Perceptions of Artificially Intelligent Chatbot Avatars as a Therapeutic Tool

Thesis
Submitted to the Faculty
of the Psychology Department

of

Washburn University

in partial fulfillment of
the requirements for

MASTER OF ARTS

Psychology Department

By

Josie Powell

Topeka, Kansas

April 4, 2025

Thesis Approval
Department of Psychology
Washburn University
Topeka, Kansas

May 2025

I hereby recommend that the thesis prepared under my supervision by

JOSIE POWELL
Entitled

PERCEPTIONS OF ARTIFICIALLY INTELLIGENT CHATBOT AVATARS AS A

THERAPEUTIC TOOL

be accepted in partial fulfillment for the
MASTER OF ARTS IN CLINICAL PSYCHOLOGY

Angela Duncan, Ph. D
Chair of the Thesis Committee

John Fritch, Ph. D
Provost and Vice President for Academic Affairs

Cynthia L. Turk, Ph. D
Head of the Department

Recommendation Concurred by

Jericho Hockett, Ph. D

Committee for the Thesis

Tucker Jones, Ph. D

Standpoint Statement

Providing accessible help to people is something that drives my academic and professional endeavors. Growing up, I watched the effects of my family move through life absent a loved one due to suicide. What came as a complete shock left a list of agonizing questions to be answered. Why did they not say anything? Would the outcome be different if they did? Why did they feel like they could not come to us? I became all too familiar with what I deemed as the "silent struggle." Thus, I made my personal mission to figure out how I can take the secrecy out of mental health, and have something, *anything*, immediately available to someone going through the silent struggle.

While this longstanding devotion was in my head, I was also living life like any other curious Generation Z twenty-something. Snapchat MyAI and ChatGPT were popular, and I found myself spending a great deal of time on the applications. I used Snapchat MyAI for mainly jokes and finding ways to make myself laugh; however, one day I found myself comparing responses from my partner to Snapchat's MyAI chatbot avatar. While I do have a loving partner, the thoughtfulness in responses I received from AI chatbot avatar was always there. Each time, I found myself shocked by the humanness and most importantly, the immediate response the chatbot avatar would deliver. Consequently, I thought to merge my devotion and AI together. I thought if I can use AI as a therapeutic tool, I might be able to help someone going through the unendurable silent struggle.

Implementing a rather novel modality of treatment such as AI comes with an equitable portion of ethical considerations. Perhaps the most important to consider is client confidentiality. When talking to an online chatbot avatar, no guarantee exists that confidential material will be kept secure. Even the most secure operating systems are in danger of a potential security breach.

However, for the purpose of this study, I assessed the attitudes and beliefs of using AI as a therapeutic tool. The primary ethical concern I have is the sample. I sampled introductory psychology students on their attitudes and beliefs of using an AI application for therapeutic intervention. Using introductory psychology students to sample might be too narrow of a sample and not access the full scope of AI considerations for therapy. The implication that a bias for using technology exists due to the sample comprising primarily of young college aged adults might skew results. Something I can do to remedy potential bias is incorporate samples from outside the Washburn introductory psychology students. This way I can ensure a more representative sample, rather than just assessing Washburn students' attitudes and beliefs for using AI in therapy.

Technology-Assisted Treatment

Technology-assisted therapy encompasses the use of technology for mental health treatment. Oftentimes, technology-assisted therapy consists of the therapist utilizing a computer or other forms of technology to assist during therapy; however, the use of technology in therapy has significantly evolved over the decades. Early adaptation of videoconferencing for psychiatric care in the late 1950s catapulted the widespread global use of technology-assisted therapy. During the 1990s, researchers focused psychiatric technology efforts on access to care and overcoming geographical obstacles to treatment. The 2000s marked a significant development when both the American Telemedicine Association (ATA) and the American Psychiatric Association (APA) endorsed their support of technology-assisted psychological interventions. The ATA and APA recognized technology-assisted treatments as effective, comparable to in-person care for diagnostic accuracy, and satisfactory to clients. Endorsement of the ATA and APA propelled confidence in technology-assisted therapy, proposing technology-assisted therapy

as a viable option to face-to-face therapy, even parallelling face-to-face therapy to technology-assisted therapy with the ethical consideration of privacy.

Garnering support from the ATA and APA, researchers needed to categorize technology-assisted therapies into one of two categories: self-guided and guided/supported digital mental health interventions (Schueller & Torous, 2020). Self-guided interventions allow the client to access therapeutic content independently through various platforms, such as mobile apps or internet. In contrast, guided/supported interventions provide a varying degree of human support from a therapist or clinician, ranging from partial to full involvement with the client. Self-guided and supported digital mental health interventions provide clients with additional diversified treatment options beyond face-to-face therapy.

Today, technology-assisted therapy modalities continue to build upon initial success of the 1990s in multiple ways (McLean et al., 2021). Firstly, technology-assisted therapies provide access to clients in rural areas as well as eradicate time-consuming travel for both client and therapist. Secondly, technology-assisted therapies provide a means for therapists and clients to circumvent costly interventions such as exposure therapy to heights, animals, bridges, and flight. Additionally, technology-assisted therapy may reduce costs for clients, making psychotherapy treatment accessible, and even providing in-the-moment feedback for clients (Newman et al., 2011). Further, well-established therapeutic techniques such as cognitive behavioral therapy, exposure therapy, and substance use treatment have been successfully adapted for technology-assisted delivery. Adaptations include augmented reality, virtual reality, artificial intelligence (chatbots, avatars, and chatbot avatars), and teletherapy services (Newman et al., 2011; Toffolo et al., 2022). Given these practical benefits and the potential breadth of technology-assisted

therapy modalities, understanding perceptions of such technologies is necessary to facilitate or modify their implementation.

Research consistently demonstrates strong positive therapist approval ratings for using technology-assisted therapy modalities (Corrêa at al., 2017; Segal et al., 2011; Simms et al., 2011) along with strong therapeutic outcomes (Giovanetti et al., 2022; Maples-Keller et al., 2017; Oh et al., 2020; Rothbaum & Hodges, 1999); however, fewer studies examine client ratings of technology-assisted interventions. The available research showcasing client ratings of technology-assisted interventions generally indicates positive feedback from clients. Researchers examined acceptance of individuals receiving internet-based cognitive behavioral therapy (iCBT; March et al., 2018; Molloy et al., 2021; Simon et al., 2019). Results from such studies indicate positive participant feedback, as well as treatment outcomes, among both adults and adolescents receiving treatment.

Acceptance of internet-based therapies may lead to reception of other technology-based treatment interventions. While studies show promising outcomes and acceptance of technology-assisted interventions, further exploration of client attitudes and beliefs toward these modalities is needed. One such necessary research area is particularly regarding the use of artificially intelligent chatbot avatars as a tool for clinical treatment.

Understanding Artificial Intelligence

Artificial intelligence (AI) is computerized software intended to perform in ways that would traditionally require human intelligence, such as reasoning and conversating (Luxton, 2014). In psychotherapy, implementation of AI is conducted using either chatbots or avatars. Chatbots are computerized programs that mimic conversation using an interface, either through voice-chat or text. Chatbots utilize natural language processing (NLP) and machine learning

(ML) to understand and adapt to language and respond to users without explicitly being programmed to do so. NLP and ML can discriminate between changes in natural language and tone to adapt and respond appropriately, making chatbots simulate real-life conversation for users (D'Alfonso et al., 2017). Conversely, avatars are digital animations or self-representations (Franco et al., 2021). Avatars are a means for users to interact virtually and can be personalized depending on the user. For example, if a user is comfortable with a female therapist, they could personalize their avatar's voice and physical characteristics to be feminine. Chatbot avatars are programs that use NLP and ML to simulate natural conversations while appealing to the user's preferred physical characteristics. Implementing AI through use of chatbot avatars creates space for additional therapeutic benefit via in-the-moment therapeutic responses absent a face-to-face therapist not seen in other technology-assisted therapies (Pham et al., 2022). To further understand how AI chatbot avatars are implemented, understanding their therapeutic history is crucial.

Therapeutic History of Artificial Intelligence

Artificial Intelligence was first introduced to the field of psychology in 1966 by computer scientist Joseph Weizenbaum. Weizenbaum developed the first AI chatbot named ELIZA, allowing users to conversate with the robot by analyzing parameters of the user's sentence, and generating a response intentional to the reaction of the user (Gümüş, & Çark, 2021). After development of ELIZA, Stanford University psychiatrist Kenneth M. Colby developed PARRY, a program able to linguistically mimic a person with paranoid schizophrenia undistinguishable to psychologists from someone with an actual diagnosis of paranoid schizophrenia (Colby, 1999). PARRY became the first AI chatbot able to pass a Turing Test (i.e., a test that evaluates a machine's ability to exhibit intelligent behavior similar to that of a human; Oppy & Dowe,

2003). PARRY's passing of the Turing Test validated the machine's ability to act as a human and solidified AI chatbots' place within the field of psychology. After developments of artificially intelligent chatbots ELIZA in the 1960s and PARRY in the 1970s, researchers today are determining where artificially intelligent chatbots best fit within psychotherapy.

Since the development of chatbots, most empirical studies involving chatbots and chatbot avatars have evaluated script quality or therapeutic effectiveness of using the avatar or chatbot (Liu et al: 2023; Xu & Zhuang, 2022). Other studies (Bell et al., 2019; Lim et al., 2022) investigated traditional therapeutic alliance with chatbot avatar alliance. These studies had entire sessions delivered via therapist or chatbot avatar. Results indicated even when the chatbot avatar possessed human-like physical characteristics, the chatbot avatar lacked features typically found through traditional face-to-face psychotherapy, such as positive regard, social partnership, and empathy (Barnett et al., 2021) features imperative to positive therapeutic outcomes (Luxton, 2014). While chatbots have existed since the late 1960s, implementation of chatbots and chatbot avatars is still widely novel in the field of psychology. Today, chatbots and chatbot avatars exist in a variety of settings from Siri and Snapchat MyAI on smartphones and Google Home, to helping psychiatrists and doctors generate probable diagnoses in healthcare. However, more research is needed to fully understand the efficacy and acceptance of using such AI for therapeutic applications. While AI therapies can be promising, it is important to acknowledge the goal is not to replace human therapists with AI. Further, a hybrid approach incorporating both face-to-face and AI-assisted therapy could potentially be beneficial for treating psychiatric disorders (Barnett et al., 2021; Johnston, 2022). The integration of AI into therapy augments the therapeutic process, providing additional support or resources to both client and clinician. While

literature suggests AI-assisted therapies may hold promise, client perceptions and experiences with technology require further study to fully understand treatment implications.

Importance of Client Perception

Assessing client attitudes and perceptions is critical when looking at treatment experience and outcomes. Further, understanding client perceptions and experiences can advance theoretical understanding, clarify client conceptualization, and provide the most effective treatment possible (Elliott, 2008). When clients perceive a therapeutic technique to be disadvantageous to their improvement, adherence to treatment can suffer. Poor adherence to treatment can also cause a rift in the therapeutic alliance, further increasing the possibility of poor treatment outcomes (Tschuschke et al., 2015). Indeed, research suggests client perceptions and attitudes towards technology-assisted therapies are important when examining predictors of treatment outcomes (Anderson, 2014; Lipkin, 1954). Clients who indicated positive orientations to therapeutic techniques were more likely to undergo therapeutic change, have positive treatment outcomes, and less likely to have therapy-interfering behaviors (Magyar-Moe et al., 2015). Additionally, perceived usefulness and suitability was a predictive factor of user intentions for online counseling, further supporting the need to assess client perceptions of technology-assisted therapy (Nilsson et al., 2007). Perceived helpfulness of past therapy experiences influences further therapy-seeking behavior (Stein et al., 2020). Assessing previous therapy experience is important to establish whether AI interventions are perceived favorably depending on previous therapy experience, especially if those therapies have implemented technologies.

Unfortunately, assessing attitudes and perceptions of technology for therapy is limited, particularly regarding client attitudes and perceptions. Research suggests (Kuhn et al., 2014; Markopoulos, 2018; Segal et al., 2011) assessing therapeutic technology such as smart phone

applications and virtual reality (VR) only assess clinicians' perceptions thus neglecting clients' attitudes and perceptions. Kirkham and Batten (2020), cognizant of this discrepancy, assessed public perception of implementing VR and mobile apps for anxiety treatment. In a non-clinical sample, when public perceptions of therapeutic technology were favored highly, participants were more willing to use it and were open to their therapists' suggestion of using it. Further, participants who viewed therapeutic technology optimistically were interested in using the technology in conjunction with other forms of intervention such as cognitive behavioral therapy (Kirkham and Batten, 2020). The present study expands upon this research and incorporates participant attitudes and perceptions of the implementation of chatbot avatars for therapeutic purposes.

Theoretical Framework

The theoretical framework used to assess attitudes and perceptions of chatbot avatars as a therapeutic tool is based on the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003; Williams et al., 2015). This theoretical model represents the most comprehensive view of participant attitudes and perceptions of implementing AI within therapy. The UTAUT was developed to synthesize constructs of eight dominant technology-acceptance research theories: Theory of Reasoned Action, Technology Acceptance Model, Theory of Planned Behavior, Motivational Model, combined Theory of Planned Behavior/Technology Acceptance Model, Model of PC Utilization, Innovation Diffusion Theory, and Social Cognitive Theory. By combining dominating theories within the literature, Venkatesh and colleagues (2003) condensed the literature on technology acceptance by combining the eight theories into one integrated theory of technology acceptance, the UTAUT. Development of the UTAUT garnered strong empirical support (Abbad, 2021; Hayotte et al., 2020) to accurately assess user

intention and behavior for a given technology compared individually to the other eight leading theories, outperforming each in a clinical trial. The UTAUT suggests four primary constructs influencing user's acceptance and behavioral intentions with the technology (Chang, 2012). These constructs are performance expectancies, effort expectancies, social influence, and facilitating conditions (Table 1).

For this study, performance expectancies refer to the belief that using chatbot avatars will offer potential benefit or gain to clients' therapeutic performance. Performance expectancy assesses perceived usefulness and relative advantage of a given technology. Perceived usefulness is the idea that technology will enhance performance while relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes (Wedlock & Trahan, 2019). Assessing performance expectancies is crucial because perceived usefulness and relative advantage are the strongest predictors of user intention with technology (Apolinário-Hagen et al., 2018; Chang, 2012).

Effort expectancies refer to consumer ease of use when working with AI technology. This construct was first derived from perceived ease of use factor within the Technology Acceptance Model. Assessing effort expectancies is important to examine when looking at new behavioral intentions. When one perceives a technology as easier to use, one is more likely to use to the technology. Both performance expectancies and effort expectancies are strong influencing factors of intention to use technology (Chang, 2012).

Social influence measures how much a user believes influential individuals consider the technology important to use. Specifically, social influence contains the implicit or explicit notion that behavior is influence by how others will perceive them for having used a given technology. Assessing social influence is vital in studying behavioral intentions. If users perceive technology

as beneficial to others of status, they were more likely to use the technology themselves. (Chang, 2012).

Finally, facilitating conditions gauges users' confidence in the AI infrastructure's ability (i.e., machine learning, natural language processing) to support the effectiveness of the chatbot avatar (Venkatesh et al., 2003). Facilitating conditions is positively correlated with intention to use a given technology. Thus, assessing facilitating conditions is crucial when examining behavioral intentions of technology (Chang, 2012).

The current study employed the Modified E-Therapy Attitudes Measure (ETAM) to assess the four constructs of the UTAUT. Among these four constructs, performance expectancy emerges as the most influential factor predicting behavioral intentions to use a given technology. Performance expectancy is further divided into two subscales: relative advantage and perceived usefulness. Research suggests assessing these two subscales of performance expectancy are vital when assessing acceptance of technology. Additionally, the current study addressed sociodemographics that may play key roles in identifying underlying variables that contribute to technology use. Previous research highlighted the impact of demographic factors such as age and gender on technology adaptation when looking at preferences for mobile banking. Results indicated the older the respondent, the more negatively they perceived mobile banking to be (Yu, 2012). Additionally, ease of use is a stronger influence on female users, while relative advantage and perceived usefulness is more important for male users (Riquelme & Rios, 2010). Further, research continually shows ethnic minorities, individuals from lower-income households, and those with less education face substantial digital disparities and are less likely to have access to and use technology compared to their counterparts (Ogundari, 2023; Williams & Shang, 2023). Therefore, this study accounted for individual variables such as gender, age, ethnicity, level of

education, household income, previous technology experience, and voluntary technology use, or degree to which those using the technology perceive the technology use voluntarily are important to consider when predicting technology use (Venkatesh et al., 2003; Williams et al., 2015).

Assessing these latter two factors, previous and voluntary technology use is vital when evaluating intentions to use a given technology. Individuals' previous experience with technology can influence their perception of the relative advantages of using the technology, which influences their intention to use it. Additionally, voluntary technology use is also an important factor influencing intention to use technology. Furthermore, individuals with previous or current therapy experience are more likely to be therapy-seeking, whereas individuals with no prior experience are less likely to seek therapy services (Venkatesh et al., 2003; Vessey & Howard, 1993).

In sum, the purpose of the current study was to examine participants' attitudes and beliefs about using artificially intelligent chatbot avatars as a therapeutic tool with the following research questions and hypotheses.

RQ1: Do individuals think using chatbot avatars is a good idea for therapeutic purposes?

H1: Reflecting the UTAUT's (Venkatesh et al., 2003; Williams et al., 2015) emphasis on performance expectancies and effort expectancies as predictors of technology use, and consistent with Nilsson et al.'s (2007) findings that perceived usefulness of telehealth predicted intentions to use online counseling, individuals who perceive therapeutic AI as useful and relatively advantageous are more likely to be open to implementation of an AI tool for therapeutic purposes.

RQ2: What is the association between previous therapy experiences and perception of chatbot avatars as a therapeutic tool?

H2: Consistent with Stein et al.'s findings (2020) stating past helpful therapy experiences influence further therapy-seeking behavior, individuals with current or past therapy experience will perceive chatbot avatars as a therapeutic tool more favorably than individuals without previous therapy experience.

RQ3: What is the relationship between previous therapy modality (face-to-face or telehealth) on perceptions of chatbot avatars as a therapeutic tool?

H3: Reflecting on Kirkham and Batten's (2020) findings that when public perceptions of therapeutic technology were favored highly, clients were more willing to utilize the technology in treatment, individuals with previous therapy experience via telehealth therapy will perceive chatbot avatars as a therapeutic tool more favorably than individuals with previous therapy experience via face-to-face.

RQ4: What is the relationship between previous chatbot avatar experience and perceptions of chatbot avatars as a therapeutic tool?

H4: Consistent with Kirkham and Batten's (2020) findings of favorable views of VR and increased willingness to use it as a treatment, individuals with previous chatbot avatar experience will have more favorable perceptions of chatbot avatars as a therapeutic tool than individuals without previous chatbot avatar experience.

RQ5: How do sociodemographic characteristics influence perceptions of chatbot avatars as a therapeutic tool?

H5: Yu (2012) identified age being a determining factor of technology use, while Riquelme & Rios (2012) observed gender differences in technology usage but found both males and females recognize its value. Additional research from Ogundari (2023) and Williams & Shang (2023) show lower-income ethnic minorities facing digital disparities are less likely to

engage with a technology. Additionally, younger individuals with a higher level of education and household income will view perceptions of chatbot avatars as a therapeutic tool more favorably than older individuals with lower levels of education and socioeconomical status regardless of gender and ethnicity.

Method

Participants

A total of 182 participants were recruited via nonprobability convenience sampling from a mid-sized Midwestern University during the Spring and Fall semesters of the academic year. Participants were recruited primarily from introductory-level psychology classes for credit towards research participation requirements and via Desire 2 Learn online learning course-page link. Participants recruited via introductory-level psychology classes were offered 10 research points for class credit as part of their participation in the study.

Materials

Sociodemographic Questionnaire. Participants were asked to complete a demographics questionnaire assessing age, gender, ethnicity, level of education, and household income. Czaja and colleagues (2006) identified variables such as age, gender, ethnicity, level of education, and household income as variables influencing technology use, and therefore these items were included on the sociodemographic questionnaire. The purpose of this questionnaire was to establish participant sociodemographic and exclusion criteria. Participants of at least 18 years of age were included in the study.

Descriptive Information Questionnaire. The Descriptive Information Questionnaire is a 3-item self-report questionnaire that assessed participants' previous experience with therapy, treatment modality, and AI chatbot avatars. Response options for previous therapy experience

are: 1 = no previous therapy experience or 2 = yes (past or current) therapy experience. Response options for previous (past or current) treatment modality are 1 = face-to-face therapeutic treatment, 2 = telehealth treatment (telephone, televideo, etc.), or 3 = not applicable (did not meet with a therapist). Response options for previous AI chatbot avatar experience (Snapchat MyAI, Mitsuku, Replika, etc.): 1 = no previous AI chatbot experience and 2 = yes (past or current) AI chatbot avatar experience.

Modified E-Therapy Attitudes Measure (ETAM). The Modified E-Therapy Attitudes Measure (ETAM; Apolinário-Hagen et al., 2017) is a 14-item questionnaire. While this measure assesses participant attitudes towards technology-assisted interventions, it was modified for the present study by changing "internet-based therapies" to "artificially intelligent chatbot avatar - assisted therapies" to be more AI specific rather than encompassing all forms of e-therapy as stated in the original measure. For example, item 1 was changed from the original "Internet-based therapies are modern and in line with our modern times" to "Artificially intelligent chatbot avatar-assisted therapies are modern and in line with our modern times." Participants completed this survey by providing their responses on a 5-point Likert scale, ranging from 0 = "strongly disagree" to 4 = "strongly agree." Participants' responses to each item were added and then divided by the number of items to produce an overall mean score. Relative Advantage and Perceived Usefulness subscale items were each added and divided by number of items within the subscale to produce mean scores.

Overall mean values < 1.5 were interpreted as a perceived negative attitude. Mean values between 1.5 and 2.5 were interpreted as a neutral attitude, and mean values > 2.5 were interpreted as a positive attitude (Apolinário-Hagen et al., 2018). All items on the ETAM map onto the UTAUT constructs (performance expectancies, effort expectancies, social influence,

and facilitating conditions). Table 2 demonstrates mapping of these items on the Modified ETAM used in the current study. Additionally, an exploratory factor analysis of the ETAM showed the extraction of two subscale items (perceived usefulness and relative advantage) further supporting the alignment of the Modified ETAM to the UTAUT framework (Apolinário-Hagen et al., 2017). Cronbach's alpha ranges from moderate to high for the overall scale (14 items $a = 0.89$), Perceived Usefulness (6 items, $a = 0.87$) and Relative Advantage (5 items, $a = 0.84$; Apolinário-Hagen et al., 2017). Interpretation of Cronbach's alpha suggests very good scale reliability of items measuring Perceived Usefulness and Relative Advantage across all items. Since no other measures currently assess participant attitudes towards therapeutic technology, validity statistics for the ETAM have not yet been reported.

Design and Procedure

For this study, the research design was quasi-experimental and correlational. Independent variables being assessed were age, gender, ethnicity, level of education, household income, previous therapy experience, and previous AI chatbot avatar experience. Such variables are important to assess because factors such as age or which type of therapy experience an individual may have had could play a potential role in perceptions of AI. Independent variables were assessed with the Sociodemographic Questionnaire and Descriptive Information Questionnaire. The dependent variable was perceptions of AI. We assessed perceptions of AI utilizing the constructs proposed in the UTAUT framework such as performance expectancies, effort expectancies, social influence, and facilitating conditions, and categorized them into one of two subscales based on item mapping, Perceived Usefulness or Relative Advantage. Constructs were assessed using the E-TAM. Expected results were consistent with what UTAUT suggests which

is participants who perceive therapeutic artificial intelligence as useful and easy to use are more likely to be open to implementation of this tool for therapeutic purposes.

Institutional Review Board approval was obtained prior to the beginning of the study. Participants at least 18 years old consented to participate in the study, and participants not eligible for the study were thanked for their time. Eligible participants completed baseline measures of sociodemographic (Appendix A); Descriptive Information Questionnaire (Appendix B); and ETAM (Appendix C). All measures were available through Qualtrics, an online survey platform. After completion of measures, participants were debriefed, provided with mental health resources, and thanked for their participation.

Results

Descriptive Statistics

A majority of respondents (n = 99, 54.4%) reported no previous therapy experience, while 83 respondents (45.6%) reported previous therapy experience. Of those reporting previous therapy, 78 (90.7%) reported this experience as face-to-face therapy, while 8 respondents (9.3%) reported previous therapy as telehealth. Most respondents (n = 136, 74.7%) reported previous experience with AI while 46 participants (25.3%) reported no previous experience with AI. Table 3 presents the sociodemographic characteristics of participants.

Perceptions of AI

To test the hypothesis that individuals who perceive therapeutic AI as useful and relatively advantageous are more likely to be open to implementation of an AI tool for therapeutic purposes, M and SD were reported. Overall perceptions of AI as a therapeutic tool were evaluated by using the ETAM. The results were summarized by calculating the mean score across all participants. Perceptions of AI were neutral among the sample (M = 2.45, SD = .66)

with participants reporting more positive perceptions for the Relative Advantage aspect of implementing AI as a therapeutic tool (M = 2.50, SD = .71) compared to its Perceived Usefulness (M = 2.41, SD = .71). These findings suggest that while participants recognize potential benefits of AI in therapy, they were less convinced of its practicality in a therapeutic setting. While ETAM subscales of Relative Advantage and Perceived Usefulness are reported, the ETAM is only interpreted with an overall perceptions score.

To test the hypothesis that individuals with current or past therapy experience will perceive chatbot avatars as a therapeutic tool more favorably than individuals without previous therapy experience, an independent samples *t*-test was conducted by looking at the overall ETAM score on individuals with and without previous therapy experience (Table 4). The results presented in Table 4 indicate no significant difference between those with and without prior therapy experience on perceptions of AI, $t(180) = -1.46$, $p = .073$. These results contradict the hypothesis presented, showcasing nonsignificant trends in the opposite direction, for individuals with prior therapy experience perceiving AI more positively than individuals without prior therapy experience.

To test the hypothesis that individuals with previous therapy experience via telehealth therapy will perceive chatbot avatars as a therapeutic tool more favorably than individuals with previous therapy experience via face-to-face, a Mann-Whitney U test was conducted. Nonparametric Mann-Whittney U tests were utilized to compare samples with uneven distribution of data. The results presented in Table 5 indicate no significant difference between mental health treatment modality and perceptions of AI. However, when examining mean ranks, participants in the telehealth group tended to have more positive perceptions of AI compared to the face-to-face group.

To test the hypothesis that individuals with previous chatbot avatar experience will have more favorable perceptions of chatbot avatars as a therapeutic tool than individuals without previous chatbot avatar experience, another Mann-Whitney U test was conducted. The results presented in Table 6 indicate no significant difference between those with previous AI experience and those without previous AI experience on perceptions of AI, $U = 2623.000$, $Z = -1.64$, $p = .102$. However, when examining mean ranks, participants in the "no previous AI experience" group tended to rate perceptions of AI higher than those with previous AI experience. This trend contradicts the hypothesis that those with previous AI experience will have more positive perceptions of implementing AI as a therapeutic tool.

Finally, to test the hypothesis that younger individuals with a higher level of education and household income will view perceptions of chatbot avatars as a therapeutic tool more favorably than older individuals with lower levels of education and socioeconomical status regardless of gender and ethnicity, a multiple linear regression analysis was conducted. The analysis examined the predictive value of sociodemographic (sex, ethnicity, highest level of education, household income, and age) variables for perceptions of AI. Prior to analysis, all continuous predictor variables (e.g., age, household income) were standardized (z-scored) to facilitate interpretation of regression coefficients and to reduce multicollinearity, especially when testing interaction effects. Interaction terms were created by multiplying the standardized perceptions of AI variable with each standardized sociodemographic variable. Categorical variables (sex, ethnicity, education) were dummy coded as appropriate. Variables were entered into the regression model in two steps: first, main effects of all sociodemographic variables and perceptions of AI were entered; second, the interaction terms between perceptions of AI and each sociodemographic variable were added to assess moderation effects. The results presented

in Table 7 indicated the overall model was nonsignificant, $F(5, 156) = 1.80$, $p = .116$, $R^2 = .055$, indicating the predictors explained only 5.5% of variance in perceptions of AI. Among all the individual predictors assessed, only ethnicity was statistically significant, unique predictor ($B = 0.263$, $p = .039$). This finding indicated perceptions of AI as a therapeutic tool varied based on ethnicity, which contradicts the hypothesis that ethnicity would not be a predictor of perceptions of AI. Findings reveal that as the ethnicity group increased among the sample, positive perceptions of AI tended to increase. Although the unique predictor was significant, caution is recommended when interpreting the significance of ethnicity perceptions of AI due to overall model nonsignificance (Feng et al., 2016).

Discussion

Hypothesis 1, grounded in the UTAUT by Venkatesh et al. (2003) and further emphasized by Williams et al. (2015), highlights the roles of performance expectancies and effort expectancies as predictors of technology use. Building on Nilsson et al.'s (2007) findings that perceived usefulness of telehealth predicted intentions to use online counseling, individuals who perceive therapeutic AI as useful and relatively advantageous are more likely to be open to implementation of an AI tool for therapeutic purposes. The hypothesis proposed if individuals recognize the potential benefits and practical utility of AI chatbot avatars, their perceptions of implementing the technology would be favorable. However, the results revealed overall neutral perceptions of implementing chatbot avatars for therapeutic purposes. Participants particularly tended to endorse the relative advantage of using chatbot avatars compared to other therapeutic alternatives, such as apps or traditional chatbots, rather than emphasizing the technology's perceived usefulness as a standalone tool. These findings suggest that participants might value

specific aspects of chatbot avatars, such as the potential to provide a more immersive or individualized experience. However, despite these potential unique attributes, participants still recognize the importance of incorporating additional treatment methods alongside technology rather than exclusively relying on it alone.

These findings could potentially be explained by a multitude of factors. For example, if individuals do not trust the AI chatbot avatar to deliver consistent quality care then their perception of perceived usefulness can be altered (Park et al., 2024). Additionally, if individuals perceive the AI technology to be too complex for practical usage, both relative advantage and perceived ease of use could be altered. Finally, even the most "well-trained" AI chatbot avatar systems can have emotional and linguistic limitations, affecting overall perceptions of utility (Abd-Alrazaq et al., 2021). Meaning that while the chatbot avatar can generate responses that appear empathetic, they cannot truly understand or experience emotions which may lead to instances of insensitive responses. Additionally, the chatbot avatar may struggle with unusual speech patterns or abstract concepts which can lead to misinterpretation of context and result in irrelevant responses (Kurian, 2023). These potential deficits of implementing the technology could reflect the endorsement of only neutral perceptions and particularly justifying why the technology might not suffice as a standalone tool.

Hypothesis 2 stated individuals with current or past therapy experience will perceive chatbot avatars as a therapeutic tool more favorably than individuals without previous therapy experience. Stein and researchers' (2020) findings suggest previous therapy experience will influence future therapy-seeking behaviors. The results presented in this study suggest differently. Although not statistically significant, participants with prior therapy experience reported neutral perceptions of AI chatbot avatars in therapy (M = 2.38). In contrast, those

without prior therapy experience tended to demonstrate more positive perceptions of implementing AI chatbot avatars (M = 2.52).

These results challenge the assumption that previous therapy experience predisposes individuals to favor or disfavor new therapeutic approaches, such as AI-assisted interventions. Instead, findings herein suggest a nuanced relationship between prior therapy experience and perceptions of openness to implementing AI chatbot avatars within a therapeutic context. A potential explanation for this phenomenon is that individuals with previous therapy experience see the potential value of meeting a real person for therapy. Additionally, Jain et al. (2024) suggests individuals with previous therapy experience may already have established expectations of what therapy is, having met with a therapist before as opposed to AI chatbot avatars being a novel therapeutic alternative from what they are used to.

Hypothesis 3 stated individuals with previous therapy experience via telehealth therapy will perceive chatbot avatars as a therapeutic tool more favorably than individuals with previous therapy experience via face-to-face. Nonsignificant results indicated participants with prior teletherapy experience tended to have more positive perceptions of implementing AI chatbot avatars as a therapeutic tool compared to neutral perceptions of participants receiving face-to-face therapy. Although findings are not statistically significant, they emulate results from Békés et al. (2023) suggesting as individuals become more familiar with teletherapy technologies, their perceptions tend to become more positive leading to predictive use and greater acceptance of the given technology for the future.

Hypothesis 4 stated individuals with previous chatbot avatar experience will have more favorable perceptions of chatbot avatars as a therapeutic tool than individuals without previous chatbot avatar experience. Contrary to Kirkham and Batten's (2020) expectation that individuals

with previous technology experience would view technology implementation in therapy more favorably, the results here suggest otherwise. Findings from the current study challenge prevailing assumptions in the literature regarding the impact of prior chatbot avatar experience on perceptions of AI in therapy. Although statistically nonsignificant, individuals without previous AI chatbot avatar experience tended to report more positive perceptions of AI chatbot avatars compared to those with previous experience, as indicated by mean rank scores. A potential explanation for this finding could be that individuals who experience AI for the first time may experience a heightened sense of curiosity and interest in engaging with the nuanced technology; whereas, individuals with previous experience are accustomed to the technology and become more disinterested over time, indicating that familiarity of AI alone does not necessarily translate to positive perceptions toward a therapeutic potential (Tan, 2024). Another possible explanation for this unexpected outcome is the nature of the AI experience could play a role in shaping overall perceptions of AI's relative advantage and utility. For example, a chatbot avatar such as MyAI on Snapchat is used for entertainment; whereas, chatbot avatars in therapy are used for therapeutic purposes. Individuals with prior AI experience for entertainment may not understand how AI could also be used for therapeutic implementation and therefore they may have unfavorable opinions.

Lastly, hypothesis 5 stated younger individuals with a higher level of education and household income will view perceptions of chatbot avatars as a therapeutic tool more favorably than older individuals with lower levels of education and socioeconomical status regardless of gender and ethnicity. Ethnicity was found to be the only significant predictor ($B = 0.263$, $p = .039$), indicating it plays a role in shaping perceptions of implementing AI as a therapeutic tool. The coefficient ($B = 0.263$) suggested that as the ethnicity group increased, the ETAM score

increased by 0.263 units, holding all other predictors at a constant. These results contradict the hypothesis that ethnicity would not be a significant predictor of perceptions. A possible explanation for this finding could be due to cultural experiences, expectations, or values. For example, experiences of racial discrimination and systemic inequities may lead some ethnic minority clients to mistrust therapists who do not share a similar cultural background (Cabral & Smith, 2011). Additionally, in some cultures seeking mental health treatment is stigmatized, complicating perceptions of a therapist's role (Meyer & Zane., 2013). Ethnic minority clients may potentially see value in discussing personal issues with technology as opposed to a human therapist (Fiske et al., 2019; Vaidyam et al., 2019). Specifically, when implementing chatbot avatars, clients could have the potential to set the avatar or language preferences to meet their own cultural background whereas that might not be an option with a human therapist. Another factor that could explain more positive perceptions of AI from ethnic minorities is accessibility. With limited availability of mental health services, especially in underserved communities, ethnic minorities may find value in having a digital mental health tool.

Limitations, Strengths, and Implications

Several limitations of this study should be considered. Convenience sampling was a limitation and therefore generalizability of results should be inferred with caution. By utilizing probability sampling, a broader and more random range of participants would have been acquired and helped to alleviate unbalanced variable groups. Along with utilizing probability sampling, individuals more representative of the general population could be included in future studies, unlike in this study where all participants had at least some level of higher education. Additionally, the telehealth group consisted of 8 participants which limited the ability to detect group differences within the sample. Expanding the group size in future studies could provide a

better understanding of how individuals with previous mental health treatment via telehealth perceive the implementing of chatbot avatars.

Another limitation of this study was the ETAM's lack of empirical validity assessing technology perception. The ETAM aims to provide understanding of how different variables influence user acceptance of a given technology through the UTAUT framework. One important consideration when using the ETAM is its inherent design to compare two distinct therapy options, rather than evaluating a combined therapeutic approach. In this study, the ETAM specifically examined perceptions of implementing chatbot avatars as an alternative to face-to-face therapy, instead of exploring a hybrid model that integrated both methods. This binary comparison limits the measure's ability to assess the potential benefits of a more integrated therapeutic strategy that could potentially leverage strengths of both face-to-face interactions with chatbot avatar assistance. However, as noted by Apolinário-Hagen et al., (2017), a need for further research on empirical validation of the ETAM is critical, especially considering no established questionnaire for measuring attitudes towards electronic-based mental health services for the general population currently exists (Apolinário-Hagen et al., 2018), even though AI continues to advance.

While the ETAM has shown reliability in measuring user perceptions of technology, further studies remain essential to assess validity across a multitude of populations and technologies. Additionally, since modifications have been made to items on the ETAM for this study, understanding how these changes might impact overall effectiveness becomes vital. A suggestion for an additional item assessing attitudes towards e-therapy would be asking individuals the degree to which they agree therapy should incorporate both face-to-face and

artificially intelligent chatbot avatar therapist. Further validation of the ETAM is needed to better understand exactly how users accept, perceive, and therefore interact with a given technology.

Examining both client and nonclient perceptions of technology in therapy is indeed a strength of this study. Unlike previous empirical studies that focused on therapist's perspectives or client outcomes, this study uniquely explores both client and nonclients' views of a particular treatment modality. The necessity of understanding how individuals perceive technology in our increasingly technology-driven world is crucial to provide culturally relevant, up-to-date, and effective care. By exploring these perceptions, this study fills a gap in the literature, informing the field about the potential for integration of AI technology for clinical practice, both those in therapy and those that might be potentially therapy-seeking.

The importance of the current study is underscored by several other considerations. First, the increased need for mental health care access, especially following the COVID-19 pandemic, for those in remote areas, those in inaccessible living situations, or those that find travel for therapy too costly. Secondly, by understanding how AI chatbot avatars in therapy are perceived, we can ensure technological innovations are effective for both client and clinician (Abd-Alrazaq et al., 2021; Siddals et al., 2024) thereby increasing the odds of better treatment outcomes compared to having no understanding of this treatment's perception (Abd-Alrazaq et al., 2021). Additionally, understanding how AI chatbot avatars are perceived can help when making individualized treatment modifications for the client.

Future research should expand the current methodology by identifying the types of therapy-seeking clients who would benefit the most from AI chatbot avatars in therapy. Specifically, examining how implementing AI chatbot avatars would be most effective for therapeutic purposes. While research has shown success with other forms of technology-assisted

therapy, such as virtual reality in exposure therapy for anxious clients, more research is needed for AI chatbot avatars (Fiske et al., 2019).

Research should examine which diagnoses and treatment domains (cognitive behavioral therapy, dialectical behavior therapy, interpersonal processing therapy, etc.) are associated with positive or negative perceptions of AI chatbot avatars. Establishing this distinction could be beneficial in helping clinicians identify which type of clients would be more likely to benefit from AI chatbot avatar-assisted therapy. For example, Goonesekera and Donkin (2022) found success implementing AI chatbots to deliver cognitive behavioral therapy for individuals with anxiety and depression. Likewise, Fiske and colleagues (2019) and Vaidyam et al., (2019) found utilizing AI chatbot avatars could assist in treatments where clients may not be as comfortable sharing certain aspects of their pathology directly with their clinician, such as for individuals with treatment-resistant schizophrenia.

Further, results indicated ethnic minority groups have more positive perceptions of implementing chatbot avatars in therapy when compared to non-ethnic minority participants. Expanding on perceptions for this group would be beneficial to determine how to best reach this clientele. Understanding what about chatbot avatars this group perceives positively such as potential to match language preferences or cultural background could have potential to reach minority groups that might not otherwise seek therapy services. Additionally, understanding perceptions could help ethnic minority clients seek services where language has previously been a barrier. Examining specific language or cultural preferences, especially in areas with diverse populations or where mental health services are limited could add to this literature.

Conclusion

The purpose of this study was to examine perceptions of implementing artificially intelligent chatbot avatars for psychotherapeutic purposes. Overall, individuals had neutral to positive perceptions of implementing artificially intelligent chatbot avatars in therapy. While technology could never replace the personal therapeutic connection a therapist makes with a client, the technology has potential to enhance the therapeutic process.

Importantly, technology-assisted therapy via AI chatbot avatars should be viewed as complementary to human therapists rather than replacements. This perspective is rooted in the understanding that interpersonal connection remains a vital part of successful therapy. Human therapists excel in trust, rapport, and emotional connectedness with clients which are vital for effective therapy (Zhang & Wang, 2024). In contrast, artificially intelligent chatbot avatars lack the ability to replicate the depth of human empathy or flexibility required for personalized care. Additionally, they cannot genuinely experience emotions or interpret real-time cues clients can often display, such as nonverbal behaviors, facial expressions, or body language. These limitations can impede their ability to address the complex needs of clients effectively.

This study provides a foundational understanding of client perceptions regarding implementation of AI chatbot avatars as a therapeutic tool. Further research and innovation will be essential to refine these tools, address their limitations, and ensure they are used ethically and effectively utilized for a therapeutic context. Moving forward, more research is still needed to assess methods for measuring client perception, the nature of implementing AI technology, and identifying which client populations would benefit most from its utilization.

References

Abbad, M. M. M. (2021). Using the UTAUT model to understand students' usage of e-learning systems in developing countries. *Education and Information Technologies*, *26*(6), 7205–7224. https://doi.org/10.1007/s10639-021-10573-5

Abd-Alrazaq, A. A., Alajlani, M., Ali, N., Denecke, K., Bewick, B. M., & Househ, M. (2021). Perceptions and opinions of patients about mental health chatbots: Scoping review. *Journal of Medical Internet Research*, *23*(1), e17828. https://doi.org/10.2196/17828

Anderson, L. B. (2014). *The Use of Technology Assisted Methods in Therapy: Clinical Social Workers' Perspectives*.

Apolinário-Hagen, J., Fritsche, L., Bierhals, C., & Salewski, C. (2018). Improving attitudes toward e-mental health services in the general population via psychoeducational information material: A randomized controlled trial. *Internet Interventions*, *12*, 141–149. https://doi.org/10.1016/j.invent.2017.12.002

Apolinário-Hagen, J., Harrer, M., Kählke, F., Fritsche, L., Salewski, C., & Ebert, D. D. (2018). Public attitudes toward guided internet-based therapies: Web-based survey study. *JMIR Mental Health*, *5*(2), e10735. https://doi.org/10.2196/10735

Apolinário-Hagen, J., Vehreschild, V., & Alkoudmani, R. M. (2017). Current views and perspectives on e-mental health: An exploratory survey study for understanding public attitudes toward internet-based psychotherapy in Germany. *JMIR Mental Health*, *4*(1), e8. https://doi.org/10.2196/mental.6375

Barnett, A., Savic, M., Pienaar, K., Carter, A., Warren, N., Sandral, E., Manning, V., & Lubman, D. I. (2021). Enacting 'more-than-human' care: Clients' and counsellors' views on the

multiple affordances of chatbots in alcohol and other drug counselling. *International Journal of Drug Policy*, *94*, 102910. https://doi.org/10.1016/j.drugpo.2020.102910

Békés, V., Aafjes-van Doorn, K., Luo, X., Balarajan, S., & Hopwood, C. J. (2023). Mastery of teletherapy is related to better therapeutic relationship and presence in teletherapy: The development of the teletherapy intervention scale. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1206960

Bell, S., Wood, C., & Sarkar, A. (2019). Perceptions of chatbots in therapy. *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–6. https://doi.org/10.1145/3290607.3313072

Cabral, R. R., & Smith, T. B. (2011). Racial/ethnic matching of clients and therapists in mental health services: A meta-analytic review of preferences, perceptions, and outcomes. *Journal of Counseling Psychology*, *58*(4), 537–554. https://doi.org/10.1037/a0025266

Chang, A. (2012). UTAUT and UTAUT 2: A review and agenda for future research. *The Winners*, *13*(2), 10–114.

Colby, K. M. (1999). Human-computer conversation in a cognitive therapy program. In Y. Wilks (Ed.), *Machine Conversations* (pp. 9–19). Springer US. https://doi.org/10.1007/978-1-4757-5687-6_3

Corrêa, A. G., de Assis, G. A., do Nascimento, M., & de Deus Lopes, R. (2017). Perceptions of clinical utility of an augmented reality musical software among health care professionals. *Disability and Rehabilitation: Assistive Technology*, *12*(3), 205–216. https://doi.org/10.3109/17483107.2015.1089328

Elliott, R. (2008). Research on client experiences of therapy: Introduction to the special section. *Psychotherapy Research*, *18*(3), 239–242. https://doi.org/10.1080/10503300802074513

Feng, G., Peng, J., Tu, D., Zheng, J. Z., & Feng, C. (2016). Two Paradoxes in Linear Regression Analysis. *Shanghai Archives of Psychiatry*, *28*(6), 355–360. https://doi.org/10.11919/j.issn.1002-0829.216084

Fiske, A., Henningsen, P., & Buyx, A. (2019). Your robot therapist will see you now: Ethical implications of embodied artificial intelligence in psychiatry, psychology, and psychotherapy. *Journal of Medical Internet Research*, *21*(5), e13216. https://doi.org/10.2196/13216

Giovanetti, A. K., Punt, S. E. W., Nelson, E.-L., & Ilardi, S. S. (2022). Teletherapy versus in-person psychotherapy for depression: A meta-analysis of randomized controlled trials. *Telemedicine and E-Health*, *28*(8), 1077–1089. https://doi.org/10.1089/tmj.2021.0294

Goonesekera, Y., & Donkin, L. (2022). A cognitive behavioral therapy chatbot (Otis) for health anxiety management: Mixed Methods Pilot Study. *JMIR Formative Research*, *6*(10), e37877. https://doi.org/10.2196/37877

Gümüş, N., & Çark, Ö. (2021). The effect of customers' attitudes towards chatbots on their experience and behavioral intention in Turkey. *Interdisciplinary Description of Complex Systems*, *19*(3), 420–436. https://doi.org/10.7906/indecs.19.3.6

Hayotte, M., Thérouanne, P., Gray, L., Corrion, K., & d'Arripe-Longueville, F. (2020). The French eHealth Acceptability Scale using the unified theory of acceptance and use of technology 2 model: Instrument validation study. *Journal of Medical Internet Research*, *22*(4), e16520. https://doi.org/10.2196/16520

Jain, G., Pareek, S., & Carlbring, P. (2024). Revealing the source: How awareness alters perceptions of AI and human-generated mental health responses. *Internet Interventions*, *36*, 100745. https://doi.org/10.1016/j.invent.2024.100745

Johnston, W. D. (2022). *Attitudes of adults treated for depression toward technology-assisted therapy. (*Publication No. 28652607) [Doctorial Dissertation, Illinois Institute of Technology]. ProQuest Information & Learning.

Kirkham, R., & Batten, C. (2020). Public perceptions on using virtual reality and mobile apps in anxiety treatment: A cross sectional analysis. *Reinvention: An International Journal of Undergraduate Research*, *13*(2). https://reinventionjournal.org/article/view/625

Kuhn, E., Eftekhari, A., Hoffman, J. E., Crowley, J. J., Ramsey, K. M., Reger, G. M., & Ruzek, J. I. (2014). Clinician perceptions of using a smartphone app with prolonged exposure therapy. *Administration and Policy in Mental Health and Mental Health Services Research*, *41*(6), 800–807. https://doi.org/10.1007/s10488-013-0532-2

Kurian, N. (2023). 'No, Alexa, no!': Designing child-safe AI and protecting children from the risks of the 'empathy gap' in large language models. *Learning, Media and Technology*, *0*(0), 1–14. https://doi.org/10.1080/17439884.2024.2367052

Lim, S. M., Shiau, C. W. C., Cheng, L. J., & Lau, Y. (2022). Chatbot-delivered psychotherapy for adults with depressive and anxiety symptoms: A systematic review and meta-regression. *Behavior Therapy*, *53*(2), 334–347. https://doi.org/10.1016/j.beth.2021.09.007

Lipkin, S. (1954). Clients' feelings and attitudes in relation to the outcome of client-centered therapy. *Psychological Monographs: General and Applied*, *68*(1), 1–30. https://doi.org/10.1037/h0093661

Liu, H., Peng, H., Song, X., Xu, C., & Zhang, M. (2022). Using AI chatbots to provide self-help depression interventions for university students: A randomized trial of effectiveness. *Internet Interventions*, *27*, 100495. https://doi.org/10.1016/j.invent.2022.100495

Luxton, D. D. (2014). Artificial intelligence in psychological practice: Current and future applications and implications. *Professional Psychology: Research and Practice*, *45*(5), 332. https://psycnet.apa.org/doi/10.1037/a0034559

Maples-Keller, J. L., Bunnell, B. E., Kim, S.-J., & Rothbaum, B. O. (2017). The use of virtual reality technology in the treatment of anxiety and other psychiatric disorders. *Harvard Review of Psychiatry*, *25*(3), 103–113. https://doi.org/10.1097/HRP.0000000000000138

March, S., Spence, S. H., Donovan, C. L., & Kenardy, J. A. (2018). Large-scale dissemination of internet-based cognitive behavioral therapy for youth anxiety: Feasibility and acceptability study. *Journal of Medical Internet Research*, *20*(7), e9211. https://doi.org/10.2196/jmir.9211

Markopoulos, P. (2018). *Mental health practitioners perceptions' of presence in a virtual reality therapy environment for use for children diagnosed with autism spectrum disorder*. (Publication No. 2472) [Doctoral dissertation, University of New Orleans]. ScholarWorks. https://doi.org/10.13140/RG.2.2.24402.25287

McLean, S. A., Booth, A. T., Schnabel, A., Wright, B. J., Painter, F. L., & McIntosh, J. E. (2021). Exploring the efficacy of telehealth for family therapy through systematic, meta-analytic, and qualitative evidence. *Clinical Child and Family Psychology Review*, *24*(2), 244–266. https://doi.org/10.1007/s10567-020-00340-2

Meyer, O. L., & Zane, N. (2013). The influence of race and ethnicity in clients' experiences of mental health treatment. *Journal of Community Psychology*, *41*(7), 884–901. https://doi.org/10.1002/jcop.21580

Molloy, A., Ellis, D. M., Su, L., & Anderson, P. L. (2021). Improving acceptability and uptake behavior for internet-based cognitive-behavioral therapy. *Frontiers in Digital Health*, *3*. https://doi.org/10.3389/fdgth.2021.653686

Newman, M. G., Szkodny, L. E., Llera, S. J., & Przeworski, A. (2011). A review of technology-assisted self-help and minimal contact therapies for anxiety and depression: Is human contact necessary for therapeutic efficacy? *Clinical Psychology Review*, *31*(1), 89–103. https://doi.org/10.1016/j.cpr.2010.09.008

Nilsson, T., Svensson, M., Sandell, R., & Clinton, D. (2007). Patients' experiences of change in cognitive-behavioral therapy and psychodynamic therapy: A qualitative comparative study. *Psychotherapy Research*, *17*, 553–566. https://doi.org/10.1080/10503300601139988

Ogundari, K. (2023). Student access to technology at home and learning hours during COVID-19 in the U.S. *Educational Research for Policy and Practice*, 1–18. https://doi.org/10.1007/s10671-023-09342-7

Oh, J., Jang, S., Kim, H., & Kim, J.-J. (2020). Efficacy of mobile app-based interactive cognitive behavioral therapy using a chatbot for panic disorder. *International Journal of Medical Informatics*, *140*, 104171. https://doi.org/10.1016/j.ijmedinf.2020.104171

Oppy, G., & Dowe, D. (2003). *The Turing Test*. https://plato.stanford.edu/entries/turing-test/?utm_source=Rambler&utm_medium=news&utm_campaign=transition

Park, G., Chung, J., & Lee, S. (2024). Human vs. machine-like representation in chatbot mental health counseling: The serial mediation of psychological distance and trust on compliance intention. *Current Psychology*, *43*(5), 4352–4363. https://doi.org/10.1007/s12144-023-04653-7

Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, *28*(5), 328–341. https://doi.org/10.1108/02652321011064872

Rothbaum, B. O., & Hodges, L. F. (1999). The use of virtual reality exposure in the treatment of anxiety disorders. *Behavior Modification*, *23*(4), 507–525. https://doi.org/10.1177/0145445599234001

Schueller, S. M., & Torous, J. (2020). Scaling evidence-based treatments through digital mental health. *American Psychologist, 75*(8), 1093–1104. https://doi.org/10.1037/amp0000654

Segal, R., Bhatia, M., & Drapeau, M. (2011). Therapists' perception of benefits and costs of using virtual reality treatments. *Cyberpsychology, Behavior, and Social Networking*, *14*(1–2), 29–34. https://doi.org/10.1089/cyber.2009.0398

Simms, D. C., Gibson, K., & O'Donnell, S. (2011). To use or not to use: Clinicians' perceptions of telemental health. *Canadian Psychology/Psychologie Canadienne*, *52*(1), 41–51. https://doi.org/10.1037/a0022275

Simon, N., McGillivray, L., Roberts, N. P., Barawi, K., Lewis, C. E., & Bisson, J. I. (2019). Acceptability of internet-based cognitive behavioural therapy (i-CBT) for post-traumatic stress disorder (PTSD): A systematic review. *European Journal of Psychotraumatology*, *10*(1), 1646092. https://doi.org/10.1080/20008198.2019.1646092

Tan, S. F. (2024). Perceptions of students on artificial intelligence-generated content avatar utilization in learning management system. *Asian Association of Open Universities Journal*, *19*(2), 170–185. https://doi.org/10.1108/AAOUJ-12-2023-0142

Toffolo, M. B. J., Fehribach, J. R., van Klaveren, C. P. B. J., Cornelisz, I., van Straten, A., van Gelder, J.-L., & Donker, T. (2022). Automated app-based augmented reality cognitive

behavioral therapy for spider phobia: Study protocol for a randomized controlled trial. *PLoS ONE, 17*(7). https://doi.org/10.1371/journal.pone.0271175

Tschuschke, V., Crameri, A., Koehler, M., Berglar, J., Muth, K., Staczan, P., Von Wyl, A., Schulthess, P., & Koemeda-Lutz, M. (2015). The role of therapists' treatment adherence, professional experience, therapeutic alliance, and clients' severity of psychological problems: Prediction of treatment outcome in eight different psychotherapy approaches. Preliminary results of a naturalistic study. *Psychotherapy Research*, *25*(4), 420–434. https://doi.org/10.1080/10503307.2014.896055

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Vessey, J. T., & Howard, K. I. (1993). Who seeks psychotherapy? *Psychotherapy: Theory, Research, Practice, Training*, *30*(4), 546–553. https://doi.org/10.1037/0033-3204.30.4.546

Wedlock, B. C., & Trahan, M. P. (2019). Revisiting the Unified Theory of Acceptance and the use of Technology (UTAUT) model and scale: An empirical evolution of educational technology. *Research Issues in Contemporary Education*, *4*(1), 6–20.

Williams, M. D., Rana, N. P., & Dwivedi, Y. K. (2015). The unified theory of acceptance and use of technology (UTAUT): A literature review. *Journal of Enterprise Information Management*, *28*(3), 443–488. https://doi.org/10.1108/JEIM-09-2014-0088

Williams, C., & Shang, D. (2023). Telehealth usage among low-income racial and ethnic minority populations during the COVID-19 pandemic: Retrospective observational study. *Journal of Medical Internet Research*, *25*, e43604. https://doi.org/10.2196/43604

Xu, B., & Zhuang, Z. (2022). Survey on psychotherapy chatbots. *Concurrency and Computation: Practice and Experience*, *34*(7), e6170. https://doi.org/10.1002/cpe.6170

Zhang, Z., & Wang, J. (2024). Can AI replace psychotherapists? Exploring the future of mental health care. *Frontiers in Psychiatry*, *15*, 1444382. https://doi.org/10.3389/fpsyt.2024.1444382

Table 1

Constructs of UTAUT

Construct	Definition	Variables	Models Contributing to Constructs
Performance Expectancies	The degree to which using the technology will bring potential gain or benefit to the user	Perceived Usefulness (PU) Extrinsic Motivation Job-fit Relative Advantage (RA) Outcome Expectancies	Technology Acceptance Model (TAM) 1-3, combined TAM-TPB (Theory of Planned Behavior) Motivation Model (MM) Model of PC Utilization (MPCU) Innovation Diffusion Theory (IDT) Social Cognition Theory (SCT)
Effort Expectancies	The degree of ease affiliated with using the technology	Perceived Ease of Use (PEOU) Complexity	TAM MPCU
Social Influence	The degree to which a user perceives it is important for others to believe that they use the technology	Subjective Norms Social Factors Image	Theory of Reasoned Action (TRA), TAM 2, TPB, and combined TAM-TPB MPCU IDT
Facilitating Conditions	The degree to which a user believes the infrastructure of the technology was created to support user experience	Perceived Behavioral Control Compatibility	TPB and combined TAM-TPB IDT

Note. Adapted from "UTAUT and UTAUT 2: A review and agenda for future research" by A. Chang. 2012, *The Winners, 13*(2), 10-114.

Table 2

Modified ETAM Item Mapping of UTAUT Constructs and Item-Scale Correspondences

ETAM items	Subscale	Related UTAUT constructs
1. Artificially Intelligent chatbot avatar assisted therapies are modern and in line with our modern times.	Perceived Usefulness	Performance expectancy Social influence
2. Artificially Intelligent chatbot avatar assisted therapies will replace conventional face-to-face psychotherapy in the future.	Relative Advantage	Performance expectancy Social Influence
3. Artificially Intelligent chatbot avatar assisted therapy is better compatible with work and private life than conventional face-to-face therapy.	Perceived Usefulness	Performance expectancy Effort Expectancy
4. It makes no difference to me whether psychotherapy is conducted through the use of artificially intelligent chatbot avatars or in a psychotherapy practice in a clinic.	Relative Advantage	Performance expectancy
5. Artificially Intelligent chatbot avatar assisted therapies will reach more individuals with mental health problems.	Relative Advantage	Performance expectancy Social influence
6. Artificially Intelligent chatbot avatar therapies can help bridging waiting time for conventional psychotherapy.	Relative Advantage	Performance expectancy Social Influence
7. Health insurance companies should cover the costs for artificially intelligent chatbot avatar-based therapies.	Perceived Usefulness	Performance expectancy Social influence
8. Artificially Intelligent chatbot avatar-based therapy programs are as effective as conventional face-to-face psychotherapy.	Perceived Usefulness	Performance expectancy
9. Trust in a therapist can be just as easily built through chatbot avatars as in conventional face-to-face psychotherapy.	Perceived Usefulness	Performance expectancy Facilitating conditions
10. Regarding therapeutic success, it makes no difference whether contacts with a therapist are provided via artificially intelligent chatbot avatars or face-to-face in a psychotherapeutic practice.	Perceived Usefulness	Performance expectancy Facilitating conditions
11. Artificially Intelligent chatbot avatar-based therapies are an appropriate alternative to conventional face-to-face psychotherapy.	Relative Advantage	Performance expectancy

12. In case of mental health problems, I would attend artificially intelligent chatbot avatar-based therapy.	Perceived Usefulness	Performance expectancy
13. I would prefer an artificially intelligent chatbot avatar-based therapy to a conventional psychotherapy.	Relative Advantage	Performance expectancy
14. Artificially intelligent chatbot avatar-based therapies will help reach more patients and help them.	Relative Advantage	Performance expectancy Social influence

Note. Adapted from "Current views and perspectives on E-mental health: An explanatory survey study for understanding public attitudes towards internet-based psychotherapy in Germany" by Apolinário-Hagen et al. 2017, *JMIR Mental Health*, *4*(1), e8.
Note. Overall score attitude assessment (ETAM mean score) (0-4 range on all items)
Perceived Usefulness scale (PU) scale: 1, 3, 7, 8, 9, 10, 12
Relative Advantage (RA) scale: 2, 4, 5, 6, 11, 13, 14
Apolinário-Hagen et al. 2017, *JMIR Mental Health*, *4*(1), e8.

Table 3 *Descriptive Statistics of Participant Sociodemographics*

	n	%	*M*	*SD*	Min	Max
Age (years)			20.01	4.63	18.00	61.00
Sex						
Female	136	73.9				
Male	44	23.9				
Ethnicity						
White	97	52.7				
Black	20	10.9				
American Indian	1	0.5				
Hispanic	26	14.1				
Asian American	3	1.6				
Bi-racial/Multi-racial	10	5.4				
Other	25	13.6				
Highest educational level						
High school graduate or GED	132	71.7				
Some college, Certificate Program, Associate's degree	42	22.8				
Bachelor's Degree	8	4.3				
Household income						
Less than $19,999 a year	41	22.3				
$20,000-$39,000 a year	37	20.1				
$40,000-59,000 a year	31	16.8				
$60,000-$79,000 a year	21	11.4				
More than $80,000 a year	51	27.7				

Table 4 *Independent Samples t-test for Previous Therapy Experience on Perceptions of AI*

Previous Therapy Experience	*n*	Perceptions of AI (*M*)	*SD*	*t*	*df*	*p*
Yes	83	2.38	.70			
No	99	2.52	.63	-1.46	180	.073

Table 5 *Mann-Whitney U test for Perceptions of AI by Modality of Treatment*

	Modality of Treatment	*U*	*Z*	*P*
Perceptions of AI	Face-to-face vs. Telehealth	240.50	-1.07	.287

Note. Mean ranks for perceptions of AI were higher in the telehealth group (*M* = 52.44) compared to the face-to-face group (*M* = 42.58), consistent with hypothesis one.

Table 6 *Mann-Whitney U test for Perceptions of AI by Previous AI Experience*

	Previous AI Experience	*U*	*Z*	*P*
Perceptions of AI	Yes vs. No	2623.000	-1.64	.102

Note. Mean ranks for perceptions of AI were higher in the no previous AI experience group (*M* = 102.48) compared to those with previous AI experience group (*M* = 87.79). Trending contrary to hypothesized direction.

Table 7 *Multiple Linear Regression Predicting Perceptions of AI*

	B	*SE*	*β*	*t*	*p*
(Constant)	2.093	0.411		5.088	<.001
Sex	-0.172	0.124	-0.111	-1.386	.168
Age	0.017	0.012	0.122	1.508	.133
Ethnicity	**0.263**	**0.126**	**0.176**	**2.086**	**.039**
Household income	0.013	0.036	0.029	0.345	.730
Highest level of education	-0.068	0.096	-0.057	-0.707	.481

Appendix A

Informed Consent for Research Participation

The Washburn University Department of Psychology supports the practice of protection for human subjects participating in research. The consent form is provided so that you can make an informed decision about whether to participate in this study. If you agree to participate, you are free to withdraw at any time without penalty.

Purpose:
The purpose of this study is to examine attitudes and perceptions of using artificially intelligent chatbot avatars in a therapeutic setting.

Participation Requirements:
You will be prompted to complete a series of online questionnaires expected to take around 20 minutes. For your completion of these questionnaires, you will receive 25 research points if enrolled in a PY 100 class. You will be asked to complete sociodemographic questionnaire, inquiring about your age, sex assigned at birth, ethnicity, highest level of education, and household income, and a descriptive information questionnaire inquiring about your previous therapy experience. The descriptive information questionnaire asks about previous therapy experience, which may be sensitive to some participants.

You will complete the modified e-therapy attitudes measure (E-TAM) and will then be provided a debriefing form. The debriefing form will provide mental health resources.

Potential Risks:
Participation in the study could involve some level of discomfort as questions regarding previous therapy experience are asked, however no additional risks beyond what would normally be encountered in usual daily activities is expected. However, if any questions cause strong emotions, you may choose to not answer the question(s) or stop participating at any time without explanation or penalty.

Potential Benefits:
You will be awarded 25 research points for your participation in the study. Participating in this study will help investigators learn more about therapeutic interventions involving technology.

Confidentiality of Data:
Your responses will be anonymous. Information obtained will be used for research. Only the investigators will have access to the data. Personal identifiable information will be maintained privately and without identification during and after the study is completed that is expected to take approximately 20 minutes to complete. Be assured that your name will not be associated in any way with the research findings. Your cooperation is greatly appreciated. A copy of this consent form is available upon request.

Contact Information:

Do not hesitate to ask any questions about the study. Should you have any questions or concerns about this study, contact the Primary Investigator, Josie Powell, B.A. at josie.powell@washburn.edu. Or, you can contact my research supervisor, Dr. Angela Duncan at angela.duncan1@washburn.edu. Should you have questions about your rights as a research participant, contact the chair of the Institutional Review Board at irb@washburn.edu.

BY SELECTING:

YES- I verify that I have read and understand this consent form, and willingly agree to participate in this study and have my answers included as part of a collective set of responses of student input under the terms described.

NO- I verify that I have read and understand this consent form and do NOT wish to participate in this study nor have my answers included as part of a collective set of responses of student input under the terms described.

Appendix B

Sociodemographics Questionnaire

Age: ___ Years

What is your sex assigned at birth?
___ Female
___ Male
___ Prefer not to answer

Ethnicity:
___ Black
___ American Indian
___ Asian American
___ Bi-racial/Multi-racial
___ White
___ Hispanic
___ Other

Education Level: Please select highest status obtained
___ Did not complete High School
___ High School Graduate or GED
___ Some college, Certificate Program,
___ Associate's Degree
___ Bachelor's Degree
___Master's Degree
___ Doctoral Degree

Household Income:
___ Less than $19,999 a year
___ $20,000-$39,999 a year
___ $40,000-$59,999 a year
___ $60,000-$79,999 a year
___ More than $80,000 a year

Appendix C

Descriptive Information Questionnaire

Instructions: Please answer the following questions

Have you ever sought mental health services such as psychotherapy or counseling?

___Yes (past or currently)
___No

Which modality did you use to meet with your therapist?

___Face-to-face (in-person)
___Telehealth (televideo, telephone, etc.)
____Not applicable (did not meet with a therapist)

Instructions: Please read the informational paragraph and answer the following question.

A chatbot is a type of artificial intelligence that can understand and respond to messages, often in a natural language like text or speech. A key feature of chatbots is their ability to have back-and-forth conversation with a user rather than pre-conceived responses. Similarly, a chatbot avatar is a graphical image or animation that visually represents the chatbot to make the interaction feel more natural and engaging for the user, creating a conversation that feels more like a real person rather than a computer program.

Have you ever had experience with artificially intelligent chatbot avatars (Snapchat MyAI, Mitsuku, Replika, etc.)?

___Yes (past or currently)
___No

Appendix D

E-Therapy Attitude Measure (ETAM)

Instructions: Please rate your level of agreement of the following statements.

1. Artificially Intelligent chatbot-avatar-assisted therapies are modern and in line with our modern times.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

2. Artificially Intelligent chatbot-avatar-assisted therapies will replace conventional face-to-face psychotherapy in the future.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

3. Artificially Intelligent chatbot avatar assisted therapy is better compatible with work and private life than conventional face-to-face therapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

4. It makes no difference to me whether psychotherapy is conducted through the use of artificially intelligent chatbot avatars or in a psychotherapy practice in a clinic.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

5. Artificially Intelligent chatbot avatar assisted therapies will reach more individuals with mental health problems.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

6. Artificially Intelligent chatbot avatar therapies can help bridging waiting time for conventional psychotherapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

7. Health insurance companies should cover the costs for artificially intelligent chatbot avatar-based therapies.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

8. Artificially Intelligent chatbot avatar-based therapy programs are as effective as conventional face-to-face psychotherapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

9. Trust in a therapist can be just as easily built through chatbot avatars as in conventional face-to-face psychotherapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

10. Regarding therapeutic success, it makes no difference whether contacts with a therapist are provided via artificially intelligent chatbot avatars or face-to-face in a psychotherapeutic practice.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

11. Artificially Intelligent chatbot avatar-based therapies are an appropriate alternative to conventional face-to-face psychotherapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

12. In case of mental health problems, I would attend artificially intelligent chatbot avatar-based therapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

13. I would prefer an artificially intelligent chatbot avatar-based therapy to a conventional psychotherapy.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

14. Artificially intelligent chatbot avatar-based therapies will help reach more patients and help them.

0	1	2	3	4
Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree

Appendix E
Debriefing Form

This study is interested in participant's perceptions of using artificially intelligent chatbot avatars as a therapeutic tool. Previous studies have only examined therapist's perspectives. In an effort to keep surveys confidential, it is requested participants in this study do not share any information from the surveys to any friends or classmates who may be in other classes that also may be completing the surveys.

Hypotheses:
We expect to find that the higher the scores on the modified e-therapy attitudes measure (ETAM), the more positive perceptions of using artificially intelligent chatbot avatars as a therapeutic tool. We expect to find these results consistent regardless of sex or ethnicity. However, we expect those with higher levels of education and household income to have the highest positive ratings. Additionally, we expect to find that those with previous therapy experience, especially previous technology-assisted therapy experience, and those with previous chatbot avatar experience to have more positive ratings of implanting artificially intelligent chatbot avatars as a therapeutic tool than those without this previous experience.

Why is this important to study?
Client buy-in is essential when examining treatment outcomes. When client's perceive a therapeutic intervention as beneficial to their progress, they are more likely to fully engage with and commit to the treatment. Various forms of technology-assisted therapies have already demonstrated strong client buy-in. This study aims to further expand on perspectives of additional technology-assisted therapies: artificially intelligent chatbot avatars. Investigating alternative therapeutic interventions is advantageous for several reasons; particularly in addressing barriers face-to-face therapy may present, such as lack of access to resources. Below you will find campus mental health resources.

-Washburn Psychological Services Clinic
Henderson, Rm 111
Topeka KS, 66621
Hours: Monday-Friday 7a.m.-7p.m.
Phone: 785-670-1750
Link: https://www.washburn.edu/academics/college-schools/arts-sciences/psychology/psychological-clinic/index.html?gad_source=1&gbraid=0AAAAAqMXKDD83BRZGcQOp16GaVEGGKKbd&gclid=Cj0KCQjw8--2BhCHARIsAF_w1gzfwby-Lf4YYqk8r1y2bdWJ1wG7nMXruBYyiZ6QwX3hErWCXdNLDAEaApqAEALw_wcB

-Washburn Counseling Services
Kuehne Hall, Suite 200
Topeka KS, 66621
Hours: Monday-Friday 8a.m.-5p.m.
Phone: 785-670-3100
Link: https://www.washburn.edu/student-life/services/counseling/index.html?gad_source=1&gbraid=0AAAAAqMXKDD83BRZGcQOp16GaVEGGKKbd&gclid=Cj0KCQjw8--

2BhCHARIsAF_w1gxUcQ_CvG5T9gS7vR53LyVhU8wIcz8PNKi2mYYgmwAHyQD-TvX2UaEaAkuZEALw_wcB

Want to know more?

If you would like to receive a summary of research findings when the study is completed, please contact Josie Powell at josie.powell@washburn.edu. If you have any questions about this research, please contact the research supervisor, Dr. Angela Duncan at angela.duncan1@washburn.edu.
If you have concerns about your rights as a participant in this experiment, please contact the chair of the Institutional Review Board at irb@washburn.edu. Thank you again for your participation!