Toward an AI-assisted Assessment Tool to Support Online Art Therapy Practices: A Pilot Study

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Abstract. Artificial intelligence (AI) has been widely used to assist art therapists with artwork assessments by providing objective information. While prior studies showed that AI-assisted tools are feasible to improve drawing analysis in in-person art therapy practices, the use of those tools in online art therapy is still under-examined. To fill the gap, we created a prototype of an AI-assisted tool for online therapy in a House-Tree-Person (HTP) test scenario and ran lab-based usability sessions with 10 art therapists in which they used our proposed prototype to complete predefined tasks. We then conducted semi-structured interviews with the participants to understand their acceptance and concerns about the prototype. The findings revealed the unique needs of art therapists and opportunities of using AI-assisted tools to improve online art therapy practices. Based on these findings, we suggest implications for creating AI-assisted tools that meet specific needs of art therapists in online therapy sessions, and further discuss future directions of research about AI-assisted tools for art therapists in online settings.

1   Introduction

During the pandemic of COVID-19, art therapy has supported people in overcoming emotional, psychological, and social issues. Through active art-making such as drawing, sculpturing, or painting, people foster self-esteem, develop emotional resilience, improve social skills, reduce conflict, and resolve distress. To offer art therapy in the pandemic while keeping social distance for safety, the majority of art therapists have to facilitate online therapy sessions (Zubala and Hackett, 2020). However, art therapists face many challenges while conducting online art therapy sessions (Zubala and Hackett, 2020; Snyder, 2021; Power et al., 2021; Choudhry and Keane, 2020). These challenges occur in viewing clients' art-making processes, incorporating art materials, and finding guidelines for the online sessions (Zubala and Hackett, 2020; Choudhry and Keane, 2020). Above all, many art therapists have faced various challenges related to using technology. Those challenges include a steep learning curve to deliver online therapy practice, a lack of knowledge or skills to manage different equipment, and issues with broadband connectivity. Especially, due to the sudden shift to online therapy practices, art therapists might have a shortage of time to research or learn about using digital technology as a tool to connect with clients remotely. While the challenges and concerns are related to the sudden shift to online settings, technology still plays an important role in art therapists' experience with online sessions.

Even before online art therapy became prevailing due to the pandemic, researchers demonstrated benefits of using innovative technology for art therapy from personal computers (Parker-Bell, 1999) to virtual reality (Hacmun et al., 2018). First, communication technologies enhance interactions between clients and art therapists in remote settings. For instance, recent studies how art therapists facilitate online art therapy through applications, such as Zoom[1], WhatsApp[2], or Skype[3] (Collie et al., 2017; Levy et al., 2018; Lloyd and Usiskin, 2020; Zubala and Hackett, 2020). Furthermore, technologies can be used to support art therapists with analyzing clients' artwork. Particularly, artificial intelligence (AI) is used for analyzing artwork in art therapy, such as identifying the main color in a drawing (Kim, 2008). Nevertheless, existing AI-assisted tools for art therapists are mostly designed to support in-person sessions or focus on the clients' experience in online therapy sessions. Unlike in an in-person environment, art therapy in online settings may impose various challenges when art therapists use AI-assisted tools along with other devices for conducting online art therapy. It is important to acknowledge such specific challenges of art therapists in online art therapy.

Extending the line of research on the development of technology for improving art therapy practices, we aimed to fill the gap in the literature about AI systems in healthcare contexts. Thus, we developed and evaluated AI-assisted assessment

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[1]   https://www.zoom.us/
[2]   https://www.whatsapp.com/
[3]   https://www.skype.com/

tools with 10 art therapists. We identified their acceptance and concerns about the prototype and revealed potential benefits of using AI-assisted tools to support online art therapy practices. We then suggest implications for creating an AI-assisted tool that meet specific needs of art therapists in online therapy sessions. Hence, our pilot study makes the following contributions to the CSCW community: (1) we provide a preliminary empirical understanding of how art therapists perceive an AI-assisted assessment tool for online art therapy practices; (2) we identify needs of art therapists when using an AI-assisted assessment tool for online therapy practices; and (3) we present implications for AI-assisted tools to improve the quality of the online drawing-based assessments.

2 House-Tree-Person Test

In our study, we chose House-Tree-Person (HTP) test for prototype development since it is widely used in therapy sessions or clinic consultations (Rohail, 2015; Yu et al., 2016; Groth-Marnat and Roberts, 1998). The HTP test is a projective drawing technique developed by a psychologist named John Buck (1948). While HTP test was originally developed to identify personal traits and intelligence, it has been used as a tool for an initial assessment in psychotherapy or mental health services. For instance, HTP test was used to assess risk factors of personality of patients with mental disorders (Rohail, 2015). In the HTP test, a client receives a short and abstract instruction to draw a house, a tree, and the figure of a person (e.g., "Draw any house"). During and after the client draws, the administrator of the test (e.g., therapist, psychiatrist) asks the client to describe the drawing (e.g., "Who lives in this house?"). Through such interactions, the administrator is allowed to investigate symbolic meanings of drawings that project the client's personal traits. For instances, the size and number of door and windows of a house drawing represent the client's relationship to the outside world and socialization. Although the interpretation of drawings may be affected by the administrator's individual knowledge and experiences, Buck's manual provides a general guide for facilitating a HTP test and identifying meaningful information from drawings (Buck, 1948). Thus, we adopted Buck's HTP test manual and developed a prototype that provides art therapists with information about drawings in online therapy sessions.

3 Related Work

3.1 Traditional Technology-assisted Art Therapy

Prior studies showed how technology supports art therapists in conducting both in-person and online art therapy sessions. Researchers in medical and HCI communities have developed and evaluated technologies that support various aspects of art therapy, including new art media and online group therapy sessions.

Some prior studies focused on technology-assisted art therapy practices that involves digital media. Instead of asking clients to draw objects on paper with pencils, technology allows art therapists to utilize digital collage making (Diggs et al., 2015), animation (Austin, 2009), or digital photography (Atkins, 2007). Those prior works showed that the diversity of digital media may enable art therapists to assess clients' emotional and psychological distress with various approaches. Furthermore, some researchers have been seeking the opportunities for technology to support online art therapy (Hacmun et al., 2018; Datlen and Pandolfi, 2020; Collie et al., 1998; Collie and Cubranić, 2002; Jones et al., 2014). These prior studies mostly focused on developing tools to improve communication between a therapist and clients or among clients in online group therapy sessions by providing a virtual space to share artwork (Datlen and Pandolfi, 2020) or enabling collaborative drawing (Jones et al., 2014).

3.2 Artificial Intelligence (AI) for Assessment Practices and Art Therapy

Artificial Intelligence (AI) has been supported assessment practices in various contexts, including healthcare and online learning. In a healthcare domain, researchers developed AI systems that predict clients' prognoses or recommend personalized treatment (Cohen et al., 2020; Yao et al., 2020; Schwartz et al., 2021; Gómez Penedo et al., 2021). While Schwartz et al. (2021) developed a treatment selection model to recommend clients' optimal treatment, Goldberg et al. (2021) evaluated the feasibility of using AI-assisted tools to assess therapists' interpersonal skills that are fundamental to psychotherapy. Similarly, in an online learning domain, prior studies focused on investigating how AI systems support the assessment of learners' understanding and competency (Coghlan et al., 2021; Hamdy et al., 2021). While Coghlan et al. (2021) discussed ethics of AI-assisted online proctoring technologies, Hamdy et al. (2021) evaluated the feasibility, acceptability, reliability and validity of an online clinical encounter tool designed to assess aspects of medical students' non-psychometric competencies. Considering as psychotherapy, art therapy has also been influenced by the advancement of artificial intelligence (AI). Particularly, AI has supported art therapists in interacting with their clients or analyzing clients' artwork. While AlSadoun et al. (2020) proposed an AI-assisted art therapy system that uses technology to enhance communication between therapists and clients, Kim and colleagues designed AI systems to evaluate the color-related information from clients' artwork, including the number of colors used and the length of edges between colors (Kim et al., 2007; Kim, 2008; Kim and Hameed, 2009; Kim et al., 2009, 2008). Moreover, in a recent study, Kim et al. (2021) proposed a novel deep learning model that may increases efficiency and objectivity of art therapy practices by identifying symbolic features from HTP drawings.

3.3 Limitations of Prior Studies

In brief, prior studies showed the opportunities for AI to improve the quality of art therapy practices, such as analyzing color elements of drawings (Kim et al., 2007; Kim, 2008; Kim and Hameed, 2009) or providing information about symbolic features of drawings (Kim et al., 2021). Nevertheless, those studies mostly investigated how to improve AI's efficiency and effectiveness to support art therapists in decision-making. The perspective and experience of art therapists with the AI-assisted tool are still understudied. In particular, little is known about how existing AI-assisted tools would be integrated into online art therapy practices that may impose unique challenges to art therapists. Hence, our study extends the understanding of AI-assisted tools' integration with online art therapy practices and provides empirical findings on how an AI-assisted assessment tool supports art therapy practices.

4   Method

We developed an AI-assisted prototype and conducted lab-based usability sessions with 10 art therapists to evaluate the prototype. In each session, each participant was asked to learn about the prototype, performed the predefined tasks, and participated in an interview. By following the procedure using the Wizard of Oz approach (Dahlbdck et al., 1993). Each participant interacted with our proposed prototype that offer manually typed information about each element (e.g., window) of drawings, rather than the information automatically detected and provided by AI models. Also, we did not ask about or measure participants' knowledge about HTP test since it was not the aim of study.

4.1 Prototype Development

Based on the findings from prior studies about challenges and needs of art therapists, we were motivated to develop a prototype that supports the assessment process in online art therapy sessions. Particularly, we focused on online HTP test as it has been widely used in in-person sessions. The development of our prototype was done in 5 steps: (1) creating an HTP test checklist following John Buck's manual, (2) collecting sample House, Tree, and Person drawings from actual tests conducted by John Buck (1950), (3) creating information about the drawings that the user would seek for assessment, based on the Buck's manual (Buck, 1948), (4) creating a server to run our prototype on with Flask web framework and Python, and (5) creating the prototype with HTML and Javascript. Our prototype supports art therapists navigating information about the selected drawing and analyzing the drawing (see Figure 1). Specific information about an element (e.g., window) or overview information about each drawing are described in to three aspects: detail, perspective, and proportion (Buck, 1948). Particularly, art therapists are allowed to click red bounding boxes around elements that are detected by AI (see Figure 2).
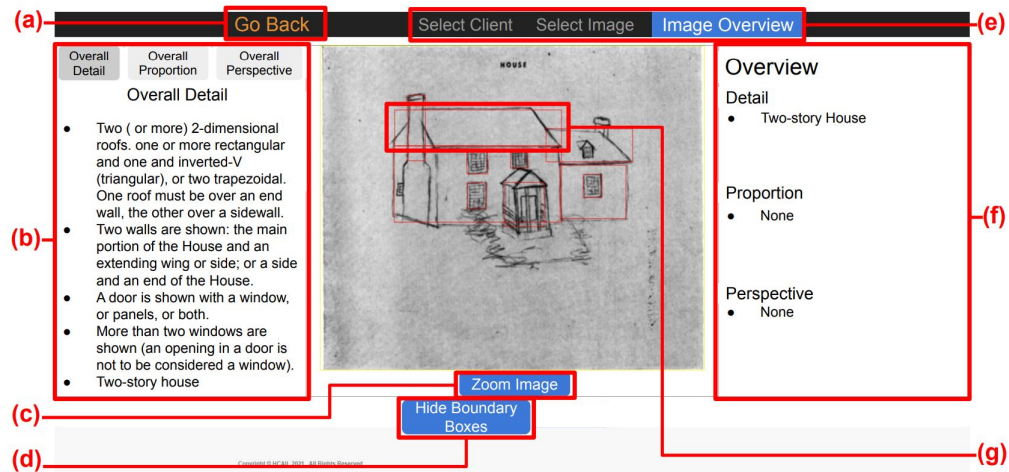
Figure 1. The prototype with main features are highlighted: (a) Back button to previous page; (b) Overall information of the image; (c) A button for displaying the enlarged image in a pop-up window; (d) A button for viewing the original image where specific items are not marked with red bounding boxes; (e) A progress indicator of the prototype; (f) The detail, proportion, and perspective of the selected element; and (g) Clickable bounding box that shows information about specific element of the drawing.

Once clicked, the prototype provides art therapists with information about the specific element.

4.2 Data Collection

We recruited 10 registered art therapists (see Table 1). The eligibility criteria for the participants are as follows: (1) must be over 18, (2) must be able to understand English, (3) must be a registered art therapist with titles (e.g., ATR, ATR-P, ATR-BC, and LCAT), and (4) must have conducted at least one online art therapy session in the past year. To identify eligible study participants, we obtained a list of registered art therapist on the websites of institutions credentialed by the American

P#	Gender	Age	Race/ethnicity	Year(s) since certificated	Learned HTP
P1	M	39	White	2.5	Yes
P2	F	46	White	16.0	No
P3	F	61	White	5.5	Yes
P4	N/A*	53	N/A*	22.5	Yes
P5	F	27	Hispanic	1.0	Yes
P6	F	57	White	26.0	No
P7	F	42	Asian, Hawaiian, & Hispanic	8.5	Yes
P8	F	42	White	10.5	Yes
P9	F	68	White & Hispanic	44.0	Yes
P10	F	38	White	8.0	Yes

Table I. The demographics information of the interview participants. ∗ P4 preferred not to describe gender and race/ethnicity. Two participants (P2, P6) did not learn the assessment process of HTP tests, but it did not affect their completion of tasks in our usability sessions since the tasks did not require prior knowledge about HTP test.
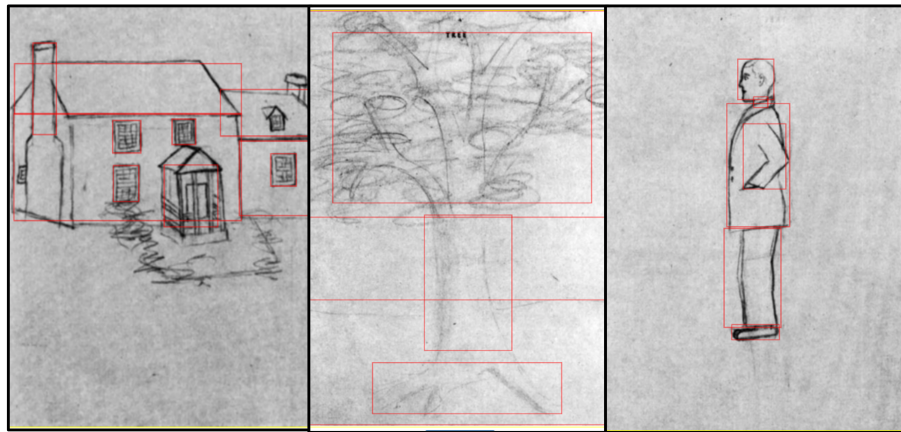
Figure 2. The three drawings: House (left), Tree (middle), and Person (right). For the Tree drawing, it was challenging for some participants to differentiate the "Branch" and "Foliage" as their bounding boxes seem to be overlapped to each other. Red bounding boxes indicate the element that AI detects. When each bounding box is clicked, AI provides art therapists information about the specific element.

Art Therapy Association. We also searched art therapists on Facebook, YouTube, LinkedIn, and Reddit by using the search queries (e.g., "art therapy," or "art therapist"). The participant age ranges from 27 to 68 (M = 47.3, SD = 12.3). The years since they get certificated in art therapy ranges from 1 to 44 (M = 14.4, SD = 13.2). All 10 participants have worked with adolescents (age 14-19) and adults (age 20-64) clients, while some of them specifically worked with preschool children (age 2-5), school-aged children (age 6-13), and/or seniors (age 65+). Eight of the participants have learned HTP test. This study was approved by our university's Institutional Review Board prior to data collection.

To collect data, we conducted a usability session with each participant as follows: (1) We introduced our prototype to participants, including how main features of our prototype work, and how AI analyze drawings; (2) We asked participants to try out our prototype by completing demo tasks so that they can understand how the prototype works and what information it provides; (3) We asked participants to use our prototype for performing predefined tasks; and (4) We conducted a semi-structured interview with each participant. The predefined tasks were: (1) searching specific information of each drawing and type it to a Google Doc, (2) searching overall information of each drawing and type it to a Google Doc. For example, the participants were asked to navigate our prototype to find detail information of roof from House drawing and overall perspective information from Tree drawing. These tasks were inspired by Buck's manual (Buck, 1948) that guide therapists to seek information from each element (e.g., door) from each drawing and to take notes for further assessment if necessary.

Next, we conducted post-test interviews that lasted 25-30 minutes. Participants gave verbal consent to interview recording and the use of anonymous data at the beginning of the interviews. They acknowledged that their participation was

voluntary. Interview questions pertained to their experience regarding using the prototype and their opinions about potential features and use of the prototype. The sample questions include *"What are your overall impressions of the prototype?"*, *"How do you feel about the information provided by AI"*, and *"How would you integrate our prototype into your online therapy practice?"*. To ensure the anonymity of all participants, we removed all personally identifiable information and assigned each participant a unique identifier (e.g., P1, P2). Each participant was compensated with a $20 gift card for their participation in this study. All interviews were recorded and transcribed automatically by Zoom, and the transcripts were reviewed by research team members to fix any errors.

4.3 Data Analysis

We analyzed the interview data using grounded theory (Strauss and Corbin, 1997). Six out of the authors separately coded the transcripts. The entire research team then conducted an affinity diagram (Holtzblatt and Beyer, 1997) on Miro[4] to identify key themes, insights, and patterns that appeared repeatedly in the collected qualitative data. To resolve discrepancies between researchers, the team had weekly meetings. , we identified how art therapists perceive an AI-assisted tool and what they need to integrate the system into their online therapy practices.The research team categorized and refined emerging themes (e.g., perceived benefits of using our prototype, challenges in adopting the prototype into current practices, and potential features to be added to the prototype).

5 Results

By analyzing interview data, we found four salient themes: benefit and challenge of using the bounding boxes,evaluation on prototype features, evaluation on information provided by the prototype, and potential benefits as an educational tool for art therapy students. Despite of diversity of our participants, these themes emerged across the whole range of work experience and age.

5.1 Roles of the Bounding Boxes

An important user interface element of our prototype is the bounding boxes that visualize selected elements on drawings. Our participants reported a major benefit and a significant challenge in utilizing the bounding boxes. For the benefit, four participants reported that the bounding boxes allowed them to analyze subtle information about elements (e.g., proportion of arm of Person) as such information is hard to eye-measure. For example, P3 emphasized that bounding boxes were helpful to specific elements of drawings: *"I really like the ability to highlight boundaries, because I definitely have certain things that I look for in the House*

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4   http://www.miro.com/

[drawing]. I was able to highlight the windows and I really think that the windows had a lot of information in them. [...] I can really look at certain features more closely." (P3). On the other hand, three participants were confused with the prototype's features, particularly with the bounding boxes on the drawings. They pointed out that the bounding boxes misled them because of the lack of sufficient explanation about the bounding boxes and AI detection. For instance, P8 assumed the red bounding boxes on the sample drawings were drawn by the client: *"I assumed that they were like yellow or red boxes, or something the client drew. [...] I think it would be necessary to explain that that box is being put on by the system so that I don't interpret that the client suddenly put a red square."* (P8). Particularly, two participants expressed both satisfaction and concerns for the bounding boxes. Their ambivalent perceptions were identified when they were asked about their concerns about the prototype and potential features to be added to the prototype.

5.2   Potential Prototype Features

In addition to the bounding boxes, our prototype provided the participants with several features, including displaying different categories (e.g., proportion) of information about the drawing elements. However, they expressed their desire for additional features for the prototype. For example, eight participants were interested in using the prototype for other assessment techniques, such as Person in the Rain, and Person Picking an Apple. Participants wanted to use the prototype for the assessments that they felt more comfortable with. The suggested assessments include Person in the Rain, and Person Picking an Apple. One of the common characteristics of these assessment techniques, including the HTP test, is that a manual is necessary for therapists to conduct a assessment with their clients. Moreover, four participants stated that they were concerned about the prototype's lack of the scalability to adjust to therapists' individual practices. Two out of the four participants described they were eager to follow their own manuals because our proposed prototype only addressed Buck's HTP manual considered as an original manual. Even if they use structured assessment techniques (e.g., the HTP test), our participants tended to have their own technique of facilitating assessments: *"I think the House Tree Person is a lot different for art therapists. Everyone kind of has their own way of doing it, even though there's like a very structured way to conduct it."* (P5). This quote indicates therapists' desire to have the ability to customize AI systems to be integrated with their individual therapy practices, even though there are structured manuals with fixed classification values and information about drawings.

5.3   Essential Clients' Data for Assessing Drawings

We found that therapists in our study wanted to obtain additional information about clients for our AI-assisted prototype. Although our prototype displayed the

client's background information such as demographic information, four participants expressed their concerns that the prototype did not incorporate client's emotions or behaviors into AI-provided information during the session. For example, P4 stated that the prototype did not consider the diverse background of the clients and difficult to observe how a client created his/her artwork. *"It seems like everybody is going to meet things that are going to mean the same thing for every person and that's not true. It's not taking into account all of the intersections of a person's diversity, it doesn't take into account cultural all kinds of different background information that is very unique to each individual and how they all intersect and you know. One thing like a hole in a tree doesn't mean the same thing for every person."* (P4). Lack of additional information about the clients made study participants feel the full assessment conducted by AI would not be truthful as the AI-assisted tool did not consider interactions between the clients and their drawings. This limitation may also cause a potential consequence leading to misinterpretation of clients' drawings. For instance, the prototype may not correctly detect what the clients intended to draw. Then, art therapists may misinterpret the drawings. Acknowledging the limitation, P5 suggested the prototype should consider clients' intentions: *"If a client draws like a star on a house or something and the AI doesn't pick that up as a window let's say the client decides it's a window and maybe there could be an option, where we[art therapists] could manually kind of put it in and say like this is a window."* (P5).

5.4 Potential Benefits as an Educational Tool for Art Therapy Students

In addition to improving the efficiency of online art therapy, we noticed that our prototype has a potential to be used as an educational tool to support art therapy students. For instance, P3 mentioned the opportunity of an AI-assisted tool for art therapy students as a standardized tool to supplement their subjective interpretation of drawings: *"What I want the students to understand is that they might be in a setting where they don't always get to do our therapy as much as they would like to [...] They could even present this to you know their colleagues their supervisors and talk about how this is a standardized tool and it's interpreted with the help of AI [...] I think this could be seen as a really you know standardized valid tool."*(P3). However, P9 was worried about letting students use the prototype because of their potential dependency on AI-assisted tools: *"So, my concern would be that a student would use your prototype and not really look at that information and think about that information themselves [...] They would just go the easy path, instead of really trying to look at the image themselves and come up with those conclusions themselves."* (P9). P9's concern indicates potential negative influences of the prototype as an educational tool on students' assessment skills, instead of helping them develop their skills.

6 Discussion

In this section, we discuss how to better design an AI system for art therapists in online therapy sessions. The findings of this interview study revealed that our AI-assisted prototype needs to be improved in three aspects. Each aspect indicates the needs of our participants, including understanding AI's functions, extending the application of the prototype beyond online therapy sessions, and considering clients' input for an AI-assisted assessment tool. We also discuss directions for designing potential collaborative AI systems for online art therapy sessions.

6.1 Visual Cues for Explaining AI's Features

A major concern that our participants had was that the prototype did not sufficiently explanation about AI functions. Although the participants mentioned that our prototype was useful to search specific detailed information on drawings, they also expressed their desire to have more explanations about what the AI-assisted tool can do. Particularly, four participants were not satisfied with the bounding boxes on drawings due to the limited explanation about how our prototype interpret the drawings. Aligning with prior studies about explainable AI (e.g., Chromik (2020)), our finding indicates the need for sufficient explanation about how AI works, where it derives information from, and what it shows to therapists. To meet such need for sufficient explanation about medical AI systems, prior studies have presented design implications. Especially, our findings resonate with the results from a study by Xie et al. (2020) that reported the development and feasibility of an AI system for physicians. By conducting co-design activities with physicians to formulate an AI system (CheXplain), that provides physicians with analysis information of chest x-ray images, the authors discovered the unique needs of physicians when physicians use the system to analyze images to make medical decisions. The authors also presented design recommendations for developing medical AI systems that can be understandable to physicians. A key recommendation was allowing physicians to control the range of AI-provided information that they would want it to be explained, from just showing the results to revealing in-depth explanations about the results. This recommendation is also applicable to the online art therapy context but with more emphasis on the visual cues such as colors and shapes of bounding boxes that helps art therapists to control AI-provided information that may need explanation. As shown in our findings, some therapists were confused with the bounding boxes on drawings. Art therapists' confusion related to bounding boxes on drawings may reduce if there are appropriate visual explanations about the AI-provided information. For example, an AI system may allow art therapists to control the number of elements with bounding boxes shown on the drawings or change the color of bounding boxes that clients have not used.

6.2 Potential Opportunities to Support Art Therapy Education Beyond Online Therapy Sessions

While our prototype was initially designed to assist online therapy practices, our findings revealed opportunities for an AI-assisted assessment tool to support therapists beyond online therapy sessions. Our participants emphasized potential use of an AI-assisted assessment tool for developing art therapy students' assessment skills and knowledge. Similar to how AI systems are used for educating medical students (e.g., chatbot for practicing communication skills of medical students (Shorey et al., 2019)), AI systems may be integrated with art therapy curriculum to improve learning achievements. In particular, art therapy students may benefit from AI systems to develop their skills to conduct online drawing-based assessments as they would get supplementary subjective information about drawings from AI systems. Also, AI systems may provide students with personalized learning environment. For instance, an AI system can be used to collect data about a student's behaviour during online sessions. The system may use the collected data to predict the student's behaviour and provide relevant analysis information from the manual to help the student develop analysis skills. However, it might be crucial to consider a potential issue with using AI systems for developing students' assessment skills. As P9 mentioned, students may have over-dependency on AI systems such as excessively relying on the results from AI systems, rather than developing their own skills to assess elements from drawings. Although dependency on AI systems may improve the efficiency of teaching environment as information about drawings would be automatically provided to students, over-dependency can be a major issue for an AI-assisted assessment tool with educational purpose that focus on developing students' skills. To reduce such over-dependency, we suggest that developers adopt the cognitive forcing interventions (e.g., AI offers information only when a button is clicked (Buçinca et al., 2021)). Such interventions may allow students to process information from the drawings before seeing the results from an AI-assisted educational system. In sum, even though AI-assisted assessment tools can potentially support art therapy curriculum, they may also hinder developing students' assessment skills. Further studies are necessary to explore more potential opportunities of AI-assisted assessment tools to be used for educational purpose.

6.3 Client-provided Information to Facilitate Therapist-Client Interactions

To better support art therapists' online interactions with their clients, we suggest that researchers add features that enable AI-assisted tools to obtain client-provided information. The client-provided information include data about clients who drew the drawings, their intentions for drawing specific figures, and their representations of certain elements (e.g., a star-shaped window [P5]). AI-assisted tools may use such client-provided information that allows art therapists to analyze the clients'

drawings. For instance, if the AI-assisted tool detects that the client did not draw a chimney, it notifies art therapists to ask the client further questions about it. In that case, an AI-assisted tool detects and highlights the elements that do not match with its manual (e.g., Buck's HTP manual). It allows art therapists and clients to talk about those specific elements. The visual cues (e.g., bounding boxes) on the drawings would make clients more engaged with the conversations since they know what art therapists would like to talk about. While considering clients as a user, it is also essential to address potential concerns of clients that could be similar to other patients in remote patient-provider interactions. For example, recent CSCW studies showed that some patients were worried about the lack of empathy and care quality (Bhat et al., 2021), and about providers' dismissal of symptoms during online medical appointments (Raj et al., 2022). Furthermore, prior studies showed the importance of integrating patients' preferences to AI-assisted tools for healthcare professionals. For instance, Jacobs et al. (2021) found the significance of including patient preferences in AI decision supporting tools for healthcare providers. Similarly, our proposed AI-assisted tool for online art therapy promotes therapist-client interactions by involving clients so that it would ultimately improve online art therapy sessions.

6.4 Toward Designing a Collaborative AI-assisted Assessment Tool for Art Therapists

This pilot study revealed preliminary evidence that an AI-assisted assessment tool is feasible in supporting art therapists. Thus, we suggest an opportunity for a collaborative AI-assisted assessment tool that collects data from clients and delivers relevant information to therapists to support the decision-making during online therapy sessions. We found that art therapists want an AI-assisted assessment tool to collect data from clients and deliver it to them to interpret drawings. The key data from clients include how clients drew the drawings and what intentions they have for drawing certain elements. This finding indicates the importance of collaboration between AI, therapists, and clients to enhance the assessment process in online art therapy practices. To design such a collaborative AI-assisted tool, it is important to note potential privacy issues when collecting data from clients. Similar to how AI systems should ensure the protection of patients' data (Wiens et al., 2019), AI-assisted tools for art therapy should also prevent privacy issues when collecting clients' data about their behaviors, emotions, or thoughts about their drawings. Moreover, a collaborative AI-assisted tool for online art therapy should enable art therapists to obtain reliable information that describes clients' drawings. Our finding shows that art therapists expect AI-provided information should be derived from reliable resources, including the data (e.g., clients' behaviors and emotions when they draw) collected from clients both actively and passively. This finding also suggests a definition of AI accountability from art therapists' perspectives. Moltubakk Kempton and Vassilakopoulou (2021) reported that prior studies lack in providing a clear

meaning of AI accountability in healthcare. Aligning with this finding, our pilot study presents the necessity of future studies to better understand and improve the accountability of AI-assisted tools for art therapists. In addition, it is important for an AI-assisted tool to provide relevant information at the right time without adding burdens to the current practices of art therapists. Yang et al. (2019) pointed out that AI-based clinical decision tools often failed to be applicable in clinical practice because of a lack of integrity in decision-making processes in a medical context. Thus, Yang et al. (2019) also suggested that AI systems for supporting clinical decisions should be "unremarkable" that should intervene in a relevant time and place when physicians need AI support. Similarly, since our pilot study presented the concept of unremarkable AI can be applied to the art therapy context without disrupting therapists' own practices, potential AI systems would need to provide art therapists with relevant objective information about clients' drawings. This approach may enhance the AI-therapist collaboration in the assessment process during online therapy sessions. Therefore, we extend the existing discussions about privacy issues of data to be shared with AI systems and accountability of AI systems in healthcare to online art therapy sessions. We also propose potential directions of future research to design a collaborative AI-assisted assessment tool that facilitates information sharing between therapists and clients in online therapy sessions.

7 Limitations and Future Work

While we presented the opportunity for AI-assisted tools to support online art therapy practices, our study has several limitations. First, while multiple drawing techniques (e.g., Mandala drawing, "Person Picking an Apple from a Tree" drawing) were used by art therapists, we only focused on the use of an AI tool for conducting the HTP test in online settings. The validity of interpretations based on the projective drawings from most techniques including the HTP test in art therapy tends to be unclear as it mostly involves therapists' subjective interpretations of clients' drawings. Nevertheless, since the HTP test has a general guide from Buck's manual (Buck, 1948) that enables our proposed prototype to provide therapists with information about clients' drawings, we chose the HTP test for our prototype development. Second, due to the small sample size, the findings may be specific to the particular participants that we conducted interviews with. Although we recruited diverse participants in different age and work experience, further research with larger sample size is necessary to generalize our findings. Third, even though the Wizard of Oz approach was useful for a quick implementation and simulate a fully functional AI-assisted tool, it has some limitations such as restricted features of the prototype. Particularly, there still remain questions about the validity of our prototype in a real-life setting. Our participants may have different experiences regarding using our prototype in the actual online sessions with their clients. Despite of such limitations of Wizard of Oz approach, our study provides the CSCW community with insights about designing an AI-assisted tool

for art therapists in online settings. Similar to prior studies that used the Wizard of Oz approach to understand user perceptions toward AI (Browne, 2019; Matic et al., 2017), our study presented preliminary findings on usability of an AI-assisted assessment tool for online therapy sessions and potential concerns of art therapists about the tool. Particularly, our findings may be applicable to other online healthcare contexts (e.g., remote consultations) since many healthcare providers may experience similar challenges as our participants did. Hence, future studies remain to examine AI-assisted tools for various assessment techniques in real-world online therapy practices in different healthcare contexts, including art therapy sessions.

8   Conclusions

The goal of this pilot study was to develop prototype of an AI-assisted assessment tool that supports art therapists in online therapy sessions and evaluate its usability. This study contributes insights for developing AI-assisted online assessment tools to the CSCW community by extending empirical understanding of art therapists' perceptions toward an AI-assisted prototype. Adopting the Wizard of Oz approach with 10 art therapists, our study revealed unique needs and concerns of art therapists when they interact with our prototype. Based on our findings, we encourage researchers in the CSCW community to investigate the feasibility and validity of AI-assisted tools to support diverse stakeholders including art therapists, physicians, psychiatrists, and clients.

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