Easy-to-understand language in video games

Empirical findings of an exploratory study among players with dyslexia

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Cognitive accessibility in video games warrants further exploration, as it encompasses a wide range of disorders and learning difficulties that may benefit from easy-to-understand (E2U) language. This study investigates players' reception of E2U language, comparing individuals with and without dyslexia. A video game was developed, and participants were assigned to one of four conditions in a 2×2 experimental design, based on the type of language used in the game (standard or E2U) and the presence or absence of dyslexia. Both quantitative and qualitative data were collected, with a particular focus on player experience and language acceptability. Players with dyslexia reported a more positive experience when playing the E2U version, whereas players without dyslexia reported largely similar experiences across both versions. Nonetheless, participants in both groups expressed a general preference for the standard language. Overall, the findings of this exploratory study suggest that E2U language has the potential to enhance the gaming experience for players with dyslexia.

Keywords: easy-to-understand language, video games, game accessibility, dyslexia

Introduction

Accessibility in video games has advanced considerably in recent years, driven by growing awareness of the diverse needs of players and the importance of inclusive design. Academic research increasingly emphasises the need to identify and address barriers that may prevent certain groups from fully engaging with gaming experiences (Hassan 2024). Within this evolving field, the present study contributes empirical evidence for a linguistic accessibility feature: easy-to-

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understand (E2U) language, with a focus on individuals with dyslexia, one of the many groups encompassed by the broader concept of *cognitive accessibility*. In a prior study, players with dyslexia expressed interest in the use of E2U language as an accessibility option (Oliva-Zamora & Mangiron 2026). Since this simplified form of a language is designed to make texts easier for everyone (see Section 2.2), it seems worth investigating whether it could benefit both players with and without dyslexia.

To address the research question "How does the use of E2U language influence player experience and language acceptability among players with and without dyslexia?", the present study includes the following objectives:

1. **O_1**: To examine differences in player experience across conditions defined by the presence or absence of E2U language and by participants' dyslexia status.
2. **O_2**: To examine differences in language acceptability across conditions defined by the presence or absence of E2U language and by participants' dyslexia status.

The constructs referenced in these objectives constitute the dependent variables of the study and are defined in detail in Section 4.

Game accessibility user research

On the one hand, *game accessibility* can be understood as a form of *media accessibility*. Both these modalities emerged within audiovisual translation as a consequence of texts transcending written content and becoming intertwined with image and sound (Remael et al. 2016). In this context, not understanding a language can constitute a barrier to access in much the same way as not being able to hear a sound. Accordingly, media accessibility options, such as subtitles, facilitate access to audiovisual content for both deaf and hard-of-hearing audiences and viewers who do not understand the source language. From this perspective, translation can itself be understood as a form of accessibility (Díaz-Cintas et al. 2007).

On the other hand, user research in Translation Studies has increasingly adopted a user-centred perspective through User-Centred Translation (UCT) (Suojanen et al. 2015), which emphasises usability and users' experiences. More recently, this approach has been extended to video games through Game Translation User Research (GTUR) (Deckert et al. 2024), where translation is investigated through its impact on players' experiences and perceptions.

At the intersection of these two approaches, *game accessibility* seeks to identify and remove the barriers that prevent users from fully engaging with video

games (IGDA-GASIG 2024). In line with the principle of "Nothing about us without us" (Charlton 1998), game accessibility should be integrated into GTUR approaches by placing users at the centre of the evaluation process and taking into account factors such as player experience, which constitutes one of the primary focuses of the present study.

The challenges of dyslexia

Dyslexia has traditionally been defined as a phonological processing weakness (Snowling 2000), often accompanied by difficulties in letter recognition (Giofrè et al. 2019). However, contemporary research highlights the need for a broader conceptualisation in which dyslexia is understood as a multifaceted disorder influenced by linguistic, cognitive, and socio-cultural factors, whose manifestation varies across languages and contexts (Wolf et al. 2024).

Dyslexia has been characterised by low reading abilities (Melby-Lervåg et al. 2012), making word recognition and decoding more demanding, which in turn impacts learning (Simoës-Perlant & Largy 2011) and comprehension (Cutting et al. 2013). Therefore, people with dyslexia may require more time to read and properly process texts (Stevens et al. 2022). This increased reading time may be linked to potential difficulties with working memory (López-Resa & Moraleda-Sepúlveda 2023), which can affect their ability to retain and manipulate information while reading.

For individuals with learning difficulties, video games have been used to support the development of reading skills (Marinelli et al. 2023) or executive functions (García-Redondo et al. 2019). Beyond their therapeutic potential, video games can also be created taking into account the needs of players with dyslexia, for example, games such as *Hauntii* (Moonloop Games 2024) make use of OpenDyslexic, a dyslexia-friendly font.

The benefits of easy-to-understand language

The term *easy-to-understand* (E2U) was introduced following the Convention on the Rights of Persons with Disabilities (United Nations General Assembly 2007). According to the International Organization for Standardization (ISO) (2023), this term encompasses all varieties of a language that can enhance comprehension, such as easy-to-read, which specifically supports people with disabilities (Ocampo 2015), and plain language, which aims to make specialised texts more accessible to the general public (Mazur 2000). Although some users perceive these adaptations as stigmatising because they may make disabilities or difficulties more

visible (Hansen-Schirra & Maaß 2020), E2U language is intended to serve both people with and without disabilities.

Within Translation Studies, E2U might be framed in media accessibility as a linguistic option that facilitates understanding for users with different communicative needs (Bernabé Caro & Orero 2019). More specifically, E2U can be defined as a form of partial translation constrained by the characteristics of audiovisual media (Maaß & Hernández Garrido 2020). Matamala (2022) explores the application of E2U principles to audiovisual translation and media accessibility, including their implementation in access services such as subtitling and audio description.

However, the potential of E2U in video games remains largely unexplored. Its application could be relevant because, due to their interactive nature, video games require information not only to be received but also to be processed and acted upon, which may entail a greater cognitive load (Mangiron 2012). In this context, several game accessibility guidelines advocate the simplification of textual information through the use of short sentences, consistent terminology, and clear language (Oliva-Zamora 2025).

In the case of dyslexia, studies suggest that simplifying texts can improve readability. Frequent and short words enhance reading speed and assimilation (Rello et al. 2013). Other ways to aid the processing of texts are displaying the information in an orderly and schematic manner (Rello et al. 2012), and highlighting important words, especially with a blue background (Ikeshita et al. 2018). Some of these features can be found in guidelines developed to design E2U texts, such as those by Inclusion Europe (2010).

Previous studies

In recent years, several guidelines providing recommendations for game accessibility have been published (Ellis et al. 2017; Microsoft 2022), and numerous examples of their implementation can be found in current video games. The most notable advances have arguably occurred in visual and motor accessibility. On the one hand, studies and surveys (e.g. Larreina-Morales 2024) have shown that blind and low-vision players are interested in mainstream games and regard audio description as an option for improving access. This has led to the implementation of audio description in titles such as *Forza Motorsport* (Turn 10 Studios 2023). On the other hand, studios have developed adaptive controllers to address motor barriers, including the Proteus Controller, which offers more than 100 possible configurations (ByoWave 2024). Hearing accessibility can be observed through features such as customisable subtitles that incorporate speaker identification and

colour-coding, as implemented in *Assassin's Creed Shadows* (Ubisoft 2025). Cognitive accessibility is also gaining increasing attention, with options such as dialogue and tutorial replay systems being used in *Prince of Persia: The Lost Crown* (Ubisoft 2024); however, this area remains underexplored in both industry and academic contexts (Aguado-Delgado et al. 2020).

In user research in video games, various scales have been developed to measure specific aspects of the player experience, such as enjoyment (Fang et al. 2010) or immersion (Cutting et al. 2025). Among the efforts to capture all dimensions, the Player Experience Inventory (Abeele et al. 2020) stands out. This scale, presented in a Likert-scale format, conceptualises the player experience in terms of both functional and psychosocial consequences of playing, already including elements such as challenge or immersion.

Regarding research on dyslexia, time has frequently been used as a metric to assess reading performance, particularly in relation to text features such as length or background. For example, studies have measured on-task time (Jamali et al. 2023) and reading time (Rello et al. 2013; Rello & Baeza-Yates 2016).

As regards E2U language, there are no examples of games with this linguistic variety, although we believe it could enhance the overall player experience. However, E2U language has been widely tested in websites, in alignment with the Web Content Accessibility Guidelines (W3C 2023), yielding promising results in terms of improved comprehension (Vollenwyder et al. 2018). The acceptability of these E2U versions of the websites has also been examined, finding that people without disabilities do not favour them (Schmutz et al. 2019). Acceptability has also been assessed in research on dyslexia (Rello & Baeza-Yates 2016), highlighting the importance of addressing user satisfaction.

Methodology

The objectives of the study were addressed from an exploratory perspective by focusing on the identification of patterns, trends, and relationships within the data. This approach allows researchers to draw informal conclusions and uncover meaningful indications without placing emphasis on the strength of statistical evidence (Morgenthaler 2009).

A mixed-method experiment with a 2x2 between-subjects design (Field & Hole 2003) was conducted. The independent variables (IV) were the following, presented with their two levels in between brackets: language (standard and easy-to-understand) and neurodivergence (dyslexia and no dyslexia).

The dependent variables (DV) were the following:

1. Player experience: A construct encompassing various aspects of a player's perception of a game (e.g., mastery, immersion, ease of control…), measured quantitatively with Likert-scale responses as interval data, and qualitatively with open-ended questions.
2. Language acceptability: A construct assessing preferences and attitudes regarding language, measured quantitatively with a Likert-scale item providing interval data, and qualitatively with open-ended questions.

Considering the different levels of the IVs, the study included the four conditions shown in Table 1.

Table 1. Summary of the four conditions

	Language	**Neurodivergence**
1st condition	Standard	No dyslexia
2nd condition	Standard	Dyslexia
3rd condition	E2U	No dyslexia
4th condition	E2U	Dyslexia

Potential confounding variables related to the interface layout, such as font size, formatting, dialogue boxes, and background contrast, were kept constant across conditions to minimise their potential influence on the comparisons. Nevertheless, these features may have influenced the overall results. They have been examined in greater detail in a parallel study, which argues that player personalisation represents a promising direction for game accessibility (Oliva-Zamora et al. forthcoming).

First, all documents related to consent and data processing were reviewed and approved by the Ethics Committee of the Universitat Autònoma de Barcelona (CEEAH 6796). Next, a pilot study was conducted to refine both the research question and the experimental method (Purchase 2012). In the pilot, the questionnaire included the mini-PXI (Player Experience Inventory) scale (Haider et al. 2022) with 11 items to limit the duration of the sessions to approximately one hour, along with other measures designed by the authors, such as open-ended questions and one Likert-scale item for language acceptability.

For the pilot, 4 participants were recruited through convenience sampling (see Section 4.2), one per condition. Based on their feedback, a new item regarding the education level of participants was added, following the classification of the Spanish National Statistics Institute, INE.[1] In terms of game design and overall playability, some issues were reported. For example, one participant struggled to

1. See https://www.ine.es/jaxiT3/Tabla.htm?t=66611&L=0.

solve a riddle in the first part of the game, while another encountered difficulties when attempting to memorise information in the final part (see Section 4.3 for a detailed description of the game tasks).

All data presented in the study were anonymised, and any personal information collected by the researchers was stored in accordance with the General Data Protection Regulation. Although anonymised at the time of publication, a dataset containing all data is available through its DOI.[2]

Participants

Given the exploratory nature and the small scale of the study, convenience and snowball sampling were used (Chandler 2023). Posts were published on LinkedIn, and over 30 associations were contacted via email or phone call. Although more than 60 people expressed interest, only around 8% reported having an official diagnosis of dyslexia.

Due to recruitment constraints, the experimental design places greater emphasis on within-group comparisons. Accordingly, the sample includes 20 participants without dyslexia, allowing two balanced subgroups of 10, and a smaller group of 10 participants with dyslexia, divided into two subgroups of 5. To retain the possibility of conducting between-group comparisons, even if limited, the number of participants without dyslexia was intentionally capped.

Prior to the experiment, participants reported their gaming habits, which were used as a blocking variable. Following a stratified randomisation, participants were first divided according to their neurodivergence condition (with dyslexia and without dyslexia). Within each group, participants were categorised based on their gaming habits (never played, played every month, or played every week), and then randomly assigned to either the standard or the E2U language condition. Therefore, an equal number of the different types of players were assigned to each condition, as can be seen in Table 2, in which *N* is the total number of participants per condition.

Table 2. Participants' distribution across conditions based on their playing habits

	Never or rarely	Every month	Every week	N
1st condition	4	1	5	10
2nd condition	2	1	2	5
3rd condition	4	1	5	10
4th condition	2	1	2	5

2. The anonymised dataset is available at https://doi.org/10.34810/data2916

A total of 30 participants took part in the study. Since no consistent problems were observed across all 4 pilot participants, no major structural changes were made. Given these results, as well as the difficulties in recruitment, it was decided to include their data in the main study after recording their education level to avoid reducing the already small sample (van Teijlingen & Hundley 2001). The group consisted of 24 women and 6 men, with a median age of 31 (range: 18–58 years; $SD = 9.84$). The relatively broad age distribution reflects the diversity of the adult population with dyslexia targeted by the study and was therefore considered appropriate. All participants were proficient Spanish speakers, which was the language used for both the game and the questionnaire. Education levels were generally high, with one third holding a Bachelor's degree (10 participants) and another third a Master's degree (10 participants).

Materials

The main materials were the video game, referred to as the *experimental object* (Purchase 2012), and the instruments to measure the DVs. The game, *Alice and the three queens*, was developed for PC by Paper Tigers in collaboration with the Universitat Autònoma de Barcelona, as part of the WEL project: easy audios in cultural visits and video games (PID2022-137058NB-I00). Developing the game from scratch allowed us to integrate accessibility from the outset, including the implementation of easy-to-understand language, while creating an experimental object tailored to the study, with simple gameplay, substantial reading, and a short duration. Inspired by Lewis Carroll's *Alice in wonderland*, this point-and-click adventure game features a retro pixel art style and can be played with keyboard and mouse. It takes approximately 15 minutes to complete it. On screen, players can only see the playable character, the scene, and a book with the objective.

The game's tasks were designed with a strong emphasis on reading. Players progress through three rooms, each containing a different puzzle which involves reading a series of descriptions before solving riddles (first room), searching for an object (second room), and answering three questions about different objects (third room). The game was originally developed in English and later localised into Spanish. Next, the authors produced the E2U version through an intralingual translation of the standard Spanish text in accordance with the guidelines by the ISO (2023), as depicted in Table 3. A two-step validation process was then carried out to ensure linguistic accuracy: an internal review by a research team member experienced in E2U language, followed by an external validation conducted by an expert from the Associació de Lectura Fàcil.

Table 3. Excerpt from the intralingual translation of Standard language into E2U language

English	Standard Spanish	E2U Spanish
This beautiful jewelry box, made of ivory and enamel, is open and filled with many precious stones: rubies, emeralds, and, above all, diamonds. The interior is lined with red velvet. Clearly, no one would dare to steal anything from Her Majesty under the watchful eye of her most trusted Guards.	Este exquisito joyero, de marfil y esmalte, contiene numerosas piedras preciosas: rubíes, esmeraldas y, sobre todo, diamantes. El interior está forrado con terciopelo rojo. Obviamente, nadie se atrevería a robarle a Su Majestad bajo la atenta mirada de sus fieles guardias.	Hay un precioso joyero de marfil y esmalte. Contiene muchas piedras preciosas como rubíes, esmeraldas y diamantes. El interior del joyero está forrado con terciopelo rojo. Nadie se atreve a robarle ninguna piedra preciosa a Su Majestad. Sobre todo, porque sus guardias vigilan atentamente.

Procedure

In light of recent technological advances, authors have highlighted the benefits of conducting studies online (Grootswagers 2020). Accordingly, the main modality of the present study was online (25 participants). However, due to technological constraints, a small number of participants ($n=5$) completed the study in person, as they were unable to run the game on their computers. The potential impact of this change in modality has been acknowledged as a limitation, following the approach of previous studies (see Mangiron & Zhang 2025). In any case, the procedure remained essentially identical across both modalities, so the following description primarily focuses on the online implementation.

First, participants met with the researchers in a Microsoft Teams video call, which remained active throughout the entire session. The researchers introduced the study and explained the procedure. Participants then received a compressed (.zip) folder containing their assigned version of the experimental object (Standard or E2U). They signed the informed consent form and were assigned a unique identifier (ID). As no installation was required, participants were instructed to launch the game directly and play at their own pace while sharing their screen. The experimental task consisted of playing the game until completion, with no time limit imposed. No help related to the game progression was offered. After completing the game, participants were asked to:

1. Submit the *GameReport.txt* containing the gameplay duration via email.
2. Complete a post-game questionnaire through Microsoft Forms, shared via the Teams chat.

At the end, participants were informed about the study's objectives and the condition to which they had been assigned. They were thanked for their time and invited to share any additional comments or feedback.

Analysis

The analysis of the data varied according to its nature, as this study employed a mixed-methods approach. On the one hand, quantitative data were obtained from the Likert scales and analysed with descriptive statistics. This decision was based on the use of non-probabilistic sampling methods and the limited sample size, both of which pose threats to the internal and the external validity and restrict the applicability of inferential statistics (Field & Hole 2003). Therefore, basic metrics such as mean and standard deviation were used to compare results, which are presented in tables. All collected data were organised in an Excel spreadsheet, and the software Jamovi was used to generate descriptive statistics.

On the other hand, qualitative data were collected from open-ended questions and analysed using qualitative content analysis. This method involves becoming familiar with the material and developing flexible categories that may evolve during the analysis. The creation of these categories is not described in detail, as the process is inherently dynamic, but they are illustrated with brief quotations, as suggested by Bryman (2012). Table 4 presents the categories used to analyse responses related to player experience, while Table 5 displays those used to assess responses related to the acceptability of the texts.

Table 4. Categories to analyse qualitative data related to player experience

Category	Definition	Quotation
Controls	Game features related to functionality	"… it wasn't necessary to press a key because [object descriptions] would automatically [open] when you got close."
Text	Text assets	"I think the texts are immersive and make you want to learn more about the story."
Paratext	Audio and art assets	"The background music is too loud."
Complexity	Level of challenge required in the game tasks	"I didn't quite understand the first screen metaphorically…"
Storytelling	Narrative, worldbuilding, and target audience	"I thought […] the story was very original."

Table 5. Categories to analyse qualitative data related to language acceptability

Code	Definition	Quotation
Length	Perception of texts as long or short	"Some of the text boxes might have been a bit too long and could feel overwhelming."
Terminology	Commonality of vocabulary	"The vocabulary was sometimes complex, but it suited the style."
Formatting	Text aspect, such as bold or size, and any other accompanying feature	"The contrast between the background and the text (black/white) wasn't great […]."
Style	Unique way ideas are expressed by the writer	"I think the text was quite well written."
Content	Themes in the text that transcend linguistic features	"I enjoyed the humour, the wordplay, and the characterisation of the characters."

Results

Prior to the debriefing, participants were asked whether they were familiar with the concept of *E2U language*. Among the group with dyslexia, 3 out of the 5 participants who played the E2U version were familiar with it. In the group without dyslexia, 6 out of the 10 participants who played the E2U version knew about the concept. Therefore, some participants may have guessed they were playing the E2U version of the game.

As a general observation, playthrough time was recorded for all participants across the different linguistic versions. On average, participants without dyslexia took 18.04 minutes to complete the game using the standard version and 14.21 minutes using the E2U version. Participants with dyslexia required 22.08 minutes with the standard version and 18.41 minutes with the E2U version. Notably, players with dyslexia using the E2U version (mean = 18.41 min) completed the game in approximately the same time as players without dyslexia using the standard version (mean = 18.04 min). While this reduction in time may not be solely attributable to text simplification, given that the E2U version contains fewer words (3,458 compared with 3,655 in the standard version), the similar durations observed across the two conditions suggest a potentially similar experience for players with dyslexia in terms of reading time. However, this interpretation should be treated with caution given the exploratory nature of the data, especially considering that completion times may have been influenced by factors such as individual differences in attention or gameplay strategies, despite gaming habits being controlled for and the experimental object featuring simple gameplay mechanics.

Player experience

Player experience was assessed using both quantitative and qualitative methods. Results are presented separately for the group without dyslexia and the group with dyslexia. Table 6 displays the results for both the standard and the E2U versions for players without dyslexia. The first column lists the constructs included in the mini-PXI, which cover both functional aspects (progress feedback, audiovisual appeal, challenge, ease of control, and goals and rules) and psychosocial dimensions (meaning, curiosity, mastery, autonomy, and immersion). Each construct is accompanied by the mean score and the standard deviation on the Likert scale, along with the minimum and maximum ratings provided by participants.

Table 6. Results from the PXI for the group without dyslexia

Construct	No dyslexia with standard				No dyslexia with E2U			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Meaning	4.20	1.99	2	7	4.60	2.17	1	7
Curiosity	5.50	2.32	1	7	5.20	2.25	1	7
Mastery	5.70	1.34	3	7	5.20	1.14	3	7
Autonomy	6.50	1.58	2	7	5.60	1.84	2	7
Immersion	6.30	1.89	1	7	6.00	1.49	3	7
Progress feedback	6.70	0.675	5	7	5.10	2.33	1	7
Audiovisual appeal	5.40	1.71	2	7	6.00	1.33	4	7
Challenge	5.00	1.76	3	7	5.00	1.63	1	7
Ease of control	6.90	0.316	6	7	6.40	0.699	5	7
Goals and rules	6.70	0.483	6	7	6.80	0.422	6	7
Enjoyment	5.70	1.34	3	7	5.50	1.43	3	7

The most notable differences between the conditions are found in the constructs of *progress feedback* and *autonomy*, both of which show higher values when the texts are presented in their standard version compared to the E2U version. Several constructs, including *curiosity, mastery, ease of control, immersion*, and *goals and rules*, also present higher mean scores in the standard version than in the E2U version. The remaining constructs show similar or even identical values, such as *challenge*, which remains unchanged between versions.

Participants without dyslexia reported similar levels of *enjoyment* in both the standard (mean = 5.70) and the E2U (mean = 5.50) conditions, although this construct is again higher in the standard version. This suggests that these players may

have a slightly better experience with standard language, although the difference is not substantial.

Regarding qualitative data, in the standard version, all 10 participants without dyslexia reported a positive experience, although some difficulties were noted. Their remarks were:

a. Object descriptions appeared unintentionally because all objects had a wide activation range that triggered the description whenever the player was nearby (P01, P03, and P05).
b. Some tasks, particularly the riddles and the memorisation questions, were considered too difficult (P04, P06, and P09).
c. The text was perceived as too long (P04 and P05), and a more adult-oriented narrative was desired (P08).

In the E2U version, most participants (8 out of 10) also described their experience as positive. Other comments included:

a. Interactions with objects were found to be difficult (P11 and P20).
b. Some tasks were considered too challenging, especially the riddles (P11, P13, P16, and P17) and the memorisation questions (P12 and P14).
c. The experience was described as more suitable for children (P12 and P15), while also being praised for its immersive text and music (P11 and P14).

The comparable perceptions of task complexity across both conditions align with the identical scores for the *challenge* construct. However, the higher score in the standard condition for *ease of control* is inconsistent with the multiple complaints about the triggering of descriptions. Although one participant described the E2U texts as immersive, the overall *immersion* score was lower than in the standard condition. The quantitative measurement of *enjoyment* aligns well with the qualitative feedback: all participants in the standard condition described the experience as positive, with a mean enjoyment score of 5.70, while 8 out of 10 participants in the E2U condition reported a positive experience, corresponding to a lower mean score of 5.50.

For the group with dyslexia, results are presented in Table 7, following the same format as for the group without dyslexia, distinguishing between the condition with standard language and the condition with E2U language.

In this case, there are notable differences between the conditions. Most players with dyslexia showed stronger agreement (at least one point higher) with statements related to *curiosity, mastery, autonomy*, and *immersion* when playing the game with the E2U version of the texts. Other constructs, such as *ease of control* and *goals and rules*, also received higher ratings in the E2U version, although the differences were less pronounced.

Table 7. Results from the PXI for the group with dyslexia

Construct	Dyslexia with standard				Dyslexia with E2U			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Meaning	5.80	1.30	4	7	5.00	1.22	4	7
Curiosity	4.20	2.39	1	7	6.00	1.00	5	7
Mastery	4.40	2.41	1	7	5.80	0.837	5	7
Autonomy	4.20	2.28	1	7	6.40	0.894	5	7
Immersion	5.40	1.52	3	7	6.40	0.548	6	7
Progress feedback	5.60	2.07	2	7	6.20	1.30	4	7
Audiovisual appeal	5.80	0.837	5	7	5.80	0.837	5	7
Challenge	4.40	2.41	1	7	5.40	0.548	5	6
Ease of control	5.80	2.17	2	7	6.20	1.30	4	7
Goals and rules	6.00	1.22	4	7	6.40	0.548	6	7
Enjoyment	4.60	1.95	2	7	6.20	0.837	5	7

Enjoyment was higher in the E2U version, with players with dyslexia rating it 1.60 points above the standard version. These results may be influenced by the sample size, as the standard deviation was considerably higher across all constructs in the standard version compared to the E2U one. This suggests a lower level of consistency among participants' responses in the standard condition. Overall, the player experience for participants with dyslexia was more positive in the E2U version of the texts.

One notable exception is the *challenge* construct, where players with dyslexia rated the E2U version as more difficult (mean = 5.40) compared to those who played the standard version (mean = 4.40).

Regarding qualitative data, in the standard version, 1 participant with dyslexia described the experience as clearly positive, while 3 others were positive, but with reservations. In addition:

a. Texts were reported to contain too much information (P22 and P24) and to lack visual cues and adequate formatting (P22).
b. Tasks were considered difficult (P21 and P24), particularly the memorisation questions (P22).
c. The narrative and visuals were generally well received, although one participant would have preferred a deeper storyline (P25).

In the E2U version, all participants with dyslexia described the experience as positive, except for one. Participants also made the following comments:

a. Controls led to accidental triggering of descriptions or skipping dialogue (P28, P29 and P30).
b. Some tasks were too difficult, particularly the riddles (P27) and the memorisation of dates and materials (P26, P29 and P30).
c. Texts contained too much information (P29 and P30), and the music was overstimulating (P28).
d. The narrative was praised (P28), although one participant thought the content was more suitable for children (P30).

When comparing quantitative and qualitative results, it becomes evident that both conditions reflect different challenges during gameplay. However, these difficulties did not seem to affect the overall experience in the E2U version. For instance, although participants in both conditions mentioned the length of the dialogues and the memorisation task as obstacles, the *mastery, autonomy*, and *immersion* constructs scored higher in the E2U version. Regarding the *enjoyment* score, participants rated the E2U version more enjoyable (mean = 6.20), in line with their mostly positive comments, while the standard version scored lower (mean = 4.60) and received more neutral feedback.

In both the group with dyslexia and the group without dyslexia, most participants reported issues with the controls, particularly the automatic triggering of object descriptions, and felt that some tasks were unfairly complex, especially certain riddles in the first task and the memorisation required in the third. Additionally, many participants commented on the excessive amount of text and information, a topic that is explored further in the following subsection.

Language acceptability

Table 8 presents the results of the Likert-scale item regarding acceptability within the group without dyslexia. The data are displayed in the same format as the previous subsection, including the mean, standard deviation, and minimum and maximum values.

Table 8. Results from language acceptability for the group without dyslexia

Construct	No dyslexia with standard				No dyslexia with E2U			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Language acceptability	5.90	1.10	4	7	5.10	1.85	2	7

Concerning qualitative data, participants without dyslexia shared the following comments about the standard version:

a. Texts were considered too long (P04), with too many paragraphs (P05).
b. Vocabulary was too complex (P01 and P03), but also suitable and humorous (P07).
c. Formatting could be improved using a more visually appealing font (P02), dividing the text into additional dialogue boxes (P05 and P10), and adding visual cues and a resizable font (P08).
d. The literary style was appropriate for the game's theme (P01), but it was also considered informal and lacking in character depth (P06 and P08).
e. The humour and characterisation were praised (P02), but the dialogues were described as repetitive (P06), and the game as bland (P08).

In the E2U version, participants without dyslexia gave the following feedback:

a. Texts were overwhelming and hard to memorise (P11, P12, P14, P16, and P18).
b. Formatting could be improved through better paragraph division (P14 and P18), a resizable font (P18), and visual cues or bold to highlight key information (P20).
c. The content was praised for staying true to the original book (P15).

Both groups expressed concerns about the length and amount of information in the texts. They also offered similar suggestions for improving formatting, such as a better division of paragraphs, using bold for emphasis, and including a resizable font.

Similarly, as shown in Table 9, players with dyslexia also rated the standard version higher than the E2U version, with a mean difference of 0.80, identical to the group without dyslexia. This difference may be nuanced by the high standard deviation in the condition of players with dyslexia and standard language, indicating that while some participants found it very difficult, others found it very easy. In all other conditions, there was a lower deviation, suggesting more consistent responses.

Table 9. Results from language acceptability for the group with dyslexia

Construct	Dyslexia with standard				Dyslexia with E2U			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Language acceptability	5.40	2.61	1	7	4.60	1.52	3	7

Regarding qualitative data, in the standard version participants with dyslexia showed mixed opinions about text features:

a. Texts were considered too long (P22), but also described as concise and informative (P25).

b. Vocabulary was praised for fitting the game's atmosphere (P21).
c. Formatting could be improved by highlighting key words (P24) and dividing the text to better present main ideas (P22).
d. Literary style was complex but acceptable (P23), well written (P24), and also lacking depth (P25).

In the E2U version, players with dyslexia also commented on various textual features:

a. Texts were considered too long by most participants (P26, P27, P28, and P29).
b. Vocabulary was generally well understood, although some unfamiliar words were noted (P30).
c. Formatting could be improved by justifying the text (P26), splitting it into separate dialogue boxes, using a resizable font (P28), and improving contrast with the background (P29).
d. The style was described as simple and easy to understand, although the content was not particularly engaging (P29).

Interestingly, length appeared to be a greater issue in the E2U version than in the standard one, even though the latter contained more words. Formatting was also a concern across both versions, with participants suggesting improvements such as highlighting key words and dividing the text into smaller paragraphs. Opinions on literary style were polarised, with different participants expressing positive views about both versions. Once again, the differences observed in the qualitative data seem to reflect a subjective perception that may not be fully explained by the specific textual features.

Overall, the standard version of the texts was preferred by players both with and without dyslexia. However, participants across all four conditions, regardless of the version they played, agreed on the need to divide the text into separate dialogue boxes and implement formatting changes, such as adjusting font size and using bold for emphasis.

Discussion

We now examine the data in light of the research objectives. $\mathbf{O_1}$ was to examine differences in player experience across conditions defined by the presence or absence of E2U language and by participants' dyslexia status. The quantitative data indicate that participants without dyslexia showed higher agreement on most constructs of the PXI when interacting with the standard version, whereas participants with dyslexia rated the E2U version more positively across most constructs.

The less favourable experience with E2U from players without dyslexia may reflect a form of stigmatisation previously observed in websites (Schmutz et al. 2019). Even though nearly half of the participants were unaware of the existence of E2U language, some of its features may have been perceived as less appealing. These include concept repetition, a higher number of segmented sentences, and the use of simpler terminology. In any case, the observed differences are subtle, and a study with a larger sample size would be necessary to determine whether these differences are statistically significant.

Regarding qualitative data, not many differences were observed between participants with and without dyslexia. However, their responses offered valuable insights into the nuances of their player experience. Among players without dyslexia, the main difficulties were related to functionality and task complexity. In the group with dyslexia, the main difficulties were related to text processing and memorisation. These participants often felt overwhelmed by the amount of information presented. This aligns with previous research, which highlights the difficulties individuals with dyslexia face due to working memory limitations (Smith-Spark & Fisk 2007) and, more commonly, reading difficulties (Melby-Lervåg et al. 2012).

The second objective, $\mathbf{O_2}$, was to examine differences in language acceptability across conditions defined by the presence or absence of E2U language and by participants' dyslexia status. The collected data indicate that the standard texts were better perceived and rated than their E2U counterparts, even by users with dyslexia. Again, this might reflect a form of stigmatisation, as 3 out of 5 participants were able to recognise the E2U language as an accessibility option. Yet, if players with dyslexia had a better experience with the E2U language, their perception of it as less acceptable seems inconsistent. The impact of E2U on language acceptability should be further explored with a larger sample to determine whether these results are statistically significant, as well as through the inclusion of measures of stigmatisation that could help explain participants' perceptions.

The qualitative data suggest that certain textual features may have influenced how the E2U texts were perceived. Participants both with and without dyslexia mentioned that these texts felt too long, although, as previously noted, the E2U version actually contained fewer words. The reason behind this perception remains unclear, but it may relate to how the information was presented, rather than its actual length. The E2U version may appear longer due to its fragmentation into shorter sentences (see Table 3 above).

In addition, across all four conditions, participants commented on text formatting. Many of their recommendations are already present in existing E2U language guidelines (Inclusion Europe 2010) and cognitive accessibility guidelines for video games (Ellis et al. 2017). Several features are also found in many com-

mercial video games, such as coloured text in *God of War: Ragnarök* (SIE Santa Monica Studio 2022) and adjustable size in subtitles in *Assassin's Creed Shadows* (Ubisoft 2025), which makes it reasonable for users to expect them.

In general terms, participants with dyslexia had a better player experience with the E2U version of the game, although they expressed a more positive attitude towards standard language. Conversely, participants without dyslexia showed a slightly better experience with the standard version and also reported a more favourable attitude toward this type of language. This highlights the potential of E2U language as an accessibility option for enhancing player experiences for individuals with learning difficulties. However, in line with research in web accessibility (Vollenwyder et al. 2018), its implementation may be most effective as a switchable feature, allowing both players with and without dyslexia to switch to the standard version whenever they prefer. Whether this would improve the acceptability of E2U language remains an open question for future research.

This study is not without limitations. As may be noticed, the maximum score in nearly all quantitative constructs is 7, while the minimum ranges from 1 to as high as 5 in some cases. The lack of anonymity and the presence of researchers during the sessions may have contributed to the social desirability bias, making participants more inclined to provide positive feedback, potentially inflating the mean scores and increasing the standard deviation in divergent cases. Two participants also required assistance during the playthrough, which may have adversely impacted their overall experience. Furthermore, some participants had prior knowledge about E2U language as an accessibility option, which may have influenced the results, particularly in terms of language acceptability. Another limitation is that, whereas player experience was measured using the validated mini-PXI scale, the quantitative language acceptability item was developed specifically for this study. As a result, the findings relating to language acceptability are exploratory and should be interpreted with caution. Finally, the combination of online and face-to-face participants may have introduced variability across the sample, although the researchers were present throughout all sessions and made every effort to replicate the same testing conditions.

The most significant limitation, however, lies in the sample size. Due to recruitment challenges, non-probabilistic sampling was used, and only 10 participants with dyslexia completed the study. As a result, inferential statistics could not be applied, and the findings in this article can therefore only be interpreted in terms of observed tendencies rather than causal relationships. Nevertheless, previous studies have produced meaningful insights with similar samples, such as 13 participants in Spinelli et al. (2002) and 7 in Ikeshita et al. (2018). A mixed-methods approach was deliberately adopted to complement the limited quantitative data, positioning the findings of this study as a foundation for future

reception studies involving a larger and more representative sample of participants with dyslexia.

Conclusion

Individuals with dyslexia face specific obstacles when playing video games. While cognitive accessibility guidelines, which address learning difficulties and cognitive disabilities, often recommend readability and clarity, they do not mention the use of E2U language. Linguistic simplification has proven effective in enhancing comprehension in texts and websites, but it may also trigger stigmatisation.

To explore whether E2U language could be a suitable accessibility feature in video games, a 2x2 experimental design was conducted. A group of 20 participants without dyslexia and a group of 10 participants with dyslexia were assigned to different conditions to assess their preferences and reactions to two different versions of a game, one with standard language and another one with E2U. Data on player experience and language acceptability were collected using a mixed-methods approach, combining descriptive statistics and content analysis.

Results suggest that players without dyslexia may view E2U language as diminishing the overall quality of the player experience. Interestingly, players with dyslexia also showed greater acceptance of the standard version. Paradoxically, within this last group, there was a tendency towards a more positive player experience with the E2U version: for players with dyslexia, most constructs in the quantitative data related to player experience received mean scores between 1 and 2 points higher for the E2U version compared to the standard one. It is also noteworthy that E2U language facilitates the reading process, whether by reducing the number of words or simplifying the texts; in this study, this was reflected in the comparable playing durations between players with and without dyslexia. Regardless of the type of language, participants were vocal about their preference for shorter texts and the importance of formatting features such as bold and resizable fonts.

Overall, the data suggest that E2U language is a promising tool for enhancing the player experience of individuals with dyslexia. However, it is important to consider the possibility of negative reactions, with a potential solution being to offer E2U language as a switchable feature. Future reception studies should involve larger samples to enable more robust quantitative analyses, while also incorporating a validated measure of language acceptability and specific items addressing stigmatisation. Furthermore, future research should employ commercial video games to assess whether the patterns identified here persist in more

ecological contexts. Such studies would contribute to the implementation of E2U language as an accessibility feature in interactive media.

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