised over entertainment, creating phenomena of exclusion of players in all their fullness (Spiel and Gerling, 2021; Wästerfors and Hansson, 2017). In the Games Inclusion Lab (GameIN) Action Research Project, some basic premises were proposed for the creative processes of games that, instead of being for a specific target audience, were created in frequent contact with their everyday contexts, promoting accessibility through constant iteration. Thus, its primary objective would be to promote playing together, regardless of the skills and specificities of each person, with inclusion in the daily contexts of neurodivergent adults in Portugal as a case study. This paper aims to describe a crucial part of this process, which includes the operationalisation of the premises of co-design, ethics and research in the context of developing a games kit accessible to this audience. To this end, monthly sessions, 30 in total, were held with three groups of neurodivergent people, in particular autistic people and/or people with intellectual disabilities, including a total of 28 participants, aged between 19 and 54 years old (M = 30.70; SD = 9.94). The games kit was implemented with a set of three games (digital, tabletop, and physical platforms) within a common narrative element (Monsters), plus two published tabletop games that were adapted to better fit the cognitive accessibility needs of the participants. This study illustrates how an iterative co-design approach, involving neurodivergent stakeholders, can successfully foster the development of playful and inclusive games while ensuring that diverse perspectives are integrated into the game design process.

Keywords: Inclusive design, Intellectual disabilities, Accessible games, Iterative playtesting

1. Introduction: A Playful Game Environment

Intellectual Disability (ID) is a developmental condition characterized by significant limitations in both intellectual functioning and adaptive behavior, affecting conceptual, social, and practical domains (American Psychiatric Association, 2013). Over time, perspectives on disability have shifted from models of exclusion and segregation toward frameworks emphasizing integration, inclusion, and empowerment (Emygdio da Silva, 2009; Sousa et al., 2023). Within this evolving context, the present study aims to relate the role play and creativity can have in the social integration of people with intellectual disabilities (PwID), promoting inclusive, engaging, and intrinsically motivating activities that not only matter with regards to accessibility but also the dignity and well-being of these individuals. In this regard, the concept of *playfulness* and *CoLiberation* (Koven, 2024) promotes the sense of "well-played", through engagement and enhanced participation, especially through cognitive-behavioral strategies that foreground fun, imagination, and game challenges.

The following work explores the development phase of a games kit which incorporates inclusive design for meaningful playful activities with PwID, within the context of the Games Inclusion Lab (GameIN). This action research project is based on some basic premises that were proposed for the creative processes of games that, instead of being exclusively developed for a specific target audience, were created while in frequent contact with their everyday contexts, promoting accessibility through constant communication and iteration. Thus, its primary objective would be to promote playing together, namely PwID, their relatives, friends, social support workers, and others, regardless of the skills and specificities of each person, with inclusion in the daily contexts of neurodivergent adults in Portugal as a case study. To seek this goal, the concepts of Play, Playfulness and Playful in the daily environments were deeply analysed to be integrated in the game developed within the proposal research.

Setting up an activity through designing fun (for a joyful environment) but with a balanced level of competition, will generate an individual immersion on the activity (*flow*) or within the teamwork

(*CoLiberation*). Instead of a player being on flow self-transcendence (Csikszentmihalyi, 1975), Koven evokes a wholeness experience of Liberation through a group collaboration (Koven, 2024). Like the framework of playful work design (Sharp, 2023), where a playful reflection on elements of play could enhance an enjoyable space and challenge interactions within a working environment context, a playful space aligns with ludic play and imaginative engagement, while the work achievements reflect agonistic play, emphasizing challenge, goals, and self-competition.

Since literature identifies play as an activity, therefore, as a characteristic of certain behaviors (Huizinga, 1949; Caillois, 2001), or as personality trait, playstable tendencies such as amusing or curiosity (Proyer, 2017; Barnett, 2007). Play is also considered as a behavioral approach, how the self engages with tasks in a playful manner (Mainemelis and Ronson, 2006), such when daily tasks are framed as play, and individuals tend to focus on the process rather than outcomes, experiencing increased intrinsic motivation and positive affect (Heimann and Roepstorff, 2018; Webster et al., 1990). However, externally imposed play or failed engagement (a daily boring demand, missing a message or failing a task) can undermine these effects, leading to disengagement or frustration (Fleming, 2005; Suls, 1983).

This is one of the relevant characteristics of play, consisting of a dual-nature, which is often described along the intersections of improvisation/spontaneous (*Paidia*) with rules and skill dimensions (*Ludus*) (Huizinga, 1949; Suits, 1978; Caillois, 2001). While ludic play is open-ended and imaginative, agonistic play is structured and competitive, which this duality spans all conceptualizations of play as a behavior, personality, and approach. To create a meaningful and playful environment for a community where PwID participates at an equal level, it requires a game design adequate for fun and competition.

Designing fun involves using imagination and humor to create enjoyment during work, enhancing affective experiences (Lieberman, 2014). Players may craft playful narratives, reframe tasks, or engage in role-play to introduce fun into their routine activities. This form of play boosts engagement by balancing personal competence with the complexity of the task.

The integration of play into PwID daily routines, through both fun and competition, suggests a meaningful strategy to enhance motivation, creativity, and well-being. Far from being trivial, play represents a versatile and adaptive mode of engagement that supports both individual fulfillment and community outcomes. Regarding these insights, a playfulness environment was set up within the GameIn project, to reframe everyday situations as enjoyable, intellectually stimulating, or personally meaningful (Barnett, 2007), promoting humor as a specific manifestation of this trait as a cognitive and behavioral form of play (Sharp, 2023).

2. GameIN as a Methodological Proposal

This study aligns with the principles of inclusive research, which is especially pertinent when engaging with PwID, as it emphasizes their viewpoints and values their input (Walmsley et al., 2018). The goal of inclusive research is to actively involve individuals typically regarded as part of marginalized or vulnerable groups in the research process, with the intention of fostering social change and meaningful impact (Kuri and Schormans, 2022). Thus, the present research is based on the co-supervising of PwID, in the sense they were collaborators, working in partnership with the game design team, as also offering guidance on participant recruitment, or overarching components such as playtesting, data collection, and feedback (Bigby et al., 2014).

The study was conducted in two different NGOs (APPACDM and CECD). In APPACDM, two groups of neurodivergent people participated. These consisted of ten participants in each group (N=20), respectively, and both were accompanied by the same three (N = 3) support workers (SW). In CECD, eight participants and three SW participated (N = 11). In total, the study consisted of ten sessions and a sample of 34 people (N = 34).

All neurodivergent participants were adults ranging from 19 to 54 years old (M = 29,23; SD = 8,69), of which seven were female (26,92%) and 19 were male (73,08%). Although SW participated in the activities, they were not the focus of this study, with data collection focusing on the neurodivergent participants (N=28).

3. Procedure

According to the different stages of the research, the project progressed through several phases: (1) obtaining informed consent from participants, in alignment with ethical guidelines for conducting research with individuals with intellectual disabilities (Casimiro et al. 2024); (2) characterizing the three working groups in order to identify potential barriers or constraints in how the sessions should be conducted; (3) validating

ethical values in research involving PwID; (4) conducting playfulness sessions aimed at interaction with the research objects (GameIn games); and finally (5) collecting data through questionnaires and interviews.

Across the monthly sessions held at APPACDM at CECD, PwID and their SW convened in the same space to take part in the planned activities. Each session began with brief introductions by the moderators, one of whom presented the objectives of the research and emphasized the participants' roles as meaningful contributors (Fernandes et al., 2025). An icebreaker activity followed, designed to foster interaction between participants and moderators, as well as among the participants themselves. The moderators then introduced the session's goals, outlining their purpose and the planned activities. These were structured to encourage engagement with the activities in a playful and approachable manner, enhancing both accessibility and comfort.

Regarding gathering observation data during the sessions, each sub-group was supported by at least two members of the research team to assure guidance through the gameplay, and to act as an observer for documenting all the activities and participants' feedback. The observer's notes included insights on aspects such as cognitive and motor accessibility, participants' engagement and behaviors, overall gameplay experience, notable remarks or expressions, and any other relevant occurrences. To further support post-session analysis, each session was filmed using two 360º video cameras with synchronized audio recording. Following each session, moderators also provided supplementary observations to complement the initial notes.

4. Games Kit

One of the main goals of the GameIN project is the creation of a games kit that promotes the inclusion and well-being of PwID through accessible games, playful activities, and social activities of game creation that can be shared by neurodiverse groups which may involve individuals' family members, friends, or social support workers. This study presents a set of decisions made in the project's research process, involving several playtesting sessions, to create components to the games kit.

During one of the initial icebreaker activities, a conducted playful experience (*Broken Phone*) proved to be especially valuable, as all participants actively engaged in the activity and shared the same feeling of enjoyment. From the research team to the PwID and the SW, everyone took part, laughing at the distorted messages and later sharing the experience with their peers. This moment was particularly significant for the project since it helped bridge the gap between the research team and the PwID and because it validated the project's core intention: that there are games or activities in which everyone can participate in a "CoLiberation" (Koven, 2024) state of mind. By focusing on playful activities and removing the more competitive aspects of games, this session ensured that every participant shared the *magic circle* (Salen and Zimmerman, 2004), and anyone was excluded.

The first working sessions, following the icebreaker activities, were focused on understanding the preferences of the individuals from the focus group, such as the types of movies they enjoy, the games they usually play, and how they typically spend their leisure time. It quickly became clear that digital games (on tablets or mobile devices) are widely used by the group. However, these formats pose some challenges for the project's goals, from ergonomically poor interaction postures (impacting the players' wellbeing) to the isolation caused by non-cooperative gameplay (negatively contributing to their inclusion in social activities).

The possibility of developing a versatile kit, including board games to promote a common shared space and greater cooperation among players, games in public spaces to encourage physical mobility and interaction with various objects (such as masks, clothing items, furniture, etc.), and digital games for the engaging media, emerged as the most suitable working hypothesis.

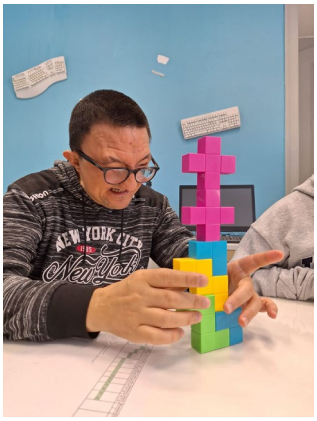
4.1 Playtest Sessions

Initial testing with the game *Speed Cups* (999 Games, 2014) revealed some accessibility challenges such as some of the cards' illustrations being too complex for the players to interpret and the free-for-all format leading to a clear avoidance of interaction as if they were each playing their own separate game (Fernandes et al. 2025). The six conducted playtesting sessions (two for each of the three groups), with the help of the participants' feedback, helped identify five specific cards to be removed, validate the effectiveness of the game components (in terms of fine motor skills), and verify that all participants were able to overcome the challenges from the game, once they were playing only with the approved cards. Also, experimenting with a variation of the game rules that favoured cooperation over competition revealed that the game could be very

successful in fostering peer support and collaboration between players; a subsequent variation involving team-based competition also led to positive results, contrasting with the less desirable effects of the exclusively competitive free-for-all format.

Similar tests were conducted during the same playtesting sessions with the game *TEAM3* (Brain Games, 2019). Here, more significant changes were required as the game's main feature, the suppression of players' senses (not being allowed to speak, or having to cover their ears/eyes), were outright rejected by some participants because it either made them uncomfortable or simply because it did not make sense to them. Ultimately, the decision was made to remove these elements, pivoting towards a cooperative activity, like what was explored with *Speed Cups*, where participants worked together to build the structures depicted on *TEAM3*'s cards using the game's building blocks. Another successful variation was to have participants work together to try to build the tallest tower possible with the game's building blocks before it fell, or they ran out of pieces (both worked to the participants' amusement).





Figures: 1-3: *Speed Cups* and *TEAM3* playtest sessions

5. Developed Games

This study highlights one of the original game concepts that has been most extensively developed within the scope of the GameIN project: *Monster Lab*, which exists in board game, physical, and digital versions. Given that several PwID expressed a strong interest in horror films, mentioning titles such as IT (2017), SAW (2004), Scream (1996-2022), or Paranormal Activity (2007–2014), the team used the monster visual theme, incorporating mechanics that promote cooperation in the physical and board game formats, and puzzles in the digital version for an exciting gameplay.

Following the testing sessions with *Speed Cups* and *TEAM3*, a strong dynamic of mutual support among participants was observed, along with a general interest in team-based competition and widespread ease with the fine motor skills required to manipulate physical game pieces. This led to the development of the first version of *Monster Lab* as a board game, in which players create their monsters by navigating a game board and collecting three components (head, torso, and limbs) from different areas. The monsters' designs were based on artwork from a FuzzInk book, and the game components were developed by the research team.

To minimize downtime between participants' turns, players cooperate as a group to build a path for their shared character piece, guiding it across the board to the zones where each of the three components can be collected. The core mechanic of drawing a path using specific tiles (segments of a pathway), combined with the challenge of moving from point A to point B, effectively encouraged collaboration in placing the path pieces on the game board to reach their goals and build their own monsters.

During the playtesting sessions, each player created a complete monster in each run, and a recurring pattern was observed: participants avoided experimenting with combinations of different monsters' parts, defining their goal as completing a monster's set (head, torso, and limbs).

Figures 4-5: *Monster Lab* prototype (board game version and digital version)

5.1 Development and Evaluation of the Monster Lab Mobile Application

Following the validation of the *Monster Lab* board game, a digital mobile version was initiated to explore the potential for inclusive digital play. This decision was informed by findings from preliminary focus groups, which highlighted a strong interest in digital games among PwID and noted the widespread accessibility of mobile platforms. While the process cannot be classified as fully co-creative, analysis grids completed during these interaction sessions by researchers, observing both caregivers and PwID, revealed that design decisions were consistently informed by the preferences, abilities, and challenges of the participant groups.

The first digital prototype *Monster Lab 1.0* (fig.5) functioned as a basic digital demo intended to evaluate user engagement with a single-player mobile interface. In this version, players controlled an avatar tasked with assembling a monster using three components (head, torso, and legs), reenacting the board game. The game allowed players to select and combine parts from eight different monster templates to create unique figures.

Initial playtests indicated diverse engagement patterns: a subset of participants tended to match body parts to form the original monster templates (as was observed in the board game version), while others opted for mixed combinations (see fig. 5). The control interface was also subject to critical evaluation. Observations identified that many users encountered difficulties using a dynamic joystick, prompting a design shift toward directional arrow controls (X and Y axis), which were more accessible and intuitive for the majority of players.

During the playtesting sessions, two participants required continuous assistance from facilitators in order to complete the game. Despite showing visible signs of stress due to the difficulty of the levels, they were determined to continue and did not express a desire to quit. Interestingly, in the final feedback, both participants reported that they had enjoyed the experience and did not perceive the game as difficult, meaning all participants reported enjoying the application. This type of feedback has been observed repeatedly across playtesting sessions.

It is important to acknowledge that this population is often highly agreeable and eager to please, which can introduce a bias in self-reported satisfaction measures. Another possibility is that some individuals with intellectual disabilities may face challenges in accurately interpreting/evaluating their own performance during gameplay. Still, the frequent voluntary replaying of the game suggests a positive level of engagement and acceptance of the mobile version.

5.2 Physical Adaptation of Monster Lab and Inclusive Play in Public Spaces

Building on the success of the digital and board game versions of *Monster Lab*, the team then also explored a physical adaptation of the game. The goal was to encourage inclusive play among PwID while engaging them in collaborative, multisensory activities in public spaces.

This iteration aimed to: (1) foster physical activity and cooperation among PwID through hybrid play (digital, analog, and performative); (2) extend game-based interaction into public or semi-public environments; (3) promote social bonding and inclusion through playful, team-based competition; and (4) collect data on gameplay preferences and group dynamics in larger, less controlled settings.

Playtests were conducted with the 3 groups, divided into 2-3 teams to take advantage of the observed interest in cooperation and team-based competition. Each team navigated through different activity stations, completing challenges inspired by earlier tested games (*Speed Cups*, *TEAM3*, *Monster Lab 1.0*), and upon

successful completion of each station, teams received a reward, such as a carnival costume piece (headpiece, torso item, or limb accessory). At the end of the activity circuit, a group vote determined the team with the most creative final mask or costume.

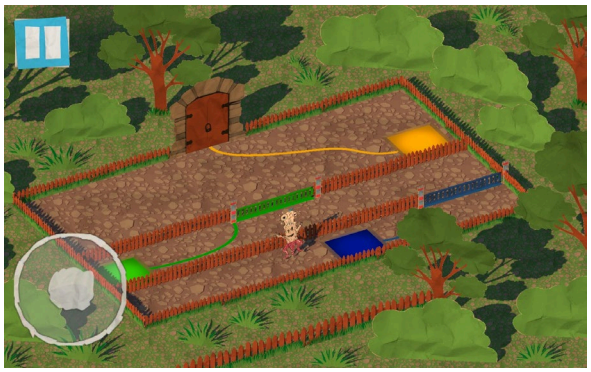
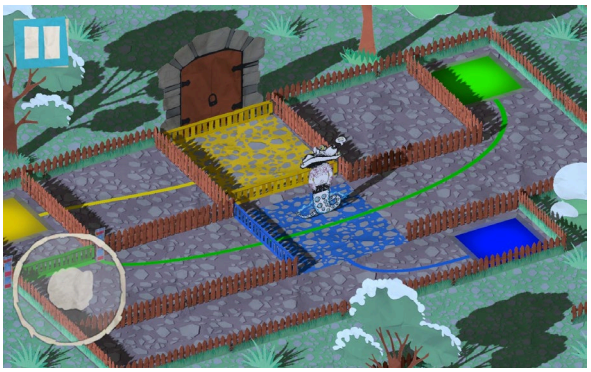

Figures 6-7: Land of Hands activity and game's "carnival rewards"

Since prior sessions were conducted in small groups, these larger-format tests required initial engagement activities to promote group cohesion. Inspired by Bernie De Koven's games, such as the *Land of Hands* (Koven, 2024), the team employed icebreakers focused on physical interaction, to support body awareness and comfort with touch (challenging for some individuals, especially those on the autism spectrum), and verbal expression, to engage participants who experience communication difficulties due to shyness or confidence issues. These activities successfully built a collective "circle of trust," fostering shared enjoyment and collaborative spirit among researchers, caregivers, and participants alike.

5.3 Monster Lab V2.0 Mobile Application

Monster Lab 2.0, the upgraded digital version, maintains the core concept of the original board game. In the first level, players create a monster, but in this version, the customized monster becomes the player's avatar for the following levels. This feature was introduced in response to recurring requests from PwID participants, who expressed a desire to see their created monsters integrated into the game experience.

Once the monster is created in the introductory scene, players must guide their character through ten levels, each progressively more complex. Early levels introduce basic interactions such as character movement, collision detection, pressure plates to open gates, and rotating platforms (figures 8-9). These mechanics are introduced gradually, alongside a color-matching system, where pressure plates correspond to gates and platforms of the same color. The game was carefully balanced, taking into consideration player feedback, to properly guide them towards progressing from simpler to more challenging puzzles.

Figures 8-9: Introductory level (puzzle 2) and a more advanced level (puzzle 6)

In terms of game visual aesthetics, to ensure visual accessibility, the game's color palette was selected based on colour guidelines from Wong (2011). Each color-coded mechanic in the game was tested to ensure it could be accurately interpreted regardless of visual impairment. However, during usability tests with PwID users, two social support workers expressed discomfort with the initial graphic style, which used Risograph and Offset print aesthetics to create a deliberately imperfect alignment (misregistration) for artistic purposes (fig.

10). These users reported visual fatigue, saying “it hurts my eyes” and “I can’t focus on the screen.” Both were later identified as having mild visual processing disorders. Although PwID participants did not report similar issues, the development team revised the art style to improve clarity and reduce visual strain.

Figures 10-11: Tree game asset with the initial (left image) and final visual style (right image)

6. Discussion

Playtesting results indicate varying levels of independence among PwID participants. Two participants were unable to complete the most difficult levels without continuous support. Three required minimal assistance, and six completed the game independently. Among those who completed the game unaided, the time to completion ranged between 15 and 22 minutes. The game offered players the option to choose between a joystick cursor and an arrow key cursor option via a settings menu. While access to the menu turned out to not be intuitive for players, requiring facilitators to assist with navigating the game menus, the arrow key cursor option turnout to be the most effective for players. Following a brief post-play interview, regarding game difficulty and interest, participants described the game as easy and engaging, however the researchers recorded the difficulties that two PwID had in completing the levels, confirming that they would not be able to do so on their own. Additionally, it was noted that verbal feedback must always be cross-checked with the analysis grids used in the research in order to accurately assess the results of the playtest sessions with PwID.

Nevertheless, the findings are significant in demonstrating that Monster Lab 2.0 can be enjoyable and accessible to PwID, and the Tabletop version, like the physical games experiences from the games Kit, supports cooperative gameplay and inclusivity, positioning them as a meaningful tool for fostering shared play experiences across diverse user groups.

The physical adaptation of *Monster Lab* reinforced the need for accessible, embodied game formats that go beyond screen-based interaction. Key insights included: (1) enhanced cooperation and peer support during team challenges; (2) increased motivation when physical movement and role-play were integrated into the activities; (3) positive reception of mixed-media rewards and the competitive, yet inclusive nature of voting for the best monster mask; and (4) greater engagement among participants, suggesting strong potential for continued development of hybrid formats combining physical and digital elements.

Additionally, the shift to a more spatially dynamic format addressed the physical and ergonomic limitations of prolonged mobile gameplay. Encouraging participants to move through larger environments helped combat sedentarism and promoted playful, social engagement in open or outdoor settings.

The findings suggest that *Monster Lab 2.0* is capable of providing an inclusive gaming experience for a neurodiverse group of players. By combining intuitive mechanics, accessibility-minded design, and engaging visuals, the game fosters cooperation and shared enjoyment across diverse user groups. This supports its potential as a valuable tool for inclusive play and digital engagement in both educational and recreational contexts.

7. Conclusion

Activities created to be accessible to PwID tend to place entertainment as a secondary goal after the accessibility of the activity itself. The GameIN project sought to create a resource that provided shareable activities that are both accessible and enjoyable for a neurodiverse group of individuals, seeking to foster interaction between those who participate in the activities and promoting the goal of further inclusion for

PwID. The observations gathered from all the sessions carried out highlighted the value of a games kit designed to foster cooperation (*CoLiberation*), healthy competition between teams (in a *playful environment*), individual challenge (through digital games), and the sharing of outcomes, such as the creation of monsters in *Monster Lab 2.0* or the masks crafted in the physical version of the game. Both PwID, their support workers, and the researchers who participated in the sessions, as team members of the physical game and icebreaker activities, demonstrated a shared sense of well-being within the playful setting. The fact that these games did not isolate PwID during gameplay, but rather encouraged collaborative problem-solving among all participants, confirms the relevance of the kit in achieving its central aim: promoting inclusive moments of well-being with PwID actively participating in the broader community.

8. Limitations and Future Directions

The study was conducted with a limited group of PwID (N=28), and should therefore be extended to a broader range of institutions. Given that the GameIn project is linked to a wide network of organizations, it is now positioned to enter a dissemination phase, expanding the reach of the kit to many more institutions supporting PwID. This includes the distribution of various game formats, adapted board games and the three versions of *Monster Lab* (board game, digital game, and physical version).

Although these games have already been tested with a group of 28 PwID, *Monster Lab 2.0* still requires updates. A version 3.0 is planned, which will include additional levels and various usability improvements, such as the option to switch between arrow-key and joystick control modes directly within the game screen interface. Moreover, although the adaptations effectively enhanced accessibility for the participants in this study, additional testing is necessary to assess sustained engagement over time and to evaluate the wider relevance and usability of these games across expanded contexts.

Acknowledgements

This study was funded by national funds through the FCT - Foundation for Science and Technology, I.P., under project Games Inclusion Lab: Participatory Media Creation Processes for Accessibility (2022.07939.PTDC), and HEI-Lab R&D Unit (UIDB/05380/2020, https://doi.org/10.54499/UIDB/05380/2020). The research team would also like to thank APPACDM Lisboa (https://appacdm-lisboa.pt/) and CECD (https://www.cecd.pt/) for the ongoing support.

Ethics and AI Statements: The present research was previously approved by the ethics committee of ILIND – Lusophone Institute for Research and Development (Lusophone University), with assurance that all participants involved signed informed consent forms, participated voluntarily, and that their collected data was properly anonymized and protected in accordance with the current data protection legislation. This article was proofread and edited for language clarity using Grammarly and Generative AI tools. These tools were employed solely for linguistic enhancement, with no impact on the content, arguments, or conclusions. The authors, for whom English is not the primary language, retain full responsibility for the work's intellectual integrity.

References

APA (2013). "Diagnostic and Statistical Manual of Mental - 5th Edition" (DSM-5), American Psychiatric Publishing.

Barnett, L. (2007). "The nature of playfulness in young adults". *Personality and Individual Differences,* 43(4): 949–958.

Bigby, C., Frawley, P. and Ramcharan, P. (2014). "Conceptualizing Inclusive Research with People with Intellectual Disability". *Journal Applied in Research Intellect Disability*, vol. 27, no. 1, pp. 3–12, 10.1111/jar.12083

Caillois, R. (2001). *Man, Play, and Games*. University of Illinois Press, Champaign.

Casimiro, C., Léste, J., Fernandes, P., Sousa, C. and Luz, F. (2024). "Empowering Neurodiverse Voices in Research Ethics through a Playful Card-Based Approach". *European Conference on Games Based Learning*. 18. 171-179. https://doi.org/10.34190/ecgbl.18.1.2674

Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*, Jossey Bass, San Francisco.

Emygdio da Silva, M. (2009). "Da Exclusão à Inclusão: Concepções e Práticas". *Revista Lusófona de Educação*, 13, 135-153.

Fernandes, P., Casimiro, C., Almeida, W., Monteiro, H., Léste, J., Luz, F. and Sousa, C. (2025). "Modding For Cognitive Accessibility: Experiences with Commercial Analogue Games and Neurodivergent Players", *INTED2025 Proceedings*, pp. 2644-2653. 10.21125/inted.2025.0714

Fleming, P. (2005). "Workers' playtime? Boundaries and cynicism in a "culture of fun" program". *Journal of Applied Behavioral Science*, 41(3): 285–303.

Heimann, K. and Roepstorff, A. (2018). "How playfulness motivates: Putative looping effects of autonomy and surprise revealed by micro-phenomenological investigations". *Frontiers in Psychology,* 9: 1704.

Huizinga, J. (1949). *Homo Ludens: A Study of the Play-Element in Culture*. Routledge & Kegan Paul.

Koven, B. (2024). *A Playful Path*. Carnegie Mellon University. Journal contribution. https://doi.org/10.1184/R1/6686705.v1

Kuri, E. and Schormans, A. (2022). "Pivotal care practices: Care ethics in inclusive arts-based research with people labelled/with intellectual disability during the COVID-19 pandemic", *The Arts in Psychotherapy*, vol. 80, p. 101920, Sep. 2022, https://doi.org/10.1016/j.aip.2022.101920

Lieberman, J. (2014). *Playfulness: Its Relationship to Imagination and Creativity*. Academic Press.

Mainemelis. C and Ronson, S. (2006). "Ideas are born in fields of play: Towards a theory of play and creativity in organizational settings". *Research in Organizational Behavior,* 27: 81–131.

Proyer, R. (2017). "A new structural model for the study of adult playfulness: Assessment and exploration of an understudied individual differences variable". *Personality and Individual Differences*, 108: 113–122.

Salen, K. and Zimmerman, E. (2003). *Rules of Play: Game Design Fundamentals*. The MIT Press.

Scharp, Y., Bakker, A., Breevaart, K., Kruup, K., and Uusberg, A. (2022). "Playful work design: Conceptualization, measurement, and validity". *Human Relations*, 76(4), 509-550. https://doi.org/10.1177/00187267211070996

Sousa, C. Neves, P. and Luz, F. (2023). "Barriers and Hindrances to the Effective Use of Games in Education: Systematic Literature Review and Intervention Strategies". *European Conference on Games Based Learning*. 17. https://doi.org/10.34190/ecgbl.17.1.1472

Spiel, K. and Gerling, K. (2021). "The purpose of play: How HCI games research fails neurodivergent populations". *ACM Transactions on Computer-Human Interaction* (TOCHI), 28(2), 1-40. https://doi.org/10.1145/3432245

Suits, B. (1978) *The Grasshopper: Games, Life and Utopia*. Harvard University Press, Cambridge.

Suls, J. (1983). "Cognitive processes in humor appreciation". In Goldstein J (ed.) *Handbook of Humor Research*. Springer, 39–57.

Walmsley, J., Strnadová I. and Johnson, K. (2018). "The added value of inclusive research". *Journal Applied in Research Intellect Disability*, vol. 31, no. 5, pp. 751–759, https://doi.org/10.1111/jar.12431

Wästerfors, D., and Hansson, K. (2017). "Taking ownership of gaming and disability". *Journal of Youth Studies*, 20(9), 1143-1160. https://doi.org/10.1080/13676261.2017.1313969

Webster. J., Heian, J. and Michelman, J. (1990). "Computer training and computer anxiety in the educational process: An experimental analysis". Proceedings of the *Eleventh International Conference on Information Systems*. ICIS, Copenhagen, Denmark, 171–182.

Wong, B. (2011). "Points of view: Color blindness". *Nature Methods*. 8(6), 441. https://doi.org/10.1038/nmeth.1618