Evidence Compass

Technical Report

Is online video counselling at least equally acceptable and equally as effective as in-person counselling?

A Rapid Evidence Assessment

March 2017

Disclaimer

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Please address any comments or queries about this report to

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Executive Summary

- This report reviews current research on the acceptability and outcomes of online video counselling (OVC) as an alternative to the traditional approach of delivering counselling in-person.
- New innovations in computer technology are opening the door for mental health practitioners to provide high quality services to a broader population of clients than ever before.
- Face-to-face communication is no longer restricted to those occupying the same room. Through the use of OVC, mental health professionals have the ability to see and treat clients from a distance, thus overcoming some of the limitations of traditional in-person counselling.
- The adoption of such services is important for addressing the significant access-to-care issues affecting not just residents living in rural areas of Australia, but also those who are unable to attend in-person sessions due to their other commitments, the nature of their illness or stigmatisation concerns.
- While there is a growing body of research demonstrating the potential of OVC to treat clients effectively, the efficacy of this treatment modality is yet to be rigorously established.
- The aim of this review was to explore the literature on OVC as a medium for the treatment of adults with a broad range of mental health problems, including depression, anxiety, and posttraumatic stress disorder. In particular, it investigates the efficacy of one-to-one OVC for the treatment of adults with mental health concerns and compares this treatment with traditional in-person counselling in terms of clinical outcomes, therapeutic alliance, client satisfaction and attrition.
- This literature review used a rapid evidence assessment (REA) methodology. The search identified two high quality recent systematic reviews of the literature relevant to the research aims. The first of these reviewed studies published between 1997 and 2010 and was conducted by Backhaus et al. (2012). This review focused on the types of psychological disorders investigated, clinical outcomes, satisfaction ratings, therapeutic relationship and attrition rates for OVC. The second, by Simpson and Reid (2014a), reviewed studies published between 1990 and 2013, with a focus on the therapeutic

alliance in OVC. These reviews were complemented with a literature search of later papers published before July 2016.

- These studies were collated to determine an overall ranking for level of support for OVC's equivalence to in-person counselling for (i) the treatment of depression and anxiety and PTSD, (ii) the establishment of a therapeutic alliance (iii) client satisfaction and (iv) attrition. The ranking categories were 'Supported' with clear, consistent evidence of equivalence with in-person counselling; 'Promising' with equivalence suggested but further research required; 'Unknown' or 'Not Supported' with insufficient evidence of equivalence or clear consistent evidence of inferiority.

- The search identified fourteen studies that considered the efficacy of one-to-one OVC for the treatment of depression and anxiety, four for the treatment of PTSD, fifteen that considered therapeutic alliance from the perspective of the client and four from the perspective of the therapist, and fourteen that considered the level of client satisfaction with one-to-one OVC. In all thirty-four papers were included in this REA.

- The key findings were:

    - Research has consistently demonstrated that despite the doubts of mental health professionals, a strong therapeutic alliance can be developed over OVC.

    - Both clients and practitioners tend to report positive experiences engaging in OVC, with satisfaction ratings typically high.

    - Importantly, the limited number of studies comparing OVC to traditional in-person counselling have shown that the clinical outcomes, therapeutic alliance and satisfaction ratings achieved in OVC are similar to those achieved in traditional in-person counselling settings.

    - Furthermore, there appears to be no significant difference in attrition rates between the two treatment modalities.

- Overall, the previous literature indicates that OVC may be at least as effective as traditional in-person counselling in achieving positive clinical outcomes for a broad range of mental health difficulties and disorders, however, these findings are often the outcome of uncontrolled, non-randomised trials with small sample sizes. A category rating of 'Promising' was therefore assigned for the level of overall support for the equivalence of OVC and in-person counselling. In order to validate these results, further, larger, randomised controlled trials are required.

- It is hoped that further validation of these findings will increase practitioners' awareness of, and confidence in, the benefits of OVC, leading to the increased utilisation of these services.

Definitions

Telehealth

Broadly, this review is concerned with the provision of telehealth services. Telehealth is the term used to describe the use of technology to provide health care when providers are geographically distant from clients (Backhaus et al., 2012). More specifically, telehealth refers to the exchange of health related information using digital or remote methods (typically over the internet or telephone) for the purposes of assessment, diagnosis, and/or treatment delivery (Backhaus et al., 2012; Nickelson, 1998). This review is concerned exclusively with mental health interventions delivered via the internet.

Internet Supported Psychological Interventions

Mental health interventions delivered online take many different forms, including one-on-one online counselling sessions via webcam, email interactions, online psycho-educational programs, self-help support websites and group therapy held in online chat rooms (Barak & Grohol, 2011). The Australian Psychological Society (APS) refers to these interventions as Internet Supported Psychological Interventions (ISPIs) which can be broken down into four broad categories: web-based interventions, online counselling and therapy, internet-operated therapeutic software, and other online activities (APS, 2011).

Although each of these services are provided over the internet, each form is quite different from the others. Consequently, the results from one study investigating one particular type of ISPI cannot be generalised to another. For example, the findings of email-based counselling studies cannot be generalised to online video counselling as the latter enables synchronous (i.e., real-time) visual and audio communication between the therapist and the client, whereas the former is restricted to asynchronous (i.e., delayed) text-based communication.

Online Counselling

Online counselling can be loosely defined as a mental health intervention that occurs between a therapist and client that are in separate locations, utilising technology to

facilitate communication and deliver treatment (Barak & Grohol, 2011). Communications are relayed back and forth between the therapist and client and can occur via different formats, including: email, text-based chat, webcam, and audio-only exchanges (Abbott, Klein, & Ciechomski, 2008).

Online counselling has suffered from a lack of clarity and consistency in regards to the terminology used to describe this service. Terms such as “web-based treatment”, “cybertherapy”, “online counselling”, “e-therapy”, “videoconferencing” and “internet-delivered cognitive-behavioural therapy (ICBT)” are broad terms used inconsistently and interchangeably throughout the literature (Backhaus et al., 2012; Barak, Klein, & Proudfoot, 2009). Compounding the problem further is the speed with which the technological landscape is changing. However, it is important for professionals to be precise in the technical terminology used to define the specific service under investigation. This is important not only for clients so that they know what the treatment will involve, but also for researchers to ensure inclusion of relevant studies in literature reviews (Backhaus et al., 2012).

In-person counselling

Traditional in-person counselling is often referred to as “face-to-face counselling” (Backhaus et al., 2012) and can be loosely defined as any mental health intervention, whereby the clinician is in the same room with a client. The term “in-person” is used less frequently in the literature, but it has been argued that this term is more accurate (since in OVC, clients are also seen “face-to-face” on the screen) (Backhaus et al., 2012). Therefore, this review uses the term “in-person counselling” to describe traditional, face-to-face counselling.

Therapeutic alliance

Broadly, the therapeutic alliance (TA) can be defined as the collaborative relationship between client and therapist. TA, also commonly referred to as the working alliance, has been operationalised in many different ways, however, most definitions involve three main elements: the bond between therapist and client (i.e., the degree of mutual trust, acceptance, and confidence between therapist and client), agreement of tasks to be accomplished during therapy (i.e., the collaborative quality of the

relationship), and goals (i.e., how closely the therapist and client are mutually engaged in setting the goals of therapy) (Bordin, 1979; Horvath & Greenberg, 1989).

Introduction

In 2014-15 approximately 4 million Australians (17.5% of the population) were reported to have a mental or behavioural condition (ABS, 2015). The most commonly reported mental health problems were anxiety-related disorders (2.6 million people or 11.2% of the population) followed by mood disorders, which includes depression (2.1 million people or 9.3% of the population). Prevalence rates of mental health disorders among Australian military personnel (both current and former serving members) may be even higher. Results from the *2010 Australian Defence Force (ADF) Mental Health Prevalence and Wellbeing Study* found that one in five ADF members had experienced at least one mental health disorder in the previous 12 months. Depression and anxiety disorders, including PTSD, were the most prevalent types of mental disorder reported (McFarlane, Hodson, Van Hooff, & Davies, 2011). Furthermore, ADF members were found to be more likely to suffer a mental health disorder at some point in their lifetime compared to the general population (McFarlane et al., 2011). It is therefore crucial that current and former serving military personnel (and their families) have access to professional mental health services. However, currently in Australia, there are significant barrier-to-care issues that may be preventing some individuals from accessing counselling services and receiving the help they need.

Firstly, not everyone lives within reach of a mental health professional, as the Australian population is quite geographically dispersed with approximately one third of Australians living in rural or remote areas (ABS, 2008). People living in these areas may find it difficult to access in-person care with studies showing significant disparities in regards to access to mental health care for rural residents compared to those living in urban areas (Schopp, Demiris, & Glueckauf, 2006). Furthermore, travel-related costs often make attending in-person counselling a costly experience for rural residents as they are often forced to take up to an entire day off work and pay for child care and travel expenses.

Needing to travel even short distances to receive in-person treatment can be difficult for many client groups (e.g., those with a disability, the terminally ill, the elderly and other groups unable to leave their homes) (Backhaus et al., 2012; Chester & Glass, 2006). Additionally, the very nature of some mental illnesses can make travel

impractical (Bee et al., 2008). For example, people suffering from depression may not have the energy or will to travel, while anxiety disorders can lead individuals to avoid anxiety-provoking situations such as large groups of people (e.g., urban centres and clinics) (Bouchard et al., 2004). This is particularly relevant to veteran populations as veterans suffering from PTSD and/or phobias may find the act of travel too distressing (e.g., driving phobias after accidents or roadside bomb attacks). Thus, attending in-person counselling sessions may be a very difficult if not an impossible task for such individuals.

A further barrier that has been found to prevent some individuals from accessing treatment is the stigma associated with seeking mental health care (Ben-Zeev, Corrigan, Britt, & Langford, 2012; Burnam, Meredith, Tanielian, & Jaycox, 2009; Greene-Shortridge, Britt, & Castro, 2007; Hodge et al., 2004; McFarlane et al., 2011; Stecker, Fortney, Hamilton, & Ajzen, 2007; Stott et al., 2013). Some individuals are reluctant to reveal mental health problems and seek treatment out of fear of receiving a negative societal reaction to such revelations (Ben-Zeev et al., 2012; Greene-Shortridge et al., 2007). Some individuals may fear that seeking help will cause them to be treated differently, perhaps even harm their careers (Burnam et al., 2009; McFarlane et al., 2011; Stecker et al., 2007; Warner, Appenzeller, Mullen, Warner, & Grieger, 2008). Such fears are often exacerbated by the thought of attending therapy in-person, where the individual may be recognised by known associates. This issue is even more pertinent in veteran populations. As demonstrated by a large cross-sectional study of United States of America (USA) military personnel (n=2,530), it was found that less than half (38-45%) of members who screened positive for a mental disorder were actually interested in receiving treatment (Hodge et al., 2004). Furthermore, those who did screen positive for a mental disorder were twice as likely to hold stigmatisation concerns (Hodge et al., 2004).

Such barriers may be inhibiting Australians from accessing mental health services and receiving the help they need. This is concerning considering that a delay between the onset of a mental health issue and treatment initiation is strongly associated with poorer mental health outcomes (Perkins, Gu, Boteva, & Lieberman, 2005). Individuals who avoid or who are unable to access in-person care are therefore at an increased risk of experiencing negative consequences of mental health problems (e.g., suicide, divorce, and substance abuse) (Bischoff, Hollist,

Smith, & Flack, 2004). As such, it is critical that innovative strategies are explored to overcome the barriers associated with accessing in-person care.

One strategy that may help overcome these issues is the provision of mental health services over the internet (Barak et al., 2009; McFarlane et al., 2011) . Current internet technologies allow real-time video communication from many devices, including computers, laptops, tablets, and mobile phones. It is through such technology that the opportunity to reach more clients has been afforded.

Online video counselling

While in-person counselling has been the norm, more recent times have witnessed a growth in online mental health services (e.g., email-based counselling, online video counselling and online self-help programs) (Andersson, 2016; Barak et al., 2009). Online video counselling (OVC) has been described as an especially valuable treatment modality given that it offers the closest approximation to the established modality of in-person counselling (Himle et al., 2006; Jerome & Zaylor, 2000).

OVC has been used since the 1950s with an increase in its use in the late 1990s (Rees & Haythornthwaite, 2004) and continuing through to today as the technology becomes more accessible and inexpensive (Frueh, 2015; Richardson & Simpson, 2015; Simpson & Reid, 2014b).

OVC allows treatment over the internet via a webcam, enabling a therapist and client to engage in therapy despite being in separate geographical locations (i.e., not occupying the same room). The goal of OVC is to provide quality mental health care for individuals who need it, particularly for those individuals with significant access-to-care barriers.

The use of OVC has grown rapidly in recent years with practice actually leading research in this area (Frueh, 2015). A recent systematic review of the OVC literature found that although there was limited evidence for the effectiveness of OVC from randomised controlled trials (RCTs), less rigorous, non-randomised studies have suggested OVC to be an effective treatment modality (Backhaus et al., 2012). Such studies have consistently found successful clinical outcomes across a variety of mental health disorders that are similar to those achieved by traditional in-person treatment (Backhaus et al., 2012). Furthermore, client satisfaction levels and ratings

of therapeutic alliance also tend to be high (Simpson & Reid, 2014a). However, some clinicians remain doubtful of their ability to establish a strong therapeutic alliance with clients when engaging in OVC (Bruno & Abbott, 2015). Although the number of studies being published on OVC is increasing, there remains a need for further large-scale RCTs to validate the findings from previous research and establish the effectiveness and acceptability of OVC more generally (Backhaus et al., 2012; Frueh, 2015; Simpson & Reid, 2014b).

This review aims to examine the efficacy of one-to-one OVC for the treatment of adults with mental health concerns and focuses on the use of OVC to treat adults suffering from depression, anxiety and PTSD disorders. In addition, this review examines the key process variables of treatment – the therapeutic alliance, satisfaction ratings, and attrition – and compares these OVC outcomes with those achieved in traditional in-person counselling.

Method

The literature review utilised a rapid evidence assessment (REA) methodology. The REA is a research methodology which takes a similar approach to that of a systematic review – using the same methods and principles but making concessions to the scope and depth of the process, in order to suit a shorter timeframe. The advantage of conducting an REA is that it utilises a rigorous method for locating, appraising and synthesising evidence relevant to the research question. The methodology, however, does have some limitations in regards to search criteria and the way evidence is assessed. For example, REAs often limit the selection criteria for studies to be within a specific timeframe (e.g., the last 10 years) and limit the selection of studies to peer-reviewed studies, published in English. Furthermore, while the quality of the evidence is assessed according to a rigorous methodology, it is not as exhaustive as a systematic review or meta-analysis. Overall, the REA is an appropriate methodology for conducting a review of the literature with the advantages outweighing the limitations, allowing for an efficient evaluation and ranking of the evidence in a short period of time (Varker et al., 2014).

Online video counselling

This review is concerned with online counselling delivered via videoconferencing technology (i.e., communication facilitated via a webcam). Videoconferencing facilitates communication between a therapist and client in different geographical locations, enabling them to interact with each other using computer monitors in real time. This mode of online communication enables the therapist and client to utilise some of the verbal and non-verbal behavioural signals that characterise therapy in traditional in-person counselling sessions (Grady & Melcer, 2005). Thus, this review defines the service under investigation as “online video counselling” (OVC). OVC has the advantage of being more precise than broader terms such as “e-therapy” or “videoconferencing”.

Defining the research questions

The components of the research questions were defined using the Population Intervention Comparison Outcome (PICO) framework (see Appendix 1). Two research questions were formulated: In adults with a mental disorder;

1) has OVC been shown to be at least as effective in reducing symptoms of mental illness when compared to in-person counselling?; and

2) are there any systematic differences in the therapeutic relationship and client satisfaction, or attrition rates between OVC and in-person counselling?

Search strategy

Searches were conducted in July, 2016. All relevant papers published between 2000 and the search date were included. All titles and abstracts were screened, and complete reports for the articles that appeared eligible for inclusion were obtained. Literature relevant to the research questions were searched for and identified using the following databases: PsycINFO, PsychArticles, Psychology and behavioural sciences collection, and Google Scholar. A snowball method was also used by examining the reference lists of obtained articles for potentially appropriate studies that may have been missed in the database searches.

The REA methodology prioritises the use of systematic reviews, meta-analyses, and guidelines in order to utilise pre-existing high-quality rigorous research, to limit unnecessary duplication, and increase the rapidness of the review (Varker et al., 2014). A search was conducted in July, 2016 to identify the most recent systematic review relevant to the research questions. The search identified two high quality, recent systematic reviews. The first of these systematic reviews was conducted by Backhaus et al. (2012). This paper reviewed studies published between 1997 and 2010 which investigated therapy delivered via videoconferencing technology and covered areas such as: the type of psychological disorders investigated and clinical outcomes, as well as the populations studied, satisfaction ratings, therapeutic alliance, and attrition rates of OVC. An additional systematic review by Simpson and Reid (2014a) was also identified. This paper reviewed studies published between 1990 and 2013 which focussed on the therapeutic alliance in OVC. The REA also

considered studies published after the cut off dates of these respective reviews up to July 2016.

Search terms

As discussed, a problem in this area of research is that multiple terms are often used interchangeably (e.g., telehealth, videoconferencing, e-therapy, etc.). Thus, given this issue and the scope of the current study, a large number of different search terms and combinations were used to identify papers relevant to the research questions. Terms such as “telehealth”, “online counselling”, “videoconferencing”, “therapeutic alliance”, “working alliance”, “satisfaction”, “mental health”, “veterans”, “depression”, “anxiety”, “posttraumatic stress”, and “quality of life” were all used in different combinations. An example of the search strategy conducted using the PsycINFO database is shown in Appendix 2.

Paper selection

The following inclusion and exclusion criteria were used to determine which papers were eligible to be included in the review:

Inclusion Criteria:
1. Published, accessible, peer-reviewed research studies published between 2000 and July 2016. 2. Quantitative and qualitative studies with outcome data that assesses the outcome variables (i.e., overall mental health, symptoms of mental health illness, quality of life) and/or process variables (i.e., therapeutic alliance, satisfaction, attrition) 3. Human adults (i.e. ≥ 18 years of age) 4. English language 5. Focused on online counselling delivered using videoconferencing technology (i.e., treatment facilitated via online computer software that enables the client and clinician to see, hear and communicate with one another) 6. Focussed on individual (i.e., one-on-one counselling) as opposed to group therapy 7. Papers where the study focus was on treating psychological disorders (mainly but not exclusive to depression, anxiety, and posttraumatic stress disorder).
Exclusion Criteria:
1. Non-English papers 2. Papers published prior to the year 2000 3. Papers where a full-text version is not readily available 4. Studies on young people (i.e., <18 years of age) 5. Papers specific to telehealth modalities other than videoconferencing (i.e., telephone, email, chat, online self-help websites) 6. Papers where the study focus was not relevant to the treatment of psychological disorders (e.g., rehabilitation from a physical injury).

Information management

The retrieval and management of articles was done using Microsoft Word and Mendeley Desktop. All papers that were identified using the search strategy were screened for relevance against the inclusion criteria. Initial screening for inclusion was performed by the reviewer, and was based on the information contained in the title and abstract. Full text versions of all studies which satisfied this initial screening

were then obtained. Full-text papers were included or excluded, based on the respective criteria. If a paper met the criteria for inclusion, it was subjected to data abstraction and included in the review.

Evaluation of the evidence

There were five key components that contributed to the overall evaluation of the evidence:

1. The **strength of the evidence base**, in terms of the quality and risk of bias, quantity of evidence, and level of evidence (study design)
2. The **direction** of the study results
3. The **consistency** of the study results
4. The **generalisability** of the body of evidence to the target population (i.e., adults with a psychological disorder)
5. The **applicability** of the body of evidence to the Australian context.

The first three components provide a gauge of the internal validity of the study data in support of the efficacy of OVC. The last two components consider the external factors that may influence effectiveness, in terms of the generalisability of study results to the specific target population as well as the applicability to the broader Australian context.

Strength of the evidence base

The strength of the evidence base was assessed in terms of a) quality and risk of bias, b) quantity of evidence, and c) level of evidence.

a) The **quality and risk of bias** reflects how well the studies were conducted, including how the participants were selected, allocated to groups, managed and followed-up, and how the study outcomes were defined, measured, analysed and reported. The process for assessing the quality and bias of previous studies is presented below:

- Individual studies - an assessment was conducted for each individual study with regard to the quality and risk of bias utilising a modified version of the Chalmers Checklist for appraising the quality of studies of interventions (see Appendix 3). Each study was rated according to these criteria to produce an overall rating of ‘Good’, ‘Fair’, or ‘Poor’.

- Meta-analyses and systematic reviews were rated according to an adapted version of the NHMRC quality criteria (see Appendix 4). Each study was rated according to these criteria, to produce an overall rating of 'Good', 'Fair', or 'Poor'.

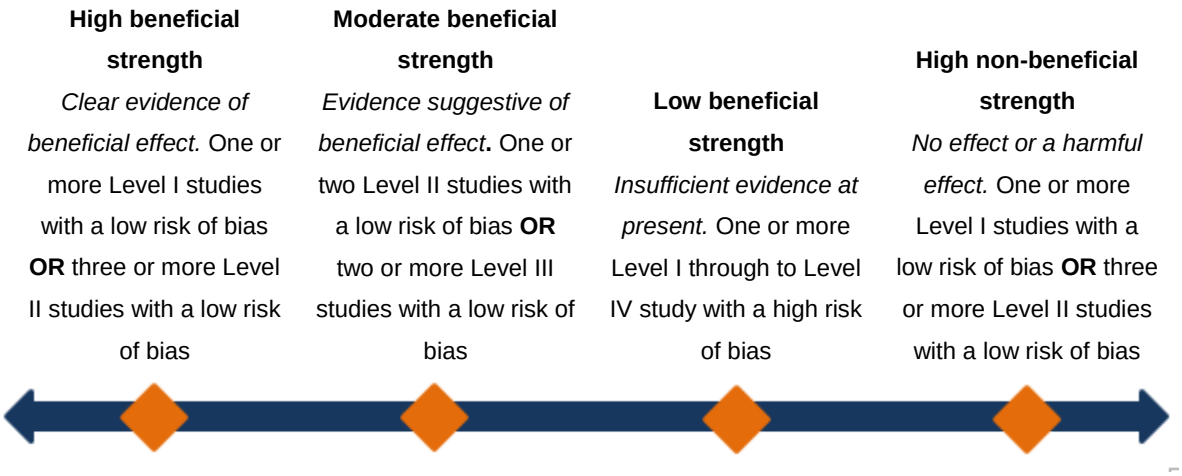
b) The **quantity** of evidence reflects the number of studies that were included as the evidence base for each ranking. The quantity assessment also took into account the statistical power of the studies.

c) The **level of evidence** reflects the study design. The details of the study designs which are covered by each level of evidence are as follows:

- Level I: A systematic review of randomised controlled trials (RCTs)
- Level II: An RCT
- Level III-1: A pseudo-RCT (i.e., a trial where a pseudo-random method of allocation is utilised, such as alternate allocation).
- Level III-2: A comparative study with concurrent controls. This can be any one of the following:
    - Non-randomised experimental trial [this includes controlled before-and-after (pre-test/post-test) studies, as well as adjusted indirect comparisons (i.e., utilise A vs B and B vs C to determine A vs C with statistical adjustment for B)]
    - Cohort study
    - Case-control study
    - Interrupted time series with a control group
- Level III-3: A comparative study without concurrent controls. This can be any one of the following:
    - Historical control study
    - Two or more single arm studies. This includes controlled before-and-after (pre-test/post-test) studies, as well as adjusted indirect comparisons (i.e., utilise A vs B and B vs C to determine A vs C with statistical adjustment for B)]
    - Interrupted time series without a parallel control group.
- Level IV: Case series with either post-test or pre-test/post-test outcomes

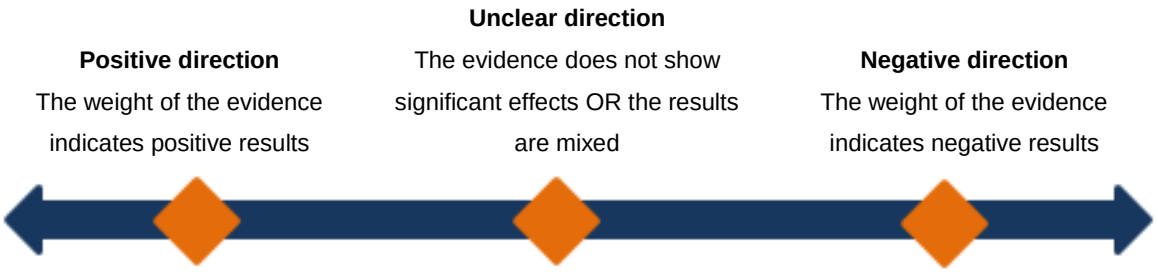
Overall strength

A judgement was made about the strength of the evidence base, taking into account the quality and risk of bias, quantity of evidence and level of evidence. The reviewer rated the overall strength of the evidence based on the categories described below:



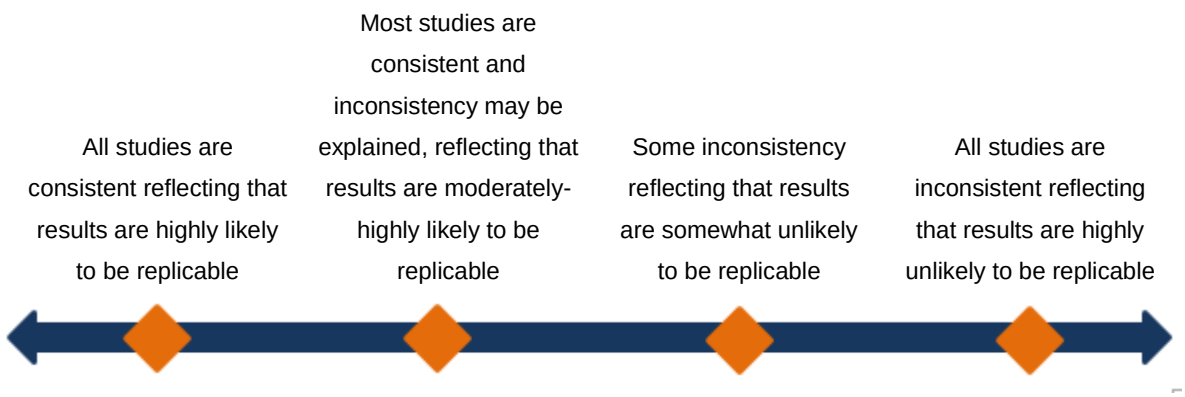
Direction

This component assessed the direction of the findings in the evidence base, in regards to whether positive or negative results have been found. Direction was ranked as follows:



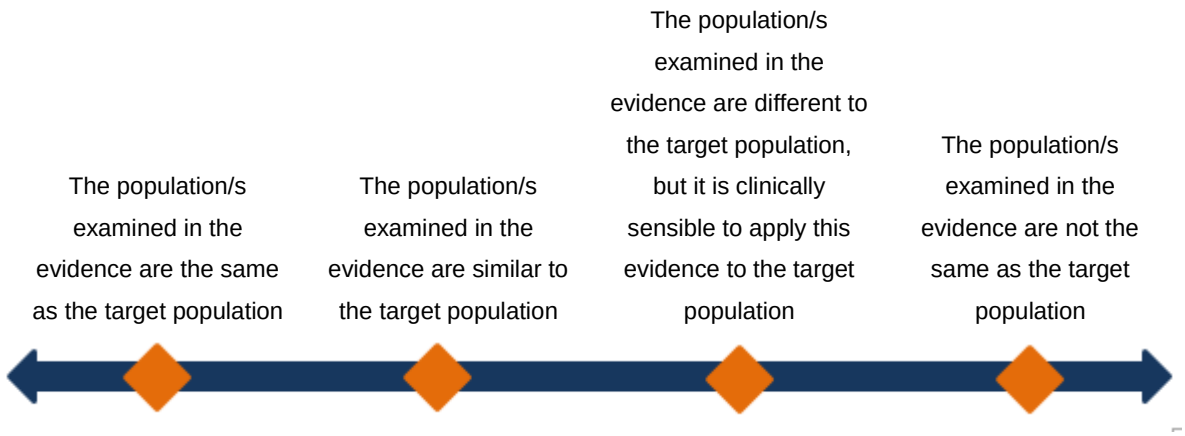
Consistency

This component assessed whether the findings were consistent across the included studies (including across a range of study populations and study designs). It is important to determine whether study results are consistent to determine whether the results are likely to be replicable or only likely to occur under certain conditions. Consistency was ranked as follows:



Generalisability

This component covered how well the participants and settings of the included studies matched the target population. Population issues that might influence this component included gender, age, and military status (e.g., current, ex-serving, or non-military). Generalisability was ranked as follows:



Applicability

This component addressed whether the evidence base was relevant to the Australian context, or to more local settings (such as rural areas or cities). Factors that may reduce the direct application of study findings to the Australian context or specific local settings include organisational factors (e.g., availability of trained staff) and cultural factors (e.g., attitudes to health issues, including those that may affect compliance). Applicability was ranked as follows:

Directly applicable to the Australian context	Applicable to the Australian context with few caveats	Applicable to the Australian context with some caveats	Not applicable to the Australian context

Ranking the evidence

Taking into account the considerations of the strength of the evidence (quality and risk of bias, quantity of evidence and level of evidence), direction, consistency, generalisability and applicability, the total body of the evidence was then ranked into one of four categories: ‘Supported’; ‘Promising’; ‘Unknown’; or ‘Not Supported’ (see Figure 1). A brief overview of the studies that contributed to the ranking results is presented in Appendix 6.

SUPPORTED	PROMISING	UNKNOWN	NOT SUPPORTED
Clear, consistent evidence of beneficial effect	Evidence suggestive of beneficial effect but further research is required	Insufficient evidence of beneficial effect. Further research required	Clear, consistent evidence of no effect or negative / harmful effect

Figure 1: Categories within the intervention ranking system

Results

The flowchart in Figure 2 describes the number of papers retrieved at each stage of the REA process and Figure 3 describes the distribution of publication year for the papers considered in this review.

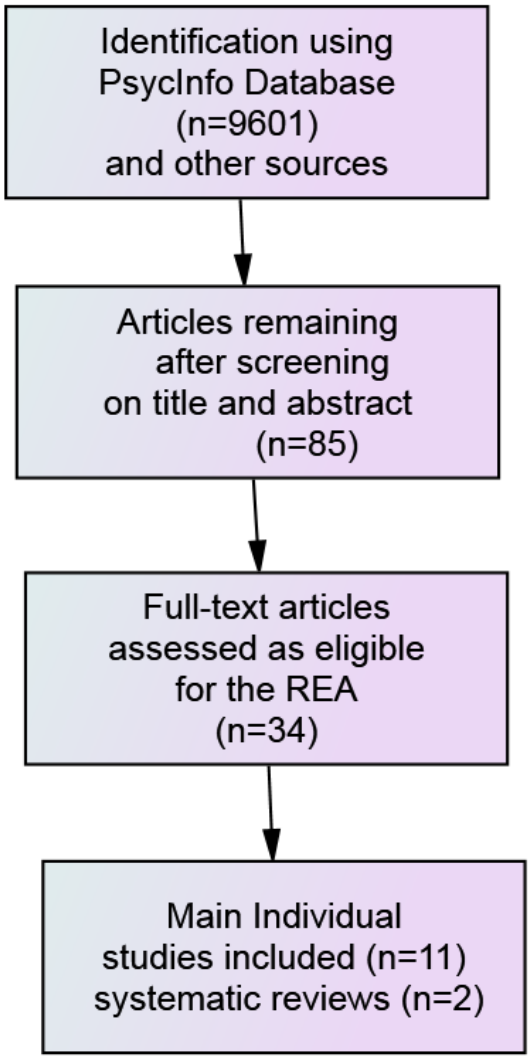


Figure 2. Flowchart representing the number of records retrieved at each stage of the rapid evidence assessment.

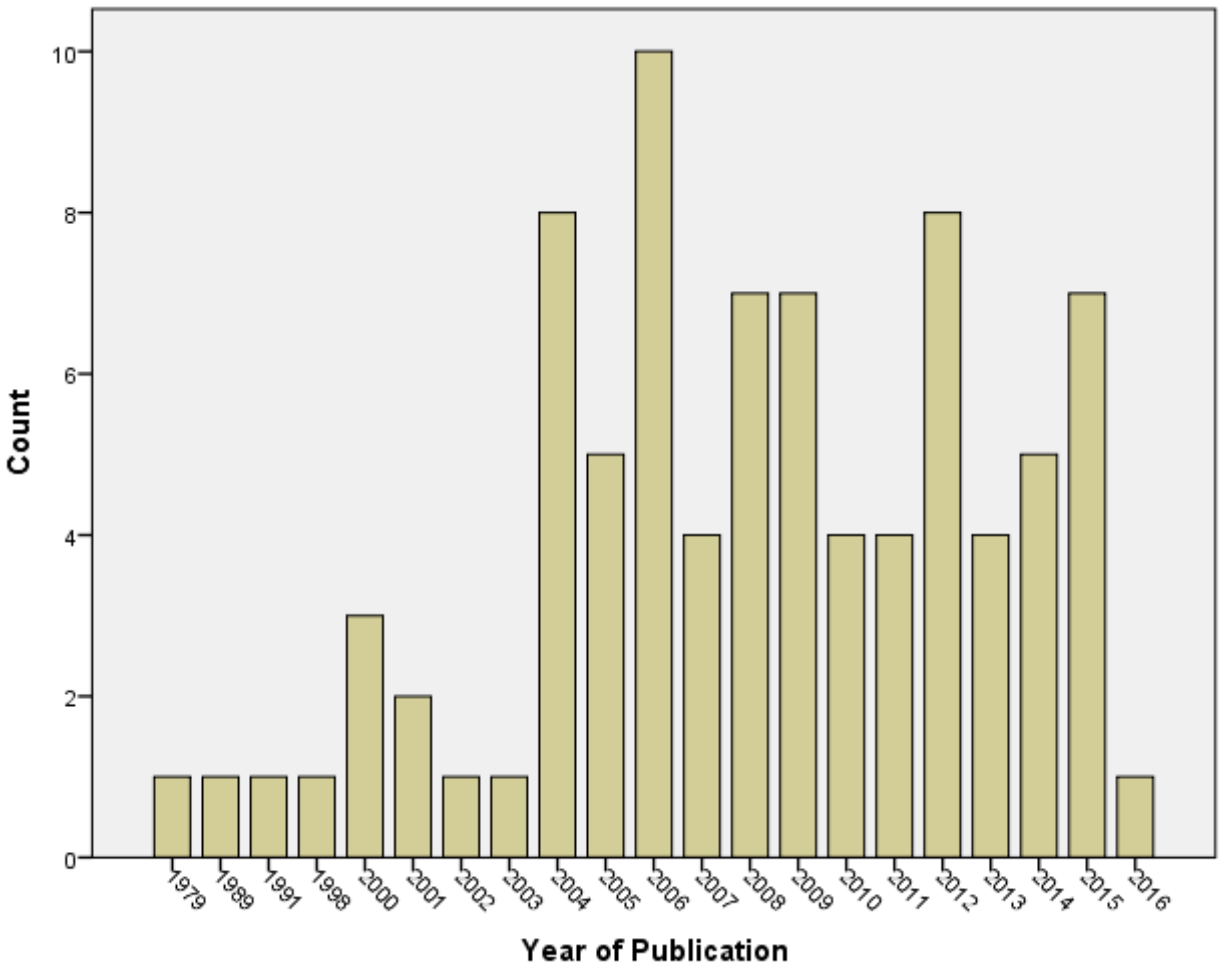


Figure 3: Year of publication of papers considered in this REA

Summary of the Evidence

OVC studies conducted in this area typically involve a sample of adult participants with a mental health problem(s) being allocated to engage in either OVC or traditional in-person counselling. Participants complete a range of outcome measures at baseline (i.e., pre-treatment) and at various follow-up points and post- treatment. This enables studies to explore rates of improvement within each modality as well as (for those studies which utilise a control group) compare and test for any differences between the two treatment modalities. Comparisons are typically made in relation to reduced symptom severity and improvements in quality of life as well as ratings of therapeutic alliance and satisfaction.

The majority of previous studies have identified cognitive-behavioural therapy (CBT) as the primary treatment type with treatment length typically ranging between 8 to 12 sessions (Backhaus et al., 2012). Other forms of treatment include exposure therapy and group therapy. However, studies have seldom reported the specific type of software used to facilitate OVC, with only a select few describing the bandwidth of the application used. As such, comparisons in regards to different platforms and the quality of connection speeds and their effects on the OVC experience cannot yet be made.

In this summary, support for the equivalence of OVC and in-person counselling is reviewed in terms of the efficacy of treatments for depression and anxiety and PTSD. Efficacy is assessed in terms of clinical outcomes, as well as therapeutic alliance, client satisfaction, consistency across client groups, other outcomes and attrition.

Depression and Anxiety

The Backhaus et al. (2012) review identified an RCT conducted on a sample of 119 USA military veterans with depression (Ruskin et al., 2004). Participants were randomly allocated to receive treatment either in-person (n=60) or via OVC (n=59). Treatment in both conditions consisted of 8 sessions with a psychiatrist over a 6-month period. Results showed that both groups of clients improved significantly over this time. Importantly, no significant differences in depressive or anxiety symptom effects were found between the two modes of treatment. Specifically, 39% of participants in the OVC condition had a remission compared to 35% in the in-person

condition. Furthermore, no significant differences in satisfaction ratings or levels of attrition were found (Ruskin et al., 2004).

This REA identified an additional two RCTs investigating OVC that reported clinical outcome data on depression and anxiety that had been published since the Backhaus et al. (2012) review. The first was conducted in Australia by Stubbings, Rees, Roberts, and Kane (2013). Stubbings et al. (2013) compared the effectiveness of 12 weekly CBT sessions delivered either in-person (n=12) or via OVC (n=14) on a sample of participants with mood and anxiety disorders. Consistent with Ruskin et al. (2004), significant reductions for symptoms of depression, anxiety, and stress were found over the course of treatment for both treatment groups. No significant differences were found between the two conditions in any of the examined outcome measures as participants receiving treatment via OVC were found to improve at a similar rate to participants receiving treatment in-person. However, it should be noted that this study was significantly underpowered to detect small differences between the treatment modalities. Such a limitation, therefore, weakens the generalisability and validity of these findings.

Egede et al. (2015) conducted a more recent RCT for the USA Veterans Health Administration (VHA), comparing the equivalence of in-person and OVC sessions on a sample of 241 veterans, more than 58 years old and predominately male (98%), suffering from a major depressive disorder. Therapy was delivered over an 8-week period with follow-up assessments conducted up to 12-months post-treatment. No significant differences in depression symptomology were detected between the in-person and OVC treatment groups. Egede et al. (2015) concluded that OVC is equivalent to treatment delivered in-person for elderly US veterans with a major depressive disorder.

None of the three RCTs identified by this review found any significant differences between OVC and in-person treatment for symptoms of anxiety and depression, with both modalities showing similar overall symptom improvement pre- to post-treatment (Egede et al., 2015; Ruskin et al., 2004; Stubbings et al., 2013). The results from these RCTs have been supported by less rigorous studies that have also reported improved clinical outcomes for clients with anxiety and depression receiving treatment via OVC (Bouchard et al., 2000, 2004; Cowain, 2001; Dunstan & Tooth,

2012; Griffiths, Blignault, & Yellowlees, 2006; Himle et al., 2006; Lichstein et al., 2013; Théberge-Lapointe, Marchand, Langlois, Gosselin, & Watts, 2015; Vogel et al., 2014; Yuen et al., 2013).

Overall, the results from these studies suggest that treatment via OVC is similar to in-person treatment for adults with depression and anxiety. Together, these RCTs were considered by the reviewer to be consistently positive but only moderate in terms of quality, generalisability and applicability. Of the three RCTs reviewed, one was conducted over 10 years ago (Ruskin et al., 2004), another used a low sample size (n<30) (Stubbings et al., 2013) and the other sample was restricted to elderly male veterans (Egede et al., 2015). Overall, the evidence base is suggestive of a beneficial effect of OVC that is equivalent to traditional in-person treatment, however, further research is required. The evidence base for the equivalence of OVC and in-person counselling for delivering treatment to adults suffering depression and anxiety was therefore ranked as 'Promising'. Future studies should aim to overcome the limitations of these previous RCTs by providing an evaluation of the latest technological software and recruiting a large, diverse sample that will be statistically powerful enough to detect small differences between the treatment modalities.

Posttraumatic stress disorder

Posttraumatic stress disorder (PTSD) has received the most attention in the OVC literature with much of the research being conducted on veteran populations (Backhaus et al., 2012). However, the RCTs identified in the Backhaus review, focussed on group rather than individual treatment (Morland, Pierce, & Wong, 2004; Morland et al. 2010; Frueh et al. 2007) and are therefore not relevant for this review.

This REA identified one recent RCT that had investigated individual OVC (as opposed to group PTSD therapy) that was conducted by Strachan, Gros, Ruggiero, Lejuez, and Acierno (2012). Strachan et al. (2012) compared eight sessions of behavioural activation and therapeutic exposure treatment delivered either via OVC (n=13) or in-person (n=18) on a sample of 31 military personnel with PTSD symptoms. Participants completed a variety of outcome measures at baseline, mid-treatment, post-treatment and at 3- and 6-month follow-ups. Significant reductions in symptoms were reported for both treatment groups with no significant differences found between the OVC and in-person groups from baseline to post-treatment

(Strachan et al., 2012). These results suggest that individuals suffering from PTSD can be treated successfully through OVC. However, like other RCTs (e.g., Stubbings et al., 2013), this study was underpowered, which adversely affects our ability to confidently conclude that OVC is as effective as in-person treatment.

Less rigorous studies included two non-randomised control studies that examined the utility of OVC in treating PTSD (Germain, Marchand, Bouchard, Drouin, & Guay, 2009; Tuerk, Yoder, Ruggiero, Gros, & Acierno, 2010). Germain et al. (2009) examined the effectiveness of OVC for treating a sample of 48 PTSD clients using CBT. Clients received treatment via either OVC (n=16) or in-person (n=32) for 16 to 25 weeks. The results found a significant improvement in overall functioning as well as a significant decline in the frequency and severity of PTSD symptoms from baseline to post-treatment for both conditions. Significant improvements in anxiety and depression symptoms were also reported. Consistent with the literature on depression and anxiety and the Strachan et al. (2012) RCT, no significant differences were observed in the effectiveness of the two treatment modalities. However, the effect size for the in-person condition (d=7.71) was larger than the effect size for the OVC condition (d =3.63).

Similar results were found for the Tuerk et al. (2010) study. A sample of 12 veterans with PTSD were treated via OVC and compared to a control group of 35 veterans with PTSD receiving in-person treatment. Both groups were treated using prolonged exposure therapy. Results showed significant improvements for the OVC group that were similar to those of the in-person group. However, attrition rates were larger for the OVC group and the effect size was again lower for this group (d=2.9) than that of the in-person group (d=4.2). This may indicate that prolonged exposure therapy is not as effective when delivered via OVC as it is delivered in-person. However, this difference could also have been due to the 12 participants in the OVC group having relatively higher PTSD-related distress at baseline compared to those in the in-person group (Tuerk et al., 2010). All 12 of these participants were also living outside the metropolitan area. This is consistent with previous research which has reported that rural residents experience more severe impairment and poorer health-related quality of life than their urban counterparts (Wallace, Weeks, Wang, Lee, & Kazis, 2006; Weeks et al., 2004). Hence, these other uncontrolled for factors (i.e., place of

residence and severity of symptoms) may be responsible for the observed increased attrition rate and reduced effect size, rather than the modality of OVC itself.

One additional non-randomised controlled PTSD study was identified by the REA. Gros, Yoder, Tuerk, Lozano and Acierno (2011) compared the effectiveness of exposure therapy delivered over 12 sessions either via OVC (n=62) or in-person (n=27) on a sample of 89 veterans with PTSD. Similar to the Tuerk et al. (2010) study, although symptoms were found to decrease significantly over the duration of treatment for both groups, the effect size was significantly larger for the in-person group (*d*=3.00) compared to that of the OVC group (*d*=1.19). Such results provide further evidence that exposure therapy may be less effective when delivered via OVC than in-person. However, rather than a reduced treatment effect size in the OVC samples, Gros et al. (2011) argued that the difference between the two treatment conditions was likely due to the surprisingly large effect sizes found for the in-person treatment conditions in these studies. Specifically, the reported effect sizes for the in-person treatment condition in the Tuerk et al. (2010) and Gros et al. (2011) studies were nearly twice as large as the published averages for in-person exposure therapy (see Bradley et al., 2005). The inflated effect size for the in-person condition may be the result of these studies not performing an intent-to-treat analysis, rather limiting the analysis to participants who completed a minimum number of sessions.

It should be noted that the effect sizes reported for the OVC conditions in these respective studies were only slightly smaller than the average effect size reported for in-person exposure therapy (Bradley et al., 2005). However, these studies did not use randomised samples which may explain the observed differences in effect sizes between the two treatment modalities. Further research, utilising large, randomised samples is needed in order to determine whether or not OVC is an effective service for treating adults with PTSD.

Overall, the evidence suggests that OVC may be able to be utilised to treat clients suffering from PTSD, when exposure therapy is not applied. Taken together, the results from the Gros et al. (2011), Tuerk et al. (2010) and Germain et al. (2009) non-randomised control studies and the fact that only one (underpowered) RCT was identified to examine the effectiveness of individual OVC to deliver treatment to adults suffering PTSD, it is clear that further research is required. The reviewer rated

the evidence base for the equivalence of OVC and in-person counselling to treat adults with PTSD as 'Unknown'. Despite the evidence base being largely suggestive of some beneficial effect for treatment of PTSD via OVC, whether this effect is equivalent to that of treatment delivered in-person is yet to be definitively established.

Client perceptions of therapeutic alliance

The therapeutic alliance (TA) has been well established as an essential factor required for effective treatment for in-person therapy with the evidence suggesting that there is a positive relationship between TA and clinical outcomes across a variety of presenting problems (for a review see Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000). A recent meta-analysis of 201 studies indicated that TA is a reliable predictor for treatment outcome and attrition (Horvath, Del Re, Fluckiger, & Symonds, 2011).

But can TA be developed in online settings? This is an important question to consider as a discrepancy in TA for OVC in comparison to traditional in-person counselling could mean that clients receiving treatment via OVC are at a disadvantage to those receiving treatment in-person and may therefore, be at a higher risk for attrition and less successful treatment outcomes (Bischoff et al., 2004). Despite OVC attempting to replicate in-person communication as much as possible, the communication process remains somewhat different. As such, the therapeutic experience may differ between these two treatment modalities. Furthermore, as OVC is not immune to technological difficulties, communication can sometimes be disrupted which could possibly compromise the therapeutic relationship and in turn, compromise the effectiveness of the treatment itself (Bischoff et al., 2004). Thus, as TA is a significant factor relevant to treatment success, it is crucial that we understand whether or not TA experienced in OVC is equivalent to the TA experienced in traditional in-person services. However, although there is extensive literature on the role of the TA for in-person treatment, the research on TA in OVC is rather limited. This section will examine the OVC literature relevant to the TA and how participant ratings of TA in OVC compare to those of participants engaged in traditional in-person counselling.

A recent systematic review by Simpson and Reid (2014a) examined peer-reviewed papers from 1991 to 2014 investigating the TA in OVC. A total of 23 papers met the criteria for inclusion in their review, three of which were conducted in Australia. Only

seven RCTs had been conducted, as well as three case-controlled studies and thirteen uncontrolled studies (Simpson & Reid, 2014a). A wide range of client groups were included, including those with anxiety (Bouchard et al., 2004; Yuen et al., 2013), depression (Ruskin et al., 2004) and PTSD (Germain et al., 2009), as well other mental health problems. So, is the TA adversely affected by OVC? Simpson and Reid (2014a) concluded that the answer to this question is no, finding that the TA developed in OVC sessions tends to be largely comparable to that of in-person treatment.

Only three of the above RCTs are relevant for this review. Day and Schneider (2002) conducted an RCT study on a sample of 80 participants randomly allocated to receive treatment either in-person (n=27), via telephone (n=27), or via OVC (n=26). Clients were compared on several measures, including TA. Participants engaging in OVC were found to have significantly higher ratings of TA compared to those engaging in treatment in-person. However, the sample size was so small for this study that it would not have been able to detect even medium effects let alone small effects. Thus, we cannot confidently conclude from this RCT that OVC and in-person treatment modalities are equivalent. The remaining two RCTs (Ertelt et al., 2011; Rees & Stone, 2005) were more related to the therapists' perceptions of TA than the clients' perceptions of TA and are therefore explored later in this review.

Further less rigorous research has found generally positive results for TA in OVC. In an early non-randomised controlled study, Bouchard et al. (2004) found that participants reported the development of an excellent TA in OVC as early as the first session and that TA scores were not significantly different from those observed for the in-person treatment group. Simpson and Reid (2014a) found that this was a consistent theme throughout the studies reviewed lending support to the notion that therapeutic relationships can be successfully developed in OVC and that these are comparable to the therapeutic relationships developed through in-person counselling.

In a non-randomised controlled study, Germain, Marchand, Bouchard, Guary and Drouin (2010) assessed the development of the TA in a sample of individuals with PTSD (n=46) who were treated by either OVC (n=17) or in-person (n=29). No significant differences in TA were found between the OVC and in-person groups (Germain et al., 2010). Germain et al. (2010) also investigated the impact of certain

variables specifically related to OVC (e.g., comfort with technology) to see whether these variables had an impact on the TA. Results were positive as the TA was found to be unaffected by these variables. For example, participants' initial comfort levels with OVC technology had no effect on the development of a TA during treatment (Germain et al., 2010). Similarly, participants' initial perceptions of OVC in general, were not related to the development of an alliance. This result is worth highlighting as it suggests that even those clients who are not accustomed to OVC technology and/or hold negative expectations about OVC can still be treated successfully and benefit from this form of treatment delivery.

These results support findings from previous uncontrolled (Himle et al., 2006; Simpson, Deans & Brebner, 2001) and non-randomised controlled trials (Simpson et al., 2006), that found clients to report feeling very comfortable in OVC sessions; participants have described OVC to be very easy, more convenient and less intimidating than in-person sessions with comfort tending to increase over the duration of treatment as clients adapt to the OVC environment. Participants engaging in OVC have also reported anticipating their relationship with their therapist to be no different than for in-person sessions (Himle et al., 2006; Urness, Wass, Gordon, Tian, & Bulger, 2006). For example, in a local Australian study, when asked to compare their experience of OVC to that of their prior experience of in-person sessions, one participant commented that there was "no lack of connection with the therapist" and stated that it was "exactly the same" (Dunstan & Tooth, 2012). Studies have also consistently demonstrated a high level of social presence in OVC sessions with clients and therapists describing experiences of actually forgetting that the other person was not in the same room as them (Bouchard et al., 2004; Himle et al., 2006).

Two additional studies that explored the TA in OVC were identified; both of which were conducted in Australia (Richardson, Reid, & Dziurawiec, 2015; Simpson, Guerrini & Rochford, 2015). A recent uncontrolled study conducted on a small sample (n=8) of rural residents living in Western Australia found clients' TA ratings to be high early in treatment and improve over the duration of therapy (Richardson et al., 2015). Another local non-randomised study compared the experiences of a small sample of clients engaging in OVC (n=6) to that of a group of clients engaging in in-person counselling (n=17). TA was equally high across both treatment modalities,

with participants claiming to have established “a good relationship with [their] therapist” (Simpson et al., 2015).

Overall, TA ratings for OVC sessions appear to be homogenous across studies, and roughly equivalent to TA ratings for in-person therapy in those studies with a comparison group (Bouchard et al., 2004; Day & Schneider, 2002; Germain et al., 2010). In fact, all 22 studies included in the Simpson and Reid (2014a) review concluded that participants tend to perceive moderate to strong TA via OVC. It should be noted that there was one study in the Simpson and Reid (2014a) review that reported comparatively higher TA in the in-person condition, however, this was for treatment delivered via a group OVC intervention (Greene et al., 2010). This suggests that OVC may be better suited to one-to-one treatment rather than group therapy.

In summary, participants (regardless of presenting problem) tend to rate TA at least equally as strongly as those receiving treatment in-person. This is consistent with results from previous systematic reviews that also examined the literature on the TA in OVC (Backhaus et al., 2012; Sucala et al., 2012) demonstrating that the TA does not appear to be compromised in OVC and, in some cases, may even be enhanced. The reviewer rated the evidence base for TA in OVC to be consistently positive, moderate in quality, and applicable to the Australian context. However, as much of the data have come from non-randomised and/or uncontrolled studies, the generalisability of such results remains suspect. Therefore, the evidence base for the equivalence of TA in OVC and in-person counselling was ranked as ‘Promising’ with further, more methodologically sound research needed to validate these findings.

Therapists’ perceptions of the therapeutic alliance

Despite the evidence demonstrating the potential of OVC to successfully treat a range of clinical disorders and the ability to develop a strong TA, some clinicians remain hesitant to use OVC (Bruno & Abbott, 2015). In fact, some clinicians tend to adopt a negative attitude toward this treatment modality, often expressing concern that OVC will negatively impact their ability to establish a strong TA with clients (Bruno & Abbott, 2015; Rees & Stone, 2005).

As mentioned earlier, the systematic review by Simpson and Reid (2014a) identified a further two RCTs that provide some insight into therapists' perceptions of the TA in OVC (Ertelt et al., 2011; Rees & Stone, 2005). The RCT by Ertelt et al. (2011) investigated OVC as a treatment modality on a sample 116 participants with an eating disorder who were treated via either OVC (n=58) or in-person (n=58). Despite clients reporting similar levels of strong TA across the two treatment groups, therapists tended to rate TA as higher for in-person sessions than they did for OVC sessions.

Similar results were reported by Rees and Stone (2005). Their RCT consisted of a sample of 30 Australian clinicians randomly assigned to rate the TA of a 20-minute video of a counselling session conducted either in-person or via OVC. Despite the session being identical in both conditions, clinicians rated the TA of the OVC session lower than that of the in-person session. It was suggested that these lower ratings were most likely due to the existence of pre-existing negative perceptions regarding OVC (Rees & Stone, 2005). These results were supported by a later study which found similar perceptions amongst a sample of psychiatrists who rated their client's satisfaction levels as markedly lower than the clients rated their own satisfaction (Shore, Savin, Orton, Beals, & Manson, 2007).

Although therapists have been found to sometimes rate TA at a lower level than clients when engaging in OVC (Ertelt et al., 2011; Rees & Stone, 2005), clinician TA ratings tend to range from moderate to very high (Simpson & Reid, 2014a). It should also be noted that many of these studies were conducted 5 to 10 years ago. Recent technological advancements in this time have seen improvements made to videoconferencing technology. Internet speeds have improved and people are now communicating via videoconferencing technology more frequently. As this technology has become more integrated into daily life, it can be assumed that people's comfort using the technology will also have increased during this time. Therefore, clinician concerns and negative attitudes to this technology may have diminished.

Overall, research on TA in OVC is still in its infancy, with many of the previous studies lacking in methodological rigour, generally due to small sample sizes (Berger, 2016). Thus, whether there are any systematic differences in the therapeutic relationship between OVC and traditional in-person treatment remains largely

unsubstantiated (Bee et al., 2008; Berger, 2016; Holmes & Foster, 2012). This may explain some of the scepticism held by mental health professionals towards OVC (Germain et al., 2010). It is possible that clinicians' perceptions of TA in OVC will improve once more reliable evidence is produced that mirrors the literature for traditional in-person treatment in regards to the role of the TA. Future research should aim to provide reliable evidence relevant to the development and maintenance of the TA in OVC so as to alleviate these prejudices and promote greater awareness of the benefits of OVC among mental health professionals. Increased use of OVC by therapists, resulting in greater familiarity with this modality, may also be helping to alleviate these concerns. However, from the current evidence available, it must be concluded that whether therapists perceive TA for OVC to be equivalent to in-person counselling is "Unknown".

Satisfaction ratings

Given that satisfaction is a crucial element of the quality of the interaction between client and clinician (Kane, Maciejewski & Finch, 1997), it is of utmost importance to ensure that OVC services are perceived to be acceptable by both clients and therapists. This section will examine the literature on the satisfaction ratings of clients and clinicians engaged in treatment via OVC and how such ratings compare to those of clients and clinicians engaged in traditional in-person treatment.

Of the articles included in the Backhaus et al. (2012) review, 26 examined participant satisfaction. The authors concluded that, overall, clients do not appear to have a preference for one modality over the other with clients tending to be very satisfied with OVC despite occasional technical issues. Dissatisfaction has been reported in some cases typically early in treatment and primarily due to technical difficulties related to the OVC technology (Backhaus et al., 2012). For example, Dunstan and Tooth (2012) reported client frustrations when a two-three second delay was sometimes encountered, while other times the lighting was distorted which was said to be distracting. Participants also claimed that OVC took some getting used to, however, participants were able to quickly adapt and no longer struggled with such issues in later sessions (Dunstan & Tooth, 2012). This is consistent with previous research indicating that clients are able to adapt to the OVC environment and that

technological issues do not appear to have an adverse impact on the OVC experience (Germain et al., 2010).

Of the RCTs to have compared client satisfaction levels, neither Ruskin et al. (2004) nor Stubbings et al. (2013) detected any significant differences between the OVC and in-person treatment modalities. As discussed earlier, however, the Stubbings et al. (2013) RCT was not sufficiently powered to detect small effects. It should be noted that although Ruskin et al. (2004) found no significant difference in the ratings of client satisfaction between the OVC and in-person treatment groups, clinician satisfaction was found to be significantly different between the two groups. Specifically, clinicians delivering therapy in-person reported being more satisfied with treatment than those clinicians delivering treatment via OVC. This is consistent with research on the TA, suggesting that clinicians may underestimate client perceptions of the OVC experience (Ertelt et al., 2011; Rees & Stone, 2005). Despite this difference, comments from clinicians were generally positive for each mode of service delivery. Furthermore, even therapists with little experience in OVC were able to adapt in a relatively short period of time (Ruskin et al., 2004).

These findings have been supported by less rigorous research. For example, a non-randomised controlled study by Morgan, Patrick and Magaletta (2008) compared satisfaction ratings with treatment delivered via OVC (n=86) and in-person (n=100). Results indicated that there were no significant differences for satisfaction ratings between the two groups. Uncontrolled studies have also reported high levels of user satisfaction with OVC (Himle et al., 2004; Richardson et al., 2015). The Richardson et al. (2015) uncontrolled study discussed earlier in this review also investigated participant satisfaction with OVC. This study also found participant satisfaction levels to be high, indicating that rural Australian residents tend to have positive experiences engaging in OVC.

This REA has demonstrated that both clinicians and clients are typically able to adapt quickly to OVC, with minimal disruption to the flow of communication. Participants tend to rate OVC sessions to be as good as in-person sessions with some clients even expressing a preference for OVC as opposed to waiting to be seen in-person, or having to travel great distances for treatment (Monnier, Knapp, & Frueh, 2003; Morgan et al., 2008; Ruskin et al., 2004). In addition to reduced travel times, clients

have also reported a range of practical benefits including flexibility and reduced travel-related costs (e.g., lost work time and fuel savings) as well as overall general convenience (Simpson et al., 2006; Urness et al., 2006).

Overall, it appears that clients tend to report high levels of satisfaction with CBT delivered via OVC that is similar to the satisfaction levels of clients receiving treatment in-person. Such results indicate that clients are generally satisfied with OVC with clients able to adapt to and enjoy OVC sessions. However, it should be noted that much of this evidence has come from small, non-randomised and uncontrolled studies. Thus, it is difficult to differentiate satisfaction with the format from satisfaction with the treatment itself. The reviewer rated the evidence base support for the equivalence of OVC and in-personal counselling satisfaction as “Promising”, because it is clear that further research is needed.

Consistency across client groups

It is important to determine whether or not certain populations are suitable for receiving treatment via OVC. As demonstrated by the literature reviewed above, OVC appears to be an effective treatment modality for clients across a range of mental health problems. Information regarding the suitability of OVC for different demographic cohorts (e.g., old vs young, male vs. female), however, is limited (Backhaus et al., 2012; Chester & Glass, 2006; Robinson, 2009). Methodological problems that have tended to plague research in this area may have contributed to this shortage, with many studies lacking the statistical power to confidently determine whether any within-group differences exist for those receiving treatment via OVC. Furthermore, the majority of studies have used a non-randomised allocation procedure, thus biasing any potential comparisons. However, of the RCTs that exist, none have reported any significant differences between demographic groups.

In their meta-analysis of ISPI services, Barak et al. (2008) found larger effect sizes for clients aged 19-25 (d=0.48) and 25-39 (d=0.62) compared to clients younger than 18 years old (d=0.15) and older than 40 (d=0.20). This suggests that young to middle-aged adults may be better suited to OVC than older cohorts. However, technology has become ever more present in the lives of older people in recent years. As a result, it is thought that as technology becomes more accepted and utilised by older generations, their skills and comfort using the technology may

increase, thus erasing this discrepancy (Robinson, 2009). In terms of gender differences, none have been reported in the literature, however, as noted in the Backhaus et al. (2012) review, this may be due to the fact that studies have neglected to test for such differences.

An additional factor that should be considered in terms of suitability is that of technological competency. It may be expected that clients with limited computer competence may express a preference for in-person sessions, however, as discussed previously there is evidence suggesting that clients' initial attitudes and levels of computer competency have no effect on treatment outcomes, with clients tending to adapt quickly to OVC technology (Germain et al., 2010).

There is limited evidence relating to treating clients with elevated levels of clinical risk via OVC, with some researchers urging caution for using this medium to facilitate treatment to such clients (Luxton, Pruitt, & Osenbach, 2014; Robinson, 2009). As such, services should consider excluding high risk individuals from participating in OVC until further evidence testing this modality amongst high-risk clients is undertaken.

Overall, the evidence base support for equivalence of OVC and in-person counselling was ranked as "Promising" as no study has reported any significantly superior or inferior effects for OVC for any particular client groups; however, it is difficult to conclude with great certainty that no differences exist considering that much of the research has been done using low sample sizes and without utilising randomised allocation methods. There is a need for further research utilising large samples and random allocation methods. This should ensure that each treatment group has a similar distribution in terms of demographics as well as presenting problem, problem severity and technological competency. Future studies should also ensure that sample sizes are large enough to provide insight into the suitability of OVC across client groups and to confirm that there are no significant differences in terms of satisfaction, TA and clinical outcomes for any of these client groups.

Other outcomes and attrition

In addition to depression, anxiety and PTSD, evidence of OVC for the treatment of other mental health disorders, including eating disorders and addiction-related

problems, was found. A case series by Simpson et al. (2006) examined the effectiveness of OVC for six clients with bulimic disorders. A significant reduction in bulimic symptoms equivalent to that for trials of in-person treatment was found. This was supported by a later RCT on a sample of 128 adults with bulimia receiving treatment either in-person or via OVC which found no significant differences between the treatment groups (Mitchell et al., 2008). A case study by Oakes, Battersby, Pols, and Cromarty (2008) also demonstrated the effectiveness of OVC to treat a patient suffering from problem gambling.

Studies have also assessed participants' overall level of functioning or quality of life rather than specific symptoms. This REA identified one such RCT comparing the efficacy of OVC (n=70) to in-person (n=70) psychiatric treatment (De Las Cuevas, Arredondo, Cabrera, Sulzenbacher, & Meise, 2006). A sample of 140 participants with a range of mental health problems (predominately mood and neurotic disorders) completed the Symptom Checklist-90 Revised (SC-90R) global distress indexes and the Clinical Global Impression (CGI) ratings at weeks 0, 2, 4, 8, 12, 16, 20 and 24. Participants each received up to eight consultations over a 24-week period. Significant improvements were found for both treatment groups, however, no significant differences in improvement were found between the two groups. Specifically, 80% of participants receiving treatment via OVC were "much" or "very much" improved on the CGI scale at the end of treatment, compared to 78% of participants receiving traditional in-person treatment (De Las Cuevas et al., 2006).

Results from non-randomised controlled studies are also encouraging with results showing improvements in general functioning of OVC clients to be actually superior to those achieved for in-person treatment (Grady & Melcer, 2005; Urness et al., 2006). Urness et al. (2006) compared mental health outcomes of OVC and in-person clients using the SF-12 quality of life survey. The SF-12 was administered at baseline and again at a one-month follow-up. The results showed a significant improvement for the OVC group, but no significant improvement for the in-person group (Urness et al., 2006). Similarly, a retrospective evaluation by Grady and Melcer (2005) found that improvements in general functioning (as measured by the Global Assessment of Functioning scale [GAF]) were significantly higher for the OVC group than the in-person group. Uncontrolled studies have also shown that quality of life and general

functioning tend to improve for OVC clients (Shepherd et al., 2006; Simpson et al., 2001).

The results from these studies provide further evidence for the potential benefits of OVC with overall functioning and quality of life among clients increasing over time and at least equivalent to the improvements experienced by clients receiving traditional in-person treatment. However, there remains a lack of reliable data from large RCTs validating the results of these less rigorous studies, so the reviewer has rated the evidence base support for OVC equivalence with in-person counselling as 'Promising' in these contexts.

In the case of attrition, all but one study in this review reported no differences in attrition rates between the two modalities. The Tuerk et al. (2010) study reported a higher rate of attrition in the OVC condition than in the in-person condition. This suggests that clients engaging in OVC may be more likely to drop-out and terminate treatment than those engaging in in-person counselling. However, a closer look at this study's design shows some potential confounding variables that could explain the higher OVC attrition rate. Firstly, it was a non-randomised design with all clients engaging in OVC located outside of the metropolitan area and having more severe symptoms of PTSD. Thus, it could be that rural residents and/or those with more severe symptoms are more likely to drop-out of treatment than their urban and less impaired counterparts. However, there is also evidence suggesting that rural clients can be treated effectively via OVC (Griffiths et al., 2006; Stubbings et al., 2013). Overall, the evidence base support for equivalence of OVC and in-person counselling was therefore ranked as "Promising".

Discussion

Currently in Australia, there are significant access-to-care barriers which may be masking needs for services by inhibiting help-seeking behaviours among the general population (Simpson & Reid, 2014b). However, advances in computer technology have greatly expanded the way in which mental health professionals can reach clients with face-to-face communication no longer restricted to those occupying the same room. Hence, new innovations must be explored, not only to meet the needs of future clients, but also to reduce the access-to-care barriers impacting some Australian residents currently.

Online services, such as OVC, have the potential to allow access to care for people who may not otherwise present for treatment. However, before this treatment modality can be widely introduced into current practice, it is important that it is empirically validated to ensure that it is an equivalent service to that of traditional in-person treatment.

This review aimed to examine the equivalence of one-to-one OVC and in-person counselling for the treatment of adults with mental health problems. Overall, research on OVC is growing across numerous settings and has been found to be beneficial for a variety of populations. Research has also demonstrated the potential of OVC to treat specific mental health disorders such as depression (e.g., Ruskin et al., 2004), anxiety (e.g., Bouchard et al., 2000, 2004), and PTSD (Strachan et al., 2012) as well as improve general functioning and quality of life (De Las Cuevas et al., 2006). Furthermore, satisfaction ratings tend to be high (Backhaus et al., 2012) and therapeutic alliance tends to be strong (Simpson & Reid, 2014a). All of these outcomes have been demonstrated to be similar to those achieved by treatment delivered via traditional in-person care (Backhaus et al., 2012; Frueh, 2015; Simpson & Reid, 2014a). However, despite these promising results, the evidence base for the efficacy of OVC remains limited with some researchers questioning the strength of previous research (Backhaus et al., 2012; Frueh et al., 2004; Morland, Greene, Rosen, Mauldin, & Frueh, 2009). Specifically, although there is evidence for the effectiveness of OVC as a treatment modality similar to that of traditional in-person counselling, whether or not OVC is equivalent is yet to be established.

Overall, the evidence base appears to relate to the target population as much of the previous research has been conducted on adults with a variety of mental health problems, including depression, anxiety, and PTSD. Much of the research has been conducted on samples consisting of veterans, with the evidence suggesting that OVC is an effective and acceptable mode of delivery for this population. However, much of the research to date has been descriptive rather than experimental with the majority of studies in this area having collected and analysed data using small non-randomised samples (e.g., Bouchard et al., 2004; Germain et al., 2009); a limitation that severely restricts the generalisability and validity of these studies. Such limitations make it difficult for researchers to replicate and compare results.

Of the 47 OVC studies reviewed by Backhaus et al. (2012), only 12 were RCTs, of which, only 6 had reasonably sized samples (i.e., n > 40). Underpowered studies are unlikely to show true differences in clinical outcomes between OVC and in-person treatment modalities and as such are unable to provide reliable evidence of equivalence (Backhaus et al., 2012; Greene et al., 2008). As suggested by Backhaus et al. (2012), future studies need to collect data from large, heterogeneous samples to ensure they are powerful enough to detect small differences between the treatment groups. Furthermore, data from more diverse samples needs to be collected to ensure that the generalisability of the results from OVC studies are applicable to a wide variety of clients (e.g., males and females, urban and rural residents, younger and older adults, military and non-military personnel).

Although additional RCTs were identified by this review, these were also not without their flaws; plagued by a lack of statistical power (Strachan et al., 2012; Stubbings et al., 2013) and homogenous samples (Egede et al., 2015). Furthermore, whether or not such outcomes are applicable to the Australian context is largely unknown as no large-scale RCT on OVC has been conducted in Australia. This shortage of RCTs is likely due to the fact that OVC technology has only become widely accessible in recent years. Moreover, although there are a limited number of studies that have been published within the last decade, considering the rapid growth of technological applications (e.g., enhanced computer equipment and faster internet speeds), conclusions drawn even as recently as five years ago may well be outdated. Thus, it is critical that new research continues to validate the findings from previous studies to

ensure that these advancements in technology are having the intended effect and are improving (or at least maintaining) the OVC experience for clients and therapists.

Overall, there does appear to be evidence for the successful treatment of a variety of mental health problems, including anxiety, depression and PTSD via OVC. Results suggest that clients receiving treatment via OVC tend to improve in overall functioning and experience a significant decrease in symptomology for a range of mental health problems and that these improvements are not significantly different to those achieved by clients receiving treatment in-person. Furthermore, client perceptions of the TA and satisfaction have also been found to be similar to those of in-person treatment. The evidence base relevant to clinical outcomes for depression and anxiety, as well as overall functioning, the TA, and satisfaction, was ranked as "Promising". Although results from preliminary studies examining these outcomes are encouraging, few studies have used large samples, randomisation and/or a control group.

In addition, considering the limited amount of research conducted on OVC to treat adults with PTSD one-on-one, and the smaller effect sizes that have been reported using this modality when compared to in-person treatment, the evidence base for OVC to treat PTSD was ranked as "Unknown." Hence, there is a need for further, more methodologically sound research, to validate previous findings and establish whether OVC is equivalent to traditional in-person treatment for PTSD. A similar conclusion has been reached for therapist perceptions of TA. Although several studies have reported that therapist perceptions of TA are lower for OVC than for in-person counselling, the limited number of rigorous current studies investigating this issue and the novelty of the OVC modality for many therapists makes an 'Unknown' ranking most appropriate for the equivalence of OVC and in-person counselling in this context.

Implications

Despite the ability of mental health professionals to adopt OVC as an approach to enhance access to treatment, utilisation has remained low (Simpson & Reid, 2014b). Several factors have likely hindered the implementation of OVC in Australia including a lack of methodologically rigorous research as well as an enduring, unfounded scepticism regarding the development of the therapeutic relationship in OVC

(Richardson & Simpson, 2015). It appears as though clinicians either continue to doubt the evidence base for OVC and need further, more methodologically rigorous research or are simply unaware of the evidence base altogether. Hence, an increased awareness of the benefits of OVC is needed among mental health professionals before OVC can be utilised more frequently. It is thought that improving knowledge of and attitudes toward OVC may increase the frequency with which mental health professionals utilise OVC, however, this can only be achieved once the evidence base for this modality has been strengthened (Bruno & Abbott, 2015).

In order to overcome the limitations of previous research and validate the evidence that has been put forth, researchers have offered some key suggestions for future research in this area to consider (Backhaus et al., 2012; Barak et al., 2008; Bouchard et al., 2000; Frueh, 2015). These suggestions include:

1) comparing the effectiveness of OVC to a valid control condition with a rigorous randomised design;

2) recruiting large, diverse samples in order to have sufficient statistical power and enhanced generalisability;

3) assessing outcomes using valid and reliable instruments;

4) investigating both clinical outcomes and process-related variables (e.g., treatment adherence, attrition, satisfaction, therapeutic alliance); and

5) utilising sound statistical analyses to confirm the presence of statistically significant improvement on specific measures post-treatment as well as conducting follow-ups to ensure the effects of treatment are long-term.

Future studies should aim to overcome the limitations of previous research by recruiting a large diverse sample and using a random allocation method so that even small differences between the treatment modalities can be detected and the results of the study can be generalised to the wider population. Such action will go a long way to validating the results of previous less methodologically rigorous research while enhancing the generalisability of the findings. It is hoped that the results of such studies will lead to more mental health services implementing OVC in their practices, so that a greater number of individuals requiring counselling can access treatment.

Limitations of the rapid evidence assessment

In order to make this review ‘rapid’, some restrictions on the methodology were necessary. As such the findings from this REA should be considered alongside its limitations. These limitations included: the omission of potentially relevant papers that were published after the end of the defined search period (July 2016); the omission of non-English language papers; the omission of OVC papers examining group therapy; and the omission of papers that discussed OVC in conjunction with other telehealth modalities. Also, this REA included only studies that had been published since the independent systematic reviews by Backhaus et al. (2012) and Simpson and Reid (2014a). Thus, if either of these reviews missed any relevant earlier papers, our review may also have missed these. In addition, although the evidence base was evaluated in terms of its strength, direction, consistency, generalisability and applicability, these evaluations were not as exhaustive as a systematic review methodology. Unfortunately, the use of multiple search terms and combinations of these search terms would make it difficult for this search to be replicated; this is compounded further by the inconsistency present in the literature with multiple terms used to describe similar modalities. Finally, the information presented in this REA is a summary of information presented in available papers. It is recommended that readers source the original papers if they would like to know more about a particular intervention or study.

Conclusion

The findings of this REA build upon those of the Backhaus et al. (2012) and Simpson and Reid (2014a) systematic reviews, in concluding that the evidence base for OVC is largely 'Promising'. Despite evidence of a beneficial effect, this evidence has come mostly from non-randomised studies and underpowered RCTs. Therefore, these encouraging findings remain largely unsubstantiated.

Additional studies are needed to determine the true efficacy and acceptability of OVC and to determine whether OVC is truly equivalent to in-person treatment. This need is clear when considering the prevalence of mental health problems among veterans and the general population, as well as the significant access-to-care barriers that may be preventing these individuals from seeking and receiving needed mental health care.

Moving forward, it is essential that new innovative ways to meet the mental health care needs of Australians are explored and tested (Simpson & Reid, 2014b). As stated by Simpson and Reid (2014b) in their 2020 vision for telehealth in Australia, more Australian-focused research evaluating the efficacy and effectiveness of OVC is "overdue". Thus, in order to increase the utilisation of OVC among mental health professionals in Australia and begin to enhance access to care for veterans and the general population, further research empirically examining the OVC modality is required.

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Appendix 1

Population Intervention Comparison Outcome (PICO) framework

The research question was formulated within a Population Intervention Comparison Outcome (PICO) framework. Application of a PICO aids to structure, contain and set the scope for the research question.

Is online video counselling at least equally effective as in-person counselling?

- **PICO format:** In adults with a mental illness, has online video counselling been shown to be at least as effective in reducing symptoms of mental illness when compared to in-person counselling?

P (Participant, Problem, Population)	**I** (Intervention)	**C** (Comparison)	**O** (Outcome)
Participant: Age ≥ 18 Gender: no specification **Problem:** any mental health illness (review will focus on but not be exclusive to depression, anxiety, PTSD). **Population:** adults with mental health concerns.	Online video counselling.	Traditional in-person (face-to-face) counselling.	Effectiveness as defined within the methodological constraints of each study, assessed by: • Changes in mental health symptoms, either on general symptom measures or measures of symptom-specific disorders.

Is online video counselling at least equally acceptable as in-person counselling?

- **PICO format:** In adults with a mental illness, are there any systematic differences in the therapeutic relationship, subjective experience, or attrition rates between online video counselling and in-person counselling?

P (Participant, Problem, Population)	**I** (Intervention)	**C** (Comparison)	**O** (Outcome)
Participant: Age ≥ 18 Gender: no specification **Problem:** any mental health illness (review will focus on but not be exclusive to depression, anxiety, PTSD). **Population:** adults with mental health concerns.	Online video counselling.	Traditional in-person (face-to-face) counselling.	Acceptable as defined within the methodological constraints of each study, assessed by: • Scores on measures of therapeutic alliance • Scores on measures of satisfaction • Attrition rates

Appendix 2

Information retrieval/management

The following is an example of the search strategy conducted in the PsycInfo database:

Step	Search terms	Results
S1	online counselling	51
S2	videoconference* OR (video conference*)	2,643
S3	S2 AND “mental health”	487
S4	S2 AND depression	1,316
S5	S2 AND anxiety	1,307
S6	S2 AND (PTSD OR “posttraumatic stress” OR “post-traumatic stress” OR “traumatic stress”)	1,266
S7	S2 AND (S3 OR S4 OR S5)	1,352
S8	S1 AND (“therapeutic alliance” OR “working alliance”)	11
S9	S2 AND (“therapeutic alliance” OR “working alliance”)	378
S10	S2 AND satisfaction	415
S11	S2 AND attrition	375

Appendix 3

Quality and bias checklist

Completed	Not Completed	
		1. Method of treatment assignment
		• Correct, blinded randomisation method described OR randomised, double-blind method stated AND group similarity documented
		• Blinding and randomisation stated but method not described OR suspect technique (eg allocation by drawing from an envelope)
		• Randomisation claimed but not described and investigator not blinded
		• Randomisation not mentioned

Completed	Not Completed	
		2. Control of selection bias after treatment assignment
		• Intention to treat analysis AND full follow-up
		• Intention to treat analysis AND <25% loss to follow-up
		• Analysis by treatment received only OR no mention of withdrawals
		• Analysis by treatment received AND no mention of withdrawals OR more than 25% withdrawals/loss-to-follow-up/post-randomisation exclusions

Completed	Not Completed	
		3. Blinding
		• Blinding of outcome assessor AND patient and care giver (where relevant)
		• Blinding of outcome assessor OR patient and care giver (where relevant)
		• Blinding not done
		• Blinding not applicable

Completed	Not Completed	
		4. Outcome assessment (if blinding was not possible)
		• All patients had standardised assessment
		• No standardised assessment OR not mentioned

Completed	Not Completed	
		5. Additional Notes
		• Any factors that may impact upon study quality or generalisability

Appendix 4

Meta-analyses and systematic reviews checklist

Systematic review:	
Citation:	
Comments:	
Study type:	
Quality rating: (Good, Fair, Poor)	
Included studies:	

Systematic review

A. Was an adequate search strategy used?

Y	N	NR	NA	Quality Criteria	Error Categories
				• Was a systematic search streagy reported?	I
				• Were the databases search reported?	III
				• Was more than one database searched?	III
				• Were search terms reported?	IV
				• Did the litarature search include hand searching?	IV

B. Were the inclusion criteria appropriate and applied in an unbiased way?

Y	N	NR	NA	Quality Criteria	Error Categories
				• Were inclusion/exclusion criteria reported?	II
				• Was the inclusion criteria applied in an unbiased way?	III
				• Was only level II evidence included?	I=IV

C. Was a quality assessment of included studies undertaken?

Y	N	NR	NA	Quality Criteria	Error Categories
				• Was the quality of the studies reported?	III
				• Was a clear, pre-determined strategy used to assess study quality?	IV

D. Were the characteristics and results of the individual studies appropriately summarised?

Y	N	NR	NA	Quality Criteria	Error Categories
				• Were the characteristics of the individual studies reported?	III
				• Were baseline demographic and clinical characteristics reported for patients in the individual studies?	IV
				• Were the results of the individual studies reported?	III

E. Were the methods for pooling the data appropriate?

Y	N	NR	NA	Quality Criteria	Error Categories
				• If appropriate, was a meta-analysis conducted?	III-IV

F. Were the sources of heterogenity explored?

Y	N	NR	NA	Quality Criteria	Error Categories
				• Was a test for heterogeneity applied?	III-IV
				• If there was heterogeneity, was this discussed or the reasons expored?	III-IV

Note: Quality criteria adapted from NHMRC (2000) How to use the evidence: assessment and application of scientific evidence. HNMRC, Canberra.

[a] Assess criterion using Y (yes), N(no), NR (not reported) or NA (not applicable).

[b] Error categories as follows: (I) leads to exclusion of the study; (II) automatically leads to a poor rating; (III) leads to a one grade reduction in quality rating (eg, good to fair, or fair to poor); and (IV) errors that may or may not be sufficient to lead to a decrease in rating.

[c] Where applicablem provide clarification for any of the criteria, particularly where it may results in downgrading of the study quality. For quality assessment of systematic reviews, this should include a statement regarding the methodologcal quality of the studies included in the systematic review.

[d] Quality ratings are good, fair, or poor.

Appendix 5

Evidence Profile – depression and anxiety

	Study 1	Study 2	Study 3
Authors and year	Ruskin, Silver-Aylaian, Kling, Reed, Bradham, Hebel, Barrett, Knowles & Hauser (2004)	Stubbings, Rees, Roberts & Kane (2013)	Egede, Acierno, Knapp, Lejuez, Hernandez-Tejada, Payne & Frueh (2015)
Design	RCT	RCT	RCT
Intervention (I) and Comparison (C)	(I): OVC (C): In-person treatment	(I): OVC (C): In-person treatment	(I): OVC (C): In-person treatment
Focus of Intervention	Treatment	Treatment	Treatment
Participant inclusion criteria	Participants were included in the study if they scored 16 or higher on the Hamilton depression scale and met the DSM-IV (SCID) criteria for one of the following five diagnoses: major depressive disorder, dysthymic disorder, adjustment disorder with depressed mood, mood disorder due to a general medical condition, or depressive disorder not otherwise specified.	Participants were included in the study if they had a primary diagnosis of a DSM-IV-TR Axis-I disorder.	Participants were included in the study if they satisfied the DSM-IV criteria for major depressive disorder
Primary outcome domain (measures)	The time-by-treatment group interaction; to determine whether the change in severity of depressive symptoms over time was influenced by the treatment condition.	The time-by-treatment group interaction; to determine whether the change in symptomology over time was influenced by the treatment condition.	Proportion of participants who responded to treatment at the end of the 12 months of follow-up (GDS, BDI, and SCID).
Secondary outcome Domain (measures)	- Change in depressive symptoms from the beginning to the	- The DASS was used to measure global clinical symptoms.	- BDI and GDS scores over time

	end of treatment (Hamilton depression scale) Treatment response was measured with the Hamilton depression scale, BDI, Spielberger Trait Anxiety Inventory Scale, the Spielberger State Anxiety Scale, the GAF, CGI, and Medical Outcomes Study 12-Item Short-Form Health Survey - Satisfaction (custom scale) - Attrition (% of drop outs)	- The Quality of Life Enjoyment and Satisfaction scale (QLES) was used to measure changes in quality of life. - The Working Alliance Inventory Short Form was used to measure the therapeutic alliance. - Satisfaction was measured using the shortened Client Satisfaction Questionnaire (CSQ)	
Setting and sample characteristics	Depressed American veterans N=119 (88% male, mean age of 49.7)	Adults diagnosed with Axis-I disorder and referred for treatment. N=26 (42% male, mean age of 30)	Depressed elderly veterans (aged ≥58 years) N=241 (98% male, mean age of 63.9)
Participants: I	N=59	N=14	N=120
Participants: C	N=60 No significant differences between the groups at baseline were reported.	N=12 No significant differences between the groups at baseline were reported.	N=121 No significant differences between the groups at baseline were reported.
Summary of the results	A significant overall effect of time was observed, suggesting a decline in the frequency and severity of PTSD symptoms for both groups. The interaction term was not significant, suggesting that there was no difference between the two treatment conditions.	A significant overall effect of time was observed, suggesting a decline in the frequency and severity of PTSD symptoms for both groups. The interaction term was not significant, suggesting that there was no difference between the two treatment conditions.	A significant overall effect of time was observed, suggesting a decline in the frequency and severity of PTSD symptoms for both groups. The interaction term was not significant, suggesting that there was no difference between the two treatment conditions.

Evidence Profile – posttraumatic stress disorder

	Study 1	Study 2	Study 3	Study 4
Authors and year	Strachan, Gros, Ruggiero, Lejuez & Acierno (2012)	Germain, Marchand, Bouchard, Drouin & Guay (2009)	Tuerk, Yoder, Ruggiero, Gros & Acierno (2010)	Gros, Yoder, Tuerk, Lozano & Acierno (2011)
Design	RCT	Non-randomised controlled trial	Non-randomised controlled trial	Non-randomised controlled trial
Intervention (I) and Comparison (C)	(I): OVC (C): In-person treatment	(I): OVC (C): In-person treatment	(I): OVC (C): In-person treatment	(I): OVC (C): In-person treatment
Focus of Intervention	Treatment (using Behaviour Activation therapy)	Treatment (using CBT)	Treatment (using exposure therapy)	Treatment (using exposure therapy)
Participant inclusion criteria	Participants were included in the study if they met criteria for PTSD or subthreshold PTSD, defined as fulfilment of Criteria A (traumatic event) and B (re-experiencing), and either C (avoidance) or D (hyperarousal)	Participants were included in the study if they had a primary diagnosis of PTSD from the SCID-IV	Participants were included in the study if they had been diagnosed with combat-related PTSD from the SCID-IV	Participants were included in the study if they had been referred to receive exposure therapy for PTSD
Primary outcome domain (measures)	The time-by-treatment group interaction; to determine whether the change in PTSD symptoms over time was influenced by the treatment condition. - PCL-M, BDI-II, and BAI	The time-by-treatment group interaction; to determine whether the change in PTSD symptoms over time was influenced by the treatment condition.	Reduction in symptomology from pre- to post-treatment - PCL-M - BDI	The time-by-treatment group interaction; to determine whether the change in PTSD symptoms over time was influenced by the treatment condition. - PCL-M - BDI - DASS - IIRS

Secondary outcome domain (measures)		Change in symptomology over time: - Modified PTSD Symptom Scale (MPSS) - BAI - BDI - Assessment of Current Functioning (ACF) Comfort with technology: - Distance Communication Comfort Scale (DCCS) - Videoconferencing Telepresence Scale (VTS) - Videoconference Therapy Questionnaires (VT-Q)		Change in symptomology over time: - PCL-M - BDI - DASS - IIRS
Setting and sample characteristics	American veterans with PTSD or subthreshold PTSD. N=31 (92.5% male, mean age of 30.4)	Adults with PTSD. N=48 (39.6% male, mean age of 42.5)	American veterans with combat-related PTSD. N=47 (94% male, mean age of 39).	American veterans with PTSD. N=89 (~90% male, mean age of 45)
Participants (I)	N=18	N=16	N=12	N=62
Participants (C)	N=13 No significant differences between the groups at baseline were reported.	N=32 No significant differences between the groups at baseline were reported.	N=35 No significant differences between the groups at baseline were reported.	N=27 No significant differences between the groups at baseline were reported.
Summary of the results	A significant overall effect of time was observed, suggesting a decline in the frequency and	A significant overall effect of time was observed, suggesting a decline in the frequency and	Participants in both groups were found to experience significant clinical improvements over time. However, the effect size for the in-	A significant overall effect of time was observed, suggesting a decline in the frequency and

	severity of PTSD symptoms for both groups. The interaction term was not significant, suggesting that there was no difference between the two treatment conditions.	severity of PTSD symptoms for both groups. The interaction term was not significant, suggesting that there was no difference between the two treatment conditions.	person group (d=4.2) was larger than that of the OVC group (d=2.9)	severity of PTSD symptoms for both groups. However, the interaction term was significant, suggesting that clients receiving in-person treatment experienced a greater reduction in symptoms than those receiving OVC.

Evidence Profile – therapeutic alliance

	Study 1	Study 2	Study 3	Study 4
Authors and year	Day & Schneider (2002)	Germain, Marchand, Bouchard, Guay & Drouin & (2010)	Simpson, Guerrini & Rochford (2015)	Richardson, Reid & Dziurawiec (2015)
Design	RCT	Non-randomised controlled trial	Non-randomised controlled trial	Uncontrolled trial
Intervention (I) and Comparison (C)	(I): Three treatment groups: OVC, telephone, and in-person (C): Wait list	(I): OVC (C): In-person treatment	(I): OVC (C): In-person	(I): OVC (C): none
Focus of Intervention	Treatment	Treatment	Treatment	Treatment
Participant inclusion criteria	Clients in need of counselling	Participants were included in the study if they had a primary diagnosis of PTSD from the SCID-IV	Clients in need of counselling	Clients receiving OVC
Primary outcome domain (measures)	To determine whether ratings of the working alliance were influenced by the treatment condition. - Vanderbilt Psychotherapy Process Scale (VPPS) - CSS - TSS	The time-by-treatment group interaction; to determine whether there was any change in alliance scores over time and whether this was influenced by the treatment condition. - WAI - SEQ - DCCS -VTS -VT-Q	Reduction in symptomology from pre- to post-treatment - CORE-10	To evaluate the client experience of OVC - ARM
Secondary outcome domain (measures)	To determine whether clinical outcomes were		To determine whether ratings of the working	

	influenced by the treatment condition. - BSI (GSI) - GAF - CSS - TSS		alliance were influenced by the treatment condition -CORE-ARM	
Setting and sample characteristics	Clients receiving counselling for a variety of problems N=80 (35% male, mean age of 39.4)	Adults with PTSD. N=46 (41.3% male, mean age of 42)	Clients receiving counselling for a variety of problems N=23	Clients receiving counselling for a variety of problems
Participants (I)	OVC N=26; Telephone N=27; In-person N=27	N=17	N=6 (50% male, mean age=34)	N=8 (25% male, ages ranged from 27 to 52 years)
Participants (C)	N=27	N=29 No significant differences between the groups at baseline were reported.	N=17 (41% male, mean age=31.8)	N/A
Summary of the results	There was a significant difference between the groups indicating that participants engaging in OVC had higher alliance scores than those in the in-person condition.	A significant overall effect of time was observed, suggesting an improvement in alliance scores over time for both groups. The interaction term was not significant, suggesting that there was no difference between in alliance scores between the two treatment conditions.	Reductions in distress and high alliance scores were found for each group. No significant differences were found between the two groups.	Ratings of alliance were high from baseline and improved over the duration of treatment.

Appendix 6

Evaluation list

Type of Intervention	Included Studies
Promising	
OVC equivalence to traditional in-person counselling for:	
Depression and anxiety	Ruskin et al. (2004), Backhaus et al. (2012); Bouchard et al. (2000; 2004); Cowain (2001); Dunstan & Tooth, (2012); Egede et al., (2015); Griffiths et al. (2006); Himle et al. (2006); Lichstein et al., (2013); Stubbings et al. (2013); Théberge-Lapointe et al. (2015); Vogel et al. (2014); Yuen et al. (2013)
Client Perceptions Therapeutic alliance	Backhaus et al. (2012); Bouchard et al. (2004); Day & Schneider (2002); Dunstan & Tooth (2012); Ertlet et al. (2011); Germain et al. (2010); Grady & Melcer (2005); Himle et al. (2006); Rees & Stone (2005); Richardson et al. (2015); Ruskin et al. (2004); Simpson et al. (2001; 2006; 2015); Simpson & Reid (2014a);
Client Satisfaction	Backhaus et al. (2012); Bouchard et al. (2004); Dunstan & Tooth (2012); Ertlet et al. (2011); Germain et al. (2010); Grady & Melcer (2005); Himle et al. (2006); Morgan et al. (2008); Rees & Stone (2005); Richardson et al. (2015); Ruskin et al. (2004); Simpson et al. (2001); Stubbings et al. (2013); Urness et al. (2006)
Consistency across groups	Barak et al. (2008), Germain et al. (2010), Luxton et al. (2009)
Other outcomes and attrition	

Type of Intervention	Included Studies
	De Las Cuevas et al. (2006), Grady & Melcer (2005), Shepherd et al. (2006), Simpson et al. (2001, 2006), Urness et al. (2006)
Unknown	
OVC equivalence to traditional in-person counselling for:	
PTSD	Backhaus et al. (2012); Germain et al. (2009); Strachan et al. (2012); Tuerk et al. (2010)
Therapist perceptions of therapeutic alliance	Ertlet et al. (2011), Rees & Stone (2005), Shore et al. (2007), Simpson & Reid (2014a).