



Attitudes and perspectives towards the preferences for artificial intelligence in psychotherapy

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ABSTRACT

The use of artificial intelligence (AI) in psychotherapy has been increased in recent years. While these technologies in psychotherapy are growing, the circumstances of accepting artificial tools during psychotherapy need to be explored to improve effective AI tools during the sensitive therapeutic environment. In this study, the factors around the preferences for AI-based psychotherapy were investigated. This cross-sectional study was conducted with a sample of 872 individuals who are highly educated, 18 aged and above. Attitude towards AI-based Psychotherapy, Attitude towards Seeking Professional Psychological Help Scale- Short Form, and Stigma Scale for Receiving Psychological Help Scale were used to examine the factors of participants' preferences for AI-based psychotherapy. While 55% of the sample preferred AI-based psychotherapy, the majority of participants trusted more human psychotherapists than AI-based systems when asked participants' trust about the security of personal data. However, three important benefits of AI-based psychotherapy were identified as being able to comfortably talk about the embarrassing experiences, having accessibility at any time, and accessing remote communication. Importantly, factors of preferences for AI-based psychotherapy were related to the idea of AI-based psychotherapy systems can improve themselves based on the results from previous therapeutic experiences. Gender and the types of profession related to psychology and technical/engineering were also associated with choosing AI-based psychotherapy. The results suggest that both raising awareness of the benefits and effectiveness of psychotherapy as well as the trust to the artificial intelligence tools can improve the rate of the preferences for AI-based psychotherapy.

1. Introduction

Accessing remotely mental health services has become an urgent need during the COVID-19 pandemic as many scholars have paid attention to how physical distancing, other containment strategies, and the consequences of economic breakdown have increased the risk of psychological and mental health problems (Holmes et al., 2020; Johnson et al., 2021; Kopelovich et al., 2021; Sheridan et al., 2021). Recently, the effectiveness of remote therapy has been discussed for the availability during the pandemic (Backhaus et al., 2012; Bee et al., 2008; Humer et al., 2020; Thompson-de Benoit & Kramer, 2020). While the need for remote access to psychotherapy has been reported, inadequate literature on the preference of using Artificial Intelligence (AI) based psychotherapy. Therefore, we aim to examine the factors around the

preferences for AI-based psychotherapy.

While different reasons might impact individuals' attending psychotherapy, several scholars found that many people failed to receive psychotherapy due to the fear of stigma (Corrigan, 2004, 2020; Corrigan & Watson, 2002; Gorges et al., 2018; Hui Ku & Hong, 2017; Slade, 2010; Werner et al., 2020). For example, Hui Ku and Hong (2017) noted that stigma around mental health services often increases the negative feelings among people with schizophrenia. This stigma could be associated with the individuals' exacerbation of the symptoms of mental health issues. Social stigma often occurs to dishonorable actions regarding mental illness (Corrigan & Watson, 2002). Furthermore, people might hold unrealistic ideas about mental health problems. Therefore, the stigma around mental health problems as well as the reluctance to seek psychological help may prevent people from participating in support

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services. To reduce and stop such stigma is a vital need to increase individuals' participation in therapeutic support. Regular participation in psychotherapy can enhance well-being among people with mental health problems. This can improve their mental health. Importantly, AI-based psychotherapy might reduce the stigma which might improve the seeking help behavior for psychological struggles.

While the stigma around psychotherapy and mental health services has been widely discussed in the literature, many researchers have recently paid attention to web-based and Internet-based interventions (Arjadi et al., 2018; Attridge, 2020; Görges et al., 2018; Salamanca-Sanabria et al., 2019). Moreover, some scholars examined the effectiveness of these interventions (Barak et al., 2008; McKay et al., 2016; Stjernswärd & Hansson, 2018). However, there is no study has examined the individuals' perspectives about AI-based psychotherapy by focusing on their help-seeking behavior and social stigma. Therefore, this study aims to empirically explore the relationship between the perceptions of stigmatization by others for seeking help and the intent of taking AI-based psychotherapy. Therefore, we overview the literature and theories around how AI-based psychography can help people who attend therapeutic process without human interaction which might reduce their stress of talking about their sensitive experiences by focusing on the help-seeking behavior and stigma.

Theoretical Perspectives: Stigma and Help-Seeking Behavior with AI-based psychotherapy.

Ebert et al. (2019) paid attention to the limitations around face-to-face psychological support for mental disorders. It was argued that Internet-based and mobile-based interventions can reduce and stop some limits of face-to-face interventions. Importantly, AI-based psychotherapy might provide more advantages for people who might not access face-to-face psychotherapy or other mental health services. For instance, they stated that machine learning and AI can hold several opportunities to improve the identification and treatment of mental disorders. Similarly, Bickman (2020) claimed that "AI promises to transform the way healthcare is delivered." Moreover, AI can help mental healthcare by focusing on some individual variabilities. Considering the disadvantaged circumstances of face-to-face therapeutic help with humans, AI-based psychotherapy might be an important option for people who experience public stigma and hold more embarrassment during face-to-face interactions with a human therapist. AI-based psychotherapy provides remote access which can increase the rate of participation among people who are not able to access physically the therapy centers.

Moreover, trust during psychotherapy is an essential element and we provide key findings around trust in general AI tools as well as AI-based psychotherapy. Several scholars noted that individuals' lack or insufficient trust is an important barrier to increasing the application of AI tools (Gillath et al., 2021; Glikson & Woolley, 2020). The reasons for lack of trust might be different based on individuals' specific positions such as losing their jobs or previous negative experiences. Furthermore, Mikulincer (1998) found that individuals' secure attachment style was linked to their trusting relationship with a human. Importantly, Gillath et al. (2021) highlighted that "reducing fear and overcoming risk perceptions is likely to be more efficient, especially at the initial stages of trust, than providing information about the number of errors or similar cognitive aspects" for increasing the application of AI technologies. They found that enhancing people's sense of attachment security can increase overall trust in AI. Considering the importance of attachment style in relationships with humans, similar issue may play an important role in interaction with non-human tools or interventions. Trust is frequently linked to the stigma as people who are high stigma to the psychotherapy insufficiently involve these services (Deres et al., 2020; McSpadden, 2022; Ogueji et al., 2021).

Many researchers in the psychology field also pay attention to the importance of trust in the engagement in psychotherapy. For instance, the meta-analysis of the relationship between adult attachment style and the therapeutic alliance in individual psychotherapy by Diener and

Monroe (2011) found that greater attachment security was associated with stronger therapeutic alliances. Furthermore, secure attachment is often related to reduced experiences of stigma and discrimination (Zhao et al., 2015). Similarly, Nam and Lee (2015) found that attachment styles and stigma mediated the relationship between stress and attitudes toward seeking help. Furthermore, previous counseling experiences were found as an important factor in stigma and attitudes toward seeking help. Therefore, we will explore the relationship between the factors of previous therapeutic experiences, stigma, help-seeking behavior, and the preferences for AI-based psychotherapy.

Complex interactions and challenges during psychotherapy should be recognized as the therapeutic process aims to improve clients' awareness about their conditions (de Mello & de Souza, 2019). Seeking help, accessing the services, and regularly attending psychotherapy sessions also hold some obstacles regarding public and self-stigma. Many of the struggles or challenges might be related to interacting with humans as many people might feel shame or embarrassment due to their previous experiences. However, these obstacles can be reduced within non-human interactions with AI-based psychotherapy. For example, AI-tools or services might provide a more comfortable atmosphere than human interactions and more accessible services than physical counseling services. In this sense, we aim to explore the key conditions on individuals' attitudes and perspectives towards preferences for AI-based psychotherapy. We propose the following research questions to examine the factors of the preference rate of AI-based psychotherapy:

- **1:** What are the key factors of the preferences for the AI-based psychotherapy?
- **2:** Is attitude towards AI-based psychotherapy associated with the preference rate of AI-based psychotherapy?
- **3:** Is the stigmatization of using psychotherapy services negatively related to the preference rate of AI-based psychotherapy?
- **4:** Is attitude towards seeking professional psychological help associated with the preference rate of AI-based psychotherapy?
- **5:** Are sociodemographic characteristics of the participants associated with the preference rate of AI-based psychotherapy?

2. Method

2.1. Procedure

This cross-sectional study was conducted between March and April 2021. The sample size was calculated as a minimum of 664 subjects for proportion hypothesizing $50\% \pm 5$ frequency of preference rate of AI-based psychotherapy in the population, taking confidence interval of 99% and design effect of 1 using a sample size calculator, (Sullivan et al., 2009). Snowball sampling was performed to collect research data using an online survey link generated on Microsoft Office 365 Forms because of the restrictions of the Covid-19 pandemic. Participants were recruited via social media such as Twitter, Instagram, Facebook, WhatsApp, etc. The inclusion criteria were determined as being 18 years old or over and accepting to participate in the study. 875 individuals responded to the questionnaire in a two-month period. Data of three participants were excluded from the data set due to their age were under 18 years old. Therefore, 872 participants' data was included in the analysis. The whole questions were compulsory, so there were no missing data in the data set. Ethical approval was obtained from Bartın University Ethics Committee (2021-SBB-0084) before commencing the study and research data were anonymously collected.

The online survey began with an introduction including the aim of the study, an explanation of informed consent procedure, information on confidentiality and the anonymity of the research data, an overview of AI-based psychotherapy, and a short presentation of the research team with contact information. The survey consisted of a sociodemographic form, a questionnaire form to assess attitudes towards AI-based psychotherapy, Attitudes toward Seeking Professional Psychological

Help Scale (ATSPPH-SF), and Stigma Scale for Receiving Psychological Help Scale (SSRPH).

2.2. Participants

The study sample consisted of 872 individuals who are 18 years old or over. Female participants represented 66.90% of the sample. The mean age was 31.76 (±9.86), most participants (92.80%) had bachelor's or higher degrees, 53.10% were single, and 86.10% pointed to their economic status as middle level. Some participants reported their profession as psychology-related profession (22.10%) and technical/engineering profession (34.20%). The vast majority of participants thought (93.60%) that psychotherapy is effective. Further 32.50% of responders reported that they received professional psychological help and 44.50% thought that it was very helpful (see Table 1).

2.3. Measures

A sociodemographic form developed by the authors based on the current literature regarding AI-based psychotherapy (de Mello & de Souza, 2019; Fiske et al., 2019; Horn & Weisz, 2020; Hirsch et al., 2018, June). The form consisted of participants' age, gender, educational status, marital status, perceived income level, type of settlement, occupational status related to the research question, experiences of psychotherapy, and preference of AI-based psychotherapy.

Attitude towards AI-based psychotherapy (ATAIP) was assessed by a questionnaire developed utilizing Integration Willingness Scale (Öz et al., 2020). The 6-item questionnaire was a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Davis technique was used to calculate content validity ratio (CVR) and Content Validity Index (CVI) of questionnaire determine the validity of individual items (Gilbert & Prion, 2016). The preferred number of experts is from 5 to 10 according to Davis technic. Six expert opinions were included in the present study. These experts evaluated each item as "Item does not represent property (1)", "Item needs a lot of correction (2)", "Item needs some correction (3)", and "Item represents attribute (4)". Initially, CVR was calculated for each item in the questionnaire, and then CVI was determined by computing mean values of CVR. As a rule of thumb, a CVI exceeding 0.80 is considered appropriate in terms of content validity. All items in the questionnaire had a CVI score more than 0.80. Cronbach alpha score of the questionnaire was 0.87 in the present study. Higher score indicates a positive attitude towards AI-based psychotherapy.

Attitude towards Seeking Professional Psychological Help Scale-Short Form (ATSPPH-SF) was developed by Fischer and Farina (1995) to evaluate a person's attitude towards seeking psychological help and validated by Topkaya and Büyükgöze Kavas (2015) in the Turkish context. This 4-point Likert scale, which ranges between 1 (strongly disagree) and 4 (strongly agree), have 10 items and one factor. Higher score indicates positive attitudes towards seeking professional psychological help. Cronbach alpha scores of original and Turkish versions of the scale were 0.84 and 0.76, respectively.

Stigma Scale for Receiving Psychological Help Scale (SSRPH) was developed by Komiya et al. (2000) to evaluate the public's perception of stigma regarding professional seeking help. This 4-point Likert scale, which ranges from 1 (strongly disagree) to 4 (strongly agree), have 5 items and one factor. Higher score signs higher stigma perception of the public towards seeking professional help. Previously, Cronbach alpha scores of SSRPH were reported as 0.72 in the original study and 0.80 in the Turkish version (Vogel et al., 2019). For the present study, this score was calculated as 0.77.

2.4. Statistical analysis

Descriptive statistics were reported by frequency, percentages, means, and standard deviations (SD). Comparison between categorical variables was tested using the Chi-squared test. The normality of the

distribution of the participants' data was evaluated using Skewness and Kurtosis values (George & Mallery, 2010). The group comparisons of continuous variables were examined using t-test and analysis of variance (ANOVA) for the data normally disturbed and Mann-Whitney-U and Kruskal Wallis tests for the data were not normally disturbed. Pearson's correlation was performed to evaluate the relationship between continuous variables. Spearman's rho was calculated for the data that were not normally disturbed.

Binary logistic regression analyses were performed using "Forward: conditional" to explore predictors for the preferences for AI-based psychotherapy. Beta (B), standard error (SE), and explanation beta coefficients (Exp (B)) were, Cox and Snell R2, and Nagelkerke R2 were presented. All study variables were incorporated into the analysis. There was no multicollinearity between independent variables investigated in the present study with the variance inflation factor (VIF) values changed between 1.060 and 1.626 which were lower than 5 and tolerance values ranged from 0.615 to 0.943 which were higher than 0.1 (Kim, 2019).

Since the whole questions in the questionnaire were mandatory to be filled, there was no missing data in the data set. However, 875 individuals responded to the questionnaire, final analysis was performed with 872 participants' data due to three responders were under the age of 18 years old. Statistical Package for the Social Sciences (SPSS) was used for the data analysis by accepting the significance level as $p < .05$.

3. Results

Table 2 describes the opinion of participants about AI-based

Table 1
Characteristics of participants.

| Characteristics | n | % |
|--|----------------------|-------|
| Gender | | |
| Female | 583 | 66.90 |
| Male | 289 | 33.10 |
| Age, Mean (±SD; Min.-Max.) | 31.76 (±9.86; 18-68) | |
| Educational status | | |
| High school or low | 63 | 7.20 |
| Bachelor | 512 | 58.70 |
| Post-graduate education | 397 | 34.10 |
| Marital Status | | |
| Single | 463 | 53.10 |
| Married | 409 | 46.90 |
| Perceived Economic Status | | |
| Low-socioeconomic status | 75 | 8.60 |
| Middle-socioeconomic status | 751 | 86.10 |
| High-socioeconomic status | 46 | 5.30 |
| Professions related to psychology | | |
| Yes | 193 | 22.10 |
| No | 679 | 77.90 |
| Professions related to technical/engineering | | |
| Yes | 298 | 34.20 |
| No | 574 | 65.80 |
| Do you believe that psychotherapy is effective? | | |
| Yes | 816 | 93.60 |
| No | 56 | 6.40 |
| Did you previously receive a professional psychological help? | | |
| Yes | 283 | 32.50 |
| No | 589 | 67.50 |
| Was the professional psychological therapy helpful? ^a | | |
| No | 32 | 11.40 |
| Low | 44 | 15.50 |
| Middle | 81 | 28.60 |
| Good | 87 | 30.70 |
| Very Good | 39 | 13.80 |

SD: Standart Deviation; Min.:Minimum; Max.: Maksimum

^a Percentages calculated over the participants receiving professional psychological help (n = 283).

Table 2
Participants' opinion about AI-based psychotherapy.

| | n | % |
|---|-----|-------|
| Would you prefer AI-based psychotherapy? | | |
| Yes | 480 | 55.00 |
| No | 392 | 45.00 |
| Did you previously study on AI? | | |
| Yes | 81 | 9.30 |
| No | 791 | 90.70 |
| Which way would you prefer to access AI-based psychotherapy? ^a | | |
| Distant tools (telephone, tablet, PC etc.) | 359 | 74.80 |
| Visit psychotherapy clinic | 121 | 25.20 |
| Which method would you prefer to communicate with AI-based system? | | |
| Communication with a voice and a 3D hologram of unknown person | 313 | 35.90 |
| Communication with a voice | 162 | 18.60 |
| Communication with a voice and an unknown person | 164 | 18.80 |
| Communication with a voice and a 3D hologram of familiar person | 135 | 15.50 |
| Communication with a voice and a familiar person | 98 | 11.20 |
| Which do you trust more about the security of personal data? | | |
| Human psychotherapist | 445 | 51 |
| AI-based systems | 123 | 14.10 |
| None of above | 304 | 34.90 |
| What are the beneficials of AI-based psychotherapy? ^b | | |
| Being able to comfortably talk about the embarrassed experiences | 605 | 69.54 |
| Having accessibility at any time | 571 | 65.63 |
| Accessing remote communication | 507 | 58.28 |
| Being more cost-effective | 350 | 40.23 |
| Preventing potential criticisms and accusations | 348 | 40.00 |
| None of above | 47 | 5.40 |

^a Percentages were calculated over the participants preferring AI-based psychotherapy (n = 480).

^b Percentages were calculated over the number of participants (n = 872).

psychotherapy. The rate of preference for AI-based psychotherapy was 55.00% in our study sample. A small number of participants (9.3%) reported that they had studied on AI and 74.80% of them stated their preference of accessing AI-based psychotherapy as using distant tools such as telephone, tablet, personnel computer, etc. It is not seen in Table 2, but the rate of preferences for AI-based psychotherapy among these participants were higher than those who did not study on AI ($X^2 = 18.647$; $p < .001$). Around one-third of the participants (35.9%) stated that they would prefer to communicate with a voice and a 3D hologram of an unknown person in case of providing AI-based psychotherapy. This was the most preferred method in our study sample. The prevalence of trusting on AI-based systems (14.10%) was lower than trusting on human psychotherapist (51.00%). However, it is not given in Table 2, responders who did not prefer to receive AI-based psychotherapy dominantly trust human psychotherapists ($X^2 = 51.899$; $p < .001$). Additionally, the most three prevalent beneficial of AI-based

Table 3
Attitude towards AI-based psychotherapy.

| Items | Attitude towards AI-based psychology | | | | | Preference rate of AI-based psych. | |
|-------|--------------------------------------|----------|---------|-------|----------------|------------------------------------|----------------|
| | Strongly disag. | Disagree | Neutral | Agree | Strongly agree | Yes (Mean ± SD) | No (Mean ± SD) |
| I1 | 9.5 | 20.6 | 39.6 | 27.2 | 3.1 | 3.36 (±.82) | 2.42 (±.93) |
| I2 | 16.1 | 31.5 | 32.9 | 18.1 | 1.4 | 2.96 (±.92) | 2.10 (±.90) |
| I3 | 8.8 | 17.1 | 33.0 | 36.9 | 4.1 | 3.50 (±.85) | 2.62 (±1.01) |
| I4 | 5.2 | 8.3 | 23.2 | 52.4 | 11.0 | 3.88 (±.79) | 3.17 (±1.03) |
| I5 | 11.7 | 25.3 | 37.4 | 22.6 | 3.0 | 3.25 (±.85) | 2.24 (±.91) |
| I6 | 12.0 | 29.9 | 38.4 | 17.2 | 2.4 | 3.12 (±.83) | 2.15 (±.86) |

I1: AI-based psychotherapy systems can understand the client's emotions.

I2: AI-based psychotherapy systems can empathize.

I3: AI-based psychotherapy systems may be aware of themselves and their environment.

I4: AI-based psychotherapy systems can improve themselves based on the results from previous experiences.

I5: AI-based psychotherapy systems produce more reliable results compared to psychological experts in treatment.

I6: AI-based psychotherapy systems produce more reliable results compared to psychological experts in diagnosis.

psychotherapy reported were being able to comfortably talk about the embarrassing experiences (69.54%), having accessibility at any time (65.63%), and accessing remote communication (58.28%).

Table 3 shows the results of participants' attitudes towards AI-based psychotherapy. The most prevalent reason for the nonacceptance of AI-based psychotherapy was that AI-based psychotherapy systems cannot empathize (Mean = 2.10; SD = ±0.90). On the other side, the most frequent reason for preferences for AI-based psychotherapy was that AI-based psychotherapy systems can improve themselves based on the results from previous therapeutic experiences (Mean = 3.88; SD = ±0.79).

Table 4 illustrates comparisons between participants' characteristics

Table 4
Comparison of mean score of ATAIP according to participants' characteristics.

| Characteristics | ATAIP Mean ± SD | t-test/F | p |
|---|-----------------|----------|-------|
| Gender | | | |
| Female | 2.85 (±.76) | -4.771 | <.001 |
| Male | 3.12 (±.79) | | |
| Age group ^a | | | |
| <25 | 2.95 (±.76) | 2.135 | .119 |
| 26 - 45 | 2.91 (±.79) | | |
| >46 | 3.09 (±.76) | | |
| Educational status ^a | | | |
| High school or low | 3.00 (±.82) | .237 | .789 |
| Bachelor | 2.93 (±.76) | | |
| Post-graduate education | 2.94 (±.80) | | |
| Marital Status | | | |
| Single | 2.91 (±.78) | -1.379 | .168 |
| Married | 2.98 (±.78) | | |
| Perceived Economic Status | | | |
| Low-socioeconomic status | 2.74 (±.90) | 2.904 | .055 |
| Middle-socioeconomic status | 2.96 (±.77) | | |
| High-socioeconomic status | 3.00 (±.78) | | |
| Did you previously study on AI? | | | |
| Yes | 2.42 (±.25) | .770 | .443 |
| No | 2.44 (±.25) | | |
| Professions related to psychology | | | |
| Yes | 2.73 (±.79) | -4.220 | <.001 |
| No | 3.00 (±.77) | | |
| Professions related to technical/engineering | | | |
| Yes | 3.11 (±.81) | 4.603 | <.001 |
| No | 2.86 (±.75) | | |
| Do you believe that psychotherapy is effective? | | | |
| Yes | 2.96 (±.77) | 2.736 | .006 |
| No | 2.67 (±.88) | | |
| Did you previously receive a professional help? | | | |
| Yes | 2.89 (±.78) | -1.473 | .141 |
| No | 2.97 (±.78) | | |

^a One way ANOVA test; ATAIP: Attitude towards AI-based psychotherapy.

and the mean score of attitudes towards AI-based psychotherapy. There were statistically significant differences between female (M = 2.85; SD = 0.76) and male (M = 3.12; SD = 0.79), $t(87) = 4.771$; $p < .001$. Participants whose professions related to psychology (M = 2.73; SD = 0.79) compare to those who were not (M = 3.00; SD = 0.77) had a lower score of ATAIP, $t(87) = 4.220$; $p < .001$. Further participants whose professions related to technical/engineering (M = 3.11; SD = 0.81) compare to those who were not (M = 2.86; SD = 0.75) had higher score of ATAIP, $t(87) = 4.603$; $p < .001$. In addition to, responders who believed that psychotherapy is effective (M = 2.96; SD = 0.77) had a significantly higher score of ATAIP than those did not believe (M = 2.67; SD = 0.88), $t(87) = 2.736$; $p = .006$.

Table 5 presents the correlation between the scores of attitudes towards AI-based psychotherapy, attitudes towards seeking professional psychological help, and stigma for receiving psychological help. There was a very weak but statistically significant correlation between attitudes towards AI-based psychotherapy and stigma for receiving psychological help ($r = .104$; $p < .01$). Although it is not given in Table 4, male had higher level of stigma for receiving psychological help (M = 2.04; SD = 0.48) than female (M = 1.92; SD = 0.51), $t(870) = 3.425$; $p < .001$. Additionally, a female whose profession were related to technical/engineering prevalently accepted the AI-based psychotherapy (61.2%) and had a higher level of stigma for receiving psychological help (M = 2.01; SD = 0.50) than those profession were not (M = 1.89; SD = 0.51), $t(581) = 2.577$; $p = .010$.

Logistic regression analysis was performed to predict factors for preferences for AI-based psychotherapy. As shown in Table 6, in Model 1, individuals' attitude towards AI-based psychotherapy was a significant predictor for preferences for AI-based psychotherapy (B = -2.272, SE = 0.165, exp [B] = 0.103, $p < .001$). In Model 2, individuals' attitude towards AI-based psychotherapy (B = -2.251, SE = 0.165, exp [B] = 0.105, $p < .001$) and having previous study on AI (B = 0.827, SE = 0.362, exp [B] = 2.287, $p < .01$) were the predictors for preference of AI-based psychotherapy. These two variables explained 44% of variance in the preferences for AI-based psychotherapy.

4. Discussion

AI tools and intelligent systems will probably become widespread in the field of psychotherapy soon. At this point, it is predicted that some of the psychotherapists and clients will adopt these technologies quickly. However, some people might be resistant and reluctant to use them. In this study, the participants' perspectives on AI-based psychotherapy and the factors affecting it were examined. The results showed that 55% of the participants perceived AI-based psychotherapy positively. Within the positive and negative answers to this question, the most significant difference was found in the profession groups including mental health and technical/engineering fields. The results showed that people working in the field related to psychology were more likely to reject AI-based psychotherapy. On the other hand, individuals in the engineering or technical field were more willing to prefer AI-based psychotherapy.

Table 5
Correlation matrix.

| Variables | M | SD | 1 | 2 |
|----------------|------|------|--------------------------------|--------------------------------|
| 1. ATAIP | 2.94 | 0.78 | .165 | 190.298 |
| 2. ATSPPH-SF a | 2.44 | 0.25 | .021 [.12-.30] | |
| 3. SSRPH | 1.96 | 0.50 | .104 ^a [.06-.26] | .071 ^b [.02-.09] |

^a Correlation is significant at the 0.01 level (2-tailed).

^b Correlation is significant at the 0.05 level (2-tailed); a = Spearman's rho; ATAIP: Attitude towards AI-based psychotherapy; ATSPPH-SF: Attitude towards Seeking Professional Psychological Help Scale- Short Form; SSRPH: Stigma Scale for Receiving Psychological Help Scale; 95% Confidence interval was reported amid [].

Table 6
Logistic regression for acceptance of AI-based psychotherapy.

| Model | Variables | B | S.E. | Wald | Exp(B) | 95% Confidence Interval |
|---------------------------|------------------------------|---------|------|---------|--------|-------------------------|
| Step 1a | ATAIP | -2.272 | .165 | 190.298 | .103** | .07-.14 |
| | Constant | 6.473 | | | | |
| | X ² | 345.726 | | | | |
| | df | 1 | | | | |
| | Cox and Snell R ² | .327 | | | | |
| | Nagelkerke R ² | .438 | | | | |
| Step 2b | ATAIP | -2.251 | .165 | 185.131 | .105** | .07-.15 |
| | Previous study on AI | .827 | .362 | 5.226 | 2.287* | 1.13-4.65 |
| | Constant | 5.638 | | | | |
| | X ² | 351.379 | | | | |
| | df | 2 | | | | |
| | Cox and Snell R ² | .332 | | | | |
| Nagelkerke R ² | .444 | | | | | |

* $p < .01$, ** $p < .001$.

This could be about trust in AI-based psychotherapy among participants in the technical field. Importantly, people who are in the psychological and mental health field might have concerns about losing their job. As many technological developments affected some people's jobs, it is possible that psychologists might hold fear of losing their job due to the developments around AI-based psychotherapy. Similarly, some studies also illustrated the relationship between the fear of losing job and lack of trust in the AI (Zhang & Dafoe, 2019). Considering this result of the psychologists' refusal of accepting AI-based psychotherapy, experts in AI should be clearly stated that these technologies are not aimed at reducing employment, but to increase the effectiveness of the diagnosis and treatment processes to be applied. The most important factor of having positive attitudes towards AI-based psychotherapy was the beliefs of the effectiveness of psychotherapy. In this finding, we can argue that individuals' knowledge and beliefs about the therapeutic process are the main predictors in the understanding of their tendencies of accepting AI-based psychotherapy. While the current literature shows the relationship between the beliefs on the effectiveness of psychotherapy and participation rate (Charles et al., 2021; Furnham, 2009; Jorm et al., 1997; Overholser et al., 2010), similar findings of the importance of belief in the effectiveness of AI-based psychotherapy was first time found in this present research study.

While the participants' profession affected their attitudes towards AI-based psychotherapy, gender was also an important factor affecting the preferences for AI-based psychotherapy. Female participants were more likely to accept AI-based therapeutic support than male participants. Similarly, some researchers found that men were more reluctant to attend psychotherapy or interventions than women for mental health (McCarthy & Holliday, 2004; Warren, 1983). These findings illustrated that the males had similar attitudes to the AI-based psychotherapy. Importantly, male participants held a higher level of stigma for psychotherapy than females. In this sense, being a male with a higher stigma was a factor in refusing psychotherapy. However, females who were in the technical fields accepted AI-based psychotherapy also held a higher stigma for receiving therapeutic help than males. So, female participants who were in technical fields mostly accepted AI-based psychotherapy while they held higher stigma human interacted therapeutic process. These were critical findings because female participants in technical fields might have preferred to use AI-based psychotherapy due to their higher stigma on face-to-face therapy or their knowledge and trust of the AI systems. Future studies should explore this issue to examine the complex intersects between gender, knowledge about AI, trust in the AI systems, and stigma on preferences for AI-based

psychotherapy.

The most preferred method of AI-based psychotherapy was a voice and a 3D hologram of an unknown person. Individuals' preference of the 3D hologram of an unknown person as a therapist appeared to be linked to their stigma as they wanted to have an unknown person as a therapist. Furthermore, there was a significant relationship between the degree of stigma and the attitudes towards AI-based psychotherapy regarding receiving therapeutic support. Therefore, individuals' help-seeking behavior and public stigma towards therapy frequently shaped their attitudes to AI-based psychotherapy. Therefore, people high on stigma and anxiety of seeking therapeutic support were perceived psychotherapy as a thread that rejected accepting AI-based psychotherapy. While there were some barriers regarding stigma and trust issues towards receiving AI-based psychotherapy, our findings found that being able to comfortably talk about the embarrassing experiences (69.54%), having accessibility at any time (65.63%), and accessing remote communication (58.28%) were factors of choosing the AI-based psychotherapy when these systems are available.

Beliefs about the capabilities of artificial intelligence-based systems also contain important results. While the face-to-face therapeutic process can be challenging for many people due to the issues of a building trusting relationship with a human therapist or the concerns of stigma in communities, having remote access and lack of human interactions may reduce their concerns of stigma. However, similar issues regarding trust and relationships might raise during AI-based psychotherapy. For instance, our finding illustrated that the most prevalent reason for the nonacceptance of AI-based psychotherapy was that AI-based psychotherapy systems cannot empathize. Therefore, the perceptions of lack of empathy in AI-based psychotherapy impacted their attitudes towards receiving it. While empathy is understanding one's experiences, thoughts, and feelings which are often identified as a core concept in patients' recovery process (Burns & Auerbach, 1996; Watson, 2016), empathy may not be favorable among cognitive-behavioral therapists because they argue that it can prevent clients' hard work, behavioral change, and improvements (Burns & Auerbach, 1996). As acting empathic and respectful manner mostly improves patients' sharing of their experiences, empathy might be an initial requirement for patients to engage in self-exposure, reappraisal, or self-discovery. Thus, empathy is not always beneficial in every stage of psychotherapy. Moreover, the most frequent reason for preferences for AI-based psychotherapy was that AI-based psychotherapy systems can improve themselves based on the results from previous therapeutic experiences. The capacity of being empathetic and improving themselves were key factors in shaping participants' preferences for receiving AI-based psychotherapy. The role of emotional responses regarding empathetic attitudes of AI-based psychotherapy should be considered for future studies.

Another important result of the study is that people trust human psychotherapists more in terms of the security of personal data. Only 14.10% of the people participating in the study trust artificial intelligence-based psychotherapy systems for data security. Data security in healthcare is one of the main concerns among stakeholders in these areas (Grande et al., 2020). For this reason, those who want to develop technology in the field of AI-based psychology should pay attention to ensuring data security and convincing stakeholders in this regard. Regarding the implications of the findings, it is critical to provide services that patients can choose AI vs human and the format and style of the therapy. The availability of these choices can help people to trust and build rapport in psychotherapy. Therefore, no matter what the majority of participants preferred in the questionnaire, it is vital to offer both AI-based and human psychotherapy.

4.1. Limitations and future directions

While there are some technology-assisted psychotherapy tools or simple mobile applications that have been available, existing AI-based psychotherapy without human interactions could cause contradictory

results, which is the limitation of this research. When people experience AI-based psychotherapy or hear any lived experiences about this application, their perspectives and attitudes might be different than our results. To overcome this misunderstanding, we added an overview of AI-based psychotherapy at the beginning of the online survey. Another limitation was no question about a preference for a text-based interaction with an agent was asked because the research focused on psychotherapy which includes more interactions in the therapeutic process rather than guidance. However, text-based interaction with an agent might have advantages of privacy and self-censorship. We aimed to investigate the factors of accepting AI-based psychotherapy in this time to recognize their perspectives and attitudes towards AI-based therapeutic processes. Moreover, the capacity to emotionally understand and develop themselves based on previous experiences of AI tools were key factors in accepting AI-based psychotherapy. Considering individuals' priority of these important functions of AI-based psychotherapy, future studies should consider the role of emotional responses regarding empathic attitudes of AI-based psychotherapy. The results of this research can help to enhance our understanding of individuals' willingness to accept AI-based psychotherapy by recognizing their consideration and sensitivities. Also, professionals who develop these tools can take into account individuals' concerns about AI-based psychotherapy and create their applications based on their preferences.

5. Conclusion

In this study, people's view of AI-based psychotherapy and factors affecting this view were examined. Trust, accessibility, comfortability in sharing embarrassing experiences during AI-based psychotherapy, and improving themselves were found key elements to seek help for psychological struggles through AI-based psychotherapy systems. Moreover, we found that participants held concerns about the data security and AI-based psychotherapy tools' empathy skills which was associated with their refusal to take support from AI-based therapeutic support. In addition, attitudes and preferred access types were also examined. Our findings provide important insight into the relationship between AI-based psychotherapy and the perceptions and attitudes of AI and stigma in communities. It has been revealed that the people and institutions that will develop technology in this field should pay attention to which parameters and in which subjects they should provide confidence.

Credit author statement

Mehmet Emin Aktan: Conceptualization, Methodology, Writing-Original draft preparation, Revising paper, Supervision, Editing, Zeynep Turhan: Conceptualization, Writing-Reviewing and Editing, Revising paper. İlknur Dolu: Conceptualization, Formal analysis, Methodology.

References

- Arjadi, R., Nauta, M. H., & Bockting, C. L. (2018). Acceptability of internet-based interventions for depression in Indonesia. *Internet Interventions*, 13, 8–15. <https://doi.org/10.1016/j.invent.2018.04.004>
- Attridge, M. (2020). Internet-based cognitive-behavioral therapy for employees with anxiety, depression, social phobia, or insomnia: Clinical and work outcomes. *SAGE Open*, 10(1). <https://doi.org/10.1177/2158244020914398>
- Backhaus, A., Agha, Z., Maglione, M. L., Repp, A., Ross, B., Zuest, D., Rice-Thorp, N. M., Lohr, J., & Thorp, S. R. (2012). Videoconferencing psychotherapy: A systematic review. *Psychological Services*, 9(2), 111–131. <https://doi.org/10.1037/a0027924>
- Barak, A., Hen, L., Boniel-Nissim, M., & Shapira, N. (2008). A comprehensive review and a meta-analysis of the effectiveness of internet-based psychotherapeutic interventions. *Journal of Technology in Human Services*, 26(2–4), 109–160. <https://doi.org/10.1080/15228830802094429>
- Bee, P. E., Bower, P., Lovell, K., Gilbody, S., Richards, D., Gask, L., & Roach, P. (2008). Psychotherapy mediated by remote communication technologies: A meta-analytic review. *BMC Psychiatry*, 8, 1–13. <https://doi.org/10.1186/1471-244X-8-60>
- Bickman, L. (2020). Improving mental health services: A 50-year journey from randomized experiments to artificial intelligence and precision mental health.

- Administration and Policy in Mental Health and Mental Health Services Research*, 47(5), 795–843. <https://doi.org/10.1007/s10488-020-01065-8>
- Burns, D., & Auerbach, A. (1996). Therapeutic empathy in cognitive-behavioral therapy: Does it really make a difference? In P. M. Salkovskis (Ed.), *Frontiers of cognitive therapy* (pp. 135–164). The Guilford Press.
- Charles, N., Rodriguez, T., Bullerjahn, M., Simpson, L., Swygert, L., Finn, J., & Anestis, J. (2021). Expectations and preferences for psychotherapy among african american and white young adults. *Journal of Racial and Ethnic Health Disparities*, 8(3), 678–689. <https://doi.org/10.1007/S40615-020-00827-2>
- Corrigan, P. (2004). How stigma interferes with mental health care. *American Psychologist*, 59(7), 614–625. <https://doi.org/10.1037/0003-066X.59.7.614>
- Corrigan, P. W. (2020). Effect of contact-based interventions on stigma and discrimination. *Psychiatric Services*, 71(12), 1324–1325. <https://doi.org/10.1176/appi.ps.711203>
- Corrigan, P. W., & Watson, A. C. (2002). The paradox of self-stigma and mental illness. *Clinical Psychology: Science and Practice*, 9(1), 35–53. <https://doi.org/10.1093/clipsy.9.1.35>
- Deres, A. T., Bürkner, P., Klauke, B., & Buhlmann, U. (2020). The role of stigma during the course of inpatient psychotherapeutic treatment in a German sample. *Clinical Psychology & Psychotherapy*, 27(2), 239–248. <https://doi.org/10.1002/CPP.2423>
- Diener, M., & Monroe, J. (2011). The relationship between adult attachment style and therapeutic alliance in individual psychotherapy: A meta-analytic review. *Psychotherapy*, 48(3), 237–248. <https://doi.org/10.1037/A0022425>
- Ebert, D. D., Harrer, M., Apolinario-Hagen, J., & Baumeister, H. (2019). Digital interventions for mental disorders: Key features, efficacy, and potential for artificial intelligence applications. In Y. K. Kim (Ed.), *Advances in experimental medicine and biology* (pp. 583–627). Springer New York LLC.
- Fischer, E., & Farina, A. (1995). Attitudes toward seeking professional psychological help: A shortened form and considerations for research. *Journal of College Student Development*, 36(4), 368–373.
- Fiske, A., Henningsen, P., & Buys, 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). <https://doi.org/10.2196/13216>
- Furnham, A. (2009). Psychiatric and psychotherapeutic literacy: Attitudes to, and knowledge of, psychotherapy. *International Journal of Social Psychiatry*, 55(6), 525–537. <https://doi.org/10.1177/0020764008094428>
- George, D., & Mallery, P. (2010). *SPSS for windows step by step: A simple guide and reference, 17.0 update*. Pearson.
- Gilbert, G. E., & Prion, S. (2016). Making sense of methods and measurement: Lawshe's content validity index. *Clinical Simulation in Nursing*, 12(12), 530–531. <https://doi.org/10.1016/J.ECNS.2016.08.002>
- Gillath, O., Ai, T., Branicky, M., Keshmiri, S., Davison, R., & Spaulding, R. (2021). Attachment and trust in artificial intelligence. *Computers in Human Behavior*, 115, 106–607. <https://doi.org/10.1016/J.CHB.2020.106607>
- Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *The Academy of Management Annals*, 14(2), 627–660. <https://doi.org/10.5465/ANNALS.2018.0057>
- Görges, F., Oehler, C., von Hirschhausen, E., Hegerl, U., & Rummel-Kluge, C. (2018). Get happy - acceptance of an internet-based self-management positive psychology intervention for adult primary care patients with mild and moderate depression or dysthymia: A pilot study. *Internet Interventions*, 12, 26–35. <https://doi.org/10.1016/j.invent.2018.03.001>
- Grande, D., Marti, X. L., Feuerstein-Simon, R., Merchant, R. M., Asch, D. A., Lewson, A., & Cannuscio, C. C. (2020). Health policy and privacy challenges associated with digital technology. *JAMA Network Open*, 3(7), 208–285. <https://doi.org/10.1001/jamanetworkopen.2020.8285>
- Hirsch, T., Soma, C., Merced, K., Kuo, P., Dembe, A., Caperton, D., Atkins, D., & Imel, Z. (2018, June). "it's hard to argue with a computer:" investigating psychotherapists' attitudes towards automated evaluation. New York, NY. In *DIS'18: Proceedings of the designing interactive systems conference* (pp. 559–571). <https://doi.org/10.1145/3196709.3196776>
- Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., Ballard, C., Christensen, H., Cohen Silver, R., Everall, I., Ford, T., John, A., Kabir, T., King, K., Madsen, I., Michie, S., Przybylski, A. K., Shafran, R., Sweeney, A., ... Bullmore, E. (2020). Multidisciplinary research priorities for the covid-19 pandemic: A call for action for mental health science. *The Lancet Psychiatry*, 7(6), 547–560. [https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)
- Horn, R. L., & Weisz, J. R. (2020). Can artificial intelligence improve psychotherapy research and practice? *Administration and Policy in Mental Health and Mental Health Services Research*, 47(5), 852–855. <https://doi.org/10.1007/S10488-020-01056-9>
- Hui Ku, Y., & Hong, R. (2017). Exploring stigma experiences using group therapy amongst people living with schizophrenia in a psychiatric day care center. *Neuropsychiatry*, 7(5), 691–699. <https://doi.org/10.4172/neuropsychiatry.1000266>
- Humer, E., Stippel, P., Pieh, C., Pryss, R., & Probst, T. (2020). Experiences of psychotherapists with remote psychotherapy during the covid-19 pandemic: Cross-sectional web-based survey study. *Journal of Medical Internet Research*, 22(11). <https://doi.org/10.2196/20246>
- Johnson, S., Dalton-Locke, C., Vera San Juan, N., Foye, U., Oram, S., Papamichail, A., Landau, S., Rowan Olive, R., Jaynes, T., Shah, P., Sheridan Rains, L., Lloyd-Evans, B., Carr, S., Killaspy, H., Gillard, S., Simpson, A., Bell, A., Bentivegna, F., Botham, J., ... Tzouvara, V. (2021). Impact on mental health care and on mental health service users of the covid-19 pandemic: A mixed methods survey of UK mental health care staff. *Social Psychiatry and Psychiatric Epidemiology*, 56(1), 25–37. <https://doi.org/10.1007/s00127-020-01927-4>
- Jorm, A., Korten, A., Jacomb, P., Christensen, H., Rodgers, B., & Pollitt, P. (1997). Mental health literacy": a survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *The Medical Journal of Australia*, 166(4), 182–186. <https://doi.org/10.5694/J.1326-5377.1997.TB140071.X>
- Kim, J. (2019). Multicollinearity and misleading statistical results. *Korean Journal of Anesthesiology*, 72(6), 558–569. <https://doi.org/10.4097/kja.19087>
- Komiya, N., Good, G., & Sherrod, N. (2000). Stigma scale for receiving psychological help (SSRPH) [database record]. <https://doi.org/10.1037/t23348-000>
- Kopelovich, S. L., Monroe-DeVita, M., Buck, B. E., Brenner, C., Moser, L., Jarskog, L. F., Harker, S., & Chwastiak, L. A. (2021). Community mental health care delivery during the covid-19 pandemic: Practical strategies for improving care for people with serious mental illness. *Community Mental Health Journal*, 57(3), 405–415. <https://doi.org/10.1007/s10597-020-00662-z>
- McCarthy, J., & Holliday, E. L. (2004). Help-seeking and counseling within a traditional male gender role: An examination from a multicultural perspective. *Journal of Counseling and Development*, 82(1), 25–30. <https://doi.org/10.1002/J.1556-6678.2004.TB00282.X>
- McKay, D., Przeworski, A., & O'Neill, S. (2016). Emerging technologies for clinical practice. In J. K. Luiselli, & A. J. Fischer (Eds.), *Computer-assisted and web-based innovations in psychology, special education, and health* (pp. 365–378). Elsevier Inc. <https://doi.org/10.1016/B978-0-12-802075-3.00014-0>
- McSpadden, E. (2022). I'm not crazy or anything: Exploring culture, mental health stigma, and mental health service use among urban community college students. *Community College Journal of Research and Practice*, 46(3), 202–214. <https://doi.org/10.1080/10668926.2021.1922321>
- de Mello, F. L., & de Souza, S. A. (2019). Psychotherapy and artificial intelligence: A proposal for alignment. *Frontiers in Psychology*, 10(263), 1–9. <https://doi.org/10.3389/fpsyg.2019.00263>
- Mikulincer, M. (1998). Attachment working models and the sense of trust: An exploration of interaction goals and affect regulation. *Journal of Personality and Social Psychology*, 74(5), 1209–1224. <https://doi.org/10.1037/0022-3514.74.5.1209>
- Nam, S. K., & Lee, S. M. (2015). The role of attachment and stigma in the relationship between stress and attitudes toward counseling in South Korea. *Journal of Counseling and Development*, 93(2), 212–224. <https://doi.org/10.1002/J.1556-6676.2015.00197.X>
- Ogueji, I. A., Amusa, A. O., Olofe, O. J., & Omotoso, E. B. (2021). Willingness and barriers to utilizing e-therapy services: A Nigerian general population qualitative study. *Journal of Human Behavior in the Social Environment*. <https://doi.org/10.1080/10911359.2021.1894300>
- Overholser, J. C., Braden, A., & Fisher, L. (2010). You've got to believe: Core beliefs that underlie effective psychotherapy. *Journal of Contemporary Psychotherapy*, 40(4), 185–194. <https://doi.org/10.1007/S10879-010-9151-3>
- Öz, A., Akkaya, B., & Özkan, H. (2020). Service robot integration willingness (sriw) scale: Adaptation to Turkish, validation and reliability study. *Business and Management Studies: International Journal*, 8(3), 3710–3750. <https://doi.org/10.15295/BMIJ.V8I3.1591>
- Salamanca-Sanabria, A., Richards, D., & Timulak, L. (2019). Adapting an internet-delivered intervention for depression for a colombian college student population: An illustration of an integrative empirical approach. *Internet Interventions*, 15, 76–86. <https://doi.org/10.1016/j.invent.2018.11.005>
- Sheridan, R. L., Johnson, S., Barnett, P., Steare, T., Needle, J., Carr, S., Lever, T. B., Bentivegna, F., Edbrooke-Childs, J., Scott, H., Rees, J., Shah, P., Lomani, J., Chipp, B., Barber, N., Dedat, Z., Oram, S., Morant, N., & Simpson, A. (2021). Early impacts of the covid-19 pandemic on mental health care and on people with mental health conditions: Framework synthesis of international experiences and responses. *Social Psychiatry and Psychiatric Epidemiology*, 56(1), 13–24. <https://doi.org/10.1007/s00127-020-01924-7>
- Slade, M. (2010). Mental illness and well-being: The central importance of positive psychology and recovery approaches. *BMC Health Services Research*, 10(1), 1–14. <https://doi.org/10.1186/1472-6963-10-26>
- Stjernswärd, S., & Hansson, L. (2018). Effectiveness and usability of a web-based mindfulness intervention for caregivers of people with mental or somatic illness: a randomized controlled trial. *Internet Interventions*, 12, 46–56. <https://doi.org/10.1016/j.invent.2018.03.004>
- Sullivan, K. M., Dean, A., & Soe, M. (2009). Openepi: A web-based epidemiologic and statistical calculator for public health. *Public Health Reports*, 124(3), 471–474. <https://doi.org/10.1177/003335490912400320>
- Thompson-de Benoit, A., & Kramer, U. (2020). Work with emotions in remote psychotherapy in the time of covid-19: A clinical experience. *Counseling Psychology Quarterly*, 34(3–4), 368–376. <https://doi.org/10.1080/09515070.2020.1770696>
- Topkaya, N., & Büyükgöze Kavas, A. (2015). Algılanan sosyal destek, yaşam doyumu, psikolojik yardım almaya ilişkin tutum ve niyet arasındaki ilişkiler: Bir model çalışması, 979–979 *Journal of Turkish Studies*, 10(2). <https://doi.org/10.7827/TURKISHSTUDIES.7768>
- Vogel, D. L., Heath, P. J., Engel, K. E., Brenner, R. E., Strass, H. A., Al-Darmaki, F. R., Armstrong, P. I., Galbraith, N., Galbraith, V., Baptista, M. N., Gonçalves, M., Liao, H., Mackenzie, C., Mak, W. W. S., Rubin, M., Topkaya, N., Wang, Y., & Zlati, A. (2019). Cross-cultural validation of the perceptions of stigmatization by others for seeking help (psosh) scale. *Stigma and Health*, 4(1), 82–85. <https://doi.org/10.1037/SAH0000119>
- Warren, L. W. (1983). Male intolerance of depression: A review with implications for psychotherapy. *Clinical Psychology Review*, 3(2), 147–156. [https://doi.org/10.1016/0272-7358\(83\)90009-0](https://doi.org/10.1016/0272-7358(83)90009-0)
- Watson, J. C. (2016). The role of empathy in psychotherapy: Theory, research, and practice. In *Humanistic psychotherapies: Handbook of research and practice* (2nd ed., pp. 115–145).

Werner, P., Raviv-Turgeman, L., & Corrigan, P. W. (2020). The influence of the age of dementia onset on college students' stigmatic attributions towards a person with dementia. *BMC Geriatrics*, 20(1). <https://doi.org/10.1186/s12877-020-1505-4>

Zhang, B., & Dafoe, A. (2019). Artificial intelligence: American attitudes and trends. *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.3312874>

Zhao, W., Young, R. E., Breslow, L., Michel, N. M., Flett, G. L., & Goldberg, J. O. (2015). Attachment style, relationship factors, and mental health stigma among adolescents. *Canadian Journal of Behavioural Science*, 47(4), 263–271. <https://doi.org/10.1037/CBS0000018>