

User-Centered Usability Evaluation of Cognitive Rehabilitation Software: A Cognitive Walkthrough and System Usability Scale(SUS) Study

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Abstract

Background: The usability of medical device software (SW) significantly influences the clinical utility and effectiveness of treatment. Importantly, user experience (UX) with cognitive rehabilitation SW can directly affect treatment adherence and outcomes.

Objective: To evaluate the usability of tablet-based cognitive rehabilitation SW and identify areas for improvement of the user-centered UX/user interface (UI).

Methods: A formative evaluation utilizing cognitive walkthrough and the system usability scale (SUS) was conducted with occupational therapists, the primary users of the SW. User errors that may potentially occur during system navigation and interface issues were analyzed, whereas the usability level was quantitatively evaluated based on the SUS.

Results: We identified the following key areas for improvement: adjustment of keypad size and position, addition of information before cognitive development evaluation, enhancement of the evaluation completion method, improvement of user manual accessibility, and refinement of the hint button and difficulty level adjustment interface. The mean SUS score was 73.5 points (B- grade), indicating an overall "Acceptable" usability level. Furthermore, the need for improvement was also identified in some UX/UI elements (e.g., utility, complexity, integration, unity, and satisfaction). To address these issues, this study proposed measures for enhancing UX/UI, including improving UI intuitiveness, optimizing the evaluation process, and improving user manual accessibility.

Conclusions: The measures proposed for identifying the usability tasks of digital rehabilitation SW and improving the UX may contribute to optimizing the UX of medical device SW and increase the prospect of clinical adoption.

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Original Manuscript

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Keywords: Usability evaluation; Formative evaluation; Cognitive walkthrough; Cognitive rehabilitation software

Introduction

With advancements in digital technology, the adoption of computer-based cognitive training is expanding in the fields of medicine and rehabilitation [1, 2]. Specifically, tablet- and computer-based

cognitive rehabilitation software (SW) is being employed as an effective rehabilitation tool due to its high accessibility and intuitive touchscreen interface [3, 4]. The objective of cognitive rehabilitation SW is to enhance patients' cognitive function through iterative cognitive training; however, a simple program design alone does not guarantee clinical efficacy. For the effective utility of such SW, evaluating the user interface (UI)/user experience (UX) design and usability—factors that shape the experiences of its intended users, such as occupational therapists—is crucial. This evaluation is strongly linked to treatment adherence and clinical efficacy [5].

Usability evaluation of medical devices and digital rehabilitation SW is critical for reducing therapists' workload, increasing treatment engagement, and ensuring the clinical reliability of the SW [6]. Notably, medical SW with low usability can reduce the work efficiency of medical staff by increasing cognitive load, as well as negatively impact patient treatment outcomes [7].

Cognitive walkthrough (CW) is an effective evaluation method for analyzing design errors that may occur during system navigation, and it also serves as a common methodology for evaluating the intuitiveness of UX/UI design during the inception of medical device development [8]. The system usability scale (SUS) is a quantitative tool used to evaluate the overall usability of medical SW, which is also useful for objectively measuring UX [9].

Previous studies have primarily focused on evaluating the clinical efficacy and treatment outcomes of computerized cognitive rehabilitation SW [10, 11], with few studies assessing usability to improve UI/UX design. The intuitiveness and ease of the UI/UX in medical device SW directly affect clinical applicability and treatment adherence, whereas poorly designed interfaces increase user errors, reducing treatment effectiveness.

This study aimed to evaluate the usability of tablet-based cognitive rehabilitation SW and identify measures for improving UX/UI. CW and SUS were used to analyze the UX of occupational therapists and the primary users and identify usability issues. Finally, based on the findings, we proposed measures for improving the design to enhance the intuitiveness and accessibility of medical device SW.

Methods

Study design

This study was designed as a formative evaluation study applying CW and SUS methodologies with occupational therapists to evaluate the usability of cognitive rehabilitation SW for children with cognitive impairment. The participants comprised occupational therapists ($n = 5$) with clinical experience and the experimental environment simulated conditions in actual occupational therapy settings.

Cognitive rehabilitation SW

The cognitive rehabilitation SW utilized in this study was developed for use in occupational therapy to enhance cognitive function, learning, and development among patients with cognitive impairments. This SW consists of a cognitive screening evaluation, structured and non-structured programs, result-checking functions, and comprehensive usage guidelines and instructions. Specifically, the SW assesses patients' cognitive status through an initial screening evaluation and subsequently recommends individualized cognitive therapy programs based on the obtained results. Occupational therapists design and monitor personalized rehabilitation treatment sessions, and analytical outcomes can be reviewed upon completion of each session. The recommended SW specifications include an Android 13-based operating system equipped with either an Exynos 1380 or Snapdragon 865 processor. In the present study, the Galaxy Tab S6 Lite was employed.

Participants

The participants comprised evaluators (facilitators and observers) and evaluation participants. The evaluators were three researchers from the National Rehabilitation Center (NRC) Usability Testbed, who were assigned roles as evaluation facilitator ($n = 1$) and observer ($n = 2$). The facilitator was responsible for conducting the entire usability evaluation, orientation, providing task instructions to evaluation participants, collecting consent forms, and conducting pre-evaluation surveys and post-evaluation interviews. The observer was responsible for observing and recording each participant's task performance.

The evaluation participants comprised five NRC-affiliated occupational therapists. The inclusion criteria were licensed occupational therapists with experience using medical devices for cognitive rehabilitation and sufficient proficiency in Korean and English to comprehend SW terminology. Individuals lacking experience in cognitive rehabilitation therapy were excluded from the study. The participants provided voluntary consent after receiving a comprehensive explanation of the study objectives, methods, and procedures.

Usability evaluation protocol

The formative evaluation comprising CW and SUS was conducted at the NRC Usability Testbed. Each session required approximately 50 min per participant (Table 1). The evaluation facilitator informed the participants about the study objectives, methods, product information, and usability test procedures. Thereafter, the general characteristics of the participants and their previous experience using similar devices were recorded. Subsequently, the participants executed tasks provided in the SW task scenarios (Table 2). The observer documented the task performance and participant reactions. Upon completing the evaluation, participants assessed the usability of the cognitive rehabilitation SW (Figure 1).

The experimental environment for formative evaluation simulated actual occupational therapy rooms, while the environmental conditions (illumination, temperature, and humidity) of the evaluation site were measured previously. Illumination, noise level, temperature, and relative humidity were adjusted to 316 lux, 28 dBA, 22.8 °C, and 67%, respectively.

CW

CW is a commonly used quantitative evaluation method to assess the cognitive load of users during system navigation and task performance [8, 12]. To evaluate whether the evaluation participants could effectively navigate the SW, the facilitator provided the task scenarios without prior training. The evaluation participants navigated the SW according to the task scenarios provided and performed the major tasks. The observer/recorder documented UI/UX issues and user errors encountered during the evaluation process.

CW was employed to analyze major usability issues that may arise as users navigate the SW. For this, the evaluation involved a total of eight major tasks, divided into 17 sub-tasks, including (i) starting the SW, (ii) performing cognitive screening evaluation, (iii) setting patient accounts, and (iv) selecting and running rehabilitation content. The eight evaluation tasks were (i) checking the power, (ii) registering patient information, (iii) patient evaluation, (iv) checking the user manual, (v) running the program 1, (vi) running the program 2, (vii) analyzing the results, and (viii) exiting the program (Table 2).

The observer monitored the evaluation participants as they performed the sub-tasks, documenting and analyzing the following (Supplementary 1): 1) Did the user know what he or she needed to do for each task? (Y/N); 2) Did the user perform and complete the task properly? (Y/N); and 3) Task completion status (Y/N) [13, 14]. Additionally, the reactions and verbal opinions of the participants

were recorded.

SUS

SUS is a quantitative evaluation tool utilized to assess how users perceive system usability [9]. The SUS comprises 10 items rated on a Likert scale (1: Strongly disagree to 5: Strongly agree) (Table 3). The total score is converted to a range of 0–100 points to evaluate the overall system usability. Moreover, the SUS scores are assigned a “letter grade,” from “F” (0–60 points) to “A” (91–100 points) according to a standardized grading system [15, 16].

Data collection and analysis

CW was utilized to analyze major usability issues that may occur during SW navigation. User reactions and opinions, comprising qualitative data collected through CW, were transcribed, managed, and coded using Excel based on the observer/recorder records. SUS evaluation was utilized to quantitatively assess the overall SW user experience. The mean and standard deviation of SUS scores were calculated and interpreted as letter grades (A to F) according to the grading system [15].

Ethical considerations

This study was approved by the Institutional Review Board of NRC (NRC-2024-04-020). All participants provided voluntary consent to participate after receiving a comprehensive explanation of the study objectives and methods. No compensation was provided for participating in the study. For the protection of personal information and the confidentiality of the participants, all data were anonymized.

Results

Evaluation of participant information

The evaluation participants comprised five occupational therapists with 3 years and 2 months to 15 years and 4 months of experience. Furthermore, the therapists had 2–12 years of experience using similar medical devices or computerized cognitive programs, such as ComCog, RAPAEI, and RehaCom (Table 4).

CW results

During the CW, which involved observing the evaluation of task performance by the participants based on the task scenarios, frequent typing errors were noted during patient registration (Task 2) and patient information generation (Sub-task 2.1) due to the small size of the on-screen keypad. Participants also experienced inconvenience when checking certain information as the keypad obscured a section of the patient information input. Furthermore, they experienced difficulty finding the delete button and experienced delays when looking for the button for changing to English to input information in English.

To perform cognitive development screening evaluation (Sub-task 3.1) under patient evaluation (Task 3), the participants appeared confused as the evaluation began without instruction or explanation. Additionally, the gesture for the puzzle task was the tapping method, but the therapist confirmed the drag method, indicating a generalization error in gesture interaction. To complete the

cognitive development screening evaluation (Sub-task 3.2), participants were required to press the “Next Item” button, as a separate “End” button was not provided. However, evaluation participants mistakenly pressed the “Back” button to end the evaluation, which led to the loss of evaluation results. This issue made it impossible to check the cognitive development results, impacting the running of the program.

To check the user manual (Task 4), most users appeared not to recognize the “What is cognitive rehabilitation SW?” icon as the button for the SW user manual.

To adjust the difficulty (Sub-task 5.2) under run the program (Task 5), selecting the program stage appeared on the program screen, whereas selecting the number of items appeared via modal pop-up. Users made errors by pressing the “Run” button without recognizing the stage selection screen when selecting the stage and number of items. To give a hint (Sub-task 5.3), three of five evaluation participants did not recognize the question mark icon as the hint button and instead provided verbal hints, resulting in errors.

To check the results from the ‘Evaluation participation date’ (Sub-task 7.2) under the analysis of results (Task 7), two participants did not end the cognitive development screening evaluation as indicated in the user manual. Consequently, the evaluation results were not saved, and thus, the list of programs performed and performance results could not be confirmed. Moreover, two participants selected the detailed program results instead of screening evaluation performance results. To check the specific results for each date (Sub-task 7.3), two participants did not complete the cognitive development screening evaluation. Consequently, specific results for each date could not be found and confirmed. Moreover, two participants could not find the icon for specific results by date, and, therefore, they were unable to perform this sub-task. To check the performance level of the patient for the cognitive domain (Sub-task 7.4), the correct icon was selected, but because the cognitive development screening evaluation results were not saved, the cognitive ability graph was not provided and could not be confirmed.

SUS results

The SUS score was 73.5 points, equivalent to a letter grade of B- (Good, Acceptable)(Figure 2). Although usability was evaluated to be generally good, some areas for improvement were identified. Specifically, the scores were relatively low for Utility (Q1), Complexity (Q2), Integration (Q5), Unity (Q6), and Satisfaction (Q9), indicating that the functional needs of the users were not sufficiently met and the method of use was not intuitive (Table 5).

Discussion

In this study, formative evaluation was conducted to evaluate the usability of cognitive rehabilitation SW and identify the areas for improvement in the UI/UX of medical device SW. Usability evaluation was conducted according to the international standard IEC 62366, and both quantitative and qualitative analyses were performed by applying CW and SUS on occupational therapists, the primary users of this SW.

The usability of medical device SW is a key element that directly affects the clinical applicability and effectiveness of treatment [17–19], whereas user-centered design (UCD) is important for increasing the effectiveness of medical device interfaces [20, 21]. In this study, challenges such as an insistent SW interface, lack of clear guidelines, and potential for user errors were also identified, showing a pattern similar to generic UX issues reported in other medical device usability evaluations.

Notably, issues identified in this study, including inappropriateness of the keypad size and position, lack of instructions prior to the start of the evaluation, and data saving error due to no button for

ending the evaluation, are consistent with the results of previous medical SW studies reporting that poor UI design can increase user errors and degrade system reliability [22]. These challenges extend beyond mere UI design errors and can significantly impact the clinical reliability of medical device SW.

Usability issues of medical device SW not only cause inconvenience with the interface but can also affect the work efficiency of the medical staff and the treatment persistence of patients in actual clinical settings [23]. Errors resulting from data not being saved due to the unclear function of the evaluation end button, as well as errors caused by insufficient instructions on essential task stages, highlight the risk of medical data loss and a decline in the reliability of evaluation results.

Moreover, the cognitive error related to the hint button identified in this study poses a risk of reducing user motivation for learning and treatment in programs designed for children with cognitive impairments. These findings are consistent with the results of previous studies emphasizing that intuitive UX is essential in rehabilitation medical device design [24]. Therefore, when designing medical SW UI, improvements to minimize interaction errors and reduce user cognitive load are crucial.

In this study, the SUS score was equivalent to a B- grade (Good, Acceptable), indicating that the level of usability was generally good, but some improvements were still needed. Among the 10 SUS items, the scores for Utility (Q1), Complexity (Q2), Integration (Q5), Unity (Q6), and Satisfaction (Q9) were below average, indicating that the functional needs of the users were not sufficiently reflected and that the method of use was not intuitive. Such findings indicate the need for a design that considers the workload and cognitive load of the medical device users. Meanwhile, the scores for Learnability (Q7) and Professionalism (Q10) were high, indicating that the users positively evaluated the ease of learning of this SW [25]. Therefore, items with low scores need to be upgraded through iterative usability testing.

Based on the findings of this study, the following UX/UI improvement measures are suggested to enhance the usability of cognitive rehabilitation SW: First, the input interface should be improved. The findings of the study confirmed that input errors occurred due to the keypad being too small and not being positioned properly. This was consistent with UI inconsistency issues frequently reported in medical device SW, which can be resolved by resizing the keypad and improving the visibility of the input fields. Second, a user-centered workflow optimization design is needed. The users were confused by the test starting immediately at the beginning of the evaluation without any guidance, whereas the button for ending the evaluation was not clearly marked, resulting in failure to save the data. Such errors can cause data loss, leading to a decline in clinical reliability in settings where medical devices are used. Therefore, UX should be improved by adding instructional messages for each stage prior to the start of the evaluation, and the evaluation end button should be clearly visible. Third, readability and accessibility need to be improved. The user manual icon was not intuitively recognized and had poor accessibility due to its positioning on the upper part of the screen; this is a problem with the information structure within the UI not being consistent with the expectations of the users. Such problems in medical device SW can increase the user learning burden. Therefore, improvements should be made to rename the user manual icon with clear wording, such as “user instruction,” and increase the visibility within the UI to provide easier access. Fourth, interaction errors should be minimized. As identified in the study, the users became confused as the methods for selecting the stage and number of items in the process of adjusting the difficulty level of the program were presented differently. Moreover, as the hint button was simply labeled with a question mark icon, the users were unable to recognize this as the hint function and provided verbal hints. This issue was due to the lack of UI consistency, which is inconsistent with intuitive design principles for medical device SW [26]. Therefore, the UI for adjusting the difficulty level should be presented in a consistent manner, and the design of the hint button should be improved to be more intuitive, enabling the users to recognize the function more easily. Such UX/UI improvements should be designed based on the principles of UCD and iterative usability testing and should be updated to

increase the intuitiveness and accessibility of medical device SW [20].

This study evaluated the usability of tablet-based cognitive rehabilitation SW and presented the direction for improving the UI/UX of medical device SW. The findings of this study confirmed the need to address the lack of clarity of UI design, optimize the workflow, and improve the interface intuitiveness. Incorporating the UX/UI improvement measures proposed in this study may contribute to enhancing the UX of medical device SW, ultimately increasing the likelihood of clinical adoption and maximizing the treatment effectiveness. Nevertheless, this study was limited by its small scale, involving only five occupational therapists, and the absence of actual patients in the usability evaluation. Future research should incorporate a more comprehensive usability analysis, including patient data and evaluations across diverse clinical settings.

Conclusion

This study evaluated the usability of tablet-based cognitive rehabilitation SW and presented the direction for improving the medical device SW design. Our findings based on CW and SUS confirmed that the major usability issues included a lack of clarity in UI/UX design, a lack of interface consistency, and low visibility of user guidelines. The UX/UI improvement measures proposed to address these issues include improving the keypad size and input field, clarifying the methods for starting and ending the evaluation, improving the accessibility of the user manual, improving the interface for hints, and adjusting the difficulty level. These improvements may reduce the user cognitive load and increase the intuitiveness and accessibility of SW to enhance the likelihood of clinical adoption. Furthermore, this study applied the usability evaluation methodologies for medical devices and digital therapeutics to emphasize the importance of UCD. Future research should conduct additional usability testing under more diverse clinical settings and analyze the actual effectiveness of treatment for a more detailed evaluation of the clinical utility of SW.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Author contributions: CRediT

Seojin Hong contributed to the planning and execution of the study, and writing – original draft; Hyun Choi and Hyosun Kweon performed the overall supervision and observation of the study, project administration, and writing – review and editing.

Data availability

The datasets generated during and/or analyzed during this study are available from the corresponding author on reasonable request.

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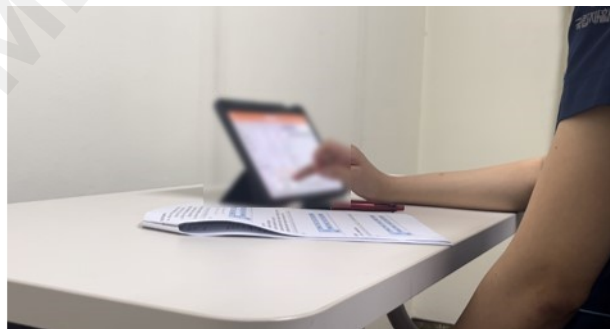
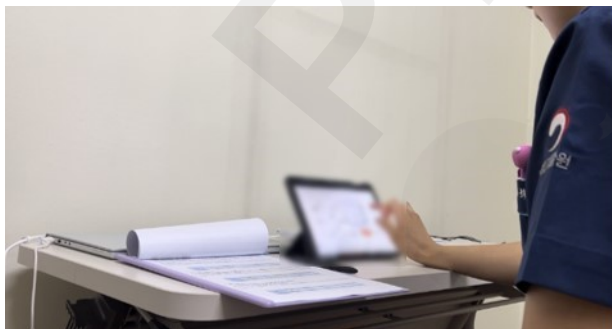


Figure 1. Performance of task scenarios by evaluation participants.



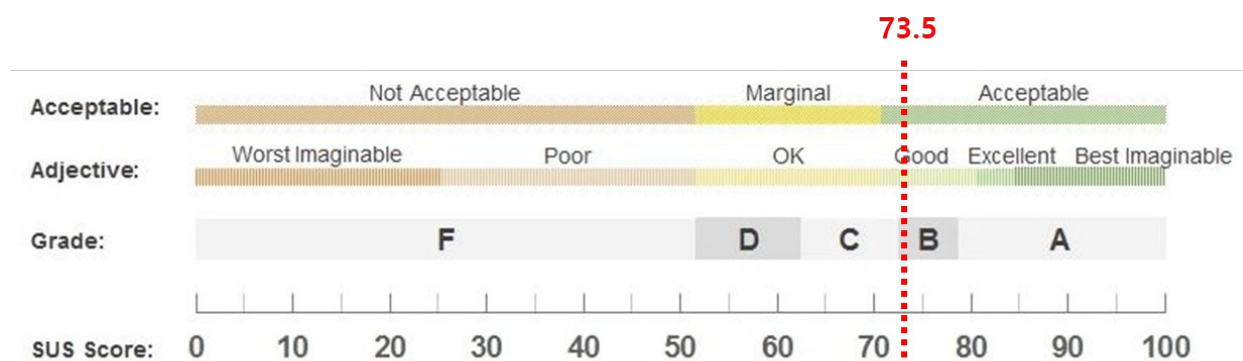


Figure 2. SUS results.

Table 1. Formative evaluation procedures involving practitioners and evaluators conducted for 50 min under the guidance of a facilitator.

Composition	Details	Time (min)
Orientation	- The facilitator introduces the concept of usability evaluation to participants who are unfamiliar with it. - The facilitator explains the target product, purpose, overview, methodology, and other relevant aspects of the usability evaluation to the participant.	5
Guidance on consent	- The facilitator provides the participant with detailed instructions regarding recording and transcription procedures. - The facilitator ensures that the participant fully comprehends the evaluation content and voluntarily provides written consent to participate in the usability evaluation.	5
Perform cognitive walkthrough	- The facilitator conducts a cognitive walkthrough following a predefined script and product usage instructions. - The participant operates the medical device in accordance with the facilitator's guidance. - The observer documents and analyzes the participant's responses during task performance.	30
Perform SUS	- The facilitator administers an SUS to the participant to assess the usability of the user interface.	10

Table 2. Task scenarios.

Task	Sub-task
1. Check the power	1.1. The therapist turns the power on from the tablet screen and runs the cognitive rehabilitation SW.
2. Patient information registration	2.1. The therapist generates patient information. 2.2. The therapist selects name as the patient.
3. Patient evaluation	3.1. The therapist performs cognitive development screening evaluation on the patient. 3.2. The therapist ends cognitive development screening evaluation.
4. Check the user manual	4.1. The therapist checks the guidelines and explanations for the find hidden objects and memory programs in the SW.
5. Run program 1	5.1. The therapist sets the settings for the find hidden objects program and applies the program on the patient. (Program: find hidden objects, Select stage: stage 1, Select items: 4) 5.2. The therapist adjusts the difficulty level of the find hidden objects program and applies the program on the patient. (Program: find hidden objects, Select stage: stage 2, Select items: 4) 5.3. The therapist provides hints to the patient. (Select the button within the program) 5.4. The therapist ends the find hidden objects program and returns to the main screen.
6. Run program 2	6.1. The therapist sets the settings for the memory program and applies the program on the patient. (Program: memory, Select stage: stages 8 and 9, Select items: 4) 6.2. The therapist ends the memory program and returns to the main screen.
7. Analysis of results	7.1. Check the user information. 7.2. Check the results from 'Evaluation participation date'. (List of programs applied) 7.3. Check the specific results for each date. (Programs applied, levels performed, number of items, correct answer rate, response time, and total performance time) 7.4. Check the comprehensive analysis. (Performance, memory, concentration, hand-eye coordination, language skill, and visual perception)
8. Exit	8.1. Exit the cognitive rehabilitation SW.

Table 3. System usability scale questionnaire.

Items	Statement
1. Utility	I think that I would like to use this system frequently.
2. Complexity	I found the system unnecessarily complex.
3. Simplicity	I thought the system was easy to use.
4. Professionalism (Technician support)	I think that I would need the support of a technical person to be able to use this system.
5. Integration	I found the various functions in the system were well integrated.
6. Unity	I thought there was too much inconsistency in this system.
7. Learnability	I would imagine that most people would learn to use this system very quickly.
8. Convenience	I found the system very cumbersome to use.
9. Satisfaction	I felt very confident using the system.
10. Professionalism (Prior learning)	I needed to learn a lot of things before I could get going with this system.

Table 4. General characteristics of participants.

ID	Sex	Experience (years)	Similar medical device			
			Used before	Model name	Experience of use (years)	Frequency of use
P1	F	≥6	Yes	RAPAEI	2	2–3 times/month
P2	F	≥3	Yes	ComCog, RAPAEI	3	1–2 times/week
P3	M	12	Yes	ComCog, Rehacom	12	2–3 times/day
P4	F	≥4	Yes	ComCog, RAPAEI	4	3 times/week
P5	M	≥15	Yes	ComCog, RAPAEI, Rehacom	10	1 time/week

Table 5. SUS evaluation results (N = 5; unit: point).

Item	Min	Max	M $\pm$ SD	Scaled M $\pm$ SD
Total	-	-	3.02 $\pm$ 0.27	73.50 $\pm$ 11.40
Utility (Q1)	3.00	4.00	3.80 $\pm$ 0.45	70.00 $\pm$ 11.18
Complexity (Q2)	2.00	3.00	2.40 $\pm$ 0.55	65.00 $\pm$ 13.69
Simplicity (Q3)	4.00	4.00	4.00 $\pm$ 0.00	75.00 $\pm$ 0.00
Professionalism (technician support) (Q4)	1.00	3.00	2.00 $\pm$ 0.71	75.00 $\pm$ 17.68
Integration (Q5)	3.00	5.00	3.80 $\pm$ 0.84	70.00 $\pm$ 20.92
Unity (Q6)	1.00	3.00	2.40 $\pm$ 0.89	65.00 $\pm$ 22.36
Learnability (Q7)	4.00	5.00	4.40 $\pm$ 0.55	85.00 $\pm$ 13.69
Convenience (Q8)	1.00	3.00	2.00 $\pm$ 1.00	75.00 $\pm$ 25.00
Satisfaction (Q9)	3.00	5.00	3.80 $\pm$ 0.84	70.00 $\pm$ 20.92
Professionalism (prior learning) (Q10)	1.00	2.00	1.60 $\pm$ 0.55	85.00 $\pm$ 13.69

M: Mean, SD: Standard Deviation.

Supplementary 1. Cognitive walkthrough observation records.

TASK	SUB-TASK	Did the user know what he or she needs to do for each task? (Y/N)	Did the user perform and complete the task properly? (Y/N)	Task completion status (Y/N)	Remarks
1. Check the power	1.1. The therapist turns the power on from the tablet screen and runs the cognitive rehabilitation SW.				
2. Patient information registration	2.1. The therapist generates patient information.				
	2.2. The therapist selects name as the patient.				
3. Patient evaluation	3.1. The therapist performs cognitive development screening evaluation on the patient.				
	3.2. The therapist ends cognitive development screening evaluation.				
4. Check the user manual	4.1. The therapist checks the guidelines and explanations for the find hidden objects and memory programs in the SW.				
5. Run program 1	5.1. The therapist sets the settings for the find hidden objects program and applies the program on the patient. (Program: find hidden objects, Select stage: stage 1, Select items: 4)				
	5.2. The therapist adjusts the difficulty level of the find hidden objects				

	program and applies the program on the patient. (Program: find hidden objects, Select stage: stage 2, Select items: 4)				
	5.3. The therapist provides hints to the patient. (Select the button within the program)				
	5.4. The therapist ends the find hidden objects program and returns to the main screen.				
6. Run program 2	6.1. The therapist sets the settings for the memory program and applies the program on the patient. (Program: memory, Select stage: stages 8 and 9, Select items: 4)				
	6.2. The therapist ends the memory program and returns to the main screen.				
7. Analysis of results	7.1. Check the user information				
	7.2. Check the results from 'Evaluation participation date'. (List of programs applied)				
	7.3. Check the specific results for each date. (Programs applied, levels performed, number of items, correct answer rate, response time, and total performance time)				
	7.4. Check the comprehensive				

	analysis. (Performance, memory, concentration, hand- eye coordination, language skill, and visual perception)				
8. Exit	8.1. Exit the cognitive rehabilitation SW.				