

Attitudes of Cognitive Behavioral Therapy Clinicians towards the adjunct Implementation of Artificial Intelligence into Psychotherapy.

Which attitudes do in Germany aspiring and practicing CBT-clinicians hold and what might affect those?

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Department of Psychology
Master's Thesis, 30 ECTS
Clinical Psychology
International two-years masters program in psychology, 120 credits
Spring term 2023
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Abstract

The number of people suffering from the burden of mental illness is notably high, higher than clinicians' availability. Artificial intelligence-based tools are increasingly considered a prime solution for issues such as delayed, inaccurate, and inefficient mental health care delivery. Much time, effort and money is spent on developing new digital tools to complement treatment and to demonstrate their value for psychotherapy, but many digital tools do not progress beyond this stage, falling into the "implementation gap" for digital tools. Mental health professionals' attitudes are significant in sustainably implementing evidence-based AI-technologies. Using a quantitative online-survey, we descriptively examined in Germany aspiring and practicing CBT-clinicians (N=44) attitudes towards several aspects of AI-implementation and tested two hypotheses: (1) their general implementation attitudes and implementation willingness improves after they have engaged with our survey questions presenting several aspects of AI implementation and (2) their perceptions of the therapeutic alliance, patient compliance, effectiveness, and the professional role are linked to their general AI implementation attitudes and implementation willingness. While we could not confirm the first hypothesis, we found that concern regarding consequences onto the own job role plays a major role, as this was statistically significantly associated with the evaluation of potential advantages, disadvantages, and applications of AI, as well as the only variable being statistically significantly associated with implementation willingness. This sheds light on the implementation gap for digital tools, which might majorly be affected by clinician's concern about changes to their own job role, rather than distorted perceptions of the interventions' effectiveness.

Psychotherapy is widely associated with the image of a therapist and a patient sitting and talking in a practice. However, psychotherapy is no longer taking place in this setting only. The beginnings of the internet in the 1980s and 1990s enabled individuals to access information about mental health online, to connect with others in support groups, and to communicate with mental health professionals via e-mail. During the early 2000s, with the advancing developments of internet technology, psychotherapy sessions via chat rooms and early videoconferencing tools emerged (Andersson et al., 2019). The Covid-19 pandemic raised this development to a new level. Suddenly, psychotherapy sessions had to be held online. "The use of technology to deliver sessions remotely, or to support clients in other ways than the traditional 'weekly face-to-face session' model has been vital during this time, and the flexibility and reach that these methods provide suggests they will continue to be a large part of treatment delivery in future" (Thew et al., 2022, p. 2).

Concurrently, the field of mental health care is confronted with a "supply shortage": The number of people suffering from the burden of mental illness is notably high (World Economic Forum, 2019), and the number of people seeking mental health care increases (Lipson et al., 2019; World Economic Forum, 2019). The need for mental health care is however higher than clinician's availability (Murthy, 2017), resulting in a so-called

“treatment-gap” for mental health related issues (Kohn et al., 2018). There is a growing demand for effective and accessible treatment options.

One way to address this consists in digital interventions with lower degrees of guidance than required by traditional psychotherapy. With the development of artificial intelligence, the incorporation of technology into mental health care acquires further dimensions. For example, Deprex is an evidence-based digital tool that aims to provide support for individuals experiencing symptoms of depression. Through the integration of AI, Deprex adapts to user responses, needs, and progress, and designs interactive components, delivers personalized feedback, and tailors interventions to individual users (Deprex, n.d.). In a recent study, it was shown that individuals with moderate-to-severe major depressive disorder who received a treatment as usual *plus* guided Deprex use showed greater daily activity, had been discharged earlier from inpatient treatment, reported a lower rate of post-hospital care and re-admissions, and reached higher effect sizes in improvement of subjective depression-severity compared to those patients receiving a treatment as usual (Richter et al., 2022).

A further prospect by delegating certain psychotherapy inherent tasks to an AI is that therapist’s capacities could better be “distributed” among those patients and tasks that require human characteristics, competencies, or contact (Andrews et al., 2018). “The real-world implementation of [artificial intelligence (AI)-based precision medicine tools in mental health care] is increasingly considered the prime solution for key issues in mental health, such as delayed, inaccurate, and inefficient care delivery” (Koutsouleris et al., 2022, p. 829). Additionally, digital tools make mental health resources and interventions accessible to e.g. those people who “accommodate rural areas [or] may experience traditional talk therapy as stigmatizing” (Miner et al., 2019, p. 3), or to bridge waiting times for psychotherapy place.

However, as in other psychotherapy research areas, the implementation of evidence-based therapies faces notable obstacles resulting in a disparity between the knowledge generated by research and its dissemination in practice (Fitzpatrick et al., 2017; Kazdin, 2017). This discrepancy, commonly known as the “research-practice gap”, is believed to play a substantial role in the limited access to evidence-based treatments for individuals seeking help for their mental health conditions (Livingston et al., 2019). Surveying attitudes and opinions of potential adopters of the respective intervention is essential to enable a sustainable integration into the context of routine care and might form a bridge between research and practice (Netter et al., 2022; Vis et al., 2018).

Aim

Therefore, the present thesis aims to explore aspiring and practicing Cognitive Behavioral Therapy (CBT)-clinicians’ perceptions of and attitudes towards the adjunct implementation of AI into CBT.

Assessed were ratings of potential positive aspects (such as increasing patient compliance by progress tracking and improving assessments by reduced social desirability) and ratings of potential negative aspects (such as data security and technical difficulties) of AI-integration, attitudes towards tasks that AI could take over (such as diagnostics, tailoring treatment planning, and analyzing treatment data), and perceived consequences for the therapeutic

alliance¹, therapy compliance², effectiveness, and for the professional role in implementing AI adjunctively compared to traditional face-to-face (FtF) therapy. Research (Netter et al., 2022; Staeck et al., 2022; Sweeney et al., 2021) suggests that attitudes of healthcare professionals regarding new interventions improve after they get familiar with those. The survey therefore measured participants' general attitudes (being curious, skeptical, enthusiastic, and concerned) towards the adjunct use of AI in CBT and their willingness to integrate AI in their own practice at two measurement points, once at the beginning and once at the end of the survey, to examine whether they differ after the participants have engaged with the survey questions and therefore with several aspects of AI implementation.

The therapeutic alliance and the patient compliance are known to be indicators of change within psychotherapy (Tzur Bitan et al., 2022) and technology-based treatment approaches are perceived to influence professionals' job roles (Doraiswamy et al., 2020; Mol et al., 2020). Therefore, we examined how perceptions of the therapeutic alliance, patient compliance, effectiveness, and the professional role in blended CBT may be linked to general implementation attitudes and willingness.

The exploration of clinician's attitudes could help to improve the evidence-based implementation of AI into psychotherapy and to thereby broaden mental health care access and availability.

Research Question & Hypotheses

Research Question: Which attitudes do aspiring and practicing CBT-clinicians in Germany³ hold towards the adjunct implementation of Artificial Intelligence into psychotherapy, and what might influence their (formation of) attitudes?

- (1) Participants' general attitudes towards AI in CBT and their willingness to integrate AI in their own practice differ significantly between the two measurement times.
- (2) Perceptions of the Therapeutic Alliance, compliance, effectiveness, and the professional role predict the general attitudes and the willingness to integrate AI at the second measurement time.

Theoretical Background

In the following sections, I will first present Cognitive Behavioral Therapy in its key components, evidence for its effectiveness, and its suitability for applying AI-driven digital interventions. Thereafter, I will illustrate respective applications of digital interventions within mental health care. Lastly, I will present research examining clinician's attitudes towards the implementation of digital interventions.

¹ The Therapeutic Alliance according to Bordin (1979) consists of collaborative goal setting, shared decision making on interventions, and of the bond (therapeutic relationship) between patient and therapist. Congruence, empathic understanding, and unconditional positive regard are, according to Rogers (2004), important therapist characteristics for the development of a healing therapeutic relationship.

² Patient treatment compliance is a measurement of how well a patient's behavior aligns with the in therapy discussed interventions and received recommendations (Cameron, 1996).

³ "aspiring and practicing CBT-clinicians in Germany" will in the following thesis referred to as "CBT-clinicians"

Cognitive Behavioral Therapy: Characteristics and suitability for implementing technology.

CBT is a widely recognized and empirically supported form of psychotherapy that typically involves a structured and time-limited treatment plan consisting of approximately 12 to 20 weekly sessions. Its focus is problem-oriented with an emphasis on the here-and-now, rather than on past causes or symptoms. CBT is based on the premise that our thoughts, emotions, and behaviors are interconnected, and it is rooted in the integration of cognitive and behavioral theories (Moorey, 2010). CBT aims to help individuals fostering positive changes in their emotional experiences and overall functioning by addressing cognitive processes and behavioral patterns and by providing individuals with practical tools and strategies. Therapy goals and interventions “should be ‘SMART’, i.e. specific, measurable, achievable, realistic and time-limited” (Fenn & Byrne, 2013, p. 580).

According to the cognitive model of mental illness developed by Beck (1995), the assumption underlying CBT is that people’s emotions and behaviors are influenced by their perceptions of events, and not by the event itself. Socratic questioning, cognitive challenging, and cognitive restructuring are according cognitive interventions in CBT. With Socratic questions, such as “Why is ... so important?“, the aim is to understand and expand the patient’s perspective and to “draw the patient’s attention to something outside of their current focus” (Fenn & Byrne, 2013, p. 581). Cognitive challenging targets concrete dysfunctional assumptions by asking the patient to provide evidence that supports/does not support their assumptions (Fenn & Byrne, 2013). For example, when being occupied with the thought “I am a failure, I can’t achieve anything”, the patient might probably find a couple of things s/he already managed to achieve and thereby learns to better distinguish thoughts from facts. Cognitive restructuring aims to modify dysfunctional thoughts or beliefs in a more accurate and helpful way (Ciharova et al., 2021). Using the former example, cognitive restructuring would emphasize to think alternatively “I am currently facing a challenge, but I will be able to master it somehow, and I will thereby grow stronger.” Cognitive interventions in CBT aim to identify, challenge, and modify the patients maladaptive thought patterns to promote more accurate, balanced, and helpful thinking.

Behavioral interventions in CBT aim to identify and modify maladaptive behaviors, and to implement strategies to promote positive behavioral change and adaptive actions. Behavioral Activation for example aims to increase a person's engagement in pleasurable, meaningful, and rewarding activities with the goal to gradually increase the experience of positive emotions, a sense of accomplishment, and to improve the overall mood and motivation. This is commonly, but not exclusively, used for treating depression. (Fenn & Byrne, 2013).

Relevant across cognitive and behavioral interventions are skills training, self-monitoring, and homework assignments. Skills training includes a wide variety of tools and resources that should help the individual to autonomously navigate their difficulties. It ranges from the above presented cognitive and behavioral techniques to relaxation techniques to problem-solving skills, social skills, emotion regulation skills, and coping skills. The specific skills taught in therapy are tailored to each individual's needs. Self-Monitoring via logs, journals, or diaries are considered a core-element to identify own thoughts, emotions, body feelings, and behaviors, and to understand their interplay. Homework Assignments are given in CBT to increase the patient’s active participation in the therapeutical process and to encourage the patient to practice and apply the learned skills to real-life situations outside of the therapy - between the sessions and after the termination of therapy. (Moorey, 2010).

CBT emphasizes a collaborative and empathetic therapeutic relationship between the therapist and the patient. The therapist provides guidance, support, and expertise, while actively involving the individual in setting treatment goals, designing interventions, and evaluating the progress. This collaborative approach (Beck, 1995) empowers the patient to assume an active role in the process. In that sense, psychoeducation is a further essential part of CBT, educating the patient about the nature of his/her mental health condition (including knowledge and understanding of their symptoms and triggers), about the underlying principles of CBT, and the rationale behind specific therapeutic techniques (Sarkhel et al., 2020).

CBT has proven to be highly efficient in the treatment of a wide range of mental health conditions, including anxiety disorders (Norton & Price, 2007; Raven et al., 2017), depression (Cuijpers et al., 2013), obsessive-compulsive disorder (Olatunji et al., 2013; Öst et al., 2022), and general stress (Hofmann et al., 2012).

CBT seems well-suited for implementing digital interventions based on its time-limited and goal-oriented here-and-now approach that works with concrete interventions (Erhardt et al., 2022; Pacheco & Scheeringa, 2022). The fact that CBT strongly involves the patient into the process aligns well with blended CBT approaches as internet modules broaden the patients possibilities of “continuing” the therapy at home. AI-applications such as symptom assessments, homework reminders, practical skills training, and interventions such as cognitive reframing seem useful for CBT, more than for other therapeutic schools which rather focus on working through emotionally sensitive past experiences, unconscious states, or complex systemic relationships (Sebri et al., 2021). This is reflected in the finding that CBT clinicians hold more positive views towards digital mental health interventions while psychodynamic clinicians hold more negative views (Schuster et al., 2020).

Technology in CBT: applications and their practicability

Current internet-based treatment approaches range from “live, real time video therapy – such as telepsychiatry using Zoom” (Carlbring et al., 2023), to interventions that are carried out via digital programs, referred to as internet-based CBT (iCBT), to interventions “mixing internet-based modules [i.e. iCBT] and face-to-face therapist sessions” (Vernmark et al., 2019, p. 285), referred to as blended CBT (bCBT).

AI enables specific features such as personalized recommendations, adaptive treatment planning (based on adaptive assessments), and natural language processing for interactive conversational interfaces. Artificial Intelligence is a branch of computer science and engineering that deals with the development of intelligent machines, systems, and applications that are capable of performing tasks that typically require human intelligence, such as learning, problem-solving, decision making, speech recognition, natural language processing, and affective computing. AI involves the application of various algorithms, statistical models, and neural networks to enable machines, within prolonged training periods, to perform tasks that are beyond the capabilities of traditional programming. The ultimate goal of AI is to create intelligent machines that can understand, reason, learn, and adapt to human behavior and environment. (Russell & Norvig, 2021). AI can analyze language patterns, sentiment, or voice intonation to detect changes in mood or identify potential mental health crises which allows early intervention and timely support. AI algorithms can continuously learn and improve from user interactions and feedback so that with each interaction, the AI system can refine its understanding of the individual, and its effectiveness by becoming more tailored over time.

Pacheco and Scheeringa provided an overview of commercially available mobile and computer apps “of which 163 apps were judged relevant to clinical work with patients with psychiatric disorders.” (2022, p. 1). In the following, I will present their findings of tasks that Clinical Mental health care Apps (Apps) are able to fulfill.

Apps support the conduct of several assessments. Psychiatric and family history, social determinants of health, and assessments of symptoms to provide a suggested diagnosis. This diagnosis can be presented together with feedback about how the patient’s symptoms are compared with others of their age. Repeated assessments of symptoms can be used to provide feedback about the stage of change the user is in. Self-assessments are suggested to be improved when filled out digitally due to lowered social judgement. “Participants who believed they were interacting with a computer reported lower fear of self-disclosure, lower impression management, displayed their sadness more intensely, and were rated by observers as more willing to disclose” (Lucas et al., 2014, p. 94). Similarly, an interviewed therapist stated: “I thought that if you see someone less that it’d be more difficult to assess the suicide risk. But it can just as well lower the threshold to say something online more easily than to discuss FtF.” (Mol et al., 2020, p. 13). The automatization of assessments is considered to increase their actual conduct compared to traditional therapy, especially when it comes to repeated symptom assessments (Pacheco & Scheeringa, 2022). This is reflected by statements such as “I don’t skip things. With bCBT, I think that I am much more thorough than without.” (a therapist participant, quoting from Mol et al., 2020, p. 12)

Assessments can be used to propose tailored treatment plans and user-specific interventions. “Tess⁴ follows up on a previously mentioned issue and asks for feedback. If the user expresses that the previous suggestion was not helpful, the chatbot suggests a different type of exercise. [...] The Trier Treatment Navigator uses the results of the baseline assessment to suggest strategies for treatment. Via repeated assessments, the system then identifies patients who are ‘not on track’ and suggests clinical exercises, worksheets, and videos. MoodMission [⁵] used the results of its preliminary assessment to suggest a ‘mission’ [strategies such as mindfulness, physical exercise, cognitive reframing, and other activities promoted by CBT.] The app has users rate their distress before and after completing the mission and adapts its suggestions to match the missions that most successfully lowered the distress score.” (Pacheco & Scheeringa, 2022, p. 10). The missions are strategies This adaptive treatment planning makes sure that the design of the treatment and selected interventions are well-tailored to each individual’s needs. User’s goals, experiences with the disorder and with respective interventions can be included to improve the recommendations. The recommendations are presented with descriptions and instructions for the proposed techniques (Erhardt et al., 2022) and include diagnosis-specific psychoeducation. The fact that this user-specific content is available at all times and also after termination of therapy improves the overall accessibility to therapy materials (Koffel et al., 2018) and may increase the patients participation in treatment and their fidelity in implementing the strategies in their daily lives outside of the therapy sessions (Imel et al., 2017). This is perceived as positive by therapists (Titzler et al., 2018) and is reflected in the following quote from a therapist: “In a FtF session

⁴ Tess is a psychological AI chatbot and “serves as a therapeutic tool or resource that can be used as an adjunct to therapy that supports an integrative approach and is not intended to replace the role of a therapist” (Fulmer et al., 2018, p. 3)

⁵ MoodMission is a smartphone application “serving as an adjunct to therapeutic interventions delivered by trained health professionals [...] and] was designed to deliver strategies in the form of real-time, momentary responses to user-reported low moods and anxiety.” (Bakker et al., 2018, p. 496)

you say a lot, but afterwards patients also forget quickly. Now they can review what they've learned as many times as they want.” (Mol et al., 2020, p. 12).

As the therapy proceeds, further assessments can be calculated via transcripts from therapy sessions: “an overall fidelity score, a percentage of non-adherent behaviors, scores for empathy and the ‘motivational interviewing spirit’, statistics on the amount of session time that the therapist spent talking, the number of open questions asked, and the number of reflections made” (Pacheco & Scheeringa, 2022, p. 11). Those assessments provide the therapist with valuable feedback on his/her behavior within the sessions and support quality assurance (Creed et al., 2022) in the sense that the patient receives psychotherapy according to evidence-based standards.

The development of symptoms via repeated assessments can be presented via graphs, compared with baseline assessments, used to predict the treatment response, and to send alerts if the repeated assessments indicate a negative change trajectory: “You notice much sooner if a patient has difficulties adhering to therapy, whether or not they are doing the work. This becomes clearer faster than in a FtF session.” (a therapist participant, quoting from Mol et al., 2020, p. 12). The tracking of progress seems well-suited to increase the therapist’s fidelity and compliance with treatment plans, and to guarantee clear feedback for both parties: therapists receive feedback about their own effectiveness, and it is ensured that the information of therapy progress – and evidence of change - is actually delivered to the patients. At the beginning of treatment, there is the possibility of individually specifying certain “difficult topics”. Forgetting those is minimized by reminders at the end of treatment that “ensure that these issues are followed up on more consistently than they might be in traditional therapy.” (Pacheco & Scheeringa, 2022, p. 4). Reminders and documentation functions seem to be consistently used by patients (Koffel et al., 2018).

A further application of AI within digital mental health interventions that was not explicitly discussed by Pacheco and Scheeringa (2022) is the implementation of conversational chatbots (Sweeney et al., 2021). Chatbots use machine learning and natural language processing to interact with users using natural language, facial expression, or body language. Chatbots can “recognize patterns, or monitor the past which helps in generating an appropriate response” (Denecke et al., 2021, p. 118). AI-chatbots are able to express empathy-like utterances and seem to have an advanced understanding of the theory of mind (Bubeck et al., 2023). They can serve as a psychoeducational coach, pose Socratic questions⁶, or produce encouraging words. Chat-GPT (*ChatGPT*, n.d.) is an advanced AI-powered language model developed by OpenAI⁷ that recently received much attention. On a mental health platform that offers peer support, Chat-GPT was able to significantly outperform responses generated by humans regarding their helpfulness (Biron, 2023). Although those results are hardly generalizable since participants were not informed about the source of support not being a human but an AI, they still demonstrate the potential of AI-chatbots to produce content that is actually perceived as helpful.

Interventions delivered via the Internet offer many advantages such as “enhanced access to evidence-based treatments, greater cost-effectiveness, the increased opportunity to reach patients in remote locations, as well as multimedia interactivity and continuous symptom

⁶ Socratic questions are “clinically informed inquiries [...] that could directly help the client when analyzing negative automatic thoughts or maladaptive core beliefs” (Carlbring et al., 2023, p. 2).

⁷ Open AI (n.d.) is a prominent artificial intelligence research lab and company in the US focused on advancing AI technology.

monitoring that could help improve adherence and prevent relapse.” (Andersson et al., 2013; quoted from Rozental et al., 2015). Systematic reviews and meta-analysis investigating the efficacy of therapist guided iCBT compared to treatment as usual found no post-treatment differences in depression, social anxiety disorder and panic disorder (Andersson et al., 2014; Carlbring et al., 2017), in disorder-specific anxiety symptoms or general anxiety symptoms (Olthuis et al., 2016), or in body dissatisfaction (Carlbring et al., 2017). One study focused on negative events related to iCBT and found that 9.3% out of 558 patients “indicated that they had experienced at least one adverse event that might be related to treatment” (Rozental et al., 2015). Schedules of iCBT were considered as too exhausting, technical problems and troubles understanding the treatment rationale arose, and feeling worse occurred especially at the beginning of treatment due to a deeper understanding of the disorder and its origins. “A few patients pointed out that the absence of a therapist's support was difficult to cope with [...] the availability of a therapist is highly regulated in terms of the time allocated per week to each patient, as is the communication in which the therapist examines the patient's progress and provides feedback about his or her assignments.” (Rozental et al., 2015, p. 229).

Blended CBT is considered to “alleviate some of the difficulties associated with iCBT [...], while preserving some of the advantages of both iCBT and FtF-CBT alike” (Mathiasen et al., 2022, p. 2), such as increasing clinicians capacity compared with traditional CBT while increasing the therapist contact for patients compared with iCBT. BCBT was found to significantly reduce anxiety and depression symptoms in a large scale study with a real-world setting (Lungu et al., 2020). In comparison to face-to-face CBT, bCBT was found to yield similar results in terms of symptom reduction and treatment adherence for insomnia (Koffel et al., 2018), substance use and anxiety (Erbe et al., 2017), and for depression (Mathiasen et al., 2022). Mathiasen et al. did not find indicators for deterioration and found equal ratings for the working alliance when considering the data of participating patients. Considering the working alliance rated by the treating clinicians, there was a slight but non-significant tendency in favor of face-to-face CBT. Vernmark et al. (2019, p. 285) found the working alliance rated by clinicians to be “predictive of subsequent changes in depression scores during treatment.” In their study, the Therapeutic Alliance was rated high by clinicians and patients and therefore they state: “A therapeutic alliance can be established in bCBT.” (Vernmark et al., 2019, p. 285). Similar results were found by Askjer & Mathiasen (2021). For depression among teenagers (aged 13-22), depressive symptoms and secondary outcomes such as suicide risk, internalizing and externalizing symptoms, severity of depression, and global functioning, did not differ statistically significant between bCBT, face-to-face CBT, and treatment as usual⁸ (Rasing, Stikkelbroek, den Hollander, Riper, et al., 2021) with those results lasting up to 12 months (Rasing, Stikkelbroek, den Hollander, Okorn, et al., 2021). BCBT is considered to have positive effects on patients interest, willingness and motivation to participate (Titzler et al., 2018). The e-mental health program Deprexix was implemented as an adjunctive treatment tool and found to be even more effective than psychotherapy as usual in reducing depressive symptoms (Berger et al., 2018; Richter et al., 2022) and it was associated with higher daily activity of the participating patients, earlier discharges, and a significant advantage for post-hospital stabilization (Richter et al., 2022).

Although AI is able to learn how to respond to sensitive requests (e.g. self-harm, *GPT-4*, n.d.), it remains questionable to what extent it might be able to handle such severe situations

⁸ Treatment as usual in this study consisted of “Interpersonal Therapy (IPT), family therapy, parent counseling, anti-depressant medication, mindfulness training, acceptance commitment therapy (ACT), short-term psychodynamic therapy, (nondirective) counseling, creative therapy, and running therapy. For the purpose of this study, CBT was not allowed within the TAU condition.” (Rasing et al., 2021, p. 5).

that require careful consideration properly. The risk of inappropriateness is reflected in the following therapist quote: “I had a traumatized patient, because she couldn’t have children. The first example on the platform was ‘I have children and I want to be a good mother...’.” (Mol et al., 2020, p. 12). Digital interventions possess the capacity of storing extensive amounts of data, but to-date, they mostly provide either measures for a single syndrome (depression, anxiety, posttraumatic stress disorder, or obsessive-compulsive disorder) or for depression and anxiety as comorbidities, but it is less common to provide a multitude of assessments (Pacheco & Scheeringa, 2022). Those tools pose a risk of missing important assessments. “[B]y including FtF sessions, the therapist can [take] the idiosyncratic case formulation of the patient, the specific disorder, and possible comorbidity into account.” (Mathiasen et al., 2022, p. 2). BCBT preserves the advantage of having iCBT online modules available at the time and place needed by the patients while offering a format that “is more compatible with the existing health care services” (2022, p. 2).

Blended CBT seems a promising supplement alongside regular face-to-face CBT for several mental health disorders. However, “[t]hough most therapists received training on the back of an organization-wide roll-out, a number observed that only a select group used bCBT on a daily base.” (Mol et al., 2020, p. 9). What do we know from existing research about patients and clinician’s experiences with and attitudes towards the implementation of digital interventions into mental health care?

Attitudes Towards Technology in Mental Health Care: Clinicians’ experiences and perspectives.

Mental health professionals who tried a smartphone app for adolescent depression and anxiety “desired a product for use as a therapy adjunct to support CBT skill development” rather than tools that serve as a replacement for therapy (Li et al., 2022, p. 1). “About two thirds of therapists agreed that BT [blended treatment] should be implemented and offered free of charge, while only about 40% agreed with these statements for IT [internet-based treatment].” (Schuster et al., 2020, p. 4). In their study, the effect of first-hand experience onto a positive attitude was found to be higher for bCBT than for iCBT (Schuster et al., 2020). Another stakeholder survey confirmed those results showing greater acceptability of blended treatment compared to stand-alone Internet treatments among care providers for mild, moderate, and severe depression diagnosis (Topooco et al., 2017).

Among psychotherapists who are experienced with bCBT, most studies report very positive experiences and attitudes. 94% out of a experienced therapists sample were overall very or mostly satisfied and 97% would recommend bCBT in the future to their patients. This reflects in statements such as “In principle everyone is eligible for bCBT. I rarely think that it’s not an option.” (Mol et al., 2020, p 12) and “If you are a psychologist, and you are interested in your profession, you should just use it.” (2020, p. 8). Patients' interest, willingness and motivation to participate, their all-time access to online content between psychotherapy sessions and after therapy end, and the potential of reducing the treatment gap were considered main facilitators for the implementation of blended treatment for depression by bCBT-experienced therapists (Titzler et al., 2018). Technical issues, such as platform usability and a concern that therapists would be unable to assist patients with technical problems were by bCBT-experienced therapists considered to burden the establishment of a therapeutic alliance and therefore considered as implementation barrier (Doukani et al., 2022; Titzler et al., 2018). Other research reports that the therapeutic alliance depends more on patient motivation and activation than on the online contact itself and one therapist accordingly said: “It’s possible to build a therapeutic relationship, but sometimes it isn’t. Yet I think that this isn’t dependent on

bCBT. Also, with FtF therapy it's possible to succeed in building a therapeutic relationship and sometimes not" (Mol et al., 2020, p. 13). A main barrier of implementation in their study was found to be fear that technology could gradually take over and that bCBT might in the future gradually transition to online CBT (Mol et al., 2020). One study concretely addressed the use of chatbots while "the majority of respondents [mental healthcare professionals] agree that there are benefits associated with mental healthcare chatbots" (Sweeney et al., 2021, p. 9), the biggest concern, indicated by 90% of respondents, was "that the clients may not feel adequately connected to their healthcare providers [and 80% indicated that] clients may abuse the use of chatbots and self-assess too often" (Sweeney et al., 2021, p. 9). Sweeney et al. (2021) found that significant positive correlations between years of experience and the belief that the chatbot could "help clients better manage their own mental health [...], improve quality of mental healthcare of people [...], improve access and timeliness to mental healthcare [...], and assist mental healthcare workers in their daily occupational role" (Sweeney et al., 2021, p. 9).

Another study (Schuster et al., 2018) found that "German respondents perceived a neutral degree of advantages of Internet-based treatment (IT) and blended treatment". On average, the best rated bCBT advantages were the possibility to repeat work material, to receive psychoeducation, and that this format bridges distances and is timewise flexible. Data security issues were on average the strongest disadvantage.

One study investigated (Doraiswamy et al., 2020) psychiatrists' attitudes towards an AI to replace their key tasks. 83% of respondents perceived it as "unlikely" that future technology would ever be able to provide empathetic care as well as or better than the average psychiatrist. Diagnoses, documentation and updating medical records, and prognoses were rated by more than half of the sample as likely to be performed as well as or better than the average psychiatrist if replaced by an AI. Around one in two psychiatrists did predict that their jobs would be substantially changed by AI/ML, reflected by statements such as "feelings of antipathy due to job displacement" and "physicians will forsake creative thinking" (Doraiswamy et al., 2020).

Most of existing research has focused on examining the effectiveness of technology-based treatment approaches within mental healthcare. Research examining mental health care professionals' attitudes towards AI is scarce, whereas most of respective research has focused on reporting clinicians' practical experiences with existing bCBT tools. In our study, we therefore examined CBT-clinicians' attitudes towards the adjunct use of AI in psychotherapy and their implementation willingness. To gain insight into the formation of attitudes and implementation willingness, we looked at associations with expectations of the therapeutic alliance, patient compliance, treatment effectiveness, and their own job role in AI-supported CBT vs. traditional face-to-face CBT.

Method

Participants

The participants were recruited via Mail, via the distribution list of the German Association of CBT (Deutsche Gesellschaft für Verhaltenstherapie, DGVT). The DGVT is with over 11.400 members the largest professional association of behavioral therapy in Germany. The recruitment via their e-mail distribution list was enabled by Prof. Dr. Thomas Berger. Participants received a standardized message (see **Appendix 1**) for survey participation via

mail including the link to the survey. The sample size was not calculated before sending out the survey due to the main analysis being exploratory descriptive. The time period for data collection lasted from the 06.07.2023 – 01.08.2023. Exclusion criteria were early termination of participation ($n = 8$) and answering the last comprehension question “Were the questions asked in an understandable way so that you could answer all of them carefully?” with “no” ($n = 2$). This resulted in a total sample of 44 participants. We collected a sample of 33 aspiring (being in psychotherapy licensure training⁹) and 11 practicing CBT-clinicians. 35 of them are females (80%), 8 of them are males (18%), and one participant is of diverse gender (2%). The average age of the participants is 33,2 years ($SD = 8.1$), with the youngest person being 24 and the oldest person being 57 years old. 41 participants (93%) indicated to work mainly with affective disorders. Five participants work in a rural setting, and 39 participants (89%) work in an urban setting. Most people indicated to be “not familiar” (32 participants, 73%) or “rather unfamiliar” (10 participants, 23%) with extant literature on AI-implementation. 22 participants (50%) indicated to have “no” experience with the adjunct use of Apps in their clinical practice, and 19 participants (43%) indicated to have “some” experience with the adjunct use of Apps. No participant indicated to be “very familiar” with AI-literature or to have “very much” experience with the adjunct use of Apps.

Materials and Procedure

The online survey was programmed with the tool “Umfrage online” (“Survey online”). The survey was conducted in Germany and in German language. A thorough documentation and translation of the survey can be found in **Appendix 2**.

At the beginning of the survey, a consent and privacy statement according to the Ethical Review Act were given, see **Ethics** (further below) for a more detailed description.

Demographical information were assessed first, namely age, gender, nationality, experience in years, education level / work experience in years, indication of the psychotherapeutic school the participant belongs to according to the four in Germany recognized psychotherapeutic schools (CBT, depth psychologically oriented psychotherapy, psychoanalysis, and systemic psychotherapy), the main disorder they work with, and indication of their practice setting being urban or rural.

In the next part, the experience with digital interventions was assessed: Familiarity with extant literature regarding AI in the field of mental health, experience with online psychotherapy via e.g. Zoom, and experience with the adjunct use of Apps in the psychotherapeutic setting. Those items were assessed using a 4-point Likert scale.

To normalize the participants level of knowledge to a survey-appropriate degree, and to help ensure that respondents attributed the same meaning to the implementation, an information text was inserted. This included information about AI, why AI exceeds the possibilities of conventional programming, some application examples, and last but not least a clear statement that this survey refers to the adjunct use of AI and that the goal is not to replace the human psychotherapists with an AI.

⁹ The German term "Approbationsausbildung für Psychotherapie", translated to English as "Psychotherapy Licensure Training.", refers to the formal education and training program required for individuals in Germany who seek to become licensed psychotherapists. The training involves a combination of academic coursework, practical clinical experience, and supervision.

After the information text, the survey continued with assessing four general attitudes (being curious, being skeptical, being enthusiastic, and being worried) regarding the developments of AI in psychotherapy and the participants willingness to integrate AI in their own therapeutic practice, both on a 5-point Likert-scale. We recoded “being skeptical” and “being worried” to receive a value reflecting the “positive attitude”, and its reliability was good with a Cronbach's alpha (α) of .71.

The fourth part of the survey examined participants attitudes of nine potential positive and nine potential negative aspects of AI implementation (presented in randomized order to avoid bias), and of nine tasks/treatment components (collected based on literature search) that AI could take over. We calculated an “overall advantage score” (with a good reliability of $\alpha = .75$), and an “overall disadvantage score” (with a medium reliability of $\alpha = .70$). Participants then indicated for which, if any, psychotherapeutic school they perceive the adjunct integration of AI as most suitable. Thereafter, participants were asked to estimate how the therapeutic alliance, patient compliance, and the therapeutic effectiveness might evolve, in comparison to the traditional psychotherapeutic setting, when integrating AI, and what feelings they have towards possible changes of their own job role (with a scale ranging from concerned to enthusiastic).

In the next step, the general attitudes (being curious, being skeptical, being enthusiastic, and being worried) regarding the developments of AI in psychotherapy and the participants willingness to integrate AI in their own therapeutic work were repeatedly assessed. Similarly as in the respective first item block, we recoded “being skeptical” and “being worried” to receive a value reflecting the “positive attitude”. Its reliability was good with $\alpha = .74$.

Lastly, participants were asked whether the questions were posed clearly so they could answer them all thoroughly, and they were given a free space to leave any thoughts regarding the integration of AI in psychotherapy. This was not used for analyses, but rather to acknowledge the time and effort participants put into completing the survey by giving them a space for comments or thoughts which might feel important to them and therefore to increase participants satisfaction.

The duration of the survey was about 15 minutes.

Data were analyzed using the statistics program R. At first, the attitudes of the participants regarding the several aspects of AI-implementation into psychotherapy were analyzed descriptively. Thereafter, a paired two-sided t-test examined whether the main attitudes (being curious, being skeptical, being enthusiastic, and being worried regarding the developments of AI in psychotherapy) and the participants willingness to integrate AI in their own therapeutic practice differed between the two measurement times, once at the beginning and once at the end of the survey, respectively. Finally, it was tested with linear regressions whether estimations of the therapeutic alliance, patient compliance, and the therapeutic effectiveness would be associated with the attitudes at the second measurement time and the implementation willingness.

The research is considered objective, since the online study was sent to all subjects via mail using the same standardized message. There was no further, possibly distorting contact between the subjects and the investigators. The objectivity of the data evaluation is guaranteed since the quantitative data were evaluated using recognized statistical methods.

Ethics

The thesis work is carried out according to the principles set out in the Ethical Review Act. Written consent for participation was obtained after survey participants were informed of the purpose of the study, methods that were used, any risks that participation may entail (none), the responsible contact person (Sasha Posthumus), and the voluntariness of participation which can be discontinued at any time without any negative consequences. The ethics declaration was signed by the student and the supervisor Per Carlbring and approved by Marie Gustafsson S nden before sending out the survey.

Results

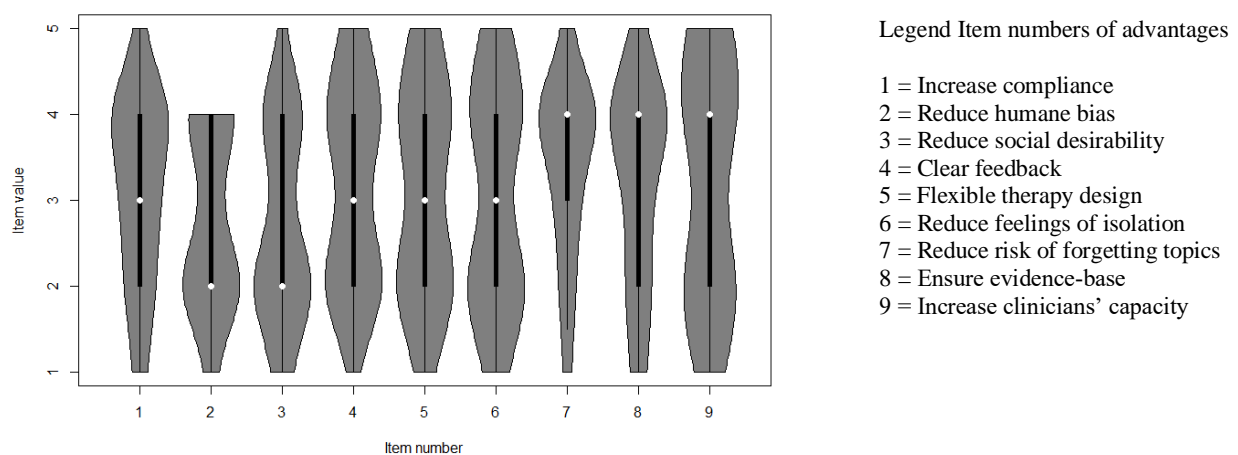
Descriptive analyses

At the first measurement time (T1), the mean score for “being curious” was $M = 4.4$ ($SD = 0.8$), for “being enthusiastic” it was $M = 2.9$ ($SD = 1$), for “being worried” it was $M = 3.3$ ($SD = 1.1$), and for “being skeptical” the mean score was $M = 3.7$ ($SD = 1.1$). The mean sum score of the positive attitude at T1 was $M = 12.4$ ($SD = 3$). The mean of implementation willingness at T1 was $M = 3.6$ ($SD = 1$), and no participant indicated to be “Not willing at all”. The implementation attitudes and willingness correlate positively at T1 with $r = .66$

The advantages were rated on a scale ranging from 1 to 5 with the following response categories: “1 = Not relevant”, “2 = I am unsure what to think”, “3 = Positive, but not really relevant”, “4 = Positive and relevant”, “5 = Positive and very relevant”. Figure 1 shows, that many items have bimodal distributions with one peak at value 2, reflecting the statement “I am unsure what to think” and the other at value 4, reflecting the statement “Positive and relevant”. Three items have a median of 4, indicated by the white dots in the figure, which means that they were by half of the sample rated as “4 = Positive and relevant”, or “5 = Positive and very relevant”. Those items are the reduced risk to miss important topics (item 7; $M = 3,4$, $SD = 1$), guaranteeing therapy conduct according to evidence-based standards (item 8; $M = 3,2$, $SD = 1,2$), and clinicians increased capacity through the automatization of certain processes (item 9; $M = 3,2$, $SD = 1,4$). Item 9, however, shows a bimodal distribution as well.

Figure 1

Distributions of advantage assessments

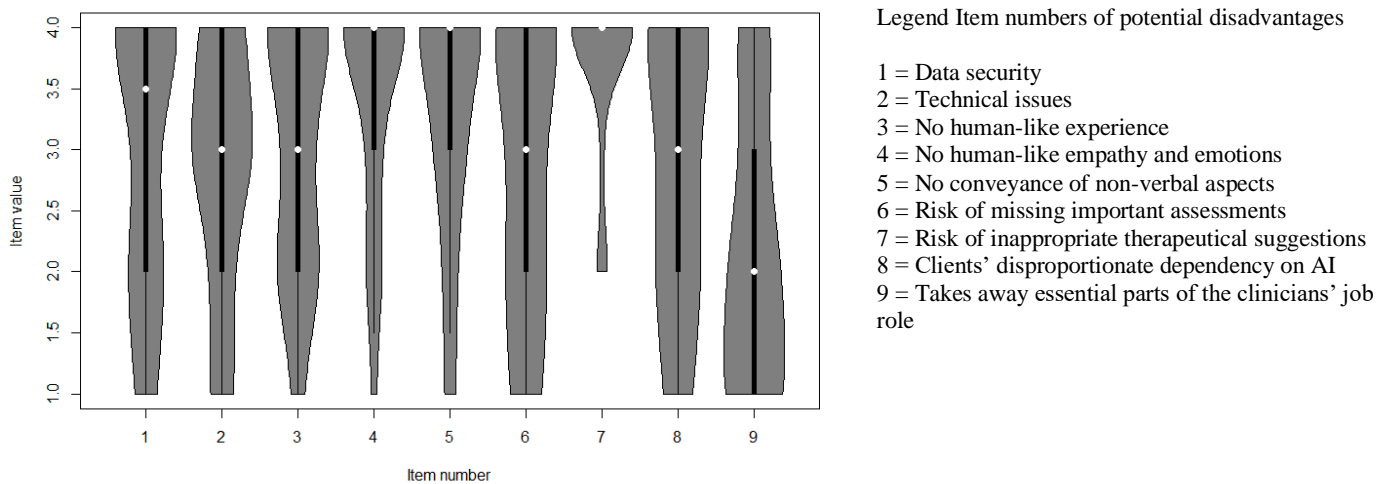


The disadvantages were rated on a scale ranging from 1 to 4 with the following response categories: “1 = No concern”, “2 = I am unsure what to think”, “3 = Negative, but not problematic”, and “4 = Negative and very problematic”. As can be seen in **The distributions** of these three items show a clear group tendency, whereas the assessments of the other items (see **Figure 2**) exhibit bi- or multimodal distributions.

Figure 2, three items were by more than half of the sample rated as “Negative and very problematic”. Missing human empathy and emotions of the AI (Item 4; $M = 3,4$, $SD = 0,9$) was by 65,9 % of participants rated as “Negative and very problematic”, missing transportation of nonverbal communication cues in text-based chatbots (Item 5; $M = 3,3$, $SD = 1$) by 54,5%, and the risk of inappropriate therapeutical suggestions (Item 7; $M = 3,7$, $SD = 0,7$) by 81,8%. The distributions of these three items show a clear group tendency, whereas the assessments of the other items (see **Figure 2**) exhibit bi- or multimodal distributions.

Figure 2

Distributions of disadvantage assessments



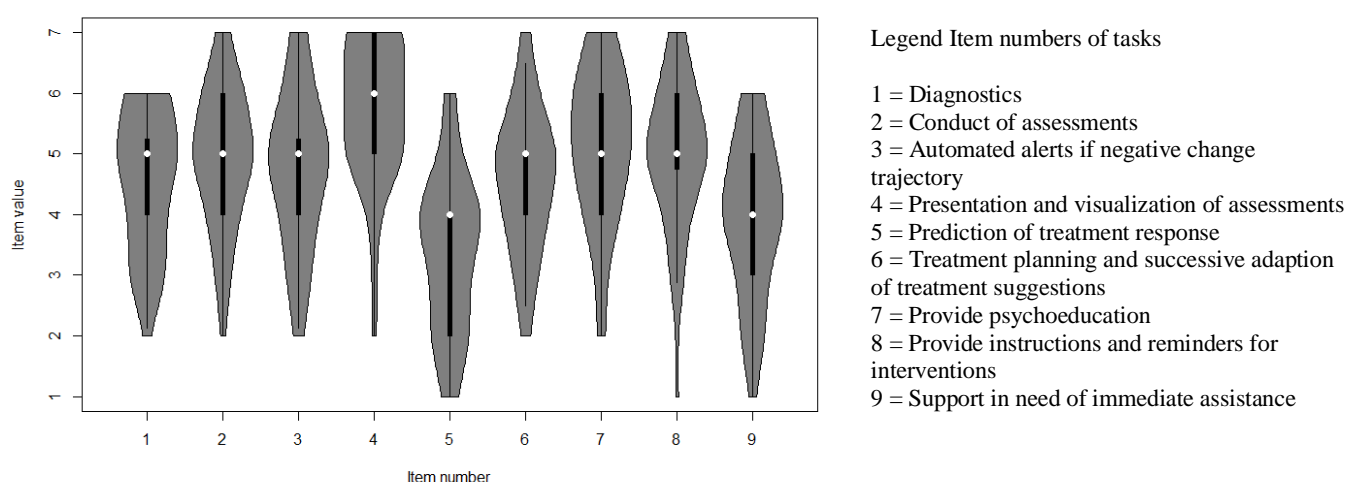
The tasks were rated on a scale ranging from 1 to 7 with the following response categories: “1 = I see only disadvantages”, “2 = I see mainly disadvantages”, “3 = I see rather disadvantages”, “4 = I can’t decide whether advantages or disadvantages overweigh”, “5 = I see rather advantages”, “6 = I see mainly advantages”, “7 = I see only advantages”.

Figure 3 presents the distribution of assessments for each item and visualizes, that in contrast to the assessments of advantages and disadvantages, most assessments show unimodal distributions and are rather positive. Four of the tasks were on average rated as or better $M = 5$, whereas 5 reflects the statement “I see rather advantages”. Those tasks are “assessments of e.g. symptoms” (Item 2; $M = 5$, $SD = 1,1$), “Presentation and visualization of assessments” (Item 4; $M = 5,8$, $SD = 1,2$), “individualized psychoeducation” (Item 7; $M = 5,2$, $SD = 1,3$), and “instructions and reminders for interventions” (Item 8; $M = 5$, $SD = 1,2$). No task was on average rated as or below $M = 3$, whereas 3 reflects the statement “I see rather

disadvantages”. Item 4 has a median of 6 with 90,1% of participants rating it as “I see rather / mainly / only advantages”. **Figure 3** further shows that “Prediction of treatment response” (Item 5; $M = 3,4$, $SD = 1,3$) and “Support for immediate assistance needs between sessions through a chatbot” (Item 9; $M = 4$, $SD = 1,3$) have a lot of data around value 4 indicating reflecting the statement “I can’t decide whether advantages or disadvantages overweigh”, with $N = 18$ (40,9%) and $N = 16$ (36,4%) people choosing this answer respectively. Those two items further have the most data points around “1 = I see only disadvantages”, and “2 = I see mainly disadvantages”.

Figure 3

Distributions of task assessments



All participants indicated that AI would be suitable for CBT, 28 participants (64%) indicated that AI would be suitable for systemic psychotherapy¹⁰, seven participants indicated that it would be suitable for psychoanalysis (16%). No participant perceived AI to be not suitable for any of the given psychotherapeutic schools.

The majority of participants indicated that the therapeutic alliance would worsen through the implementation of AI (26,8%) or be comparable to traditional CBT (70,7%), with $M = 1,8$ ($SD = 0,5$). Therapy compliance ($M = 2,5$, $SD = 0,7$) and effectiveness in terms of symptom reduction ($M = 2,4$, $SD = 0,6$) were by the majority perceived to be comparable to traditional CBT (35% and 35,5 % respectively) or to improve (55% and 41% respectively).

Regarding the own professional role, most participants ($N = 21$, 47,73%) have “mixed feelings” and eight participants (18,18%) indicated their professional role would not be affected. Eight participants indicated to be very or rather worried and eight participants indicated to be rather or very enthusiastic about the changes in their professional role.

¹⁰ A psychotherapy approach that focuses on understanding and addressing issues within the context of the larger systems in which individuals and families operate instead of viewing problems solely as residing within individuals.

At the second measurement time (T2), the mean score for “being curious” was 4.3 ($SD = 0.8$), for “being enthusiastic” it was 2.9 ($SD = 1.1$), for “being worried” it was 3.1 ($SD = 1.2$), and for “being skeptical” the mean was 3.5 ($SD = 1.1$). The mean sum score of the positive attitude T2 was 13 ($SD = 3.2$). The mean implementation willingness T2 was 3.5 ($SD = 0.9$). The implementation attitudes and willingness correlate positively at T2 with $r = .74$.

Hypothesis 1

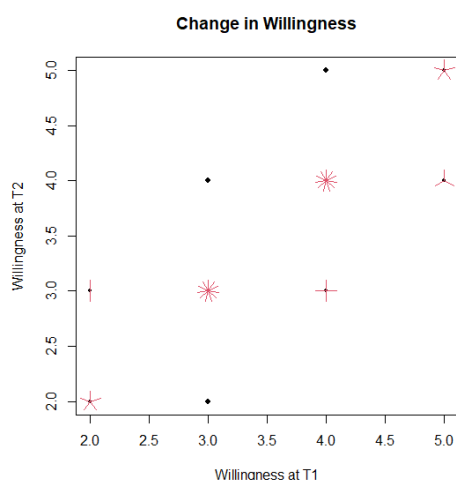
The positive attitudes at T2 were comparable to the attitudes T1 and correlate highly ($r = .85$). Two-sided paired t-tests did not reveal significant differences between the two measurement times for skepticism ($t(43) = 1.354$, $p = .183$), for curiosity ($t(43) = 1.071$, $p = .290$), for being worried ($t(43) = 0.842$, $p = .404$), or for being enthusiastic ($t(43) = -0.216$, $p = .830$), and respectively not for the general positive attitudes score ($t(43) = 0.698$, $p = .491$).

The willingness to implement AI in the own practice was similarly comparable between the two measurement times ($r = .85$) and a two-sided paired t-test did not reveal significant differences ($t(43) = 1.159$, $p = .253$).

Figure 4 visualizes that most participants gave the same rating at both measurement times.

Figure 4

Change in willingness between the two measurement times



Hypothesis 2

First, we calculated linear regressions for each attitude. The linear model for being skeptical ($R^2 = .226$, $F(4, 33) = 2.405$, $p = .069$) and the linear model for being curious ($R^2 = .221$, $F(4, 33) = 2.342$, $p = .075$) were statistically not significant with the independent variables being perceptions of the Therapeutic Alliance, compliance, effectiveness, and the professional role.

The linear model for enthusiasm was statistically significant ($R^2 = .45$, $F(4, 33) = 6.647$, $p < .01$) with significant effects of perceptions of compliance ($\beta = .43$, $p < .01$) and effectiveness ($\beta = .30$, $p < .05$). Perceptions of the therapeutic alliance ($\beta = -.06$, $p = .704$) and the job role ($\beta = .26$, $p = .064$) were not significantly associated with enthusiasm.

The linear model for concern was statistically significant ($R^2 = .571$, $F(4, 33) = 10.96$, $p < .01$) with significant effects of perceptions of the therapeutic alliance ($\beta = -.47$, $p < .01$) and the own job role ($\beta = -.31$, $p < .01$). Perceptions of compliance ($\beta = -.14$, $p = .281$) and the effectiveness ($\beta = -.07$, $p = .604$) were not significantly associated with concern.

We also calculated a linear regression with the overall positive attitude score (being skeptical and being worried were recoded, see Methods). The overall regression was statistically significant ($R^2 = .523$, $F(4, 33) = 9.035$, $p < .01$). It was found that perceptions of compliance ($\beta = .32$, $p < .05$) and the own professional role ($\beta = .33$, $p < .05$) significantly predicted the attitude T2. Perceptions of effectiveness ($\beta = .23$, $p = .098$) and the therapeutic alliance ($\beta = .20$, $p = .170$) were not found to significantly predict the attitude T2. The results can be found in Table 1.

Table 1

Regression results using Attitude_T2 as the criterion

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	0.42	[-3.84, 4.68]						
Compliance	1.53*	[0.19, 2.86]	0.32	[0.04, 0.59]	.08	[-.04, .20]	.51**	
Alliance	1.40	[-0.63, 3.43]	0.20	[-0.09, 0.49]	.03	[-.05, .10]	.52**	
Effectiveness	1.30	[-0.25, 2.85]	0.23	[-0.04, 0.51]	.04	[-.05, .13]	.47**	
Job role	0.84*	[0.17, 1.50]	0.33	[0.07, 0.59]	.10	[-.04, .23]	.45**	
								$R^2 = .523^{**}$ 95% CI [.21, .64]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Multiple linear regression was used to test if perceptions of compliance, effectiveness, the therapeutic alliance, and the own professional role significantly predicted the implementation willingness T2. The overall regression was statistically significant ($R^2 = .27$, $F(4, 33) = 3.596$, $p < .05$). It was found that perceptions of the own professional role ($\beta = .46$, $p < .01$) significantly predicted the implementation willingness T2. It was found that perceptions of compliance ($\beta = .30$, $p = .192$), the therapeutic alliance ($\beta = -.22$, $p = .173$), and the effectiveness ($\beta = .14$, $p = .358$) did not significantly predict the implementation willingness T2. The results can be found in **Table 2**.

Table 2*Regression results using willingness_T2 as the criterion*

Predictor	<i>b</i>	<i>b</i> 95% CI [LL, UL]	<i>beta</i>	<i>beta</i> 95% CI [LL, UL]	<i>sr</i> ²	<i>sr</i> ² 95% CI [LL, UL]	<i>r</i>	Fit
(Intercept)	1.51*	[0.27, 2.74]						
Compliance	0.26	[0.06, 0.46]	0.30	[0.01, 0.58]	.07	[-.02, .22]	.28*	
Alliance	-0.27	[-0.67, 0.12]	-0.22	[-0.55, 0.10]	.04	[-.06, .13]	.07	
Effectiveness	0.17	[-0.20, 0.54]	0.14	[-0.17, 0.46]	.02	[-.05, .08]	.22	
Job role	0.46**	[0.07, 0.86]	0.49	[0.14, 0.83]	.18	[.00, .36]	.36**	
								<i>R</i> ² = .269* 95% CI [.01, .42]

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr*² represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

* indicates $p < .05$. ** indicates $p < .01$.

Discussion

We conducted an online survey in Germany to assess practicing and aspiring CBT-clinicians' attitudes towards the adjunct use of AI in psychotherapy. AI is a relevant component of digital interventions since it enables way more features than traditional programming, such as personalized recommendations, adaptive interventions, or natural language processing for interactive conversational interfaces. While there is lots of research concerning the effectiveness of i/bCBT, there is little research addressing attitudes towards the integrative implementation of Artificial Intelligence.

Contrary to expectations, participants' implementation attitudes and willingness did not change between the two measurement times. This was unexpected, since participants were given a number of aspects within the survey which could have potentially changed their mind, especially as most participants were rather unfamiliar with extant literature on AI-implementation or the adjunct use of Apps. Former research (Netter et al., 2022) did show that after a one-time information session, including a 20-minute presentation and a concluding question and answer session, the intent to use the respective digital intervention in the future was high and the participants had a moderately positive attitude towards iCBT interventions. Their sample consisted of iCBT-unexperienced therapists. However, they did not measure attitudes twice and therefore can't evaluate how much the information session influenced the participants opinions. Discussing AI can be particularly challenging, as many individuals (not only within or regarding the field of psychotherapy) might hold steadfast and rigid viewpoints, rooted in limited understanding, and fueled by (emotional) concerns regarding potential risks. Given the complex nature of the topic and the possible consequences involved, effectively conveying its benefits necessitates a comprehensive and more in-depth approach to information sharing. Additionally, face-to-face received information might be taken in better when it comes to digital interventions, as digital communication ways might elicit resistance and add to the fear that with the implementation of digital tools, human contact will get lost at some point.

This would align with further results from our study. We found a statistically significant association between thoughts about compliance in AI-supported CBT and implementation

attitudes, and a statistically significant association between perceived changes of the own professional role due to AI and implementation attitudes and willingness. These results imply that, when it comes to implementation willingness, the own professional role plays the key role. The more participants were concerned about consequences onto their professional job role, the lesser they were willing to implement AI in their own practice. The job role was found to play a role in former research (Doraiswamy et al., 2020; Mol et al., 2020), however, to my knowledge, so far no research considered its associations with implementation attitudes and willingness.

AI is a term that might easily elicit strong emotions and clinician's might be concerned – although we clearly stated that this survey is about an integrated approach – that AI would evolve nonetheless until their own profession becomes obsolete once it is started being used. This would explain why in our survey the best rated advantages were the reduced risk to miss important topics (item 7), and the guarantee of therapy conduct according to evidence-based standards (item 8). It seems like AI is tolerated as a control-instance, but not allowed to interfere with the psychotherapy itself. The worst rated disadvantages were missing human empathy and emotions of the AI (Item 4), missing transportation of nonverbal communication cues in text-based chatbots (Item 5), and the risk of inappropriate therapeutical suggestions (item 7). This aligns with former research about psychiatrists attitudes towards AI (Doraiswamy et al., 2020). The tasks that were rated best in this survey were the conduct of assessments (item 2), of psychoeducation (item 7), the presentation of assessment results (item 4), and giving instructions and reminders for interventions (item 8). Those tasks are, again, the ones that touch upon the therapeutical job role lesser than do other tasks such as providing support for the patients between the sessions.

A couple of items, particularly from the potential advantages and disadvantages assessments, show bi-or multimodal distributions. Those present a challenge for interpreting these results descriptively on a group-level. However, considering the distributions in **Figure 1** leads to the impression that clinicians' face a lot of uncertainties how to evaluate certain aspects. This applies to potential advantages such as reducing humane bias, reducing social desirability in assessments, or reducing patients' feelings of isolation between sessions though a chatbot, and this applies to tasks such as diagnostics, prediction of treatment response, and providing support in need of immediate assistance via a chatbot.

Although former research did show that AI-tools are able to predict the treatment response, there is no such research which can show whether this should be considered something positive. Will those tools increase the clinicians' motivation to help those patients with a negative treatment prediction, or would such a result lower their motivation and even worsen the outcome according to the "Rosenthal-Effect"¹¹? And although AI can already mimic empathy pretty well (Biron, 2023), although self-assessments were shown to improve due to reduced social desirability when "talking" to a computer (Lucas et al., 2014), and although the existence of AI-chatbots and the according possibility of accessing a supportive space at all times is perceived as positive by patients (Browne et al., 2022), this research cannot paint a picture of how the future psychotherapists job role will look like. This, however, seems to be of major importance, for the general positive attitude and for the implementation willingness. I was wondering, whether participants perceive aspects that jeopardize their job role as less positive, and therefore conducted linear regressions between thoughts about the own professional role and advantages ($R^2 = .16$, $F(1, 42) = 8.292$, $p < .01$, $r = .41$), disadvantages ($R^2 = .26$, $F(1, 42)$

¹¹ The Rosenthal Effect refers to the fact that positive expectations and beliefs of one person have a positive effect on the outcome of another person in the form of a "self-fulfilling prophecy," just as negative expectations and beliefs can have a negative effect (Rosenthal & Fode, 1963).

= 14.94, $p < .01$, $r = -.51$), and tasks ($R^2 = .12$, $F(1, 42) = 5.905$, $p < .05$, $r = .35$). Each regression model was statistically significant. The own job role seems to play a major role in evaluating the implementation of AI.

I think, considering the fact our participants consisted of rather AI-uninformed and technology-inexperienced clinicians, it is not surprising that the results revealed a lot of uncertainties in the different assessments, and that these show a pretty wide range in opinions. It is reasonable, as they might miss *knowledge*, that their *sense* of concern regarding their own job role has much impact.

Limitations and Future Directions

The present study investigates an up-to-date topic and adds an important value by examining practitioners', and therefore potential AI-adopters' in the field of mental health care, attitudes towards AI-implementation. It thereby addresses the research-practice gap and the digital implementation gap.

We are aware that our research may have a major limitation in its sample size. The survey was online for three weeks and summer holidays during this period time might have affected participation rates. However, participation rates might have also remained low due to the intricate and emotionally charged nature of AI, which often leaves people hesitant to engage with and open up to this complex subject. The small sample size affects the generalizability of results and might have led to the fact that a lot of the descriptive data show bi- or multimodal distributions which makes a clear trend of preferences hardly identifiable. However, this must not necessarily be a result of the sample size and could also simply reflect clinicians' differing attitudes.

Another limitation consists in the format of the survey which displayed a couple of long tables. Checking the results of the dropouts (seven of the eight total dropouts occurred after answering the first survey questions on implementation attitudes and willingness) revealed no different attitudes compared to the other participants. This leads to the assumption that no specific characteristics of their attitudes, but the appearance of the first big table (with dis/advantages) on their screen led to termination. We assume that the extensive amount of items might have hampered the motivation of other participants as well, especially since they did not receive any incentive for their participation. It might have been better to focus on less variables and to present them in an easier graspable way, instead of "flooding" participants with many aspects they could hardly process within the short amount of time.

Due to the quantitative nature of the survey, the complexity of participants attitudes could not be captured in-depth. However, the results of this study can be used as a basis for further (qualitative) in-depth investigations. This applies especially for thoughts and feelings which clinicians do have regarding potential consequences of AI for their own job role. It would be interesting to examine, what attitudes those people who have a high concern regarding their own psychotherapeutic job role have towards technological progress in general.

Furthermore, it is crucial to investigate patients' viewpoints regarding the utilization of AI. So far, research has focused on patients experiences with digital interventions – but what are the thoughts of i/bCBT inexperienced patients towards the use of AI? Aspects such as that individuals might perceive themselves as less valued when relegated to the 'realm of the internet', the potential exacerbation of fear among already anxious individuals due to the digitization of the world, and the concern that therapists overly rely on AI and therefore neglect their own job role and responsibility might play a role here.

As touched upon within the interpretation of results, it would be interesting to examine in further research, whether online and in-person information sessions lead to changes in attitudes and implementation willingness differently.

It further seems valuable to explore clinician's attitudes before and while using AI-applications in a longitudinal design. How do attitudes change, and which aspects influence the attitudes at which experience level? From past research, we know that very experienced clinician's hold better views towards mental-health chatbots (Sweeney et al., 2021) and bCBT (Schuster et al., 2020) than clinicians with less experience. Does this also apply to the implementation of Artificial Intelligence? Does *sensing* concern regarding the own job role play a less detrimental role when *knowing* more about AI-tools?

It seems meaningful to incorporate the topic of digital interventions and AI into therapists' continuing education, enabling them to mitigate apprehensions and embrace the positive aspects of AI, thus fostering its effective utilization.

However, in general, there is much more research needed in the field of digital interventions and AI. Besides the mentioned aspects, it is necessary to explore whether certain disorders, personality traits, or demographic variables influence the patient's suitability for digital interventions. Another aspect consists in investigating the consequences of certain applications. While we may possess technical insights into the functionality of a specific AI feature, a thorough examination of its ramifications remains imperative. For instance, though we understand that AI can predict treatment responses (Pacheco & Scheeringa, 2022), the essential query pertains to its actual utility. Is it really helpful, or rather harmful? Though we know that text generated by AI-chatbots is perceived as helpful (Biron, 2023), it remains unknown, whether the use of AI-chatbots in the long term increases stigmatization of mental disorders. Though we know that digital tools can increase the willingness to open up and therefore improve assessments (Lucas et al., 2014), it is important to recognize that AI systems learn from human input. If humans overly depend on AI diagnoses and disregard their own critical thinking, this could lead to a decline in their diagnostic skills and the ability to consider nuances that AI might overlook and poses a potential risk of stunting the advancement of mental health care diagnostics. The implementation of Artificial Intelligence into mental healthcare is - despite impressive existing results - characterized by knowledge gaps and uncertainty, which may possibly only be addressed in the light of future developments.

Conclusion

The accessibility of evidence-based mental health care is one of the major challenges in mental health care. "Today, an estimated 300 million people worldwide suffer from depression alone, while suicide is the second leading cause of death among young people [...] worldwide, some estimates suggest that around two-thirds of people experiencing a mental health challenge go unsupported" (World Economic Forum, 2019, p. 5).

Digital interventions decrease the clinicians' amount of time spent per patient, and thereby increase the number of available clinician hours to meet the high and growing demand for mental health care. Digital interventions are therefore considered a primary solution to reduce the treatment gap. Of course, this should not be at the expense of the quality of psychotherapy. Research could show that bCBT is as effective as treatment as usual in terms of post-treatment symptom reduction for a couple of disorders (Erbe et al., 2017; Lungu et al., 2020; Mathiasen et al., 2022; Rasing, Stikkelbroek, den Hollander, Riper, et al., 2021) with

those results lasting up to 12 months (Rasing, Stikkelbroek, den Hollander, Okorn, et al., 2021) and without showing indices for higher deterioration and drop-out rates than treatment as usual (Mathiasen et al., 2022). One e-mental health program, Deprexis, implemented as an adjunctive treatment tool in reducing depressive symptoms, was found to be even more effective than psychotherapy as usual (Berger et al., 2018; Richter et al., 2022). Digital interventions are considered a valid adjunct to existing treatment approaches in mental health care. Artificial Intelligence is partly used in those tools, and might be even more relevant in the future, as AI technologies evolve rapidly. AI technologies are capable of performing tasks that typically require human intelligence, such as learning, problem-solving and decision making. AI technologies are beyond the capabilities of traditional programming and pose benefits for digital interventions such as personalized feedback, adaptive treatment planning, and natural language processing for interactive conversational interfaces. Much time, effort and money is spent on developing new tools to deliver or enhance treatment and to demonstrate their value for psychotherapy, but many digital tools do not progress beyond this stage, falling into the “implementation gap” (Thew et al., 2022).

Therefore, we addressed clinician’s attitudes towards AI and examined, which aspects might affect their attitudes. Our research firstly demonstrate the high uncertainty regarding AI in psychotherapy by the strongly differing attitudes, as in the assessment of tasks, advantages, and disadvantages, group trends were only sparsely visible. Our research secondly sheds new light on the so-called implementation gap, namely that clinician’s evaluations of AI-aspects and their implementation willingness are strongly affected by concerns about their own job role.

On the one hand side, our results make it seem relevant to educate therapists about the positive aspects of AI, and to consider their concerns by examining more deeply what affects those concerns and how they might be addressed best. Information campaigns in that sense might benefit from highlighting the benefits of AI in terms of the support they can provide to clinicians, while similarly addressing its limitations and the continuing importance of a human psychotherapist. Up to date it seems to be common sense that digital interventions cannot replace a human psychotherapist, and that digital tools are only meant to complement mental health care.

On the other hand side, we need to consider that there is no such a promise that the job of the psychotherapist will indeed not become obsolete at some point in the future, especially when considering the vast developments of technology, and the impressive results that digital tools were able to show within mental health care. It is important to recognize that there needs much more research to be done within the field of implementation of Artificial Intelligence into mental healthcare, a field that is - despite impressive existing results - characterized by knowledge gaps and uncertainty which may possibly only be addressed in the light of future developments.

Nonetheless, as the technological advancement cannot be stopped, it seems important to remain open to the developments of AI within mental healthcare, as in doing so, one preserves the ability to actively shape its future.

References

- Andersson, G., Carlbring, P., Ljótsson, B., & Hedman, E. (2013). Guided Internet-Based CBT for Common Mental Disorders. *Journal of Contemporary Psychotherapy*, 43(4), 223–233. <https://doi.org/10.1007/s10879-013-9237-9>
- Andersson, G., Cuijpers, P., Carlbring, P., Riper, H., & Hedman, E. (2014). Guided Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: A systematic review and meta-analysis. *World Psychiatry*, 13(3), 288–295. <https://doi.org/10.1002/wps.20151>
- Andersson, G., Titov, N., Dear, B. F., Rozental, A., & Carlbring, P. (2019). Internet-delivered psychological treatments: From innovation to implementation. *World Psychiatry*, 18(1), 20–28. <https://doi.org/10.1002/wps.20610>
- Andrews, G., Basu, A., Cuijpers, P., Craske, M. G., McEvoy, P., English, C. L., & Newby, J. M. (2018). Computer therapy for the anxiety and depression disorders is effective, acceptable and practical health care: An updated meta-analysis. *Journal of Anxiety Disorders*, 55, 70–78. <https://doi.org/10.1016/j.janxdis.2018.01.001>
- Askjer, S., & Mathiasen, K. (2021). The working alliance in blended versus face-to-face cognitive therapy for depression: A secondary analysis of a randomized controlled trial. *Internet Interventions*, 25, 100404. <https://doi.org/10.1016/j.invent.2021.100404>
- Bakker, D., Kazantzis, N., Rickwood, D., & Rickard, N. (2018). Development and Pilot Evaluation of Smartphone-Delivered Cognitive Behavior Therapy Strategies for Mood- and Anxiety-Related Problems: MoodMission. *Cognitive and Behavioral Practice*, 25(4), 496–514. <https://doi.org/10.1016/j.cbpra.2018.07.002>
- Beck, J. S. (1995). *Cognitive therapy: Basics and beyond* (pp. xiv, 338). Guilford Press.
- Berger, T., Krieger, T., Sude, K., Meyer, B., & Maercker, A. (2018). Evaluating an e-mental health program (“deprexis”) as adjunctive treatment tool in psychotherapy for depression: Results of a pragmatic randomized controlled trial. *Journal of Affective Disorders*, 227, 455–462. <https://doi.org/10.1016/j.jad.2017.11.021>
- Biron, B. (2023, January). *Online mental health company uses ChatGPT to help respond to users in experiment—Raising ethical concerns around healthcare and AI technology*. Business Insider. <https://www.businessinsider.com/company-using-chatgpt-mental-health-support-ethical-issues-2023-1>
- Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research & Practice*, 16(3), 252–260. <https://doi.org/10.1037/h0085885>
- Browne, N. L., Carragher, N. O., O’Toole, A., Pimm, J., Ryder, J., & Thew, G. R. (2022). Evaluating user experiences of SHaRON: An online CBT-based peer support platform. *The Cognitive Behaviour Therapist*, 15, e18. <https://doi.org/10.1017/S1754470X22000150>
- Bubeck, S., Chandrasekaran, V., Eldan, R., Gehrke, J., Horvitz, E., Kamar, E., Lee, P., Lee, Y. T., Li, Y., Lundberg, S., Nori, H., Palangi, H., Ribeiro, M. T., & Zhang, Y. (2023). *Sparks of Artificial General Intelligence: Early experiments with GPT-4*. <https://doi.org/10.48550/ARXIV.2303.12712>
- Cameron, C. (1996). Patient compliance: Recognition of factors involved and suggestions for promoting compliance with therapeutic regimens. *Journal of Advanced Nursing*, 24(2), 244–250. <https://doi.org/10.1046/j.1365-2648.1996.01993.x>
- Carlbring, P., Andersson, G., Cuijpers, P., Riper, H., & Hedman-Lagerlöf, E. (2017). Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: An updated systematic review and meta-analysis. *Cognitive Behaviour Therapy*, 47(1), 1–18. <https://doi.org/10.1080/16506073.2017.1401115>

- Carlbring, P., Hadjistavropoulos, H., Kleiboer, A., & Andersson, G. (2023). A new era in Internet interventions: The advent of Chat-GPT and AI-assisted therapist guidance. *Internet Interventions*, 32, 100621. <https://doi.org/10.1016/j.invent.2023.100621>
- ChatGPT. (n.d.). Retrieved July 18, 2023, from <https://openai.com/blog/chatgpt>
- Ciharova, M., Furukawa, T. A., Efthimiou, O., Karyotaki, E., Miguel, C., Noma, H., Cipriani, A., Riper, H., & Cuijpers, P. (2021). Cognitive restructuring, behavioral activation and cognitive-behavioral therapy in the treatment of adult depression: A network meta-analysis. *Journal of Consulting and Clinical Psychology*, 89(6), 563–574. <https://doi.org/10.1037/ccp0000654>
- Creed, T. A., Salama, L., Slevin, R., Tanana, M., Imel, Z., Narayanan, S., & Atkins, D. C. (2022). Enhancing the quality of cognitive behavioral therapy in community mental health through artificial intelligence generated fidelity feedback (Project AFFECT): A study protocol. *BMC Health Services Research*, 22(1), 1177. <https://doi.org/10.1186/s12913-022-08519-9>
- Cuijpers, P., Berking, M., Andersson, G., Quigley, L., Kleiboer, A., & Dobson, K. S. (2013). A Meta-Analysis of Cognitive-Behavioural Therapy for Adult Depression, Alone and in Comparison with other Treatments. *The Canadian Journal of Psychiatry*, 58(7), 376–385. <https://doi.org/10.1177/070674371305800702>
- Denecke, K., Abd-Alrazaq, A., & Househ, M. (2021). Artificial Intelligence for Chatbots in Mental Health: Opportunities and Challenges. In M. Househ, E. Borycki, & A. Kushniruk (Eds.), *Multiple Perspectives on Artificial Intelligence in Healthcare: Opportunities and Challenges* (pp. 115–128). Springer International Publishing. https://doi.org/10.1007/978-3-030-67303-1_10
- Deprexis. (n.d.). Über deprexis®. *deprexis*. Retrieved May 30, 2023, from <https://de.deprexis.com/sicherheit-wirksamkeit/>
- Doraiswamy, P. M., Blease, C., & Bodner, K. (2020). Artificial intelligence and the future of psychiatry: Insights from a global physician survey. *Artificial Intelligence in Medicine*, 102, 101753. <https://doi.org/10.1016/j.artmed.2019.101753>
- Doukani, A., Free, C., Araya, R., Michelson, D., Cerga-Pashoja, A., & Kakuma, R. (2022). Practitioners' experience of the working alliance in a blended cognitive-behavioural therapy intervention for depression: Qualitative study of barriers and facilitators. *BJPsych Open*, 8(4), e142. <https://doi.org/10.1192/bjo.2022.546>
- Erbe, D., Eichert, H.-C., Riper, H., & Ebert, D. D. (2017). Blending Face-to-Face and Internet-Based Interventions for the Treatment of Mental Disorders in Adults: Systematic Review. *Journal of Medical Internet Research*, 19(9), e6588. <https://doi.org/10.2196/jmir.6588>
- Erhardt, D., Bunyi, J., Dodge-Rice, Z., Neary, M., & Schueller, S. M. (2022). Digitized thought records: A practitioner-focused review of cognitive restructuring apps. *The Cognitive Behaviour Therapist*, 15, e39. <https://doi.org/10.1017/S1754470X22000320>
- Fenn, K., & Byrne, M. (2013). The key principles of cognitive behavioural therapy. *InnovAiT: Education and Inspiration for General Practice*, 6(9), 579–585. <https://doi.org/10.1177/1755738012471029>
- Fitzpatrick, K. K., Darcy, A., & Vierhile, M. (2017). Delivering Cognitive Behavior Therapy to Young Adults With Symptoms of Depression and Anxiety Using a Fully Automated Conversational Agent (Woebot): A Randomized Controlled Trial. *JMIR Mental Health*, 4(2), e19. <https://doi.org/10.2196/mental.7785>
- Fulmer, R., Joerin, A., Gentile, B., Lakerink, L., & Rauws, M. (2018). Using Psychological Artificial Intelligence (Tess) to Relieve Symptoms of Depression and Anxiety: Randomized Controlled Trial. *JMIR Mental Health*, 5(4), e9782. <https://doi.org/10.2196/mental.9782>

- GPT-4. (n.d.). Retrieved April 27, 2023, from <https://openai.com/research/gpt-4>
- Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. *Cognitive Therapy and Research*, 36(5), 427–440. <https://doi.org/10.1007/s10608-012-9476-1>
- Imel, Z. E., Caperton, D. D., Tanana, M., & Atkins, D. C. (2017). Technology-enhanced human interaction in psychotherapy. *Journal of Counseling Psychology*, 64(4), 385–393. <https://doi.org/10.1037/cou0000213>
- Kazdin, A. E. (2017). Addressing the treatment gap: A key challenge for extending evidence-based psychosocial interventions. *Behaviour Research and Therapy*, 88, 7–18. <https://doi.org/10.1016/j.brat.2016.06.004>
- Koffel, E., Kuhn, E., Petsoulis, N., Erbes, C. R., Anders, S., Hoffman, J. E., Ruzek, J. I., & Polusny, M. A. (2018). A randomized controlled pilot study of CBT-I Coach: Feasibility, acceptability, and potential impact of a mobile phone application for patients in cognitive behavioral therapy for insomnia. *Health Informatics Journal*, 24(1), 3–13. <https://doi.org/10.1177/1460458216656472>
- Kohn, R., Ali, A. A., Puac-Polanco, V., Figueroa, C., López-Soto, V., Morgan, K., Saldivia, S., & Vicente, B. (2018). Mental health in the Americas: An overview of the treatment gap. *Revista Panamericana de Salud Pública*, 42. <https://doi.org/10.26633/RPSP.2018.165>
- Koutsouleris, N., Hauser, T. U., Skvortsova, V., & Choudhury, M. D. (2022). From promise to practice: Towards the realisation of AI-informed mental health care. *The Lancet Digital Health*, 4(11), e829–e840. [https://doi.org/10.1016/S2589-7500\(22\)00153-4](https://doi.org/10.1016/S2589-7500(22)00153-4)
- Li, S. H., Achilles, M. R., Spanos, S., Habak, S., Werner-Seidler, A., & O’Dea, B. (2022). A cognitive behavioural therapy smartphone app for adolescent depression and anxiety: Co-design of ClearlyMe. *The Cognitive Behaviour Therapist*, 15, e13. <https://doi.org/10.1017/S1754470X22000095>
- Lipson, S. K., Lattie, E. G., & Eisenberg, D. (2019). Increased Rates of Mental Health Service Utilization by U.S. College Students: 10-Year Population-Level Trends (2007–2017). *Psychiatric Services*, 70(1), 60–63. <https://doi.org/10.1176/appi.ps.201800332>
- Livingston, N. A., Shingleton, R., Heilman, M. E., & Brief, D. (2019). Self-help Smartphone Applications for Alcohol Use, PTSD, Anxiety, and Depression: Addressing the New Research-Practice Gap. *Journal of Technology in Behavioral Science*, 4(2), 139–151. <https://doi.org/10.1007/s41347-019-00099-6>
- Lucas, G. M., Gratch, J., King, A., & Morency, L.-P. (2014). It’s only a computer: Virtual humans increase willingness to disclose. *Computers in Human Behavior*, 37, 94–100. <https://doi.org/10.1016/j.chb.2014.04.043>
- Lungu, A., Jun, J. J., Azarmanesh, O., Leykin, Y., & Chen, C. E.-J. (2020). Blended Care-Cognitive Behavioral Therapy for Depression and Anxiety in Real-World Settings: Pragmatic Retrospective Study. *Journal of Medical Internet Research*, 22(7), e18723. <https://doi.org/10.2196/18723>
- Mathiasen, K., Andersen, T. E., Lichtenstein, M. B., Ehlers, L. H., Riper, H., Kleiboer, A., & Roessler, K. K. (2022). The Clinical Effectiveness of Blended Cognitive Behavioral Therapy Compared With Face-to-Face Cognitive Behavioral Therapy for Adult Depression: Randomized Controlled Noninferiority Trial. *Journal of Medical Internet Research*, 24(9), e36577. <https://doi.org/10.2196/36577>
- Miner, A. S., Shah, N., Bullock, K. D., Arnow, B. A., Bailenson, J., & Hancock, J. (2019). Key Considerations for Incorporating Conversational AI in Psychotherapy. *Frontiers in Psychiatry*, 10. <https://www.frontiersin.org/articles/10.3389/fpsy.2019.00746>
- Mol, M., van Genugten, C., Dozeman, E., van Schaik, D. J. F., Draisma, S., Riper, H., & Smit, J. H. (2020). Why Uptake of Blended Internet-Based Interventions for

- Depression Is Challenging: A Qualitative Study on Therapists' Perspectives. *Journal of Clinical Medicine*, 9(1), Article 1. <https://doi.org/10.3390/jcm9010091>
- Moorey, S. (2010). Cognitive behaviour therapy and psychoanalysis. In A. Lemma & M. Patrick (Eds.), *Off the couch: Contemporary psychoanalytic applications* (pp. 194–211). Routledge/Taylor & Francis Group.
- Murthy, R. S. (2017). National Mental Health Survey of India 2015–2016. *Indian Journal of Psychiatry*, 59(1), 21. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_102_17
- Netter, A.-L., Etzelmueller, A., Kircher, T., Rapley, T., Ebert, D. D., & Brakemeier, E.-L. (2022). Implementing Internet-Based Cognitive Behavioral Therapy in Routine Care: Healthcare Practitioners' Attitude and Perceived Level of Normalization After a Single Information Event. *Journal of Technology in Behavioral Science*, 7(1), 45–56. <https://doi.org/10.1007/s41347-021-00237-z>
- Norton, P. J., & Price, E. C. (2007). A Meta-Analytic Review of Adult Cognitive-Behavioral Treatment Outcome Across the Anxiety Disorders. *Journal of Nervous & Mental Disease*, 195(6), 521–531. <https://doi.org/10.1097/01.nmd.0000253843.70149.9a>
- Olatunji, B. O., Davis, M. L., Powers, M. B., & Smits, J. A. J. (2013). Cognitive-behavioral therapy for obsessive-compulsive disorder: A meta-analysis of treatment outcome and moderators. *Journal of Psychiatric Research*, 47(1), 33–41. <https://doi.org/10.1016/j.jpsychires.2012.08.020>
- Olthuis, J. V., Watt, M. C., Bailey, K., Hayden, J. A., & Stewart, S. H. (2016). Therapist-supported Internet cognitive behavioural therapy for anxiety disorders in adults. *Cochrane Database of Systematic Reviews*, 3. <https://doi.org/10.1002/14651858.CD011565.pub2>
- OpenAI. (n.d.). Retrieved July 19, 2023, from <https://openai.com/>
- Öst, L.-G., Enebrink, P., Finnes, A., Ghaderi, A., Havnen, A., Kvale, G., Salomonsson, S., & Wergeland, G. J. (2022). Cognitive behavior therapy for obsessive-compulsive disorder in routine clinical care: A systematic review and meta-analysis. *Behaviour Research and Therapy*, 159, 104170. <https://doi.org/10.1016/j.brat.2022.104170>
- Pacheco, C. R., & Scheeringa, M. S. (2022). Clinical wisdom in the age of computer apps: A systematic review of four functions that may complement clinical treatment. *The Cognitive Behaviour Therapist*, 15, e40. <https://doi.org/10.1017/S1754470X22000368>
- Rasing, S. P. A., Stikkelbroek, Y. A. J., den Hollander, W., Okorn, A., & Bodden, D. H. M. (2021). Long Term Outcomes of Blended CBT Compared to Face-to-Face CBT and Treatment as Usual for Adolescents with Depressive Disorders: Analyses at 12 Months Post-Treatment. *Social Sciences*, 10(10), Article 10. <https://doi.org/10.3390/socsci10100373>
- Rasing, S. P. A., Stikkelbroek, Y. A. J., den Hollander, W., Riper, H., Deković, M., Nauta, M. H., Creemers, D. H. M., Immink, M. C. P., Spuij, M., & Bodden, D. H. M. (2021). Pragmatic Quasi-Experimental Controlled Trial Evaluating the Outcomes of Blended CBT Compared to Face-to-Face CBT and Treatment as Usual for Adolescents with Depressive Disorders. *International Journal of Environmental Research and Public Health*, 18(6), Article 6. <https://doi.org/10.3390/ijerph18063102>
- Raven, D., Jörg, F., Visser, E., Oldehinkel, A. J., & Schoevers, R. A. (2017). Time-to-treatment of mental disorders in a community sample of Dutch adolescents. A TRAILS study. *Epidemiology and Psychiatric Sciences*, 26(2), 177–188. <https://doi.org/10.1017/S2045796016000226>
- Richter, L. E., Machleit-Ebner, A., Scherbaum, N., & Bonnet, U. (2022). How Effective is a Web-Based Mental Health Intervention (Deprexis) in the Treatment of Moderate and Major Depressive Disorders when started during Routine Psychiatric Inpatient Treatment as an Adjunct Therapy? A Pragmatic Parallel-Group Randomized

- Controlled Trial. *Fortschritte der Neurologie · Psychiatrie*, a-1826-2888.
<https://doi.org/10.1055/a-1826-2888>
- Rogers, C. R. (2004). *On becoming a person: A therapist's view of psychotherapy*. Constable.
- Rosenthal, R., & Fode, K. L. (1963). The effect of experimenter bias on the performance of the albino rat. *Behavioral Science*, 8(3), 183–189.
<https://doi.org/10.1002/bs.3830080302>
- Rozental, A., Boettcher, J., Andersson, G., Schmidt, B., & Carlbring, P. (2015). Negative Effects of Internet Interventions: A Qualitative Content Analysis of Patients' Experiences with Treatments Delivered Online. *Cognitive Behaviour Therapy*, 44(3), 223–236. <https://doi.org/10.1080/16506073.2015.1008033>
- Russell, S. J., & Norvig, P. (2021). *Artificial intelligence: A modern approach* (Fourth edition). Pearson.
- Sarkhel, S., Singh, O., & Arora, M. (2020). Clinical Practice Guidelines for Psychoeducation in Psychiatric Disorders General Principles of Psychoeducation. *Indian Journal of Psychiatry*, 62(8), 319. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_780_19
- Schuster, R., Pokorny, R., Berger, T., Topooco, N., & Laireiter, A.-R. (2018). The Advantages and Disadvantages of Online and Blended Therapy: Survey Study Amongst Licensed Psychotherapists in Austria. *Journal of Medical Internet Research*, 20(12), e11007. <https://doi.org/10.2196/11007>
- Schuster, R., Topooco, N., Keller, A., Radvogin, E., & Laireiter, A.-R. (2020). Advantages and disadvantages of online and blended therapy: Replication and extension of findings on psychotherapists' appraisals. *Internet Interventions*, 21, 100326. <https://doi.org/10.1016/j.invent.2020.100326>
- Sebri, V., Pizzoli, S., Savioni, L., & Triberti, S. (2021). Artificial Intelligence in mental health: Professionals' attitudes towards AI as a psychotherapist. *Annual Review of CyberTherapy and Telemedicine*, 18.
- Staack, R., Drüge, M., Albisser, S., & Watzke, B. (2022). Acceptance of E-mental health interventions and its determinants among psychotherapists-in-training during the first phase of COVID-19. *Internet Interventions*, 29, 100555. <https://doi.org/10.1016/j.invent.2022.100555>
- Sweeney, C., Potts, C., Ennis, E., Bond, R., Mulvenna, M. D., O'Neill, S., Malcolm, M., Kuosmanen, L., Kostenius, C., Vakaloudis, A., Mcconvey, G., Turkington, R., Hanna, D., Nieminen, H., Vartiainen, A.-K., Robertson, A., & Mctear, M. F. (2021). Can Chatbots Help Support a Person's Mental Health? Perceptions and Views from Mental Healthcare Professionals and Experts. *ACM Transactions on Computing for Healthcare*, 2(3), 1–15. <https://doi.org/10.1145/3453175>
- Thew, G. R., Rozental, A., & Hadjistavropoulos, H. D. (2022). Advances in digital CBT: Where are we now, and where next? *The Cognitive Behaviour Therapist*, 15, e44. <https://doi.org/10.1017/S1754470X22000423>
- Titzler, I., Saruhanjan, K., Berking, M., Riper, H., & Ebert, D. D. (2018). Barriers and facilitators for the implementation of blended psychotherapy for depression: A qualitative pilot study of therapists' perspective. *Internet Interventions*, 12, 150–164. <https://doi.org/10.1016/j.invent.2018.01.002>
- Topooco, N., Riper, H., Araya, R., Berking, M., Brunn, M., Chevreul, K., Cieslak, R., Ebert, D. D., Etchmendy, E., Herrero, R., Kleiboer, A., Krieger, T., García-Palacios, A., Cerga-Pashoja, A., Smoktunowicz, E., Urech, A., Vis, C., & Andersson, G. (2017). Attitudes towards digital treatment for depression: A European stakeholder survey. *Internet Interventions*, 8, 1–9. <https://doi.org/10.1016/j.invent.2017.01.001>

- Tzur Bitan, D., Shalev, S., & Abayed, S. (2022). Therapists' Views of Mechanisms of Change in Psychotherapy: A Mixed-Method Approach. *Frontiers in Psychology*, 13. <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.565800>
- Vernmark, K., Hesser, H., Topooco, N., Berger, T., Riper, H., Luuk, L., Backlund, L., Carlbring, P., & Andersson, G. (2019). Working alliance as a predictor of change in depression during blended cognitive behaviour therapy. *Cognitive Behaviour Therapy*, 48(4), 285–299. <https://doi.org/10.1080/16506073.2018.1533577>
- Vis, C., Mol, M., Kleiboer, A., Bührmann, L., Finch, T., Smit, J., & Riper, H. (2018). Improving Implementation of eMental Health for Mood Disorders in Routine Practice: Systematic Review of Barriers and Facilitating Factors. *JMIR Mental Health*, 5(1), e9769. <https://doi.org/10.2196/mental.9769>
- World Economic Forum. (2019). *World Economic Forum Global Future Council on Neurotechnologies. Empowering 8 billion minds: Enabling better mental health for all via the ethical adoption of technologies* (pp. 1–27). <https://www.weforum.org/whitepapers/empowering-8-billion-minds-enabling-better-mental-health-for-all-via-the-ethical-adoption-of-technologies/>

Appendix 1

Standardized Message for Survey Participation

Original: German version

Guten Tag,

mit dieser E-Mail laden wir Sie herzlich dazu ein, an unserer Umfrage zum Thema "Integration Künstlicher Intelligenz in die psychotherapeutische Praxis" teilzunehmen.

Ziel ist es, anlässlich der aktuellen technologischen Entwicklungen ein Meinungsbild von praktizierenden und angehenden Psychotherapeut*innen in Deutschland zu erhalten. Nur wenn wir Psychotherapeut*innen uns aktiv an den laufenden Debatten beteiligen, können wir den Einsatz von künstlicher Intelligenz nach unseren Bedarfen gestalten.

Die Studie wird im Rahmen eines Forschungsprojektes von Frau Sasha Posthumus (Universität Stockholm) durchgeführt, mit freundlicher Unterstützung von Prof. Per Carlbring (Universität Stockholm), Prof. Dr. Thomas Berger (Universität Bern) und Prof. Dr. Johanna Böttcher (Psychologische Hochschule Berlin).

Ihre Teilnahme ist ein wichtiger Beitrag zum Verständnis dessen, wie praktizierende und angehende Psychotherapeut*innen in Deutschland verschiedene Aspekte der Integration künstlicher Intelligenz in die psychotherapeutische Praxis wahrnehmen und bewerten.

Die Umfrage dauert maximal 15 Minuten und wir freuen uns sehr, wenn Sie sich die Zeit nehmen und an unserer Umfrage teilnehmen.

Hierzu folgen Sie bitte diesem Link: <https://www.umfrageonline.com/ki-psychotherapie>

Mit besten Grüßen
Sasha Posthumus

Translation: English version

Hello,

with this email we would like to invite you to participate in our survey on the topic "Integration of Artificial Intelligence into Psychotherapeutic Practice".

In the advent of the current technological developments, our aim is to receive insight about the opinions of practicing and prospective psychotherapists in Germany. Only if we psychotherapists actively participate in the ongoing debates, we can shape the use of artificial intelligence according to our needs.

The study is conducted as part of a research project by Ms. Sasha Posthumus (Stockholm University), with the kind support of Prof. Per Carlbring (Stockholm University), Prof. Dr. Thomas Berger (University of Bern) and Prof. Dr. Johanna Böttcher (Psychologische Hochschule Berlin).

Your participation is an important contribution to understanding how practicing and prospective psychotherapists in Germany perceive and evaluate different aspects of the integration of artificial intelligence into psychotherapeutic practice.

The survey will take a maximum of 15 minutes and we would be very pleased if you take the time to participate in our survey.

To do so, please follow this link: <https://www.umfrageonline.com/ki-psychotherapie>

With best regards
Sasha Posthumus

Appendix 2

Complete survey

Original: German version



Stockholms
universitet

u^b UNIVERSITÄT
BERN



Psychologische
Hochschule Berlin

Seite 1

Guten Tag und vielen Dank, dass Sie sich die Zeit nehmen, an dieser Studie teilzunehmen.

Ihre Teilnahme ist ein wichtiger Beitrag zum Verständnis dessen, wie praktizierende und angehende Psychotherapeut*innen in Deutschland verschiedene Aspekte der Integration von Künstlicher Intelligenz (KI) in die psychotherapeutische Praxis wahrnehmen und bewerten.

1. Zweck der Studie

Die **Universität Stockholm** führt im Rahmen eines Forschungsprojekts zur KI in die psychotherapeutische Praxis eine Datenerhebung durch. Im Rahmen des Forschungsprojekts soll untersucht werden, wie verschiedene Bereiche und Aspekte der Implementierung von KI in die psychotherapeutische Praxis von praktizierenden und angehenden Psychotherapeut*innen in Deutschland wahrgenommen und bewertet werden. Ziel ist es, zusätzlich zu Effektivitätsstudien ein Meinungsbild von Psychotherapeut*innen zu erhalten, um die Diskrepanz zwischen Forschung und Praxis zu adressieren.

2. Teilnahmebedingungen

- Das Ausfüllen der Online-Umfrage dauert in etwa 15 Minuten.
- Die Teilnahme an der Studie ist mit keinerlei Risiko verbunden.
- Die Teilnahme an der Studie erfolgt anonym.
- Die Teilnahme an der Studie erfolgt freiwillig und kann jederzeit beendet werden. Falls Sie sich dazu entscheiden, an der Umfrage nicht teilzunehmen oder Ihre Teilnahme abzubrechen, so müssen Sie dies nicht begründen.

3. Datenverwertung

- Es gibt keine Möglichkeit, eine einzelne Person in der Forschungsdatendatei zu identifizieren.
- Die statistische Verarbeitung der Daten erfolgt so, dass es nicht möglich ist, individuelle Antworten zu erkennen.
- Die Ergebnisse werden ausschließlich auf Gruppenebene präsentiert und es können keine individuellen Antworten identifiziert werden.
- Die Ergebnisse des Forschungsprojekts werden im Rahmen einer wissenschaftlichen Abschlussarbeit veröffentlicht. Eine Veröffentlichung in einer wissenschaftlichen Fachzeitschrift ist vorgesehen.

4. Kontakt

Die für das Projekt verantwortliche Person ist Frau Sasha Posthumus, Universität Stockholm, +49 176 61499793, sapo3191@psychology.su.se.

Die Umfrage wird mit freundlicher Unterstützung von Prof. Per Carlbring (Universität Stockholm), Prof. Dr. Thomas Berger (Universität Bern) und Prof. Dr. Johanna Böttcher (Psychologische Hochschule Berlin) durchgeführt.

5. Einverständnis

Mit dem Klicken auf "Weiter" bestätigen Sie, dass Sie die oben angeführten Informationen gelesen und verstanden haben und diese akzeptieren.

Teil 1: Demografische Informationen

Wie alt sind Sie? *

Bitte geben Sie Ihr Alter in Jahren an

Welchem Geschlecht fühlen Sie sich zugehörig? *

Nur eine Antwort ist möglich

- ☐ männlich
- ☐ weiblich
- ☐ divers
- ☐ keine Angabe

Welcher Nationalität gehören Sie an? *

- ☐ deutsch
- ☐ andere
- ☐ keine Angabe

Welche der folgenden Aussagen trifft auf Sie zu? *

- ☐ Ich befinde mich in Psychotherapie-Ausbildung
- ☐ Ich bin promoviert im Fachbereich der Psychologie
- ☐ Ich bin approbierte*r Psychotherapeut*in und habe folgende Berufserfahrung in Jahren:

Welchem psychotherapeutischen Verfahren gehören Sie an? *

Mehrfachauswahl möglich.

- ☐ Kognitive Verhaltenstherapie
- ☐ Tiefenpsychologisch orientierte Psychotherapie
- ☐ Psychoanalyse
- ☐ Systemische Psychotherapie

Mit welchen Störungsbildern arbeiten Sie hauptsächlich in Ihrer psychotherapeutischen Arbeit? *

Mehrfachantwort möglich.

- ☐ Angststörungen
- ☐ Disruptive Verhaltensstörungen
- ☐ Essstörungen
- ☐ Glücksspielsucht
- ☐ Affektive Störungen
- ☐ Neuropsychiatrische Störungen ADHS und Autismus
- ☐ Persönlichkeitsstörungen
- ☐ Psychotische Störungen
- ☐ Psychosomatische Störungen
- ☐ Substanzmissbrauch
- ☐ Andere Störungsbilder:

Arbeiten Sie in einer städtischen oder ländlichen Praxisumgebung? *

- ☐ städtisch
- ☐ ländlich
- ☐ keine Angabe

Ihre Erfahrung mit digitalen Interventionen

Wie vertraut sind Sie mit vorhandener Literatur zur Implementierung von KI im Bereich der mentalen Gesundheitsversorgung? *

- ☐ Nicht vertraut
- ☐ Eher unvertraut
- ☐ Eher vertraut
- ☐ Sehr vertraut

Wie viel Erfahrung haben Sie mit der Durchführung von online Psychotherapie (über z.B. Zoom)? *

- ☐ Keine
- ☐ Ein wenig
- ☐ Viel
- ☐ Sehr viel

Wie viel Erfahrung haben Sie mit der (ergänzenden) Nutzung von Apps in Ihrer eigenen psychotherapeutischen Arbeit? *

- ☐ Keine
- ☐ Ein wenig
- ☐ Viel
- ☐ Sehr viel

Informationstext

Bitte lesen Sie den Informationstext sorgfältig! Er bildet die Grundlage für die verbleibende Umfrage.

Digitale Interventionen in Form von Online-Programmen oder „Apps“ bieten neue Möglichkeiten in der mentalen Gesundheitsversorgung. Sie können beispielsweise genutzt werden, um die langen Wartezeiten für einen Therapieplatz zu überbrücken. Es gibt jedoch auch die Möglichkeit, digitale Interventionen mit der traditionellen Psychotherapie zu verbinden. So können Patient*innen in regelmäßigen Abständen ihre Psychotherapiesitzungen wahrnehmen und zwischendurch über die digitalen Anwendungen Erinnerungen für ihre Hausaufgaben erhalten, Erhebungen zu ihren Symptomen ausfüllen, oder mit einem Chatbot über akute Fragen, Bedürfnisse oder Schwierigkeiten kommunizieren. Künstliche Intelligenz (KI) spielt dabei eine wesentliche Rolle.

KI befasst sich mit der Entwicklung intelligenter Maschinen, Systeme und Anwendungen, welche Aufgaben ausführen können, die normalerweise menschliche Intelligenz erfordern. Dazu gehört z.B. Lernen, Problemlösung, Entscheidungsfindung, Spracherkennung, Verarbeitung natürlicher Sprache und affective computing. KI übersteigt somit die Möglichkeiten der herkömmlichen Programmierung. In einer kombinierenden Anwendung von Psychotherapie und KI soll es nicht darum gehen, Psychotherapeut*innen durch eine KI zu ersetzen. Die Psychotherapie wird weiterhin von einem Menschen durchgeführt. Digitale Interventionen, welche KI verwenden, können jedoch Aufgaben wie Diagnostik, die Erstellung von individuellen Behandlungsplänen, Unterstützung zwischen den Sitzungen und Datenanalysen übernehmen.

In der folgenden Umfrage beziehen wir uns auf diese **ergänzende Verwendung** von KI. Bitte berücksichtigen Sie dies beim Ausfüllen der Umfrage.

Teil 3: Einstellung zur Integration von KI

Im Folgenden würden wir gerne mehr über Ihre Einstellungen gegenüber den Entwicklungen von KI in der Psychotherapie erfahren. Bitte geben Sie hierfür an, wie sehr Sie den folgenden Aussagen zustimmen. *

	Nein, überhaupt nicht	Nicht so sehr	Ich bin mir nicht sicher	Ein wenig	Ja, sehr
Ich bin neugierig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin skeptisch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin begeistert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin besorgt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wie gewillt sind Sie, KI ergänzend in Ihre eigene praktische Tätigkeit zu integrieren? *

- ☐ Überhaupt nicht
- ☐ Nicht so sehr
- ☐ Ich habe gemischte Gefühle
- ☐ Ich ziehe es in Erwägung
- ☐ Sehr gewillt

Teil 4: Bewertung von KI in der Psychotherapie

Wie bewerten Sie die folgenden potenziellen Vorteile der Implementierung von KI in die Psychotherapie? Bitte geben Sie an, welche Aussage Ihrer Einschätzung am meisten entspricht. *

	Nicht relevant	Ich bin unsicher, was ich davon halten soll	Positiv, aber nicht wirklich relevant	Positiv und relevant	Positiv und sehr relevant
Erhöhte Patienten-Compliance durch automatisierte Erhebungen, Verlaufskontrollen und Erinnerungshinweise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verbesserung der Erhebungen durch Reduktion menschlicher Verzerrungen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verbesserung der Erhebungen durch Reduktion sozialer Erwünschtheit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Klare Rückmeldung über die therapeutische Wirksamkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexible Strukturierung von Prozessen durch automatisierte Symptomverfolgung und adaptive Behandlungspläne	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verringerung von Gefühlen der Isolation zwischen den Sitzungen (auf Seite der Patient*innen) durch die ständige Verfügbarkeit von Informationen, Instruktionen und Chatbots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Automatisierte Nachverfolgung reduziert das Risiko, zu Beginn der Behandlung besprochene Themen zu vergessen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sicherstellung der Durchführung von Psychotherapie nach evidenzbasierten Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Erhöhung der Kapazität der Psychotherapeut*innen durch Automatisierung gewisser Prozesse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wie bewerten Sie die folgenden möglichen Nachteile der Implementierung von KI in die Psychotherapie? Bitte geben Sie an, welche Aussage Ihrer Einschätzung am meisten entspricht. *

	Keine Bedenken	Ich bin unsicher, was ich davon halten soll	Negativ, aber nicht problematisch	Negativ und sehr problematisch
Datenschutz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technische Schwierigkeiten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keine menschliche persönliche Erfahrung (z.B. des Chatbots)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keine menschliche Empathie und Emotionen (z.B. des Chatbots)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keine Vermittlung von nonverbalen Aspekten in der textbasierten Kommunikation (z.B. mit einem Chatbot)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risiko, wichtige Erhebungen nicht durchzuführen (z.B. bei Komorbiditäten)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risiko von unangemessenen Therapievor schlägen (z.B. bei Missverständnissen oder akut kritischen Situationen)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risiko einer unverhältnismäßigen Abhängigkeit der Patient*innen von der KI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Den Therapeut*innen werden relevante Bestandteile ihrer Arbeit genommen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sie haben den Großteil der Fragen bereits beantwortet!



Teil 4: Bewertung von KI in der Psychotherapie

Was denken Sie über die Übernahme der folgenden Aufgaben durch KI? Bitte geben Sie an, welche Aussage Ihrer Beurteilung am besten entspricht . *

	Ich sehe nur Nachteile	Ich sehe hauptsächlich Nachteile	Ich sehe eher Nachteile	Ich kann mich nicht entscheiden, ob Vorteile oder Nachteile für mich überwiegen	Ich sehe eher Vorteile	Ich sehe hauptsächlich Vorteile	Ich sehe nur Vorteile
Diagnostik	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Erhebung von z. B. Ausgangssymptomen, Veränderungen der Symptome, Behandlungstreue, Behandlungsergebnissen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Automatische Warnmeldungen, wenn wiederholte Erhebungen auf einen negativen Veränderungsverlauf hindeuten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Darstellung und Visualisierung von Erhebungen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vorhersage des Therapieerfolgs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Behandlungsplanung und schrittweise Anpassung von Behandlungsvorschlägen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bereitstellung von individuell angepasster Psychoedukation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bereitstellung von Anweisungen und Erinnerungshilfen für Interventionen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unterstützung bei unmittelbarem Hilfebedarf zwischen den Sitzungen durch einen Chatbot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Welche der folgenden Aufgaben könnten Sie sich vorstellen, in Ihrer eigenen praktischen Tätigkeit an eine KI zu übergeben? Eine Mehrfachauswahl ist möglich. *

- ☐ Diagnostik
- ☐ Erhebung von z. B. Ausgangssymptomen, Veränderungen der Symptome, Behandlungstreue, Behandlungsergebnissen
- ☐ Automatische Warnmeldungen, wenn wiederholte Erhebungen auf einen negativen Veränderungsverlauf hindeuten
- ☐ Darstellung und Visualisierung von Erhebungen
- ☐ Vorhersage des Therapieerfolgs
- ☐ Behandlungsplanung und schrittweise Anpassung von Behandlungsvorschlägen
- ☐ Bereitstellung von individuell angepasster Psychoedukation
- ☐ Bereitstellung von Anweisungen und Erinnerungshilfen für Interventionen
- ☐ Unterstützung bei unmittelbarem Hilfebedarf zwischen den Sitzungen durch einen Chatbot
- ☐ Keine

Für welche der folgenden psychotherapeutischen Verfahren empfinden Sie die Integration von KI als geeignet? *

Mehrfachauswahl möglich.

- ☐ Kognitive Verhaltenstherapie
- ☐ Tiefenpsychologisch orientierte Psychotherapie
- ☐ Psychoanalyse
- ☐ Systemische Psychotherapie
- ☐ Keins

Teil 4: Bewertung von KI in der Psychotherapie

Im Folgenden nennen wir Ihnen drei therapeutische Aspekte. Was denken Sie, wie diese sich durch den Einsatz von KI und im Vergleich zu traditioneller Psychotherapie verändern? *

	geringer / schwächer	vergleichbar sein	erhöht / stärker	keine Angabe
Die therapeutische Allianz wird...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Therapie-Compliance wird...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effektivität im Sinne von Symptomverbesserung wird...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Welche Gefühle haben Sie gegenüber möglichen Veränderungen Ihrer eigenen therapeutischen Rolle in Hinblick auf die Entwicklungen von KI? *

Bitte geben Sie an, welche Aussage am besten auf Sie zutrifft.

- ☐ Ich bin sehr besorgt
- ☐ Ich bin eher besorgt
- ☐ Ich habe gemischte Gefühle
- ☐ Ich bin eher enthusiastisch
- ☐ Ich bin sehr enthusiastisch
- ☐ Ich glaube nicht, dass die berufliche Rolle betroffen sein wird

Teil 5: Wiederholte Abfrage Ihrer Einstellungen

Im Folgenden würden wir gerne erneut Ihre Einstellungen gegenüber den Entwicklungen von KI in der Psychotherapie erheben. Bitte geben Sie hierfür an, wie sehr Sie den folgenden Aussagen zustimmen. *

	Nein, überhaupt nicht	Nicht so sehr	Ich bin mir nicht sicher	Ein wenig	Ja, sehr
Ich bin neugierig	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin skeptisch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin begeistert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ich bin besorgt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wie gewillt sind Sie, KI ergänzend in Ihre eigene praktische Tätigkeit zu integrieren? *

- ☐ Überhaupt nicht
- ☐ Nicht so sehr
- ☐ Ich habe gemischte Gefühle
- ☐ Ich ziehe es in Erwägung
- ☐ Sehr gewillt

Teil 6: Abschlussfragen

Waren die Fragen verständlich gestellt, sodass Sie alle sorgfältig beantworten konnten? *

- ☐ ja
- ☐ nein

Welche weiteren Gedanken machen Sie sich zur Integration von KI in die Psychotherapie? Wir freuen uns, wenn Sie uns diese noch mitteilen würden.

Die Umfrage ist nun beendet. Herzlichen Dank für Ihre Teilnahme!

Falls durch die Umfrage bei Ihnen Fragen aufgekomen sind oder Sie Interesse an den Ergebnissen haben, wenden Sie sich gerne an Frau Sasha Posthumus:
sapo3191@psychology.su.se

Das Fenster kann nun geschlossen werden.

Good afternoon and thank you for taking the time to participate in this study.

Your participation is an important contribution to the understanding of how practicing and prospective psychotherapists in Germany perceive and evaluate different aspects of the integration of artificial intelligence (AI) into psychotherapeutic practice.

1. Purpose of the study

Stockholm University is conducting a data collection as part of a research project on AI in psychotherapeutic practice. In the context of this Research Project, we investigate how different aspects of the implementation of AI into psychotherapeutic practice are perceived by practicing and prospective psychotherapists in Germany. The aim is, in addition to effectiveness studies, to obtain opinions of psychotherapists, in order to address the research-practice gap.

2. Conditions of participation

The online survey will take approximately 15 minutes to complete.

There is no risk associated with participating in the study.

Participation in the study is anonymous.

Participation in the study is voluntary and can be terminated at any time. If you decide not to participate in the survey or to discontinue your participation, you must not justify this.

3. Data

There is no possibility to identify an individual person in the research data file.

The statistical processing of the data is done in such a way that it is not possible to identify individual responses.

The results of the research project will be published as part of a final thesis paper. A publication in a scientific journal is planned.

4. Contact person

The person responsible for the project is Ms. Sasha Posthumus, Stockholm University, +49 176 61499793, sapo3191@psychology.su.se.

The survey is kindly supported by Prof. Per Carlbring (Stockholm University), Prof. Dr. Thomas Berger (University of Bern) and Prof. Dr. Johanna Böttcher (Berlin University of Psychology) are conducting the survey.

5. Consent

By clicking "Continue", you confirm that you have read, understood, and accepted the above information.

Part 1: Demographic Information

What is your age? [Free space for numbers]

What is your gender? [male / female / diverse / no answer]

What is your nationality? [german / other / no answer]

Which statement fits you? [I am in the approbation training / I have a PhD in the field of psychology / I am a licensed psychotherapist and have the following years of experience: free space for numbers]

Which psychotherapeutic school do you belong to? [CBT / Depth psychologically oriented Psychotherapy / Psychoanalysis / Systemic Psychotherapy]

Which disorders do you mainly work with in your clinical practice? [Anxiety disorders / Disruptive behavior disorders / Eating disorders / Gambling disorder / Mood disorders / Neuropsychiatric disorders ADHD and Autism / Personality disorders / Psychotic disorders / Psychosomatic disorders / Substance use disorders / Other disorders]

Do you work in an urban or a rural practice setting? [urban / rural / no answer]

Part 2: Your experience with digital interventions

How familiar are you with the extant literature on AI implementation into the field of mental health care? [Not familiar / Rather unfamiliar / Rather familiar / Very familiar]

How much experience do you have with online psychotherapy (e.g. via Zoom)? [None / Some / Much / Very much]

How much experience do you have with the adjunct use of apps in your own therapeutic practice? [None / Some / Much / Very much]

Information text

Please read the information text carefully! It forms the basis for the remaining survey. Digital interventions in the form of online programs or "apps" offer new opportunities in mental health care. They can be used, for example, to bridge long waiting times for a therapy place. There is also the possibility of combining digital interventions with traditional psychotherapy. Thereby, patients can attend their psychotherapy sessions at regular intervals and, in between, use the digital applications to receive reminders for their homework, fill out surveys about their symptoms, or communicate with a chatbot about acute questions, needs, or difficulties. Artificial intelligence (AI) plays an essential role in this.

AI is concerned with the development of intelligent machines, systems and applications that can perform tasks that normally require human intelligence. This includes, for example, learning, problem solving, decision making, speech recognition, natural language processing, and affective computing. AI thus exceeds the capabilities of conventional programming. In a combined application of psychotherapy and AI, the goal is not to replace psychotherapists with AI. Psychotherapy will continue to be performed by a human. However, digital interventions that use AI can perform tasks such as diagnostics, creating individualized treatment plans, providing support between sessions, and analyzing data.

In the following survey, we refer to this **adjunct use** of AI. Please keep this in mind when completing the survey.

Part 3: Attitudes towards AI-Integration

In the following, we would like to learn more about your attitudes towards the developments of AI in psychotherapy. Please indicate how much you agree with the following statements. [No, not at all / Not that much / I am not sure / A little bit / Yes, very much]

I am curious

I am skeptical

I am enthusiastic

I am concerned

How willing are you to adjunctively integrate AI in your own practice? [Not at all / Not that much / I have mixed feelings / I am considering / Very willing]

Part 4: Rating of tasks and implications of AI in CBT (Predictors)

How would you rate the following potential advantages of implementing AI in psychotherapy? Please indicate, which statement matches your attitude best. [Not relevant / I am unsure what to think / Positive, but not really relevant / Positive and relevant / Positive and very relevant]

- Increase compliance of patients by reminders and thorough progress tracking.
- Improve assessments by reduced humane bias.
- Improve assessments by reduced social desirability.
- Clear feedback about therapists' effectiveness.
- Flexible therapy processes through automated symptom tracking and adaptative treatment planning.
- Reduce clients' feelings of isolation between sessions through all-time availability of information, instructions, and chatbots.
- Automated tracking and reminders reduce risk of forgetting topics.
- Ensure conduct of psychotherapy according to evidence-based standards.
- Increase clinicians' capacity through automatization of certain processes.

How would you rate the following potential disadvantages of implementing AI in psychotherapy? Please indicate, which statement matches your attitude best. [No concern / I am unsure what to think / Negative, but not problematic / Negative and very problematic]

- Data security
- Technical issues
- No human-like personal experience
- No human-like empathy and emotions
- No conveyance of non-verbal aspects in text-based communication with a chatbot
- Risk of missing important assessments
- Risk of inappropriate therapeutic suggestions (e.g. in case of a misunderstanding or critical situations)
- Risk of clients disproportionate dependency on AI
- Takes away essential parts of the clinicians job role

What do you think about the assumption of the following tasks by AI? Please indicate, which statement matches your thoughts best. [I see only disadvantages / I see mainly disadvantages / I see rather disadvantages / I cant decide whether advantages or disadvantages overweigh / I see rather advantages / I see mainly advantages / I see only advantages]

- Diagnostics
- Assessments of e.g. baseline symptoms, change in symptoms, treatment outcomes
- Automated alerts when repeated assessments indicate a negative change trajectory
- Presentation and visualization of assessments
- Prediction of treatment response
- Treatment planning and successive adaption of treatment suggestions
- Provide psychoeducation
- Provide instructions and reminders for interventions
- Provide support in need of immediate assistance between sessions via a chatbot

Which of the following tasks could you imagine handing over to an AI in your own practice? [Select them by clicking, tasks as presented above]

For which of the following psychotherapeutic schools do you perceive the integration of AI to be suitable? [CBT / Depth psychologically oriented Psychotherapy / Psychoanalysis / Systemic Psychotherapy]

Part 4: Rating of implications of AI in psychotherapy

In the following, we will mention three therapeutical aspects. How do you think these will change as a result of the use of AI and in comparison with traditional psychotherapy? [reduce, weaken / be comparable / increase, strengthen / no answer]

The therapeutic alliance will...

The therapy compliance will...

The effectiveness in terms of symptom reduction will....

What feelings do you have towards potential changes of your professional role if adjunctly implementing AI? [I am very concerned / I am rather concerned / I have mixed feelings / I am rather enthusiastic / I am very enthusiastic / I don't think the professional role will be affected]

Part 5: Repeated assessment of your attitudes

In the following, we would like to repeatedly assess your attitudes towards the developments of AI in psychotherapy. Please indicate how much you agree with the following statements.

[No, not at all / Not that much / I am not sure / A little bit / Yes, very much]

I am curious

I am skeptical

I am enthusiastic

I am concerned

How willing are you to adjunctively integrate AI in your own practice? [Not at all / Not that much / I have mixed feelings / I am considering / Very willing]

Part 6: Final question

Were the questions understandable so you could answer them thoroughly? [Yes / No]

What other thoughts do you have about integrating AI into psychotherapy? We would be happy if you would share them with us. [Optional text space]