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Therapeutic alliance in videoconferencing psychotherapy: A review

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Abstract

Psychotherapy services are limited in remote and rural areas in Australia and across the globe. Videoconferencing has become well established as a feasible and acceptable mode of psychological treatment delivery. Therapeutic alliance (TA) is an essential factor underlying successful therapy across therapeutic models. In order to determine the state of knowledge regarding TA in psychotherapy via videoconferencing, a literature review was conducted on research studies that formally measured TA as primary, secondary or tertiary outcome measures over the past 23 years. The databases searched were Medline, PsycArticles, PsycINFO, PsycEXTRA and EMBASE. Searching identified 9915 articles that measured satisfaction, acceptability or therapeutic rapport, of which 23 met criteria for the review. Three studies were carried out in Australia, 11 in USA, 4 in Canada, 3 in Scotland and 2 in England. Studies overwhelmingly supported the notion that TA can be developed in psychotherapy by videoconference, with clients rating bond and presence at least equally as strongly as in-person settings across a range of diagnostic groups. Therapists also rated high levels of TA, but often not quite as high as that of their clients early in treatment. The evidence was examined in the context of important aspects of TA, including bond, presence, therapist attitudes and abilities, and client attitudes and beliefs. Barriers and facilitators of alliance were identified. Future studies should include observational measures of bond and presence to supplement self-report.

KEY WORDS: *rural mental health, telepsychology, videoconferencing, video therapy.*

Introduction

There are a number of barriers to the equitable provision of evidence-based psychological treatments. A general shortage of psychologists and other qualified providers contribute to this problem, with the majority based in major cities. Rural and remote residents have minimal local access to psychological expertise and are often required to travel long distances to access appropriate care. Other hindrances that are common to those living both in rural and urban settings include physical or psychological disability, incarceration, caring responsibilities, financial difficulties, work responsibilities and anxieties associated with the stigma of attending mental health appointments, but these issues might become exacerbated in rural areas due to the requirement to travel long distances to access psychological care.[1–3] Remote videoconferencing therapy services have started to address some of the barriers experienced by rural clients; however, it appears that the in-person model has been assumed to be the gold standard for psychotherapy, with technology-supported services in some way inferior and only suitable as an adjunct to in-person communication or when in-person options are unavailable.[4] Despite this, alongside other forms of remote communication technologies, videoconferencing is gaining credibility as a convenient and practical mode of psychological and psychiatric treatment delivery. The provision of psychotherapy via videoconferencing carries several advantages, including promotion of equitable service delivery, reduction in travel costs, as well as time and disruption to work commitments, reduced stigma (which may be heightened when attending locally provided mental health services in small communities) and increased availability of support and professional supervision for psychologists located in remote areas.[5] In short, videoconferencing has the potential to make best use of scarce psychology and psychotherapy resources over vast distances. The evidence base supporting the effectiveness of psychotherapy via videoconferencing is increasing with the publication of

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What is already known on this subject

- *Clinical and counselling psychology services are inequitably distributed, with shortages in remote and rural areas of most countries.*
- *Numerous naturalistic studies have reported that psychotherapy provided via videoconferencing is associated with high levels of client satisfaction and acceptability.*
- *In spite of this, the use of videoconferencing for psychotherapy has not yet become standard practice for the majority of psychologists, with some studies suggesting a negative bias.*

What this study adds

- *This review synthesises a wide range of quantitative (both controlled and uncontrolled) and qualitative studies that have measured therapeutic alliance either as a primary or secondary measure in the context of psychological therapy, providing a rich source of naturalistic data with high ecological validity.*
- *Evidence to date indicates that client-rated therapeutic alliance is high across diagnostic groups and interventions, and therapist-rated alliance is moderate to high in psychotherapy via videoconferencing.*
- *Evidence suggests that in spite of hesitancy among psychologists, even those with little experience in video therapy adapt their communication style and adjust to the technology in a relatively short period of time.*

larger randomised research trials in recent years.[6,7] Numerous studies to date have shown high levels of satisfaction and acceptability of psychotherapy via videoconference (VC).[8–17] In fact, some clients claim to feel that there is something special about participating in a therapeutic service provided via videolink, and that they view themselves as pioneers in the area.[18] In spite of this, videoconferencing continues to appear to be underutilised among clinical psychologists for the purposes of conducting face-to-face psychotherapy.[19] There may be several factors inhibiting the growth of telepsychology, not least of which is a lack of health care reimbursement for services carried out through remote technology.[20] Perhaps even more pertinent is the widely held belief among psychologists that video therapy is inferior by comparison with in-person treatment.[21–23] This is largely based on the assumption that the presence of technology will interfere with the development of a healthy therapeutic alliance (TA).[22] This paper reviews the telepsychology research literature, which compellingly challenges this assumption.

Most research over the past 20 years has measured the therapeutic relationship specifically in terms of working alliance.[24–31] TA has been operationalised by Bachelor and Horvath in 1999 as a collaborative effort by therapist and client to facilitate healing.[24] Although TA has been described in different ways according to a range of theoretical orientations, most definitions concur on three main conditions: the affective bond or attachment between therapist and client, the collaborative quality of the relationship, and the ability of the therapist and client to agree on mutually acceptable therapeutic tasks and goals.[31–34] It is well established that a positive TA, along with therapist effects, is one of the strongest factors required for effective psychotherapy.[35] A recent meta-analysis of 201 studies indicated that TA accounts for approximately 8% of total variance in therapeutic outcomes across treatment models.[29] In fact, TA as measured early in therapy is a reliable predictor both for outcome and attrition.[28] Findings from several studies indicate that it is the strongest influencing factor[31,36–38] and that the correlation between TA and outcome increases as treatment progresses.[28]

Bordin described three factors that contribute to TA: agreement between therapist and client on goals for therapy, agreement between therapist and client on specific tasks of therapy, and the therapist–client bond.[39] The bond signifies the attachment between therapist and client, and is the basis for the development of trust and the client's ability to face personal fears and anxieties. Although it might be expected that goals and therapeutic tasks are unlikely to be adversely affected by videoconferencing, one could contemplate that the therapeutic bond may be affected by the presence of technology.[40] Previous papers in this area have largely included a brief summary of the current data on TA as secondary to other factors, such as outcome,[41,42] or have integrated their review of TA studies with other process factors, such as client satisfaction, therapeutic environment, treatment expectations and clinical context.[5,15,43] Typically, most systematic reviews do not include all types of evidence, often omitting feasibility studies, evaluation reports and different types of comparison reports. The current review did not exclude these studies as they were considered of value in increasing our understanding of the way in which different aspects of TA function in the context of videoconferencing psychotherapy. Both quantitative and qualitative studies, and published papers as well as unpublished dissertations and case studies, were included, with the aim of

providing a richer and more detailed investigation of the specific aspects of TA, with a specific focus on 'bond' and 'presence'. By including findings from samples of diverse populations from naturalistic and multiple case study settings, this review provides greater contextual generalisability. The reader can determine to what degree the findings are generalisable in terms of whether the research settings described resemble those of the context of the reader.[44] The inclusion of a range of studies that used mixed methods to analyse the data facilitated the integration of both the subjective and objective perspectives.[45] Through combining quantitative and qualitative data, the researchers were able to access 'multiple sources of evidence [which] essentially provided multiple measures of the same phenomenon' (p. 92).[46] Indeed, the range of settings and populations studied and the inclusion of mixed methods for data analysis may in fact enhance the authenticity of the conclusions that have been reached and their generalisability to real clinical settings.[47,48] The objective of this literature review was to explore research that has formally investigated TA in the context of psychotherapy via videoconferencing and to identify preliminary factors in the literature to date that may be influential in either enhancing or inhibiting the development of rapport, with particular reference to the therapeutic bond and experience of presence. This review was guided by Bouchard *et al*.'s proposal that three central factors are likely to facilitate the development of a therapeutic bond in VC: (i) the capacity of the client and the therapist as individuals to develop a TA, (ii) the beliefs that clients and therapists hold towards psychotherapy via VC, and (iii) the experience of presence.[49]

We followed a systematic review protocol with the goal of identifying the strengths and gaps in the literature, clarifying the conclusions that can be drawn from the studies currently available in this area, and proposing suggestions for future research. The general purpose of this paper was to investigate four main questions: (1) 'What are the types of articles that have been published on TA in telepsychology and what is the relative frequency of each type of article?' (2) 'Is it possible to develop an adequate TA via videoconferencing?' (3) 'Is therapeutic alliance equivalent when psychotherapy is delivered via teleconferencing compared with in person?' and (4) 'What are the components of TA that have been measured in relation to psychotherapy via videoconferencing?'

Method

Search strategy

The electronic search engines of Medline, PsycArticles, PsycINFO, PsycEXTRA and EMBASE were searched to identify eligible articles. There were variances in the search strategies used because of how the databases operated (Table 1). We began by searching the terms 'telepsychology' OR 'telepsychiatry' OR 'tele-mental health' OR 'videoconferencing' OR 'video therapy' OR 'video conferencing'. Following this, we combined each of the terms 'therapeutic alliance', 'bonding' and 'rapport' with each of the terms used in the first search. The searches were conducted on 2 May 2013. We screened all titles and abstracts, and we obtained complete reports for the articles that appeared eligible for

TABLE 1: *Searches conducted and terms used*

Database	Terms
PSYCINFO + PSYCARTICLES + PSYCEXTRAS	telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing: 1619 articles telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing AND therapeutic alliance: 1420 articles telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing AND bonding: 1420 articles telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing AND rapport: 1419 articles
EMBASE and MEDLINE	1. telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing: 3997 articles 2. telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing AND therapeutic alliance: 18 articles 3. telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing AND bonding: 3 articles 4. telepsychology OR telepsychiatry OR tele-mental health OR videoconferencing OR video therapy OR video conferencing AND rapport: 19 articles

inclusion. All relevant papers published between 1990 and July 2013 were included. A further snowballing technique was used where reference lists of relevant articles were reviewed for literature that met this criterion. Because of the amount of literature, articles already captured by other means (e.g. systematic reviews and literature reviews) were excluded.

Selection criteria

We established three inclusion criteria: (i) published in English language; (ii) empirical studies focused on live telepsychology defined as any mode of psychology service delivery involving face-to-face communication whereby clinician and client were able to hear and see each other in real time (including the use of Integrated Services Digital Network (ISDN)- and IP-based videoconferencing, Skype, iChat and interactive television systems). As most research in this area is in the form of small-scale naturalistic studies, both controlled and uncontrolled research was included, and (iii) at least one of the following outcomes were reported: therapeutic relationship, TA, bond and presence. We excluded (i) search engine results without an abstract (including letters to the editor), (ii) articles that were focused on psychiatric services that did not involve psychotherapy (e.g. consultations, medication reviews), (iii) interventions that did not use video (i.e. telephone-based psychotherapy, email therapy, online computer-based therapeutic programs), (iv) self-help programs, and (v) articles where TA was not formally measured (including studies that focused exclusively on satisfaction and feasibility). A consensus by both authors was required to establish eligibility of articles. Only 23 of the 9915 articles found were included in this paper (Fig. 1). The majority of articles that were excluded fell into one of the above categories, with most of these having omitted formal measurement of TA. This reflects the relative recency and infrequency of the attention being paid to this topic in the telepsychology literature and supports supporting the need for the current focal review.

Classification analysis of all articles

Analysis of all articles

In order to address the research questions, all 23 articles were analysed. Question 1 was addressed by identifying the types of articles available for review using the strategy described above. Articles were classified as (i) uncontrolled studies (encompassing case studies, case series and cross-sectional surveys); (ii) controlled, non-randomised studies; or (iii) randomised controlled trials (RCTs). Articles were further classified by country, diagnostic group, measures used to assess alliance, mode of

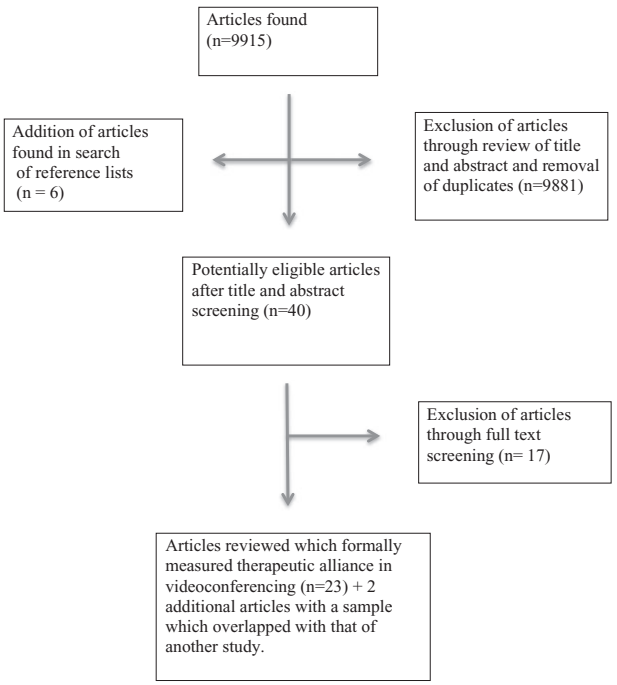

FIGURE 1: *Research flow chart.*

videoconferencing and format of intervention (i.e. individual, group, family, undefined) and type (Cognitive Behavioural Therapy (CBT), family therapy, eclectic or other specified therapeutic model), and are reported in Table 2. Prior to answering Question 3, articles were examined to determine whether different empirical articles were reporting on the same data set. Two studies were identified as having overlapping samples with another study. These were included in Questions 2–3, but were counted as part of the study with the larger sample size in each case. Those articles that were excluded are noted with an asterisk (*) in Table 2.

To address Questions 2, 3 and 4, we scrutinised each of the 23 articles by hand to summarise the conclusions drawn from each study, for the purpose of identifying the degree to which TA via videoconferencing has been demonstrated and how it compares with TA in an in-person setting. In particular, we examined the different aspects of TA as it relates to videoconferencing.

Results

We identified 17 unique articles from the initial electronic searches, and the search of reference lists yielded an additional six unique articles. All of these studies included the formal measurement of TA via either self-report questionnaires or qualitative methods either as a primary, secondary or tertiary outcome measure, with the majority falling into the latter categories.

TABLE 2: *Summary of therapeutic alliance in video therapy studies*

Author (year)	Location	Sample size – (in-person: videoconference)	Alliance measure/s	Study group	Description of intervention	Type of trial	Kbits/s	Outcome
Bischoff *et al.*[50]	USA	3	Qualitative analysis of therapy sessions; qualitative interviews with therapists and clients; open and axial coding of transcripts	17-year-old depressed adolescent and 2 adults with marital problems	Marital and family therapy	Qualitative multiple case study design	Combination of satellite and DSN cable; 'high speed'	Clients and therapists able to make necessary adjustments and accommodations to usual communication patterns which compensated for influence of the technology, thereby preserving the therapeutic alliance
*Bouchard *et al.*[49]	Canada	8	The Working Alliance Inventory (WAI[25,26])	Adults with panic disorder with agoraphobia with co-morbid disorders	12 sessions CBT	Uncontrolled trial	ISDN 384 kbits/s	Very high alliance ratings; total score was 241 (out of a maximum of 252), task score was 27 (maximum possible was 28); 'goals' and 'bond' were rated at maximum possible[28]
Bouchard *et al.*[51]	Canada	21 (10:11)	WAI[25,26] S1, S3 and post-treatment	Adults panic disorder with agoraphobia	12 sessions weekly CBT	Non-randomised controlled trial	ISDN 384 kbits/s	Very high alliance across treatment; scores on bond subscale were 25.9 after session 1, 27.7 after session 5, and 26.8 after session 12
Bouchard *et al.*[7]	Canada	41	WAI[25,26]; Videoconferencing Telepresence Scale[52,53] (sessions 1, 5, 12)	Adults with panic disorder with agoraphobia	12 sessions CBT	Uncontrolled trial	ISDN 384 kbits/s	Presence played significant role in predicting bond between therapist and client
Day and Schneider[54]	USA	80 (in-person: 27; videoconferencing: 26; audio: 27)	Observer ratings on 3 subscales of Vanderbilt Psychotherapy Process Scale: client participation; client hostility; therapist exploration[55]	Adults with wide range of clinical problems including weight problems and personality disorder	5 sessions CBT	Randomised controlled trial	Closed-circuit TV	High working alliance across conditions; statistically less client participation in in-person condition than in videoconferencing (ES: 0.62) and audio (ES: 0.57) conditions
Ertelt *et al.*[56]	USA	128 (66:62)	WAI[25,26]	Adults with BN or EDNOS	CBT – manualised (20 sessions)	Randomised controlled trial	Connection via T1 lines	Therapists generally endorsed greater differences between the treatment delivery methods than clients. Clients tended to make significantly higher ratings of therapeutic factors than therapists.
Germain *et al.*[57]	Canada	46 (29:17)	WAI[25,26]; Session Evaluation Questionnaire[58,59]; Distance Communication Comfort Scale[60]; Videoconferencing Telepresence Scale[52,53]	Adults with primary diagnosis of PTSD	CBT (16–25 weeks)	Non-randomised controlled trial	ISDN 384 kbits/s	Therapeutic alliances equally high in both videoconference and in-person conditions. The avoided situations treated during in vivo exposure did not alter the quality of the therapeutic alliance in either treatment condition. Alliance was not negatively affected by participants' initial comfort level with remote communication nor participants' initial perception of telepsychotherapy.
Ghosh *et al.*[61]	England	1	WAI[25,26]	Adult female-male transsexual	10 session eclectic therapy	Uncontrolled single case study	ISDN 128 kbits/s	Client moderate comfort throughout therapy. Therapist felt increasingly comfortable over first three sessions, then entirely comfortable thereafter.

Glueckauf *et al.*[62]	USA	36 (22 teenagers and their parents)	Modified WAI[25,26]	Teenagers with epilepsy	6 sessions issue-specific family counselling (ISFC)	Randomised controlled trial comparing (in-person; videoconferencing/speaker phone)	ISDN bandwidth not stated	Alliance was moderately high across treatment groups. Parents reported TA as good across all modalities. Teens reported lower TA in videoconferencing condition.
Goetter *et al.*[63]	USA	1	Working Alliance Inventory – Short Form[25,26,64]	Adult woman with OCD	16 sessions of exposure and response prevention	Uncontrolled case study	Skype	Alliance scores high throughout treatment (pretreatment: 6; mid: 7; post-treatment: 7). Client rated high levels of comfort, indicated high agreement that therapeutic interaction was natural, felt she was in the physical presence of her therapist and that she was an active participant in therapy.
*Greene *et al.*[65]	USA	125 (64:61)	Group Therapy Alliance Scale – abbreviated version (GTAS)[66]	Male veterans with moderate to severe anger problems	12 session group anger management therapy	Randomised controlled non-inferiority trial	High-quality bandwidth not stated	Clients reported TA as high (above 4 on a 5-point scale) in both conditions, but greater variance in video therapy group and ratings were significantly lower than in-person condition. Mean ratings within conditions did not mediate clinical outcomes between conditions (in which VC was roughly equivalent to in-person therapy).
Himle *et al.*[67]	USA	3	WAI[26,27] Videoconferencing Telepresence Scale[53,55]	Adults with OCD	Manualised CBT 12 weeks	Multiple baseline case series	ISDN 384 kbits/s	High ratings of alliance, satisfaction and therapist empathy; high levels of telepresence, and a feeling that they were 'in the room' with therapist
Krumm-Heller Roe[18]	USA	12	Semi-structured interviews	Adults active or retired from military and/or family members	Supportive CBT: 6 months to 4 years	Qualitative case series	ISDN 128–384 kbits/s	Therapeutic bond rated at high level by all participants; video therapy served to amplify and accelerate the therapeutic process.
Manchanda and McLaren[68]	England	1	WAI[25,26]	Adult with mixed anxiety and depressive disorder	CBT 12 sessions	Uncontrolled case study	ISDN: 128 kbits/s	High working alliance reported by client and therapist across the 12 sessions (therapist mean rating: 208.6; client mean rating: 224 out of a maximum of 256).
Morland *et al.* (2010)[6]	USA	125 (64:61)	Abbreviated version of the Group Therapy Alliance Scale (GTAS[69])	Male veterans with PTSD	Adult group anger management therapy	Randomised controlled non-inferiority trial	High-quality bandwidth not stated	In-person group participants reported significantly higher therapeutic alliance (see Greene *et al.*[65]).
Morgan *et al.*[70]	USA	186 psychology: (50:36); psychiatry (50:50)	WAI[25,26] Session Evaluation Questionnaire (SEQ;[58,59])	Adult male inmates with mood or psychotic disorder	General mental health and coping/medication management	Non-randomised controlled trial: comparing videoconferencing with in-person therapy	Videoconferencing via secure satellite connection; bandwidth not stated	No significant difference between telemental health and in-person delivery for perceptions of therapeutic alliance or general satisfaction with service.
Porcari *et al.*[71]	USA	20 (attended both VC and in person)	WAI[25,26] Videoconferencing Telepresence Scale[52,53]	Male veterans with PTSD	PTSD assessments	Randomised crossover design: participants randomly assigned to first receive either FTF or VC evaluation in a crossover design	ISDN 512 kbits/s	90% indicated some degree of satisfaction with VC. Most preferred in-person but would use VC rather than travel to appointments. Working alliance was moderate with no difference between groups (in-person = 4.7 (SD 1.0); VC = 5.0 (SD = 0.9). Most participants experienced some sense of telepresence, especially on the social interaction subscale (mean = 78; SD 30).

Rees and Stone[22]	Australia	30	Penn Helping Alliance Scale (HAr)[72]	Australian clinical psychologists	Psychologists required to rate simulated therapy session	Randomised controlled trial; psychologists were randomly allocated to watch a 20-min video of an identical session either in face-to-face or videoconferencing format.	Not stated	Psychologists rated lower levels of TA for session via VC compared with same session carried out in person.
Richardson (2012)	Australia	8	Agnew Relationship Measure[73]	Adults with depression and co-morbidity	Average of 11 sessions CBT	Single case series design	ISDN: 256 kbps (roughly equivalent to 80% quality of television broadcast)	Strength of alliance increased between sessions 1 and 15. Clients rated alliance at higher level than therapist.
Simpson *et al.*[74]	Scotland	6	Agnew Relationship Measure[73]	Adults with bulimic disorders	Up to 26 sessions CBT	Single case series design	ISDN 384 kbits/s	High therapeutic alliance and satisfaction, 3 preferring VC, 1 preferring in person, 2 had no preference.
Simpson *et al.*[75]	Scotland	10	Penn Helping Alliance Scale[72]	Adults with range of clinical problems	Up to 20 sessions CBT	Uncontrolled AB design trial	ISDN 128 kbits/s	Mean alliance rating for teleconferencing clients was 4.0 out of a maximum of 5. The presence of certain personality characteristics (e.g. paranoid and avoidant) may detract from the ability of some clients to engage in this form of therapy.
Simpson and Slowey[76]	Scotland	1	WAI[25,26] Client Change Interview[66]	Adult with obesity and atypical eating disorder	Schema therapy: 7 videotherapy sessions + 1 phone session	Uncontrolled case study	ISDN 384 kbits/s	WAI rated at maximum level at mid- and post-treatment; satisfaction rated at maximum level for quality of sound, picture and 'ease of communication'.
Stubbings[77]	Australia	26 (12:14)	Working Alliance Inventory – Short Form[25,26,64]	Adults with anxiety and/or depression	Manualised CBT	Randomised controlled trial	iChat facility on Apple Mac computers	No significant differences between conditions on working alliance, credibility of therapy and client satisfaction ratings.
Wade *et al.*[78,79]	USA	6 children with TBI and families*	Agnew Relationship Measure[73]; Comfort with Technology Scale (self-developed); qualitative interviews	Families of children with traumatic brain injury (TBI)	Family problem solving (FPS) VC plus online sessions	Uncontrolled trial	Via webcam on computer screen	Parents reported strong TA as indicated by high confidence in therapist and her skills, comfort in openly expressing oneself and agreement on how to work together. Children with TBI and siblings rated therapist as caring (M = 9.67, SD = .52; M = 8.40, SD = 2.07 on a 10-point scale, respectively). In qualitative interviews, children with TBI described FPS more favourably than previous therapy experiences, partly because they felt more 'relaxed' and did not require long car trips. An initial face-to-face interview helped build trust and comfort.
Yuen *et al.*[80]	USA	24	Working Alliance Inventory-Short Form (WAI-S[25,26,64])	Adults with social anxiety disorder	12 sessions Acceptance-Based Behavior Therapy	Uncontrolled trial	Skype	Nearly all clients (95%) reported that receiving treatment through Skype was fairly or very easy. TA increased from a mean of 5.22 at session 2 to 5.73 at post-treatment (out of a maximum of 7). Stronger TA is not related to outcome.

*Study has overlapping sample with another study.

Types and frequency of articles (Question 1)

There were seven RCTs, three non-RCTs, five uncontrolled pilot trials, four single case series and four single case studies. Three articles were PhD dissertations. One case study and one case series were exclusively based on qualitative studies. The remaining 21 studies carried out quantitative analyses. Three studies were carried out in Australia, eleven in the USA, four in Canada, three in Scotland and two in England. A wide range of client groups were included, including panic disorder with agoraphobia,[7,51] mixed client groups including personality disorder,[54,75] transsexual adjustments,[61] mixed anxiety and depression,[68,77,81] teenagers with epilepsy and their families,[62] adult inmates with mood or psychotic disorder,[70] obsessive–compulsive disorder (OCD),[63,67] social anxiety disorder,[80] posttraumatic stress disorder (PTSD),[57,65,82] eating disorders,[56,74,76] and families of children with traumatic brain injury.[79] The majority of studies reported on individual work with adults (18 articles) or adolescents (1), with a minority using other types of contact, including couples work (1) and family therapy (3). The psychotherapy treatment models studied included CBT (13 articles), marital and family therapy (1), acceptance and behaviour-based therapy (1), 'eclectic' therapy (1), general mental health and coping management (1), issue-specific family counselling (1), family problem solving (1), group anger management (1), exposure and response prevention (1), and PTSD assessments (1). One of the articles differed in that it focused on psychologists who rated an identical session conducted either in-person or via videoconferencing.[26] As such, the clinical presentation and psychotherapeutic model was not stated, as the intention of the study was to measure psychologist perceptions of alliance in each condition. The modality of videoconferencing varied from study to study, with the majority of studies using ISDN-based videoconferencing (or via T1 lines or satellite),[16] with a minority using other forms of technology (i.e. iChat (1); Skype (2); other web-based service (1); closed-circuit TV (1); not stated (2)).

A range of measures were used to assess TA, including the following:

1. The full or modified version of the Working Alliance Inventory (WAI) is a 36-item instrument on which participants rate different aspects of their experiences in psychotherapy. The WAI has three subscales derived from Bordin's (1979) transtheoretical conception of the alliance:[27] task, goals and bond. The task subscale contains items related to specific therapeutic techniques used during the session and related technical details. The goals subscale contains items that assess the extent to which the patient and therapist are in agreement on and working towards therapeutic goals. The bond subscale contains items relating to trust, empathy and other factors that contribute to therapeutic bond. This questionnaire includes a range of items, including 'What I am doing in therapy gives me new ways of looking at my problem', 'I am confident in [my therapist's] ability to help me', 'We agree on what is important for me to work on', 'What I am doing in therapy gives me new ways of looking at my problem' and 'We have established a good understanding of the kind of changes that would be good for me'. Each item is rated on a 7-point Likert scale, with 'never' and 'always' at opposing poles. The Working Alliance Inventory-Short Revised is a 12-item measure that assesses three key alliance aspects: (i) agreement on the tasks of therapy, (ii) agreement on the therapeutic goals and (iii) development of an affective bond[25,26,64] (14 studies).
2. The Penn Helping Alliance Scale (Penn) comprises ten 10-point Likert-type items, six of which measure the patient's experience of receiving help or a helpful attitude from the therapist (HA 1), and four of which measure the patient's experience of being involved in a joint or team effort with the therapist (HA 2)[72] (2 studies).
3. The Agnew Relationship Measure (ARM) has five scales: bond, which concerns the friendliness, acceptance, understanding and support in the relationship; partnership, which concerns working jointly on therapeutic tasks and towards therapeutic goals; confidence, which concerns optimism and respect for the therapist's professional competence; openness, which concerns the degree to which clients perceive they are free to disclose personal concerns without fear or embarrassment; and client initiative, which concerns the degree to which clients are able to take responsibility for the direction of the therapy. Items and scales are parallel across client and therapist forms.[73] The ARM has a simple format and uses language that is compatible with most therapeutic approaches[73] (3 studies).
4. Videoconferencing Tele-Presence Scale (VTS) is an eight-item questionnaire that participants rate according to the degree to which they feel they were 'being with' the therapist during their most recent videoconferencing session. For each item, participants must rate the degree to which they agree with a statement by using a percentage scale (0–100%). The validation study identified three factors: physical presence (e.g. 'I had the feeling I was in the same room as the other person'), social presence (e.g. 'It seemed the person or party located at the other videoconference site and I were together and that feeling disappeared when the videoconference

session ended') and absorption (e.g. 'When the videoconference session ended, I felt like I was coming back to the real word'), with a Cronbach's alpha of 0.84[52,5353] (4 studies).

5. Vanderbilt Psychotherapy Process Scale (VPPS) comprises 44 5-point Likert-type items assessing seven dimensions of therapist and patient attitudes and behaviours: patient exploration (PEXP), therapist exploration (TEXP), patient participation (PPAR), patient hostility (PHOS), therapist warmth and friendliness (TWFR), negative therapist attitude, and therapist directiveness (TDIR)[55] (1 study).
6. Distance Communication Comfort Scale (DCCS) is a self-report questionnaire that contains 27 statements relating to participant comfort level with three different types of communication: face to face, VC and telephone[60] (1 study).
7. Session Evaluation Questionnaire (SEQ) measures session evaluation and two dimensions of participants' post-session mood: positivity and arousal.[58,59] Psychotherapy sessions are evaluated as good or bad along two main dimensions: (i) as powerful and valuable versus weak and worthless (depth), and (ii) as relaxed and comfortable versus tense and distressing (smoothness). In addition, the SEQ measures two dimensions of participants' post-session mood, positivity and arousal, which are generally considered as basic theoretical dimensions of mood and emotion.[83,84] The SEQ, Form 5, includes 21 items in a 7-point bipolar Likert scale. Participants are instructed the following: 'Please circle the appropriate number to show how you feel about this session'. The items are divided into two sections: session evaluation and post-session mood. The stem 'This session was:' precedes the first 11 items (session evaluation), bad–good, difficult–easy, valuable–worthless, shallow–deep, relaxed–tense, unpleasant–pleasant, full–empty, weak–powerful, special–ordinary, rough–smooth, and comfortable–uncomfortable. The stem 'Right now I feel:' precedes the second 10 items (post-session mood), happy–sad, angry–pleased, moving–still, uncertain–definite, calm–excited, confident–afraid, friendly–unfriendly, slow–fast, energetic–peaceful, and quiet–aroused. Each item is scored from 1 to 7, with higher scores indicating greater depth, smoothness, positivity or arousal. Each dimension is scored as the mean of the constituent item ratings, rather than the sum of the item ratings. Consequently, the dimension scores lie on the same 7-point scale as the individual items, making interpretation easier. The midpoint of each SEQ scale is 4.00, and the possible range (e.g. from maximum shallowness to maximum depth) is 1.00–7.00. The SEQ has had several iterations, and factor analyses confirm an independent and internally consistent set of items.[58,59]
8. Group Therapy Alliance Scale (GTAS) is a 36-item questionnaire of group therapy alliance, based on the systemic model of alliance.[69] This scale was designed to measure a modified version of Bordin's (1979) alliance model across four interpersonal dimensions: (i) individual group member to therapist alliance, (ii) members-as-a-group to therapist alliance, (iii) others-within-the-group to therapist alliance and (iv) member to member alliance. Items are rated on a 7-point Likert scale (completely disagree (1) to completely agree (7) to rate their working alliance with the group as a whole, the group members and the therapist(s)) (2 studies).
9. Qualitative interviews or analyses of sessions[18,50,66,76,78,79] (4 studies).

Most studies used more than one measure. These are summarised in Table 2.

Feasibility and strength of TA via videoconference (Questions 2 and 3)

Consistent with previous reviews, comparisons between studies were difficult due to variations in type and reliability of technology with attendant discrepancies in audio/video quality and bandwidth.[5,15,41,42,85] The presence of a number of (possibly confounding) factors makes it difficult to draw clear conclusions. These factors include aspects of TA: 'bond, presence, therapist attitudes and abilities, client attitudes and beliefs'; type of telepsychology, client and therapist experience across the above parameters; types and wide range of patient/client groups across studies and therapeutic modality. Some studies stated the type of technology but did not state either the bandwidth or the model/size of videoconferencing unit or screen, making juxtaposition impractical. Nevertheless, the inclusion of a wide range of studies that have used different technologies and measured TA in different ways gave us the opportunity to examine different aspects of TA and to explore whether TA can be established across different diagnostic groupings and therapeutic models. The variations have also provided an opportunity to consider how the specific elements of TA manifest in a range of therapeutic conditions and contexts. In spite of the variations between modalities, it was considered important to include a wide range in order to realistically reflect past and current trends in this growing field. Due to the possibility that each therapeutic model may have its own unique issues and differential outcomes, the modality used within each study was clearly identified in Table 2, and potential confounding factors were considered in relation to the aspects of alliance reported in this review. Nonetheless, the majority of studies used a therapeutic

model that included cognitive and/or behavioural components, and were both problem-focused and time-limited. In spite of the inconsistencies across diagnostic groups, technologies and therapeutic models, TA ratings (as measured by self-report questionnaires or qualitative methods) for VC sessions were surprisingly homogenous across studies, and roughly equivalent to TA ratings for in-person therapy in those studies with a comparison group.[6,51,54,56,57,65,70,77] All 22 studies that measured therapist and/or client alliance concluded that both perceive moderate to strong TA via videoconferencing. Some patients described enhancement of the therapeutic relationship via telepsychology, with a few indicating a preference for these over in-person sessions.[74,75,86] The strength of TA as rated by video therapy clients was demonstrated in some studies to increase between pre- and post-therapy,[80,81] whereas others described high alliance throughout the course of therapy.[18,51,53,54,56,57,62,63,65,67,68,74–76,79,80] Two studies reported comparatively higher alliance in the in-person condition. Both were group settings, with one family therapy[62] and the other a group anger management study.[65] In the family therapy study, TA was rated on the modified WAI across three modalities (in-person, by speakerphone and by videoconferencing) by teens with epilepsy and their parents. The parents rated good levels of TA across the three modalities, while the teens reported lower levels of TA in the videoconferencing condition. The authors hypothesised that the neuropsychological deficits that can accompany epilepsy may have interfered with their ability to encode and interpret social interactions via the videoconferencing format. In the anger management group, male veterans rated high levels of TA in both conditions (over 4 on a 5-point scale), but there was more variance in the telepsychology condition alongside significantly lower ratings than the in-person condition. While TA ratings were found to predict clinical outcomes for individuals, mean ratings within conditions did not mediate outcomes between the conditions (in which in-person treatment was not superior to telepsychology). The authors proposed that alliance may have been affected by the duration and intensity of this group-based treatment, as well as other patient-specific determinants (including comfort or familiarity with technology or treatment history). It may be that group treatments can be experienced as particularly demanding for some patients due to the need to manage multiple distractions and demands on their attention, including balancing videoconferencing etiquette with group interpersonal dynamics. In particular, patients with PTSD may be particularly challenged due to the characteristic hypervigilance associated with this disorder. Another study[71] that evaluated individual therapy with veterans also found a preference for in-person therapy, but TA was moderate with no difference between groups. In spite of their indicated preference for in-person sessions, 90% indicated some degree of satisfaction with VC, stating that they would rather use videoconferencing than travel to appointments.[73] Interestingly, both group studies used videoconferencing with high-quality bandwidth, suggesting that quality of technology and connection may not have been major factors influencing alliance. Another finding supporting this notion was that those forms of videoconferencing that are considered less reliable (e.g. Skype, iChat) did not appear to be associated with lower alliance, with high client ratings of alliance, satisfaction and presence reported in these studies.[44,48,62]

In the study that measured psychologist perceptions of video therapy compared with in-person therapy,[26] a simulated fourth treatment session was acted out by a therapist/actor pair to be as identical as possible across both settings. Sessions were recorded and checked for equivalence by an independent psychologist. The script was repeated verbatim in the video therapy session, and gestures, clothing and accessories remained constant across settings. A sample of psychologists was randomly assigned to watch either the face-to-face or videoconferencing session. The TA in the videoconferencing session was rated as significantly lower compared with the in-person session, suggesting that psychologists perceive that the technology hinders the development of the therapeutic relationship, and in particular the client's experience of their therapist as understanding, warm and empathic.

The articles included in this study focused on different aspects of TA, and more detailed findings will therefore be discussed under the categories proposed by Bouchard *et al*.[49] and Bordin[39]: bond, presence, therapist and client beliefs about psychotherapy delivered via VC, and the relative capacities of therapist and client to form a TA. These factors are explored in the context of previous findings in this area.

Components of therapeutic alliance in psychotherapy via VC (Question 4)

Bond and presence

Therapeutic bond, or emotional attachment between therapist and client, is a central component of TA and is measured most commonly by the bond subscales of the WAI, ARM and GTAS inventories. Most of the studies included in this review referred to global TA ratings. Although they mostly included bond as a subcategory, only a minority specifically separated out these ratings in their analyses. Those studies that did refer to bond suggested that high levels of bond can be generated via telepsychology even from the earliest stages of

therapy.[7,18,49,51] One such study found that an initial mean bond rating of 26 (of a maximum of 28) after session 1 rose to 27 after five sessions, and remained at this level at post-treatment, with a group of clients receiving telepsychology for agoraphobia and panic disorder.[51] The authors speculate that the use of P in P (Picture in Picture – an image of oneself on the screen) may have contributed to TA as it gave therapists ongoing visual feedback on their work. Similarly, a recent case series of clients with either depression or anxiety[81] found that client ratings of bond improved by over one standard deviation over 15 sessions. Whereas friendliness and acceptance items were endorsed more frequently at the beginning of therapy, support and understanding items were also endorsed at higher ratings as therapy progressed. The author suggests that a therapeutic bond was initially developed through a friendly or warm interaction style, but the bond deepened and became more intricate as the relationship developed. Indications from the client perspective were clearly in support of the notion that warmth can be communicated within the context of video therapy. Overall, these ratings suggest that the medium of telepsychology (via VC) can transmit warmth directly, and can also promote the development of deeper level emotions and attachment. In contrast, therapist ratings of bond were positive and largely constant throughout the therapeutic process. Similar findings were reported in a recent study[56] whereby client ratings of bond did not differ between treatment conditions and increased over the course of treatment. Therapists rated higher levels of bond in the in-person than in the VC condition, but in both the level of bond was high and improved significantly over the treatment period.

Telepsychology is frequently criticised on the basis that the artificiality of the technology-mediated image and audio quality will interfere with the sense of presence considered to be a necessary condition for TA to be developed and maintained (e.g.[22,49]). Presence has been defined by one researcher as the perception of being in a space or environment, even when one is physically located in a different place,[7,53] and has been closely linked to the concept of TA and bond.[51,57] This may be influenced by factors such as individuals' ability to immerse themselves in the virtual or technology-based environment, as well as external factors (e.g. ease of communication, quality of picture and sound, lip–voice synchronisation, presence of distractions).[87] In the context of telepsychology, this would translate to the sense that one is in the presence of the person at the remote site, rather than being in a geographically different location. Several studies have described client and therapist experiences of actually forgetting that the other person was not with them in the room, and being completely engrossed in the therapeutic process without feeling distracted by the technology.[51,63,67,71] In one study, the subjective experience of social presence (i.e. the feeling that they are actually in the room with the therapist) was found to predict more than 20% of the bond between client and therapist.[7] Social presence was rated as even stronger than physical presence, suggesting that clients have a strong sense of being present with the therapist and 'in' the therapy, while retaining a clear sense of their actual physical location. Notably, Germain *et al*. (2010) report that TA rated by clients did not appear to be impacted by a range of factors associated with videoconferencing, including initial level of comfort with and perceptions of videoconferencing, difficult therapeutic tasks (e.g. in vivo exposure to avoided situations) or experience with telepsychotherapy in their study with clients with PTSD, suggesting that even those who initially hold negative expectations are able to benefit from this type of treatment.[57]

A key determinant of the therapeutic bond as construed by most TA measures is the level of empathy conveyed by therapists.[66,88] In a meta-analysis of over 57 studies, Elliot *et al*. found that empathy predicted treatment outcome consistently across different therapeutic models, treatment formats (individual, group) and levels of client problem severity. This effect was greatest for client- and observer-rated empathy compared with therapist perceptions of empathic accuracy measures. This involves a conscious effort by the therapist to both understand and demonstrate understanding through responding in ways that meet clients' emotional needs. This includes checking out that they understand the clients' experience correctly and providing validation for the clients' viewpoint.[89] It is likely that therapists have to consciously work at conveying empathy in video therapy sessions in order to compensate for factors such as delays in sound, lack of eye contact and inability to physically hand over a box of tissues.[71] In addition, therapists may need to rely more heavily on verbal gestures to convey understanding and TA in telepsychology than in in-person settings.[90] A recent study looking at exposure and response prevention for OCD[67] showed that therapists were more likely to rely on verbal reinforcement of clients' efforts. In this study, clients reported high levels of therapist empathy, high TA and a strong sense that they were in the room with the therapist. The authors speculate that clients may also have felt less anxious about showing distress via VC. As in-session exposure sessions required clients to perform tasks independently, they also felt more confident about transferring these skills to between-session homework practice. Other studies have noted similar effects, whereby videoconferencing may enhance communication by slowing down interactions through turn-taking, and paying more attention to social cues and to signs of emotionality.[86,91]

Several studies have noted that clients describe feeling less self-conscious in VC sessions as compared with in-person treatment.[20,67,68,76] In a case series of clients with bulimic disorders, participants reported that video therapy was less intimidating, less pressured and more convenient than in-person sessions.[74] Clients described a greater sense of personal space and increased personal control in video therapy. In some cases, telepsychology was also shown to ensure a greater sense of confidentiality (such as for those living in a small, close-knit community). Others experienced anxiety regarding possible stigmatisation associated with attending telepsychology sessions at their local mental health clinic, although one might expect similar difficulties even if a local in-person clinic were provided. Given the high levels of shame associated with the experience of eating disorders, it was suggested that video therapy may in fact facilitate the development of a therapeutic rapport by providing the 'distance' or space required to minimise shame experienced in therapy. However, the authors also recommended that 'shame' be directly addressed in treatment at an appropriate point so that it can be faced and worked through, rather than avoided altogether, potentially jeopardising therapy. It was suggested that video therapy may be a factor that enhances TA with this client group as a result of equalising the power balance. Whereas in-person therapy takes place within the therapist's office, video therapy requires that both participants have their own space, and clients are aware that they can use the controls to turn the volume up or down, zoom the therapist in or out (or off!), or even terminate a session if they so choose. Participants in this study reported that this increased their sense of control, and reduced feelings of being 'intimidated' and 'pressured' that may be induced by simply attending therapy. It was also suggested that those clients who find intimacy and 'connection' with others uncomfortable, such as those with avoidant coping styles, may find they are more able to participate in therapy conducted via VC. Video therapy may provide sufficient distance from the therapist, to provide clients with a sense of safety to think about and experience closeness without feeling invaded and without their sense of identity being threatened. For many such clients, this may be their first opportunity to experiment with developing an attachment to another person in a safe holding environment, while retaining some sense of personal control. In fact, those who experience low levels of internal control in their day-to-day lives and relationships may prefer the extra control offered by videoconferencing. Similarly, those who feel ashamed or self-conscious in the context of discussing their difficulties may also prefer the distance and opportunity for control offered by videoconferencing.[92] One client in this study described feeling safe to discuss her difficulties via VC, as she was less fearful of losing control over her emotions. This was associated with feeling less 'scrutinised' and 'embarrassed' when communicating in this modality (compared with in-person therapy). A similar experience was described by a client who was seeking help for an eating disorder with obesity,[76] reporting that video therapy allowed her to feel less embarrassed and shy than she would have been in in-person therapy, and therefore less inhibited about discussing her difficulties. Previous studies have indicated that clients who experience high levels of shame or self-consciousness, as well as those who use avoidant coping styles, and those who require high levels of control, may find that videoconferencing provides a fertile environment for the development of a positive TA.[51,74,76,80,93] Krum-Heller Roe conceptualises this as the dialectic of 'hiding/exposing', characterised by the ambivalence that clients experience when they partly feel an urge to keep their true selves hidden, and partly to open up and be known by others.[18] In this study, one client described feeling that videoconferencing provided a sense of safety and protection, which allowed her to express her feelings. Videoconferencing also seemed to protect her sense of separateness, thus allowing her to feel able to expose her difficulties from the safety of distance. A different client described the videoconferencing as a barrier to the discussion of difficult issues at first and accepted the offer of an in-person session to help establish a rapport. He acknowledged that following this in-person session, he was able to make the decision to learn to open up via videoconferencing. Clearly, individuals respond differently to the presence of technology, with some feeling safer to communicate openly, and others feeling more guarded and suspicious. In many cases, the opportunity to have an initial in-person meeting with the therapist can help establish comfort and trust, enabling participants to overcome initial anxieties about the use of psychotherapy and videoconferencing.[78,94]

Therapist attitudes and abilities

If therapeutic bond and TA are associated with factors such as empathy and transmission of warmth, then therapist attitudes and abilities will be important components that may either facilitate or detract from the development of a strong rapport in telepsychology. Studies in in-person settings show that therapist anxiety can interfere with the development of TA, especially if it leads to reactivity to the client, such as being critical or tense.[57,95] It is therefore of key importance to identify attitudes that therapists hold towards the use of video therapy, and the way in which this influences their behaviour and the TA. Indeed, psychologists have expressed scepticism about the potential for developing a TA via VC. In one study (Rees and Stone), psycholo-

gists were randomly assigned to rate TA of a 20-min video of a therapy session conducted either in-person or via VC.[22] Although the session was identical in both conditions, psychologists expressed concern that the technology would have a detrimental effect on TA, and expressed concern that client's perception of therapist empathy, sensitivity, warmth and understanding would be compromised. Shore *et al*. described similar findings when psychiatrists rated client satisfaction of psychiatric assessments by American Indian veterans (Structured Clinical Interview for DSM Disorders (SCID)) as markedly lower than participants actually rated themselves.[96] Similar findings were found in another study[23] in which psychologists' attitudes to videoconferencing were qualitatively explored. Psychologists believed that therapy conducted via videoconferencing would be less effective than in-person therapy. They also suggested that clients in crisis or with complex presentations would be unsuitable for VC therapy, including those experiencing psychosis, suicidal ideation or with personality disorders. A significant number of psychologists in this study also believed that VC therapy would only be appropriate for time-limited, structured therapy (including CBT, assessments, psycho-education, case management, reviewing homework). They indicated that longer term, less structured therapy approaches, such as psychodynamic therapy or therapy with complex clients, would be less suitable to deliver via VC. The majority of psychologists who were interviewed indicated that although they felt that a collaborative relationship would be possible via VC, they anticipated that the technology would compromise the development of a TA due to difficulties conveying empathy, sensitivity, warmth and understanding. So are these expectations held by psychologists with little or no personal experience in the use of VC for therapeutic purposes borne out by the current evidence?

Although therapists using VC sometimes rated TA at a lower level than clients,[56,68,81] in general their TA ratings ranged from moderate to very high. The evidence also suggests that even psychologists with little experience in video therapy usually become accustomed to it in a relatively short period of time.[14,97] Several factors have been identified as crucial in terms of the capacity of the therapist to facilitate TA in the context of in-person therapy. As the creator of person-centred therapy, and one of the very first therapists to describe TA, Rogers highlights several important factors that are conducive to a strong therapeutic rapport, including the expression of unconditional positive regard, spontaneous praise, acceptance and a sense of caring for the client.[98] The importance of conveying genuine and authentic congruence is an essential ingredient, as communicated through active and engaged listening and relating.[99–101] The evidence to date suggests that in fact therapists do make adjustments when conducting therapy via VC in order to convey these important factors while facilitating the development of TA. Bischoff *et al*. found that both therapists and clients made three main accommodations to their usual communication styles in order to adapt to the technology and to promote TA.[50] These accommodations include the following: 1/being more deliberate and overt in nonverbal responses, such as through purposefully exaggerating voice inflections and changes in tone, as well as gestures and mannerisms; 2/asking more questions in order to clarify the meaning attached to clients' facial expressions and body language; and 3/offering an in-person session within the rural community at the start of therapy as a way of boosting rapport. In fact, two of the three clients declined due to privacy concerns. These authors observed that therapists and clients adjusted quickly to the change in pace of conversation required over videoconferencing, with minimal disruption to the flow of communication. They note that, in many cases, therapists and clients appear more invested in the therapeutic relationship conducted by VC, and more tolerant of plans not turning out as expected, perhaps due to the understanding that working at a distance may be more difficult to initiate and sustain. Similarly, Manchandra and McLaren report that the therapist in their study used gestures of encouragement and support and that were noticeably more exaggerated than in an in-person setting.[68] Tuerk *et al*. observed that those therapists who were competent in videoconferencing had developed clinical flexibility, strong rapport building skills and creativity when carrying out prolonged exposure therapy via videoconferencing in the treatment of adults with PTSD.[11] Even at low bandwidth and low audio and visual quality, therapists and clients are able to adjust to the transmission delay by making adaptations, such as using shorter sentences (allowing more opportunities for the other to speak, thereby reducing interruption of each other caused by both talking at the same time) and turn-taking (i.e. waiting for the other to finish speaking and pause before beginning).[61] In fact, therapists may be more likely to take the time needed to prepare for sessions conducted via videolink than in-person sessions, which has the potential to enhance clinical outcomes.[75,81]

Client attitudes and beliefs

Just as therapist attitudes and skills play a role in the development of rapport, the individual capacities and potential of clients also are of crucial importance. In general, clients did not appear to have a modality preference,[56] although some studies have indicated that when given a choice clients expressed a preference for

telepsychology over in-person psychotherapy.[8,74,75,102] Just as therapists appear to make adjustments when working by VC, a number of studies have identified similar patterns with clients, with significantly more client participation in videoconferencing than in in-person settings. Clients were found to be more active, with higher levels of initiative, spontaneity, trust and disinhibition. The authors suggest that clients may have a propensity to make more effort to communicate and to take greater responsibility for their role in the dialogues than in a conventional in-person setting. It may also be that the distance gives an extra dimension of safety that allows more openness in communication.[54] Germain *et al*. noted that even when clients had negative preconceptions or were not initially entirely comfortable at the start of video therapy, this did not interfere with the development of a positive rapport.[57] These authors also found that factors that have been found to undermine TA in-person settings (e.g. defensive attitude, lack of psychological preparedness) did not adversely affect alliance in video therapy. Even the stress of carrying out exposure work with previously avoided tasks, did not interfere with TA.[57]

Discussion

The aims of this systematic review were to identify, synthesise and interpret the findings on TA via VC using a predefined search and selection protocol to address four general questions. We will discuss the issues that pertain to each of the four questions.

Types of articles (Question 1)

Of the 23 articles included in the review, seven were RCTs, three non-RCTs, five uncontrolled pilot trials, four single case series and four single case studies. Two studies were exclusively based on qualitative data, and the remaining 21 studies carried out quantitative analyses. A range of client groups were covered in these studies, including panic disorder with agoraphobia, mixed client groups including personality disorder, transsexual adjustments, mixed anxiety and depression, teenagers with epilepsy and their families, families of children with traumatic brain injury, adult inmates with mood or psychotic disorder, OCD, social anxiety disorder, PTSD, and eating disorders. The majority of studies reported on individual work with adults (18 articles), with a minority using other types of contact, including couples work and family therapy. The majority of studies used CBT as the main treatment focus, or a similar time-limited solution-focused treatment approach. A range of videoconferencing modalities were also used, including ISDN-based videoconferencing, (or via T1 lines or satellite), with a minority using other forms of technology (i.e. iChat, Skype, other web-based service, closed-circuit TV).

A range of measures were used to assess TA, including the WAI, Penn, ARM, VTS, VPPS, DCCS, SEQ, GTAS and qualitative interviews or analyses of sessions. Most studies used more than one measure.

Feasibility and strength of TA via videoconference (Questions 2 and 3)

Preliminary evidence from this review suggests that TA is equivalent across in-person and VC modalities, and that in-person therapy may not be the gold standard for everyone.[6,41,51,54,56,57,65,70,74,75,77] In spite of inconsistencies across diagnostic groups, technologies and therapeutic models, TA ratings (as measured by self-report questionnaires or qualitative methods) for VC sessions were surprisingly homogenous across studies, with all 22 studies that included therapist and/or client ratings reporting moderate to strong TA. Indeed, some patients indicated a preference for using web-based technology over in-person sessions,[74,75,86] which is consistent with previous findings.[40,103] Many studies described high TA throughout the course of therapy.[18,51,53,54,56,57,62,63,65,67,68,74–76,79,80] Two studies that reported on group therapy (i.e. family therapy for epilepsy and group anger management) reported comparatively higher TA in the in-person condition. Group treatments may be particularly demanding for some patients in a VC setting due to the need to manage multiple distractions and demands on their attention, including balancing videoconferencing etiquette with group interpersonal dynamics. One study investigated psychologist perceptions (as observers) of an identical simulated therapy session conducted via VC and in-person therapy; the TA in the videoconferencing session was rated as significantly lower compared with the in-person session. This finding suggests that psychologists may have had negative expectations about the impact of technology on TA that influenced their ratings of TA in the VC condition.[22]

Components of therapeutic alliance in psychotherapy via VC (Question 4)

Of the minority of studies that specifically examined therapeutic bond, all indicated that high levels of bond can be generated via VC even from the earliest stages of therapy.[7,18,49,51] In general, ratings suggest that VC can in fact facilitate the transmission of warmth and the development of deeper level emotions and attachment. A sense of 'presence' has also been considered a key factor affecting the development of TA via VC, with several studies noting that both clients and therapists

described being completely absorbed by the therapeutic process without feeling distracted by the technology.[51,63,67,71] Some studies suggested that VC may enhance communication by slowing down interactions through turn-taking, paying more attention to social cues and to signs of emotionality,[76,86,91] and equalising the power balance.[74] Indeed, in many cases, clients report reduced shame and self-consciousness, such that the distance and opportunity for increased control provided by therapy via videoconferencing allows them the safety to communicate openly about their difficulties.[74–76] For others, videoconferencing may initially represent a barrier to communication, and they may require more help with adjusting to the technology. It appears that with experience, both therapists and clients make accommodations to their usual communication styles in order to adapt to the technology and facilitate TA.[50]

The studies included in this study were mostly small pilot studies, with a few RCTs. The small scale and naturalistic setting of these studies increase ecological validity and enable a rich description of therapeutic factors that might not have been possible to elucidate in larger trials.[46,47] However, larger, adequately powered studies will also be required in the future to verify these findings. Studies on TA in in-person settings suggest that therapist anxiety or reactivity may undermine the development of TA.[95] It will be important for future studies to measure clinician attitudes and perceptions in relation to videoconferencing, and to explore to what extent these impact on the strength and development of TA. Therapist characteristics along the dimensions of warmth/hostility and flexibility/rigidity have also been found to be correlated with strength of TA, and it will be important to measure these factors in the future in relation to videoconferencing psychotherapy. Future studies may also improve the reliability of the measurement of bond and presence through triangulation of both psychometrically valid quantitative measures and qualitative assessment of this construct.

To reduce the impact of apparent unsupported biases regarding the efficacy of telepsychology, psychotherapists should be encouraged to become aware of the current process and outcome evidence that supports the use of this modality in psychotherapy. This may be achieved through the incorporation of training in videoconferencing psychotherapy to help clinicians develop insight and self-reflexivity into the way in which their behaviour and therapeutic style influence the quality of TA with different client groups.[104,105] Training could focus on the development of moment-by-moment awareness, and the cultivation of the therapist's ability to self-reflect both on their own responses and on the therapeutic process as it takes place via videoconferencing. In addition, therapists may benefit from training in 'relational sensitivity'[106,107] through which they can better recognise and resolve therapeutic ruptures, thereby capitalising on critical opportunities for change and growth in video therapy. It will be important for clinicians to routinely measure both TA and clients' experiences of and responses to video therapy itself in order to improve their capacity to recognise and repair therapeutic ruptures, and to prevent unplanned termination.[108]

It will also be important to consider whether there may be certain client groups who are more or less likely to benefit from VC therapy. It has been suggested that the presence of certain personality characteristics (e.g. paranoid and avoidant) or difficulty trusting others may detract from the ability of some clients to engage in this form of therapy, due to fears about being watched or recorded.[74,75] For some clients, difficulty trusting others and a lack of social confidence may increase the anxiety they feel about the use of videoconferencing. Richardson also described a poor client-treatment match with two clients who had a history of childhood abuse, rigid personality characteristics and signs of dissociation.[81] She suggested that these clients may be less suited to stand-alone telepsychology due to their approach-avoidance interpersonal style and emotional dysregulation, and might benefit more from the stability and increased support offered by a combination of in-person and videoconferencing sessions. In another study, teenagers with epilepsy[62] were found to rate lower levels of TA in videoconferencing sessions than those conducted via speakerphone or in-person, even though their parents rated equal alliance across conditions. In this study, the authors speculate that the epilepsy may have interfered with their ability to process information communicated by videolink. On the other hand, it has also been suggested that some clients may be better suited to VC than in-person therapy. This might include those who experience high levels of shame and body-related self-consciousness, as well as those with a high need for control,[74] although further studies are needed to test this hypothesis.

Although in some cases we may be able to find a way of matching client characteristics, such as presenting problems, personality type and level of comfort with technology, to different modes of treatment delivery,[54] for many clients living in remote and rural areas videoconferencing may represent their only feasible means of accessing psychotherapy.[76,109,110] Therefore, further research should also be conducted into the factors that may strengthen TA for clients who initially find video therapy uncomfortable, or whose difficulties are more complex or require more intensive psychotherapy. Further studies are also required to identify the relative advantages and disadvantages of the types of

technology available, with a view to pinpointing factors that enhance or detract from the development of therapeutic rapport.

There are inherent difficulties associated with measuring a subjective concept such as TA, with researchers employing a range of definitions and measures in an attempt to quantify it in concrete terms. It may also be subject to bias, depending on the mode of administration and patients' perceptions of whether or not their therapist will view their ratings. It is suggested that future research in this area would benefit from comparing observer ratings of TA across VC and in-person modalities to determine the association between self-report and observed TA. This would also allow the researcher to observe any factors that may be specific to VC that facilitate or detract from the development of TA.

Conclusion

Only 23 telepsychology studies of more than 9000 were identified in this review that measured TA as a primary, secondary and tertiary outcome measure. Preliminary evidence on the basis of the studies demonstrated high levels of TA as rated by clients and therapists, even at low bandwidths and poor quality image/sound. In general, clients have rated the TA at least as high in the VC as in-person therapy. Therapist ratings are also generally high, often increasing over the course of therapy. There is evidence that therapists often make adjustments when using videoconferencing, which allow them to express empathy and warmth in an active fashion. Therapists tend to be more likely to check with clients for clarification and to ask for more information about facial expressions and bodily gestures. It may also be that the additional preparation that therapists make before VC therapy sessions may be a factor that potentially enhances clinical outcomes. Clients have commented that the enhanced control and personal space that they feel in video therapy can enhance the TA. There is also initial evidence that clients are more active in video therapy than in-person therapy. This may be as a result of a greater sense of ownership or responsibility for their part in the therapeutic relationship, and also due to feeling less intimidated and thereby safer to openly discuss feelings and problems. It seems that as therapists learn to tailor their approach to individual client characteristics, the TA is strengthened. These promising findings support the need for further research in this area to encourage practice and training in telepsychology, and to make therapy more accessible for geographically disadvantaged clients.

Author contributions

SGS and CLR contributed equally.

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