

**The working alliance goes online:
A scoping review of text-based internet psychotherapy**

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Abstract

Introduction: Text-based internet-based psychotherapy has been increasingly researched throughout the last 25 years, yet investigating the working alliance and its importance for treatments of mental disorders online has often been neglected. By exploring the database on this subject the present scoping review intended to give an orientation of the current research basis on the working alliance in internet-based psychotherapy. **Methods:** Literature was collected searching four different databases: Scopus, Web of Science, PsycInfo and Wiley Online Library. A total of 16 studies were selected after an extensive search and analysed to explore study characteristics, measurements of the working alliance and associations of the alliance with treatment outcome. Data was extracted, summarized and presented in tables to give an overview of the findings. **Results:** A great variety of patient groups targeted by the interventions was found in the selected articles on the working alliance. Modalities used to deliver treatment were mostly internet-based cognitive therapy (ICBT) and specifically tailored platforms for distinct patient groups (e.g. PTSD). Most treatments solely made use of asynchronous communication, such as mails and integrated messaging functions, which were mostly used to give feedback on tasks. Almost all of the reviewed interventions used a cognitive behaviour approach. For measurements some form of the Working Alliance Inventory was used in all but one study. Measurements of studies using the WAI or WAI-short form generally indicated a positive working alliance with a mean score of 5.78 and a standard deviation of 0.83. Relationships of treatment outcomes and measurements of the working alliance were varied, with some reporting low to moderate associations ($n = 8$) and others reporting none ($n = 4$). **Discussion:** The overall high measurements of the working alliance in current literature indicate that good working alliances can be established between therapist and patient in internet-based treatment with only text-based communication. Findings are mostly consistent with those of an older review from 2012, but studies including the working alliance as a measured construct in their investigation seem to have slightly increased and the methodology seems to have improved. The relationship of the working alliance with outcome measures of treatment seems to suggest limited importance of the alliance for treatment outcomes, but meta-analyses need to evaluate this further.

Keywords: Working alliance, Internet-based psychotherapy, Mental Health,

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Introduction

This review concerns the psychotherapeutic working alliance and how the concept changes in an increasingly technological environment. With the use of internet-based psychotherapy becoming more common in the mental health sector, therapists often raise concern as to whether a working alliance can develop online and whether it can be favourable for the therapeutic work (Berger, 2017). While many consider the relationship between therapist and patient to be a central component of successful psychotherapy, its role online is questioned and not fully understood among both researchers and practitioners. This scoping review aims to map out and synthesize the main findings concerning the working alliance in text-based internet psychotherapy in order to provide an up-to-date and extensive overview of the growing knowledge base of this topic. The scoping review examines platforms and media that are used to establish a working alliance in internet psychotherapy, patient groups and types of therapists that were involved in research concerning the working alliance, approaches used for the treatment, the quality of the working alliance in research, and reported associations between the working alliance and outcomes. The review, further, intends to evaluate possible weaknesses of past research on the working alliance and gaps in the literature in order to guide future research and emphasize possibilities for future investigation. For the present paper the term ‘working alliance’ (Bordin, 1994) was chosen to describe the therapeutic relationship between therapist and patient, as it is mostly used in common practice today to refer to the concept in psychotherapy.

The working alliance

The term working alliance refers to collaborative aspects of the relationship between therapist and client in therapy. Discussions concerning this relationship and related concepts date back to the birth of psychotherapy and Freud (1927) who already recognized the importance of this special bond and its impact on psychoanalytical and therapeutic processes and outcomes. While the focus was primarily on the unconscious and its reflection in the therapeutic relationship during these early years of psychotherapy, the concept evolved with the discipline. Great developments in research on the therapeutic working alliance can be traced to Rogers who dedicated investigations to the facilitative conditions offered by therapists (empathy, genuineness, and unconditional positive regard) (Rogers, Gendlin, Kiesler, & Truax, 1967). Luborsky (1976) further investigated the underlying processes of the relationship’s development and defined two phases in which the client develops a belief in the therapist’s support and then later invests in the therapeutic process. A highly influential

concept of the working alliance by Bordin (1994) offers a pan-theoretical perspective with the core of the alliance being: agreement on therapy goals, agreement on therapy tasks and the bond between therapist and client. Tasks refer to the processes and behaviours in psychotherapy sessions that relate to the actual therapeutic work. Therapeutic goals refer to the objectives of the therapy that are endorsed by both therapist and client. According to Bordin (1994) the bond refers to the interpersonal attachment between therapist and patient and should include confidence, acceptance and mutual trust. The knowledge derived from Bordin's analysis of the relationship between therapists and clients is still used today and the components are often investigated when ruptures in the working alliance occur (Horvath & Greenberg, 1989).

Working with ruptures in the working alliance forms an important part of the relational work in psychotherapy. Westbrook, Kennerley, and Kirk (2011) highlight the importance of identifying ruptures in the alliance throughout the therapeutic process in their introduction to cognitive behaviour therapy and the importance of dealing with them to strengthen the alliance. Unresolved ruptures in the working alliance have been indicated to adversely affect expected and actual outcomes of treatment (McLaughlin, Keller, Feeny, Youngstrom, and Zoellner, 2014). These findings underline the significance of working alliance ruptures for research on the concept. Whether ruptures in the working alliance appear in internet-based psychotherapy and how they influence outcomes is still unknown (Berger, 2017).

When considering these diverse perspectives on the working alliance, it is not surprising that research on this special relationship has examined various factors that seem to play a role. Some researchers have investigated the alliance as a composition of elements while others highlighted the concept as a synergistic assembly of these parts to a whole that is more than just the sum of its components (Horvath & Greenberg, 1989). Research suggests that the relationship is dyadic, meaning that both therapist and patient/client contribute to its quality which is based on findings that indicate that next to the therapist's contributions, patient trust (Birkhäuer et al., 2017) and capacity for attachment and bond (Bernecker, Levy, & Ellison, 2014) make great contribution to the relationship.

A meta-analytic review by Flückiger, Del Re, Wampold, and Horvath (2018) on the alliance in adult psychotherapy showed results that supported Bordin's argument for the alliance as a significant factor in all types of psychotherapy treatment. The review further highlighted the support for a predictive relationship between therapeutic working alliance and therapy outcomes with an overall small association between alliance and outcome ($r = .278$).

Moreover, the review identifies patient's high severity in symptoms as a challenge to the alliance development, with personality disorders as one cluster of symptoms notably presenting difficulties in the formation of an alliance (Forster, Berthollier, & Rawlinson, 2014).

Research on the working alliance and outcome of psychotherapy shows that the quality of the relationship correlates more highly with client outcome than the specialized treatment interventions themselves (Lambert & Barley, 2002). These findings highlight the importance of relationship factors in therapy and the therapeutic relationship as a possible curative tool used to enhance the quality of psychotherapy. Lambert and Barley (2002), therefore, encourage therapists to keep up with developments in the field that relate to relationship factors and focus on using these in accordance with specialized treatment techniques to improve client outcomes. While many psychotherapist's view the working alliance as a crucial component for successful therapy, research has yet to provide evidence for its causal role in the recovery process. Cuijpers, Reijnders and Huibers (2019) reviewed common factors in psychotherapy and could not find data indicating empirically validated working mechanisms. These findings also question the assumption of the alliance being a causal factor in patients' recovery processes. Nonetheless, the before mentioned associations of the working alliance with treatment outcomes seem to indicate that it is an important factor in psychotherapy despite the lack of empirical indications of a causal relationship.

Psychological treatment and interventions online

The internet has long been explored as an alternative route to deliver psychological treatment. This mostly happens in the form of psychological online interventions, which are interventions that aim to institute behavioural change, personal growth and symptom reduction and therefore focus on behavioural issues, using the internet as an alternative route of delivery (Ritterband et al., 2003) Benefits include easy, broad, and convenient accessibility and lowered costs (Andersson et al., 2015). The efficacy of a broad range of psychological online interventions that intend to facilitate symptom reduction and personal growth has been demonstrated in randomized controlled trials. Meta-analyses show moderate to large effects and comparable results to face-to-face therapy for a variety of psychopathological symptoms (Anderson, Cuijpers, Carlbring, Riper, & Hedman, 2014).

Psychological internet interventions are, for the most part, not understood as a new approach to psychotherapy from a theoretical perspective. Most of these interventions are based on cognitive behaviour therapy (CBT) and some few others use theoretical underpinning of the psychodynamic approach, interpersonal psychotherapy, or integrative

approaches (Berger, 2017).

Many reviews and meta-analyses fail to differentiate between different types of psychological online interventions, which leads to unspecified information failing to guide our understanding of the various forms these interventions can take online. Berger and Andersson (2009) therefore distinguish between web-based unguided self-help programs, internet-based guided self-help approaches, and internet-based psychotherapies. The first two provide users with information on psychological issues and a self-help program and differ in their use of guidance by health care professionals. Typically, communication in these psychological online treatments is done within a closed system (e.g. www.minddistrict.com) and treatment content, including texts, videos, illustrations, and audio files, is provided gradually to clients. A clinician provides guidance and support and answers questions regarding the treatment, either by using text-based methods (e.g. chats, mails etc.), or video chats and telephone support (Andersson, 2014). The third type entails all psychotherapies that exclusively use the internet as a communication medium between patient and therapist. This can be done in the form of e-mail, chat, or videoconferencing. Berger and Andersson (2009) also distinguish between modes of communication of psychological online interventions. Communication can be text-based and asynchronous, text-based and almost real-time or synchronous communication (e.g. chat), and audio- or video-based synchronous communication (e.g. video-conferencing). In his narrative review Berger (2017) reviewed the working alliance within these types of internet interventions. In regard to text-based internet psychotherapy the researcher found a limited database on the working alliance in this category of psychological treatment. The present literature review assesses the scope of the evidence base with current data and will therefore focus on this specific type of internet-based psychotherapy, as defined by Berger (2017).

The working alliance online

A study exploring clinicians' attitudes towards the therapeutic alliance in internet-based therapy showed that clinician's ratings of the importance of the alliance in conventional face-to-face psychotherapy were significantly higher than those in online psychotherapy. Clinicians further report less confidence in their abilities to develop a functional working alliance in internet-based psychotherapy (Sucula et al., 2012). However, research on internet-based cognitive behaviour therapy suggests the quality of the working alliance to be at least as strong as in face-to-face therapy and also highlights the association of the alliance with treatment outcome online (Pihlaja et al., 2018).

Research on positive and stable therapeutic relationships established through the

internet indicates that the alliance can be established early in treatment and that contact with a therapist can be experienced as intense and personal (Knaevelsrud & Maercker, 2006). Goffman (1990) found that individuals communicate feelings and thoughts more comfortably when feeling unobserved while writing, which leads to more personal self-revelation. This can explain the online relationship's possible intensity and intimacy, which is referred to as *text-based bonding*. Yaphe and Speyer (2011) further find that online therapists can benefit from working with text-based cues and the richness of the written word and the additional time to reflect due to the possibility of asynchronous exchange. In addition, the lack of social clues encourages the development of alliances and contributes to higher levels of openness and self-disclosure (Whitty and Gavin, 2001).

It is possible that the working alliance plays a different role in internet based therapy than in face-to-face therapy. Andersson and colleagues (2012) analysed samples of internet-based cognitive behaviour therapy (ICBT) and the role of the working alliance and found a non-significant association between outcome and alliance ratings across samples. Simpson et al. (2011), however, were able to show an association between a good working alliance and adherence to online treatment, which facilitated treatment response. These findings could indicate that while the perceived quality of the relationship might be comparable in rating, its role and contribution to the effectiveness of an internet intervention might be different, so for example, by making people adhere to an intervention and thus yielding better outcome effects.

The discrepancies between practitioners' attitudes and beliefs concerning face-to-face and online treatment and the small body of data on the patient-therapist relationship in internet-based psychotherapy puts emphasis on the importance of a thorough review of the working alliance in this context. An up-to-date overview of findings will empower psychotherapists in their use of text-based internet psychotherapy by providing a clear and structured outline of studies investigating the working alliance online. In addition, it intends to support conscious decision-making in terms of the working alliance online, by highlighting recent findings on various groups of patients, the platforms that seem to enable a high-quality working alliance, and the associations with outcomes which can give practitioners and researchers some indication of whether the alliance plays as much of a role in text-based online psychotherapy in comparison to face-to-face psychotherapy.

Research objective

The above-mentioned scientific findings offer some insight into the current knowledge base on the working alliance and internet-based psychotherapy. This scoping review was conducted to explore and map out this specific concept in the context of internet-based

treatment in mental health care in order to identify the nature and the extent of current research evidence. Several aspects of interest were identified based on the before-mentioned information to ensure a directed search and exploration of the contemporary research. This scoping review maps out the study characteristics of the existing research on the working alliance in text-based internet psychotherapy by exploring:

- 1) Which mental disorders and psychological problems are currently being investigated,
- 2) Which platforms/modalities are used for delivery of these interventions,
- 3) Which forms of communication are used,
- 4) What types of therapists are involved,
- 5) Which treatment approach is treatment based on,

To assess findings concerning the working alliance and its measurements as well as relationships with treatment outcome the review further explores:

- 6) Which measurements are used to assess the working alliance/therapeutic relationship,
- 7) What types of statistical relationships between the therapeutic relationship and outcome of treatment are reported

Given the fact that many reviews and meta-analyses fail to differentiate between different types of psychological online interventions, this literature review specifically focussed on text-based psychotherapy to ensure specified information that can hopefully better guide reader's understanding of the various forms these interventions can take online. This scoping review, therefore, made use of the defined categories by Berger and Andersson (2009) (web-based unguided self-help program, guided self-help intervention, and internet psychotherapy) and defined modes of communication within these psychological interventions (text-based and asynchronous, text-based and almost real-time, and audio- or video-based real-time communication). Only studies on text-based internet psychotherapies and guided psychological interventions were included to explore the before-mentioned seven aspects of current research.

Methods

The present literature review is a scoping review. Scoping reviews intend to map out the current body of research on a specified topic in terms of nature, characteristics and volume. They typically synthesise data into tabular form and analyse the existing literature in the field of interest by characterising quantity and quality of the data (Grant and Booth, 2009). An assessment of the potential size and scope of available research on the specified topic is done systematically, transparently, and in order to be easily replicated.

Search strategy and selection criteria

This literature review was planned and conducted according to the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009).

The electronic databases Scopus, PsycINFO, Web of Science, and Wiley Online Library were used to search for relevant studies published between 2005 and 2020. These databases were chosen, because of their focus on social, medical and psychological topics, with PsycINFO being more narrowly focussed on psychological and mental health research and Scopus being a database with a broader scope. All four electronic databases provide advanced search functionality. Each database was searched for articles and the search was repeated several times throughout the period of data collection to ensure an exhaustive and up-to-date evidence base. In order to look systematically for studies search terms that relate to the concepts of ‘working alliance’ and ‘internet-based psychotherapy’ were created and combined using Boolean operators ‘AND’ and ‘OR’ (see Table 1).

Table 1

Search strategies

Search strategy: Scopus	
#1	(“working alliance” OR “therapeutic relationship” OR “therapeutic alliance”) AND (“internet-based psychotherapy” OR “online psychotherapy” OR “web-based psychotherapy” OR “online mental health”)
#2	#1 = 5 documents
Search strategy: PsychINFO	
#1	(“working alliance” OR “therapeutic relationship” OR “therapeutic alliance”) AND (“internet-based psychotherapy” OR “online psychotherapy” OR “web-based psychotherapy” OR “online mental health”)

#2	#1 = 15 documents
Search strategy: Web of Science	
#1	(“working alliance” OR “therapeutic relationship” OR “therapeutic alliance”) AND (“internet-based psychotherapy” OR “online psychotherapy” OR “web-based psychotherapy” OR “online mental health”)
#2	#1 = 12 documents
Search Strategy: Wiley Online Library	
#1	(“working alliance” OR “therapeutic relationship” OR “therapeutic alliance”) AND (“internet-based psychotherapy” OR “online psychotherapy” OR “web-based psychotherapy” OR “online mental health”)
#2	#1 = 54

The snowballing search strategy was also used to add literature to the review. The snowballing strategy refers to the use of already retrieved studies to identify others (Wohlin, 2014). Backward and forward snowballing refer to the systematic use of reference lists and citations of articles to find additional papers. Both types were applied for the present literature review to find complementary research papers.

Studies found were screened on title in the first step and, then, on abstract in the second step. In step 3 it was determined whether the examined studies were eligible based on reading the full paper and eligibility was judged using the inclusion and exclusion criteria. Subsequently, the reference lists of the included studies, as well as the studies that cited the included studies were inspected. A flowchart illustrating the study selection process of the present systematic literature review according to the PRISMA guidelines is presented below (see Figure 1) (Moher, Liberati, Tetzlaff, & Altman, 2009).

The following inclusion/exclusion criteria were established: The first criterion concerns the language of the article, which needed to be either in English, German, Dutch or Spanish for an extensive review. Secondly, only articles from 2005 or later were considered, as the technological framework of the review’s topic makes it likely that studies from before 2005 are outdated. The third inclusion criteria is the use of text-based internet psychotherapy as defined by Berger’s (2017) categories, which lead to the exclusion of scientific literature describing unguided or minimally guided internet-based self-help programs or interventions, and video or audio-based internet psychotherapies. Lastly, studies needed to measure the working alliance or a similar construct (e.g. therapeutic alliance) using some form of validated scale, such as the Working Alliance Inventory.

Procedure and analysis

The collected articles of this review were fully read and analysed in accordance to the aim of this research as specified above. All data from the revised studies were extracted by one researcher. Since the aim was to establish which mental disorders or psychological problems were investigated in research on the working alliance in internet-based mental health research, the disorders or problems treated in the studies were noted in a table providing an overview of the disorders and problems (see Table 2 below). If an intervention targeted more than one disorder the group of disorders was used in accordance to the DSM-5 categorization of mental disorders to describe the treated mental health problems targeted (e.g. the term anxiety disorders for several disorders including severe symptoms of anxiety, such as social anxiety disorder, general anxiety disorder, and panic disorder). To gain insight into the group characteristics of participants used for the study of online treatment, general information such as age and gender were also noted in Table 2.

The second exploration, namely the identification of platforms and modalities used in research on the working alliance online, was achieved by identifying and describing the various modalities used in the scientific evaluation of treatment (see Table 3). Sample sizes were also noted to get an understanding of the size of the research undertakings. To explore the third research objective - the forms of communication within the online treatment - the articles were analysed and the reported communication type was noted. To use the categorization terms provided by Berger (2017) types of communication within an intervention were categorized as synchronous and asynchronous, next to providing information on what type of medium was used to communicate (e.g. mail, chat).

In order to explore what type of practitioner guided patients through treatment in researched interventions and which therapeutic approach was used for the treatment of mental disorders this information was extracted from the articles and noted in Table 3. Here, the exact wording as used in the study design section of the study was used to maintain the identity of the practitioner's group, as a grouping of these mental health professionals might bias the results, given the fact, that different countries use different titles for various groups of mental health care workers (e.g. therapist, psychotherapist, psychological psychotherapist). Therapeutic approaches were grouped into the main schools of contemporary psychotherapy: cognitive behaviour therapy, third wave CBT (e.g. acceptance and commitment therapy, mindfulness-based cognitive therapy), psychoanalytic therapy, psychodynamic therapy, client-centred psychotherapy, and gestalt therapy. If the approach the treatment was based on was not specified by the researchers this was remarked with 'not specified'.

It was further explored what type of measurement was used to assess the therapeutic relationship, at which point in time the measures were conducted, and whether calculations of a statistical relationship of measures of the therapeutic relationship with outcome measures of the treatment were done. Cut-off scores for the categorization of the strength of associations were specified a-priori and based on the general guidelines by Cohen (1988). Thus, a correlational value was labelled weak when below 0.10, small from 0.10 to 0.30, moderate from 0.30 to 0.50, and labelled strong from 0.50 to 1.00. These data were identified and noted in Table 4 for an extensive overview. If information for the exploration of any of the research objectives was not researched or reported in the reviewed articles, this was marked with ‘n.a.’ meaning not available.

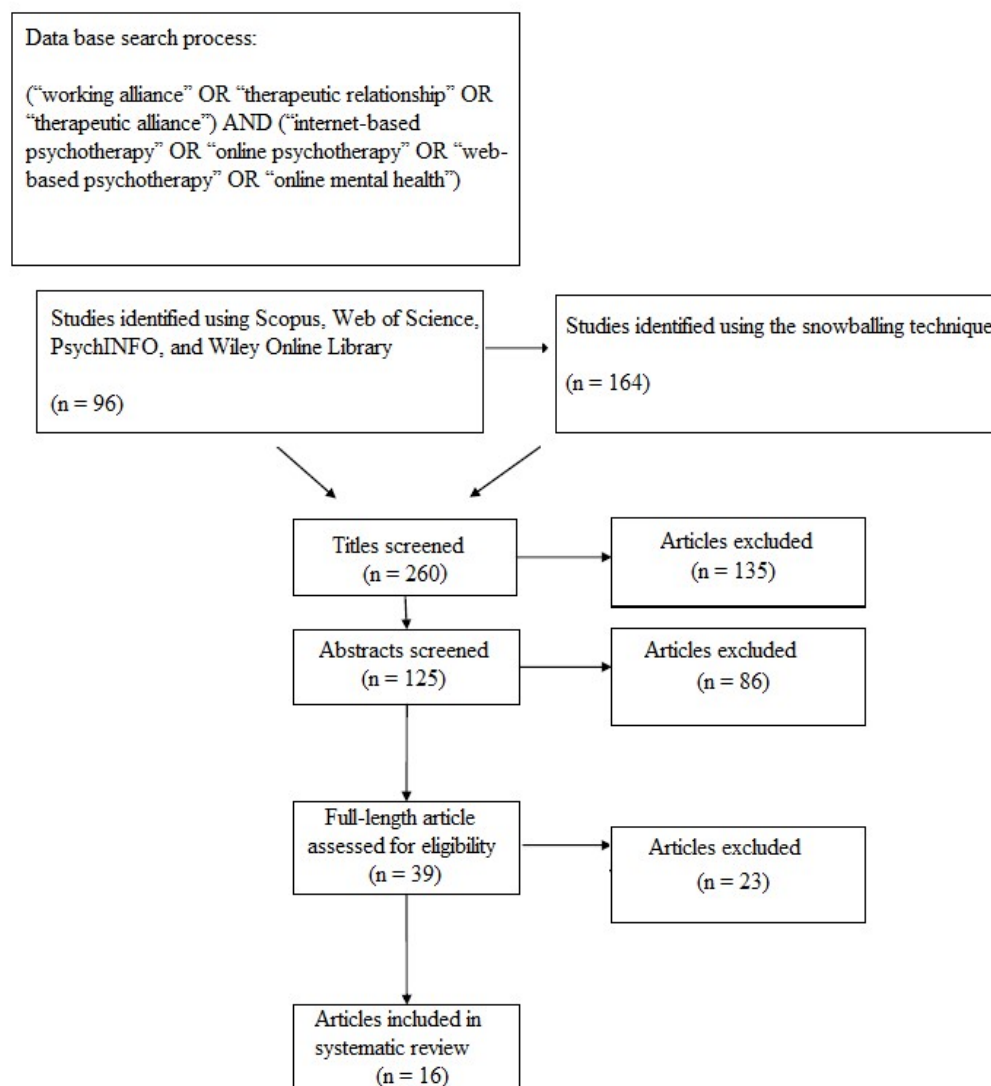


Figure 1. Flowchart of the inclusion/exclusion process of articles for the systematic literature review

Results

A total of 16 studies were reviewed for this scoping review. Among the included studies, 9 studies investigated the working alliance as a primary objective, while the other 7 studies assessed the concept as a secondary objective.

Participant characteristics

Table 2 (see below) summarizes the participant characteristics. Among the reviewed studies a great variability of patient groups can be found. The most commonly investigated patient group were patients suffering from anxiety disorders ($n = 6$). Another patient group often assessed in working alliance research was posttraumatic stress disorder patients (PTSD) and patients suffering from PTSD-related symptoms ($n = 5$). Other investigated patient groups suffered from depression ($n = 3$), binge-eating disorder ($n = 1$), preterm labour stress ($n = 1$), and chronic tinnitus ($n = 1$). In most studies the majority of participants were female, with the exception of two studies; one having a low percentage of 39.5% female participants and another with an exclusively female group of participants. Two studies investigated the working alliance in the treatment of children and adolescents and one study the treatment of traumatized elderly.

Table 2

Participant characteristics

	Authors	Presenting problem	Gender	Age (years), mean (SD)
1a	Andersson et al. (2012)	Depression	75 % female	38.9 (13.5)
1b	Andersson et al. (2012)	Generalized anxiety disorder	80.6% female	40.0 (11.2)
1c	Andersson et al. (2012)	Social anxiety disorder	59.3% female	37.7 (11.42)
2	Andersson et al. (2014)	Obsessive-compulsive disorder	66.3% female	34.93 (12.72)
3a	Andersson et al. (2012)	Anxiety disorders	61.6% female	13.91 (1.56)
3b	Andersson et al. (2012)	Anxiety disorders	53.0% female	12.12 (2.5)
4	Dölemeyer, Klinitzke, Steinig, Wagner, Kersting (2013)	Binge-eating disorder	93.2% female	34.8 (10.3)
5	Herbst et al. (2016)	Obsessive-compulsive disorder	n.a	n.a
6	Jasper et al. (2014)	Chronic tinnitus	39.5% female	51.92 (10.55)
7	Klein et al. (2010)	Posttraumatic stress disorder	77.27% female	66.1 (11.36)

8	Knaevelsrud, Böttche, Pietrzak, Freyberger, Kuwert (2017)	Childhood traumatization	64.9% female	71.4 (4.7)
9	Knaevelsrud, Maercker (2006)	Posttraumatic stress reactions	92% female	35 (n.a)
10	Knaevelsrud, Maercker (2007)	Posttraumatic stress disorder	90% female	35 (10.55)
11a	Lindegaard et al. (2020)	Social anxiety disorder	62% female	41.4 (12.0)
11b	Lindegaard et al. (2020)	Social anxiety disorder	74% female	42.6 (16.3)
12	Bergman Nordgren, Carlbring, Linna, Andersson (2013)	Anxiety disorders	67% female	39.3 (11.2)
13	Preschl, Maercker, Wagner (2011)	Depression	84% female	34.9 (9.5)
14	Scherer et al. (2016)	Preterm labor stress	100% female	32.53 (3.49)
15	Topooco et al. (2019)	Adolescent depression	91%	17.5 (1.1)
16	Wagner, Brand, Schulz, Knaevelsrud (2012)	Posttraumatic stress symptoms	81%	27.7% (7.0)

Study characteristics

Table 3 (see below) summarizes the characteristics of the reviewed studies. The sample sizes ranged from 13 to 132. Among the reviewed studies most stated a form of Internet-based cognitive therapy (ICBT) as the used treatment platform or modality ($n = 13$). The reviewed ICBT treatments all contained treatment modules that were accessed via the internet, created by researchers or clinical psychologists for a specific target group, and which allowed communication between therapist and patient, which mostly entailed feedback on writing tasks and progress in treatment. Other studies used an internet intervention developed for binge-eating disorder ($n = 1$), an internet-based self-help platform (not specified), and internet interventions and psychotherapy for PTSD ($n = 3$). One study used internet psychodynamic treatment and another a cognitive behavioural stress management program called IB-CSBM.

Most reviewed studies used asynchronous communication ($n = 13$), which involved feedback on self-help tasks and on written assignments, emails, and the use of an integrated text or chat function within the treatment platform. Text-based responses by a therapist were always created between 24-48 hours after a message was sent by a patient, questions were

asked or writing assignments were completed. One study did not specify the type of communication and another reported 'written exchange' without a detailed specification. Only one study partially used synchronous text-based communication involving a chat room used by the patient and therapist.

In regard to the type of therapist offering or guiding treatment online, several studies offered guidance by a licensed or registered psychotherapist or psychiatrist, and/or psychotherapists in training ($n = 11$), while others employed psychology students in the final phase of their master's degree ($n = 3$). Among the reviewed studies some used the term 'online therapist' or 'therapist' to refer to their practitioners, without specifying the term further ($n = 4$), whereas one did not state who was responsible for communication with patients within the treatment program.

The majority of reviewed studies based their treatment on the cognitive behaviour therapy approach ($n = 15$). One study used a psychodynamic treatment approach in one condition of their studied treatments. Finally, one study did not specify which psychotherapeutic approach the treatment was based on.

Table 3

Study characteristics

	Authors	Sample size	Platform or modality	Form(s) of communication (asynchronous/asynchronous and partially synchronous)	Treatment length	Therapists	Therapeutic approach
1a	Andersson et al. (2012)	88	Internet-delivered cognitive behaviour therapy	Weekly feedback on self-help tasks (asynchronous)	8 weeks	'Internet therapist'	Cognitive behaviour therapy
1b	Andersson et al. (2012)	89	Internet-delivered cognitive behaviour therapy	Weekly asynchronous feedback on self-help tasks (asynchronous)	8 weeks	'Internet therapist'	Cognitive behaviour therapy
1c	Andersson et al. (2012)	204	Internet-delivered cognitive behaviour therapy	Weekly asynchronous feedback on self-help tasks (asynchronous)	8 weeks	'Internet therapist'	Cognitive behaviour therapy
2	Andersson et al. (2014)	101	Internet-based cognitive behaviour therapy	Integrated text messaging function, emails (asynchronous)	10 weeks	Clinical psychology students in their final year of the study program under supervision of a licensed psychologist	Cognitive behaviour therapy

3a	Andersson et al. (2012)	73	Online cognitive behaviour therapy	Emails (asynchronous)	10 youth and five parent sessions	Registered psychologists	Cognitive behaviour therapy
3b	Andersson et al. (2012)	132	Online cognitive behaviour therapy	Emails (asynchronous)	10 youth and five parent sessions	Registered psychologists	Cognitive behaviour therapy
4	Dölemeyer, Klinitzke, Steinig, Wagner, Kersting (2013)	59	Internet intervention based on 'Overcoming Binge Eating'	Integrated text messaging function (asynchronous)	16 weeks	'Therapist'	Cognitive behaviour therapy
5	Herbst et al. (2016)	29	Internet-based cognitive behaviour therapy	n.a	14 sessions	n.a	Cognitive behaviour therapy
6	Jasper et al. (2014)	38	Internet-based self- help	Online messaging systems (asynchronous)	10 weeks	Clinical psychologists certified in CBT or psychologists in advanced stages of their training	Cognitive behaviour therapy

7	Klein et al. (2010)	22	Internet intervention PTSD Online	Audio files and emails individually tailored and constructed (asynchronous)	10 weeks	Registered and probationary registered psychologists	Cognitive behaviour therapy
8	Knaevelsrud, Böttche, Pietrzak, Freyberger, Kuwert (2017)	94	Internet-based CBT	Uploading texts in secure Web portal (asynchronous)	6 weeks	Licensed clinical psychologists having with special training in Integrative TT	Cognitive behaviour therapy
9	Knaevelsrud, Maercker (2006)	91	Online psychotherapy for traumatized patients	Feedback on writing assignments (asynchronous)	5 weeks	Psychologists trained in the application of writing assignments for PTSD	Not specified
10	Knaevelsrud, Maercker (2007)	96	Internet-based cognitive behavioural therapy	Feedback on writing assignments (asynchronous)	5 weeks	Trained clinical psychologists trained in the application of writing assignments for PTSD	Cognitive behaviour therapy

11a	Lindegaard et al. (2020)	13	SOFIE Internet-based cognitive behaviour therapy treatment	Mail service within internet platform, feedback on homework assignments (asynchronous)	10 weeks	Master's degree-level psychology students	Cognitive behaviour therapy
11b	Lindegaard et al. (2020)	23	Internet psychodynamic treatment	Feedback on homework assignments (asynchronous)	10 weeks	Master's degree-level psychology students	Psychodynamic therapy
12	Bergman Nordgren, Carlbring, Linna, Andersson (2013)	27	Internet-based cognitive behaviour therapy	Feedback on homework assignments (asynchronous)	10 weeks	Master's degree-level psychology students who had completed clinical training	Cognitive behaviour therapy
13	Preschl, Maercker, Wagner (2011)	25	Internet-based cognitive behaviour therapy	Feedback on writing assignments and instructions for exercises (asynchronous)	8 weeks	Psychologists and psychotherapists trained in CBT for depression	Cognitive behaviour therapy
14	Scherer et al. (2016)	58	Internet-based cognitive behavioural stress management (IB-CBSM)	"Written exchange" (n.a)	6 modules	Trained psychologist or psychologist in training	Cognitive behaviour therapy

15	Topooco et al. (2019)	70	Iterapy: ICBT with therapist chat sessions	Chat sessions conducted inside the treatment platform (synchronous)	8 weeks	Therapists in training	Cognitive behaviour therapy
16	Wagner, Brand, Schulz, Knaevelsrud (2012)	55	Internet-based therapy for PTSD symptoms	Written feedback and instructions (asynchronous)	5 weeks	Psychologists and psychiatrists	Cognitive behaviour therapy

Measurements

Table 4 below summarizes the findings concerning measurements of the therapeutic relationship and its researched relationship with outcome measures, with articles ordered by type of scale instead of alphabetically.

Most reviewed studies used the Working Alliance Inventory (WAI) for measurements of the working alliance ($n = 15$). All but one used the short form (WAI-S) with a 7-point Likert scale. Three studies used the revised short form of the WAI, which makes use of a 5-point Likert scale (Hatcher and Gillaspay, 2006). One study assessed the therapeutic relationship with the Therapeutic Alliance Questionnaire (TAQ). The reviewed studies varied in their chosen points in time for measurements. Four studies measured the working alliance in the third week and one in the fourth week. Another study took measurements after a set number of modules ($n = 1$), after the completion of certain modules ($n = 3$), after the first half of treatment and post-treatment ($n = 1$), and solely after treatment ($n = 1$).

The WAI short form can typically measure a minimum score of 1 and a maximum score of 7 (Busseri and Tyler, 2003). Measurements of the average working alliance for the treated groups with the WAI or the WAI-Short Form ranged from 4.95 (0.98) to 6.4 (0.83). The average score of all WAI and WAI-Short Form measurements is 5.78 with a standard deviation of 0.83, which indicates a positive working alliance. Only two of the three studies using the revised short form of the WAI reported measurements (see Table 4). Calculations of statistical relationships between measurements of the working alliance and outcome measures of treatment are shown in Table 4 as reported in the reviewed studies. These techniques include Pearson correlations and hierarchical multiple regression analysis. Five studies found significant correlations between the working alliance measures and primary outcome measures, which ranged from small ($n = 1$) to moderate ($n = 4$). Three of the reviewed studies found that higher degrees of working alliance predicted better treatment outcomes, while two others found that higher degrees of working alliance or subscales thereof predicted the variance in the treatment outcomes. Two studies found that the working alliance predicted secondary outcome measures (such as compliance). One study found a partial mediation of the working alliance on between group condition and patient satisfaction. Furthermore, two studies found that subscales, such as agreement on tasks, were significantly and moderately correlated with outcome measures of the assessed treatment. Lastly, four studies did not report statistical relationships between working alliance measurements and outcome measures.

Table 4

Therapeutic relationship measures and findings

	Authors	Therapeutic relationship measure	Moment of assessment	Quality of therapeutic relationship, Mean (Standard deviation)	Relationship between therapeutic relationship and outcome
1a	Andersson et al. (2012)	Working Alliance Inventory	Third week of treatment	5.41 (0.83)	Correlations between the WAI-SR and residualized change scores on the primary outcome measures were weak ($r = .09$) and not statistically significant
1b	Andersson et al. (2012)	Working Alliance Inventory-Short Form	Third week of treatment	5.63 (0.94)	Correlations between the WAI-SR and residualized change scores on the primary outcome measures were small ($r = .13$) and not statistically significant
1c	Andersson et al. (2012)	Working Alliance Inventory-Short Form	Fourth week of treatment	5.45 (1.05)	Correlations between the WAI-SR and residualized change scores on the primary outcome measures were small ($r = .10$) and not statistically significant
2a	Andersson et al. (2012)	Working Alliance Inventory-Short Form	After completion of third session	5.77 (1.20)	n.a.
2b	Andersson et al. (2012)	Working Alliance Inventory-Short Form	After completion of third session	5.85 (1.09)	Higher degree of working alliance predicted compliance with the treatment ($B = 0.38, F_{1,80} = 13.10, p = 0.01$) Higher degree of WAI-SR predicted overall functioning ($B = 0.22, t = 2.21, p = 0.03$)

3	Dölemeyer, Klinitzke, Steinig, Wagner, Kersting (2013)	Working Alliance Inventory-Short Form	After first half of treatment and post treatment	5.92 (0.80)	Correlations between the WAI-SR and EDE-Q-subscale 'restrained eating behaviour' were significant and moderate ($r = -0.436$), no correlations between WAI-SR and binge eating episodes
4	Knaevelsrud, Böttche, Pietrzak, Freyberger, Kuwert (2017)	Working Alliance Inventory-Short Form	End of treatment	6.2 (0.7)	n.a
5	Knaevelsrud, Maercker (2006)	Working Alliance Inventory-Short Form	Fourth treatment session	5.8 (0.62)	Correlations between the WAI-SR and anxiety were not significant and moderate ($r = .33$)
6	Knaevelsrud, Maercker (2007)	Working Alliance Inventory-Short Form	End of treatment	6.3 (0.54)	Correlations between the WAI-SR (at the end of treatment) and treatment outcome were significant and predicted 15% of the variance in post-treatment measures of the IES-R, adjusted R -square = .148; $F_{2,39} = 8.15, p < .05$
7	Bergman Nordgren, Carlbring, Linna, Andersson (2013)	Working Alliance Inventory-Short Form	Third week	6.00 (0.80)	Correlations between the WAI-SR (at week 3) and residual gain scores on the primary outcome measure were significant and moderate ($r = -.47$)
8	Preschl, Maercker, Wagner (2011)	Working Alliance Inventory-Short Form	After four weeks	5.82 (0.80)	Correlations between clients' ratings of the working alliance and outcome of treatment at post-treatment in the online group were significant and small ($r = -.10$), the WAI-SR did not significantly predict the BDI residual gain score ($r = -.06$)

9	Topooco et al. (2019)	Working Alliance Inventory-Short Form	n.a	4.95 (0.63)	n.a
10	Wagner, Brand, Schulz, Knaevelsrud (2012)	Working Alliance Inventory-Short Form	After the fourth session	6.04 (0.83)	Early WAI-SR (at mid-treatment) significantly predicted treatment outcome (<i>adjusted R-square</i> = .20; $F_{2,44} = 6.57, P = .003$)
11	Andersson et al. (2014)	Working Alliance Inventory – Short Form	Third week of treatment	n.a	Higher degree of working alliance predicted better outcome ($B = -0.09, SE = 0.05, t = -1.83, p = 0.07$)
12	Scherer et al. (2016)	Working Alliance Inventory – Short Form Revised, adapted to the online help for women	After module 2,3,4, and 5	n.a	Correlations of the WAI subscale goal and task and the stress/anxiety outcome were significant and predicted nearly 40% of the variance in patient satisfaction is explained by the WAI, $R\text{-square} = .398; F_{1,50} = 33.060, p < .001$, WAI partly mediates at least the relationship between group condition and patient satisfaction
13	Herbst et al. (2016)	Working Alliance Inventory-Short Form Revised	Post treatment	4.08 (0.78)	Correlations between the WAI-SR and Y-BOCS SR change score were significant and moderate ($r = 0.33$); a marginal correlation between WAI-SR and the OCI-R change score was significant and weak ($r = 0.29$)
14	Jasper et al. (2014)	Working Alliance Inventory-Short Form Revised	Fifth week	2.34 (0.98)	Correlations between the subscales ‘agreement on treatment tasks’ and residual gain scores for the therapy outcome measure ‘tinnitus distress’ were significant and moderate ($r = .40$)
15	Lindegaard et al. (2020)	Working Alliance Inventory adapted	Third week	n.a	Correlations between the WAI-SR (at week three) and treatment outcome were significant and WAI-SR

		for guided Internet-based treatment			predicted change rate ($B = -0.05$, 95% $CI [-0.072, -0.018]$, $z = -3.22$, $p = .001$)
16	Klein et al. (2010)	Therapeutic Alliance Questionnaire (TAQ)	n.a	89.2 (15.1)	n.a

Note. The Working Alliance Inventory is from Horvath and Greenberg (1989); the Working Alliance Inventory – Short Form is from Busseri and Tyler (2003); the Working Alliance Inventory – Short Form Revised is from Hatcher and Gillaspay (2006); the Therapeutic Alliance Questionnaire is from Bickman et al. (2004).

Discussion

This scoping review intended to gain a better understanding of research on the working alliance in text-based internet psychotherapy within the last 15 years. The review aimed to explore several study characteristics of research on this topic, as well as the type of measurements of the working alliance and its relationship to treatment outcome.

In regard to the study characteristics-related aspects of exploration there are several key findings of the present research. First, this literature review concludes that research on the working alliance has been conducted with a great variety of groups of patients. Second, among the reviewed studies most used a form of Internet-based cognitive therapy (ICBT) as modality for treatment delivery. Other modalities used were internet interventions developed and tailored for specific disorders or problems, (such as PTSD, or binge-eating disorder). Third, the great majority of the studies solely used asynchronous communication methods, such as emails, delayed chats, and integrated text-based communication features within websites and platforms. Types of therapists involved in internet-based treatment in the reviewed studies varied in their background. Some involved trained therapists or psychologists who are in their clinical training, but several studies did not specify the therapist's background or training and simply described their practitioners as 'internet therapists'. Lastly, most reviewed studies were based on cognitive behaviour therapy, whereas only one study included a treatment program based on psychodynamic therapy.

In regard to the three aspects related to measurements of the working alliance and relationships with outcome measures, which were explored in this review, there were several key findings. All but one study reviewed here used some form of the Working Alliance Inventory. Measurements of the working alliance using either the WAI or WAI-short form were mainly high with an average score of 5.78 and a standard deviation of 0.83, which indicates a good working alliance and is comparable to ratings in face-to-face treatment, such as in a study by Busseri and Tyler (2003) who investigated the Working Alliance Inventory. They reported comparable measurements with a mean of 5.87 and a standard deviation of 0.88 in face-to-face treatment. The reviewed studies investigating the statistical relationship between measurements of the working alliance and outcome measures of treatment presented varied results. Many studies indicated significant weak to moderate correlations of the working alliance or subscales of the alliance with outcome measures, while few could not find significant correlations with primary outcome measures. A few studies indicated that the early measurements of the working alliance served as a significant predictor of high treatment

outcome or high measurements of secondary outcome measures such as compliance to treatment.

Links to previous research

The results of this scoping review are consistent with the previous literature review by Sucala et al. (2012). That review was the first to summarize the literature on the role of the working alliance in internet-based therapy and indicated that, back then, the topic had been largely ignored in internet-based therapy literature. The researchers had only found 6 studies that investigated the working alliance as a primary objective. With several additional studies found for the present review, research on the working alliance seems to have increased in number. Sucala and colleagues (2012) criticized methodological limits of the reviewed studies, including a lack of appropriate control groups, incomplete report of results (e.g. lack of standard deviations), and lack of pre-test information. While this scoping review did not investigate the methodological quality of the studies to the extent Sucala et al. (2012) did, studies appear to have improved in methodology, given the fact that most studies used control conditions and eight of the studies were randomized controlled trials. Furthermore, among the reviewed studies all but two reported standard deviations. Given the fact, that the present literature review did not review the methodological quality of the studies as extensively as done by Sucala et al. (2012), future reviews could focus on detailed evaluations of methodology used in research on the working alliance in internet-based psychotherapy, for example by doing a meta-analysis.

The older review found differences in times of measurements of the working alliance in treatment and recommended measuring the alliance at the beginning of treatment on the basis of meta-analytic studies (Eaton, Abeles, and Gutfreund, 1988). This also connects to recent findings by Reefhuis et al. (2019) who found that working alliance measurements after two weeks were most predictive of treatment outcome. Five of the studies reviewed here did, indeed, measure the working alliance early on in treatment, specifically in the third week of treatment or after the third session. Nonetheless, the literature reviewed here also shows incongruence in measurement times and many studies did not stick to recommendations made by the before-mentioned meta-analysis.

Several studies investigating the impact of the working alliance on treatment outcome reviewed by Sucala et al. (2012) indicated a positive relationship between these factors. This is partially consistent with the reviewed studies in this review. Several studies were able to show weak to moderate correlations of the working alliance with treatment outcomes.

Just as in this review the earlier review noted that cognitive behaviour therapy was the

most commonly used therapeutic approach for internet-based psychotherapy. The findings of this scoping review are further consistent with the claim that working alliance scores were high and roughly comparable to those of face-to-face therapy (Berger, 2017), which suggests that positive alliances can be established in Internet interventions even though only text-based communication modalities are used between patients/user and therapist. The inconclusive relationship between outcome of treatment and measurements of the working alliance further correspond to Berger's discussion of a possible different role of the alliance in internet-based interventions than in face-to-face treatment. It is possible that even though measurements of the working alliance in internet-based treatments are high, other factors such as content, amount of received counselling and feedback, or user-friendliness of the platform, more strongly relate to treatment outcomes. Berger (2017) also discussed the lack of data on ruptures in the alliance between therapist and patient, although ruptures seem likely to occur in relationships that are formed on the basis of reduced communication cues and responsiveness. The reviewed studies presented in this article also lacked reports of ruptures, leaving us uninformed of whether ruptures occur in online therapy, how these are dealt with, and whether they play as an important role online as in face-to-face therapy. Considering the fact that unresolved ruptures in the working alliance have been shown to negatively affect expected and actual outcomes of treatment as stated by McLaughlin, Keller, Feeny, Youngstrom, and Zoellner (2014), the lack of research on this subject seems surprising.

Discussion of research results

The findings highlight that a good working alliance between therapist and patient in internet-based psychotherapy is possible and that mostly asynchronous, text-based communication does not decrease the quality as measurements in the reviewed studies and comparable measurements in conventional treatment show. Only one of the reviewed studies reported a low mean score of 2.34 with a standard deviation of 0.98 for the revised short form of the WAI. Nonetheless, additionally reported scores by the researchers indicate an increase in working alliance ratings by week 9. The study was unique in their targeted population of patients suffering from chronic tinnitus and their sample of mainly male patients. Given the lack of research on online treatment with this patient group it cannot be said whether the late increase in alliance quality stems from patient characteristics, the specific treatment or other factors.

With the great majority of the studies using a cognitive behaviour therapy approach or framework for the internet-based psychotherapy it becomes apparent that this approach dominates the treatment options online. This finding might be explained by the fact that

CBT's solution-focused and narrative nature fits into the context of these interventions, which was also explored by Kraus, Stricker and Speyer (2010). The short-term interventions and techniques that are used in CBT may also be more easily integrated into internet-based psychotherapy given the length of the treatments reviewed here (5 – 16 weeks). Other psychological approaches such as psychodynamic approaches were underrepresented in the literature review. While internet-based treatments that are based on psychodynamic theory are slowly starting to appear, these have yet to research the working alliance or similar constructs relating to the therapeutic relationship in their studies (Johansson et al., 2012). Online interventions using third-wave CBT approaches, such as acceptance and commitment therapy, and interventions from the relatively new branch of positive psychology were not found in the research base on the working alliance online. Due to the lack of diversity in approaches in internet-based treatment conclusions about which types of therapists or which type of approach is better able to enable a positive working alliance cannot be drawn.

Even though a wide range of treatments for various patient groups was found in the reviewed studies, internet-based treatments for individuals with schizophrenia and personality disorders seem to be missing in the literature on the working alliance online. This could be explained by the great severity of symptoms, high suicidality and self-injury, or the dangers to others and oneself that these disorders might pose under the decreased oversight of a mental health care professional. Finally, the reviewed literature present various treatment options on the internet, but a look at the researchers shows that often the same research groups from Sweden, Germany and Switzerland investigate the working alliance online which makes for a lack of variety in researchers studying the subject.

Study limitations

There are several potential limitations concerning the results of this review. The first limitation relates to the inter-rater reliability. The scoping review lacked an additional researcher involved in the screening and determination of eligibility of studies which makes for a less reliable selection process. The second limitations relates to the quality assessment of reviewed articles. No exclusion criteria were applied in the screening and selection process to select studies with high methodological quality, but instead a broad coverage of the topic was aimed to achieve. Moreover, abstracts included in this review were required to report the assessment of the working alliance. It is possible that studies reported measurements of the working alliance as an incidental factor that was not included in the abstract, and were therefore not included in this review. At last, a greater variety of search terms could have been used to search for related concepts. These limitations could be addressed in future reviews to

broaden the scope of literature for review and give an even better understanding of current findings on the working alliance online.

Directions for future research

Despite the before mentioned limitations this review can be seen as a step toward a more positive perspective on relationships between therapist and patient in internet-based treatment and highlights the fact that high quality working alliances can be established online. Future research could assess qualitatively what therapists actually do and how therapist and patient interact online to establish this valuable relationship. This might give us some understanding of what type of behaviour can enable a positive working alliance and, possibly, how internet-based treatment options and communication modalities can facilitate these behaviours. A meta-analysis could further combine the quantitative results of the reviewed studies for a more precise evaluation of overall working alliance measurements and their relationship to treatment outcome. Such an analysis could evaluate which types of platform and forms of communication enable better working alliances by grouping types of internet-based interventions and evaluating statistically which yield higher results and to what extent the alliance relates to the treatment outcome.

Work remains to be done to gain a general understanding of how the working alliance relates to treatment outcome in internet-based therapy. The assessment of the relationship between the working alliance and treatment outcome in the group of studies reviewed here are inconclusive and range from moderate relationships to no relationship at all. A detailed meta-analysis might tell us more about the connections between the alliance and outcome and whether further resources should be invested in the research on the working alliance online or if other factors, such as user-friendliness or interface etc., relate more strongly to treatment success in internet-based therapy. The present scoping review shows that the current research base allows for a meta-analysis.

Furthermore, it should be considered to evaluate potential biases. Findings of working alliance ratings tend to be close to the maximum score. This might indicate a possible ceiling effect in the measurement of the working alliance in current research which suggests measurement inaccuracy and distortions of alliance assessment. A possible publication bias could further be assessed, considering that the presented studies investigating online treatment generally report high measurements. This could stem from the fact that measurements of factors underlining the positive effects of online interventions tend to get more attention in research. Researchers measuring negative working alliances might not report these results and focus on other factors instead.

Moreover, future research on the working alliance could make use of newer research methods such as experience sampling or ecological momentary assessments, for which participants report feelings, thoughts or behaviours over a long period in multiple instances. This intensive type of longitudinal research method could be used to gain an understanding of fluctuations of working alliance ratings over time and possibly indicate when ruptures occur. By including these multiple measurements over time, ruptures could be assessed in online therapy, addressing the criticism of neglecting ruptures in research stated by Berger (2017) and mentioned above.

Although the generalizability of the present results must be established in future research, this scoping review has provided strong support for the possibility of a good working alliance in various text-based psychotherapeutic treatments online and with various groups of people suffering from different mental disorders. It might inspire clinical psychologists, psychiatrists and mental health care workers to consider accessible internet-based options with a low-threshold for groups of patients currently without treatment.

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