# Internet-based CBT Program with and without videoconference guidance sessions: A Randomized Controlled Trial to treat work-related symptoms of anxiety and depression

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*Data availability statement: authors declare the total availability of the data of the present study.

## Abstract

This study provides the results from the implementation of a highly structured therapist-guided iCBT program for people with work-related anxiety and depression, in terms of program efficacy, participants' adherence and satisfaction. Seventy-seven national police-workers were randomly allocated to one of two groups: without additional videoconference sessions (web platform with guidance of therapist), and with additional videoconference sessions (same intervention as the previous group, plus two videoconference guidance sessions with a psychologist). The intervention was comprised of 12 sessions and took place for 17-20 weeks. We found an adherence rate of 36.4%, with no differences between groups. All participants endorsed lower depression [BDI-II $F(1) = 36.98$, $\rho < .001$; ATQ $F(1) = 24.22$, $\rho < .001$], and anxiety [STAI-State $F(1) = 76.62$, $\rho < .001$] after the program. As a variable related to anxiety and depression in workplace, participants also showed higher assertiveness levels [RAS $F(1) = 8.96$, $\rho < .001$]. A significant reduction of the mean level of anxiety perceived by participants as the intervention program progressed was observed in both groups ($F(2)=7.44$; $p=.003$). Participants were satisfied with the therapists' intervention and with the program. No significant group effects were found for any of the measures. Reduction in depression levels was maintained in the 12 months follow-up, but levels of anxiety increased. This study is innovative, as it is the first controlled trial to analyze the effect of two added videoconference sessions, and it includes short and long term measures, which is not usual. The results are discussed to clarify the role of the contact with the therapist to improve treatment adherence.


## Key practitioner

- This study highlights the effect of an internet intervention for work-related anxiety and depression.
- The results suggest that internet interventions without therapist face-to-face contact can be as effective (in results and adherence) than interventions with a little proportion of videoconferences sessions.
- The results of this study show iCBT constitutes a good alternative to face to face treatments for work-related anxiety and depression, with good results that can give the users confidence if they prefer an online version.

## Introduction

The technological advancement and the increase of people using Internet and online resources has prompted an exponential development of e-mental health services, which refers to the development of these services through the Internet. In this line, online psychological therapy has become an alternative methodology to provide treatments with different purposes: From health promotion programs (e.g. smoking cessation, physical activity or eating habits) to psychological interventions or prevention programs for different clinical and subclinical problems (e.g. depression, anxiety or stress) (Asplund, et al., 2019; Chakraborty, Maiti, & Strecher, 2018; Kim, Chen & Hwang, 2018; Kuribayashi et al., 2019; Lara et al., 2016).

Evidence on computer-based interventions shows promising results for the treatment of clinical problems like depression and anxiety disorders (Hedman, Brjánn, & Nils, 2012), eating disorders (Huurne et al., 2015), or addictive behavior (Postel, de Haan, Huurne Becker, & de Jong, 2010), but also for the treatment of subclinical problems in different population, depending of some characteristics, like the group age (adolescents, young adults or older adults) (Väimäki, Anttila, Anttila, & Lahti, 2017; Vanoh et al., 2018), or the belonging to a risk profession, like health professionals (Hersch et al., 2016) or teachers (Oishi et al. 2018).

However, the effectiveness of internet intervention compared to face-to-face interventions is usually questioned. Despite, studies show that internet interventions are effective compared to control group without intervention, and also that differences in effectiveness compared to face-to-face are no substantial (Andersson, Titov, Dear, Rozental, & Carlbring, 2019; Carlbring, Andersson, Cuijpers, Riper, & Hedman-Lagerlöf, 2018; Andersson, Rozental, Shafan, & Carlbring, 2018; Olthius, Watt, Bailey,

Hayden, & Stewart, 2016; Sunnhed et al., 2020). Empirical evidence to date points out encouraging results in the field of internet interventions efficacy, however, there are some aspects that highlight the need for further studies: firstly, some meta-analysis consider that the quality of some studies is low, what reveals a lack of robust studies from a methodological point of view in order to accumulate evidence of the effectiveness of internet interventions. In second place, effectiveness studies rarely take follow-up measures, what restrict conclusions about long-term efficacy.

Internet interventions appear to make psychological treatments more economical, available, and to favor greater flexibility (Day, McGrath, & Wojtowicz, 2013; Hadjistavropoulosa, Alberts, Nugent, & Marchildon, 2014), what can make them more accessible to population. However, some disadvantages in internet interventions are also suggested, as problems in confidentiality, low rates of compliance, or high levels of attrition (Anderson & Titov, 2014; Christensen, Griffiths, & Farrer, 2009; Gratzer & Goldbloom, 2020; Thew, 2020).

Attending to this high level of attrition, evidence shows that guided on-line interventions encourage adherence to treatments and decrease dropout rates compared to self-guided interventions (Mohr, Cuijpers, & Lehman, 2011). In addition, several studies suggested that automated programs without therapist support are less effective than Internet interventions with, at least, minimal therapist guidance (Andersson & Cuijpers, 2009). In this sense, it has been found that any degree of contact with therapist as periodic interviews, mail exchange or individualized messages may be beneficial for effectiveness (Baumeister, Reichler, Munzinger, & Lin, 2014). The influence of therapist factors on face-to-face therapy outcomes have been widely recognized (Norcross, 2011; Norcross & Lambert, 2019). Also, some similarities between the impact of therapists in iCBT and

face-to-face CBT has been found (Bergström et al., 2010; Carlbring et al., 2005, 2018; Kiropouloset al., 2008; Spek et al., 2007).

However, the level of guidance to optimize iCBT treatment results is understudied yet (Almlöv et al., 2011). Despite therapist guided interventions have shown higher adherence rates and higher efficacy, we must be cautious when considering how much should the therapist guide the intervention, given that it could affect the efficiency of interventions (Palmqvist, Carlbring & Andersson, 2007). Further studies are needed with the aim of optimizing iCBT efficiency (Arnberg, Linton, Hultcrantz, Heintz, & Jonsson, 2014), as efficiency is from our point of view one of the strengths of online psychological interventions. Specifically, following Andersson et al. (2018), Olthius et al. (2016), and Thew (2020), further studies, that maximize the effectiveness of intervention with minimal therapist guidance, are necessary.

In this study, we address the noted gaps in online psychological treatments research: the lack of clarity about the level of guidance to optimize iCBT treatments, and the scarcity of follow-up measures. And we address it through a program directed to the treatment of an important and frequent social problem: work-related psychopathological symptoms of anxiety and depression in a sample especially susceptible to it, police workers. There are several mental health problems triggered by working conditions that cause high levels of social and economic impact, as has been highlighted by different international agencies, like the European Agency for Safety and Health at Work (EU-OSHA, 2014). Specifically, this agency found sleeping problems, irritability and anxiety reported by 8%, 11% and 8%, respectively, of asked workers (EU-OSHA, 2009). These prevalence data are not only important for quality of life of individuals (Wu, Liu, Li, Tian, & Tan, 2019), but also have a significant impact on the social and economic plane (EU-OSHA, 2014; Vercamer, 2018).

The largest group of employees who suffered from stress, anxiety and irritability were in the education, health and public administration, and defense sectors (EU-OSHA, 2014). Research in psychology has frequently shown the high levels of depression, anxiety and stress experienced by professionals who are dedicated to serving to others (e.g. educational sector and public administration), as well as those who work in emergency services (e.g. health and social sectors) (Harvey et al., 2017; Hunter, Fenwick, Sidebotham, & Henley, 2019; Jones-Rincon & Howard, 2019; Tarcan Hikmet, Schooley, Top, & Tarcan, 2017; Xu, Kynoch, Tuckett Eley, & Newcombe, 2019). The high demands in these two tasks make police workers a risk population to suffer certain psychopathological symptoms, such as depression, anxiety and, if it is maintained over time, stress (Di Nota, Anderson, Ricciardelli, Carleton, & Groll, 2020; Husain, 2014; 2019; Wu et al., 2019).

In response to these work-related problems, the interest of large part of health professionals has focused on designing and applying psychological programs to treat work-related psychopathological symptoms, as anxiety and depression, in a sub-clinical stage (Proper & van Ostrom, 2019). Some methodological disadvantages appear when the severity of a problem at the base line is low, and room for improvement is small. However, the number of workers with a level of subclinical stress, depression or anxiety that potentially put them at risk for developing a clinical disorder was at least twice the number of those who met the criteria for a clinical disorder (EU-OSHA, 2009). The implementation of interventions in subclinical symptoms might avoid the development of clinical disorders and their consequences, resulting in better cost-effectiveness (Matrix, 2013). However, reviewing the literature we found a lack of studies on iCBT programs applied in subclinical phases of anxiety and depression at workplaces (Kuribayashi et al.,

2019; Phillips et al., 2014; Schneider, Sarrami, Grime, & Thornicroft, 2014), and we have not found any study in a sample of police workers.

In a long-term view, the programs directed to subclinical phases of anxiety and depression could avoid the maintenance of such symptoms to prevent stress, burnout, and related health problems (Kivimävi et al., 2015; Theorell et al., 2016). Outcome research in this field generally show a significant decrease of anxiety and depression, as well as an increase in some skills needed to cope with job requirements (Joyce et al., 2016; Martin, Sanderson, & Cocker, 2009; Phillips et al., 2014; Pieper, Schöer, & Eilerts, 2019). In general, the aim of these intervention programs is to teach people how to manage their symptoms by learning skills to regain control over a given situation and change problematic thoughts and behaviors that usually contribute to the continuance of the problem. For this purpose, the effectiveness of therapist-assisted Internet-delivered Cognitive Behavior Therapy (iCBT) for depression and anxiety – not specifically at workplaces - has been highly demonstrated over the last decade (Andersson et al., 2019; Andrews et al., 2018; Sztein, Koransky, Fegan, & Himelhoch, 2018). Among the most common techniques included in these programs are psychoeducation, self-monitoring, relaxation, cognitive restructuring, graded exposure, problem solving and behavioral activation (Clarke et al., 2014; Ellis, Campbell, Sethi, & O'Dea, 2011; Newby, Mewton, Williams, & Andrews, 2014; Titov et al., 2014). However, less common is the use of assertiveness training to teach social skills – also in face-to-face treatments-, despite its importance in the development of psychological problems, and specifically, on work-related psychological problems (Speed, Goldstein, & Goldfried, 2018). This is the reason why we have included social skills training in our program, but the assertiveness skills training would not be considered as a result of the intervention by itself, but rather as a means of reducing anxiety and depression symptoms related to workplace.

According to the points exposed above, in this study we provide the results from the implementation of an iCBT program for police workers with work-related symptoms of anxiety and depression, in terms of program efficacy, participants' adherence and satisfaction. Our aim is to study whether adding two videoconference guidance sessions - changing the level of contact with the therapist - affects these three variables, as well as to study short and long-term effectiveness of the intervention program. Given the lack of studies previously mentioned, our interest is to test whether adding some amount of videoconference sessions can improve the results of this web-based treatment without compromising its efficiency.

This research is likely to assist with the transfer of knowledge to iCBT practice and may enrich the literature about therapist guidance in iCBT implementation.

We hypothesized that:

- Adherence and satisfaction with the program would be higher in the group with additional videoconference sessions compared to the group without additional videoconference sessions.

- However, we expected that the treatment program would produce effects in both groups, without significant differences between them in terms of efficacy (for those who completed the treatment).

## Method

### Participants

Seventy-seven participants, national police workers, with work-related symptoms of anxiety and depression participated in this study. The participants held different positions within the National Police Force (street police officers, office workers, etc.). We selected a convenience sample, not a random sample (although the

division into groups was random, as explained later). The intervention was offered by the Faculty of Psychology at the Universidad Autónoma of Madrid (Spain). Participants were recruited by email with the collaboration of the company Gesmepol, over two periods: February 2013 and February 2014. In the first instance, 84 individuals applied for the program, while only 77 met the inclusion criteria: (i) Age ≥ 18 years; (ii) being an active worker; (iii) having frequent access to a computer and the Internet; (iv) having participated in an online informative and assessment session before the program (pre-assessment session). We excluded individuals with a severe clinical problem according to the results from STAI (State-Trait Anxiety Inventory; excluded participants with percentile > 77), and BDI-II (Beck Depression Inventory – Second Edition; excluded participants with score> 29, severe depression), and they were informed about the reasons by a telephone call. They were also recommended individual psychological treatment.

The resulting 77 consenting participants were randomly allocated to one of two treatment conditions: without additional videoconference sessions (n= 38), and with additional videoconference sessions (n= 39). The age of the participants ranged from 25 to 57 years (M= 40.83; SD= 7.69). Forty-three participants were men (55.8%), while thirty-four were women (44.2%). Other sociodemographic characteristics of the sample are included in Table 1.

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**Intervention**

Participants did perform each session individually (tasks were carried out individually), but they were also organized in groups to analyze the effect of

videoconference sessions – two groups with additional videoconference sessions and two groups without additional videoconference sessions. Participants could interact and share their experiences with other participants during the development of the program through forums, which were always moderated by the therapist to guarantee a therapeutic use. The participation in groups was planned to favour similar advantages that it favours in face-to-face therapy (e.g. to improve cost-benefit ratio, to facilitate individual learning, to improve adherence, etc.). We divided the participants into four and not only into two groups with the aim of having groups with an appropriate number of participants (minimum 10-maximum 20), so they could interact between them and have a sense of group belonging; also, it was important for the therapists to have groups that they could manage appropriately in the clinical issues. This was a treatment offered for the community that was implemented when there were participants enough for the therapeutic groups, so clinical reasons were used to determine the size of the groups, instead of making power calculations to guarantee statistical analyses.

In all cases, the intervention took place over 17-20 weeks (12 sessions, each one available during 10 days), either from April to August 2013 (one group with additional videoconference sessions and one group without additional videoconference sessions), or from March to July 2014 (one group with additional videoconference sessions and one group without additional videoconference sessions). Participants in both conditions had access to the web platform with the guidance of two therapists and they received the same treatment modules in the same chronological order. Additionally, participants with additional videoconference sessions performed two Skype guidance sessions with a therapist over the whole study period (17-20 weeks). The Research Ethics Committee of

the Universidad Autónoma of Madrid approved this procedure. Details of participants' flow are shown in Figure 1.

Our program is a highly-structured therapist-guided CBT web-based intervention according to the definition by Barak, Klein, & Proudfoot (2009), and is consistent with the literature on evidence-based face-to-face cognitive behavioral practice (Beck, Rush, Shaw & Emery, 1979; Caballo, 2002; Davis, McKay, & Eshelman, 1985; D'Zurilla & Goldfried, 1971; Ellis & Grieger, 1977). The evidence-based techniques and contents were all adapted to a web-based setting and appropriate examples on working contexts were developed.

Thus, the objectives of the program were: (1) to understand anxiety and depression, and the factors related to it, especially at work settings; and (2) to practice some basic strategies to manage work-related anxiety and depression, so participants can use them to appropriately face daily difficult situations, whether at work or in other contexts. The intervention was comprised of the following components: 12 online text-based lessons enriched with audiovisual material, some communication tools (a query tool for participants, notifications, and group online forums), a schedule tool, homework assignments for each session, and graphical representation for each participant's and other participants' progress. Although participants completed the lessons by themselves at their own pace, two therapists followed their progress on a daily basis and they communicated with them to give them feedback on their progress at least three times each lesson or more, if it was convenient. This feedback was interactive, so therapists sent messages to participants and they could answer them, ask them questions, etc. Participants were encouraged to complete each session in 10 days, and to complete the

program between 17 and 20 weeks, because we gave them three extra weeks for people who needed more time to complete the whole program.

In addition to this active guidance, for the participants in the condition with additional videoconference sessions, there were two guidance sessions – at the beginning (sessions 2-3) and in the middle (sessions 7-8) of the program – with one of the two therapists by videoconference (Skype). The therapist assigned to each participant was responsible for the two videoconferences with this participant. The aims of the first guidance session were to present the program and the therapist, to assess the participants' work-related anxiety and depression, and to adjust their expectations about the program. The aims of the second guidance session were to recognize the effort of the participants, helping them with any difficulties they might have encountered, and motivating them to continue participating in the program. We decided to include only two videoconferences based on clinical reasons: we thought two videoconferences with the explained aims in these parts of the treatment would improve the results of the program. As there are not previous findings in the literature regarding the ideal number of videoconference sessions in iCBT, we thought that perhaps two sessions could be an optimal number to maintain the efficiency of the online treatments, and we wanted to test it.

The program is structured in five modules: introduction (sessions 1-2), managing physical arousal (sessions 3-5), social skills training (sessions 6-8), cognitive training (sessions 9-11), and relapse prevention (session 12). Each session has an information section, proposed activities designed for the participants' assessment and training, and a summary of the main points at the end. Session 1 includes assessment tools (pre), a description of the program and the website, as well as a presentation of the therapists

and the group members. Session 2 provides education about anxiety and work as an anxiogenic environment. Session 3 describes a breathing exercise for relaxation. Session 4 includes guidelines about practicing progressive muscle relaxation. Session 5 explains relaxation through guided imagery. Session 6 provides basic information about social skills training, such as communication stiles and assertive rights. Sessions 7 and 8 provide exercises to practice assertive communication. Session 9 introduces information about unhelpful thoughts, their influence on low mood, and includes guidelines about practicing stop thinking. Session 10 provides exercises to challenge unhelpful thoughts. Session 11 continues with challenging thoughts, as well as providing guidelines for problem solving and efficient time management. Session 12 includes relapse prevention and assessment tools (post).

**Measures**

The measures used in this study are described as follows:

- *Brief Symptom Inventory* (BSI; Derogatis, 1993*)* in the Spanish version by Ruipérez, Ibánez, Lorente, Moró, and Ortet (2001). The BSI is a 46-item measure that comprises six specific dimensions: depression, phobic anxiety, paranoid thoughts, obsession-compulsion, somatization, and hostility-aggressiveness. It also allows a general severity index to be obtained. Cronbach's alphas of the subscales in the Spanish version were between .70-.91.
- *State-Trait Anxiety Inventory* (STAI; Spielberger, Gorsuch, & Lushene, 1970) in the Spanish version by Buela-Casal, Guillén-Riquelme, and Seisdedos Cubero (2011). The STAI is a 40-item measure that comprises two subscales: State anxiety and Trait anxiety. The Trait Anxiety Scale (A-Trait) was only used as a preliminary measure, while the State Anxiety Scale (A-State) was used as a

preliminary measure and as a primary outcome measure. The Cronbach's alphas of the subscales in the Spanish version were .82-.95.

- *Beck Depression Inventory – Second Edition* (BDI-II; Beck, Steer, & Brown, 1996) in the Spanish version by Sanz and Vázquez (2011). The BDI is a 21-item measure of the severity of depression based on the DSM-IV diagnostic criteria for depression. The Cronbach's alphas in the Spanish version were .87-.91.
- *Automatic Thoughts Questionnaire* (ATQ; Hollon & Kendall, 1980) in the Spanish version by Comeche Moreno, Díaz García, and Vallejo Pareja (1995). The ATQ is a 30-item measure to assess the amount and kind of negative thoughts associated with different psychopathologies. The internal consistency in the original questionnaire was .96.
- *Rathus Assertiveness Schedule* (RAS; Rathus, 1973) in the Spanish version by Comeche Moreno, Díaz García, and Vallejo Pareja (1995). The RAS is a 30-item inventory to measure the behavioral change after assertiveness training programs. The internal consistency in the original questionnaire was .77.
- *Self-report "How am I feeling?"* We asked the participants to assess their level of anxiety and select a score between 0 and 10 in an "anxiety thermometer" each session.

The STAI, and BDI-II inventories were used to ensure participants were eligible for this study (we checked with these tests they had anxiety and depression symptoms, and they self-reported that these symptoms were due to their work). The results on STAI, BDI-II, ATQ, RAS and in the self-report "How am I feeling?" were considered primary outcome measures.

**Treatment satisfaction**

Participants were asked to rate their satisfaction with the program with respect to two aspects: satisfaction with the therapists' intervention and general satisfaction with the program (0: not satisfied at all - 4: totally satisfied).

**Time points**

Participants completed the BSI, STAI (A-Trait and A-State), and BDI before starting the program, at the pre-assessment session. They also completed the STAI (A-State), ATQ, and RAS at the first session. The self-report "How am I feeling?" was completed at each session (sessions 1-12), and at session 12 the STAI (A-State), BDI, ATQ, and RAS were completed again (these scores were considered the post-treatment measures). The treatment satisfaction was only assessed at session 12 in case of participants who finished the program. In addition, the STAI (A-State) and BDI were completed at the three, six, and 12-month follow-ups.

**Procedure**

The participants were contacted through email during the diffusion period, and then the interested individuals completed the pre-assessment session. Potential participants received information about the aims of the program, were assessed on their expectations of it and, if these expectations were wrong, we gave them information to correct them (about what a psychological treatment is and about the role of therapist and participant of the program), and they also completed the pre-treatment questionnaires and provided information about socio-demographic data. They also gave their informed written consent for their participation in this study.

The individuals meeting the inclusion criteria were randomly assigned to one of the two experimental conditions using a randomization software in the computer. In

both conditions, there was an active daily guidance by two expert psychologists in web-based intervention along the 12 lessons. A more experienced clinical psychologist supervised them with scheduled meetings every session. The clinical contact with participants consisted of the psychologists strongly encouraging participants to practice the skills taught, reinforcing advances and giving corrective feedback to improve, motivating changes, and encouraging and moderating the participation in forums. They sent notifications to the participants on an as-needed basis depending on the participants' behavior, and in pre-defined moments at the start (to introduce the session and establish time restrictions), middle (to encourage participation on the session) and end of each session (to give a clinical feedback on their participation). In case of the participants in the condition of additional videoconference sessions, one therapist established a meeting through Skype with each participant twice along the treatment: at session 2-3 and at session 7-8.

Once the program was completed, participants were contacted preferably via email to take the follow-up measures (three, six- and 12-months follow-up). When it was not possible to contact, they were contacted via telephone.

Regarding statistical analyses, descriptive analysis was carried out at baseline to know the scores of the participants in all the measures and MANOVA was carried out to analyze differences in all the measures to guarantee group comparability. We used T-Student test for independent groups to analyze intergroups differences in adherence and completion rates, and treatment satisfaction. For interventions outcomes, follow-up differences, and "How I am feeling?" report two factors ANOVA (group x moment) was used, which allowed to analyze the interaction between factors. Additionally, we

used Bonferroni test for pairwise comparisons in follow-up differences and "How I am feeling" report.

## Results

### Adherence and completion rates:

Of the 77 participants in the program, 28 completed the total 12 lessons, representing an adherence rate of 36.4%. The completion rate for the group without additional videoconference sessions was 42.10% (16 completers out of 38 participants) and 30.77% for the group with additional videoconference sessions (12 completers out of 39). There are no significant differences between the mean number of sessions completed by the group with additional videoconference sessions (5.49) and the group without additional videoconference sessions (7.68) ($t(75)= -1.977$; $p= .052$). Twenty-five participants completed the 12-month follow-up assessment, 14 participants from the group without additional videoconference sessions and 9 from the group with additional videoconference sessions. In Figure 1 there are more details about adherence and completion during the intervention.

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### Intervention outcomes:

a) Baseline:

On average, participants suffered from mild to minimal depression [ATQ Mean(SD) = 50.22(16.19) and BDI-II Mean(SD) = 11.69 (7.64); $r=.59(\rho\leq.001)$] following the criteria established by Sanz, Gutiérrez, Gesteira, & García-Vera (2014) for BDI-II and Comeche, Díaz, & Vallejo (1995) for ATQ. Following STAI scores, the level of anxiety was mild [A-State Mean(SD) = 25(10,71); A-Trait Mean(SD) = 21.27(11.15);

r=.82(ρ≤.001)] (Buela-Casal, Guillén-Riquelme, & Seisdedos, 2011). According to the BSI scores, the level of psychological symptoms is close to the mean of non-clinical Spanish population normative data (Ruipérez, Ibánez, Lorente, Moró, & Ortet, 2001). Finally, the mean level of assertiveness was close to zero in a scale from -90 to 90 points [RAS(SD) = 4.60(23.57)]. No significant differences were found between the conditions with and without additional videoconference sessions in all preliminary measures (STAI, BDI-II, and BSI inventories) [F Pillai=1.06 (ρ=.396)] (see also Table 2).

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b) Intervention effects:

There were no significant interaction Group x Time, indicating that group with videoconference sessions did not differ significantly from group without videoconferences in measures with respect to pre-post measures. Additionally, there is a significant main effect for time reducing depression [BDI $F(1) = 36.98$, $\rho < .001$, $\eta^2_p = .59$; ATQ $F(1) = 24.22$, $\rho < .001$, $\eta^2_p = .48$], anxiety [A-State $F(1) = 76.62$, $\rho < .001$, $\eta^2_p = .74$] and improving the level of assertiveness [RAS $F(1) = 8.96$, $\rho < .001$, $\eta^2_p = .26$]. This result indicates that all participants endorsed lower depression and anxiety scores after completing the program, as well as higher assertiveness (See Table 2).

c) 3, 6 and 12-months follow-up:

No interaction effects Group x Time were found for the follow-up measures in 4 time-points on two outcomes (Depression and Anxiety) repeated measures ANOVA. Main effects showed no significant changes in depression over time [BDI $F(3) = 1.80$ $\rho < .156$]. This result indicates that the decrease in depression after completing the program continues after a one-year period. Regarding anxiety, some changes were observed over time [A-State $F(3) = 5.67$, $\rho < .001$, $\eta^2_p = .21$]. There was an increment in the level of

anxiety over a one-year period after finishing the program. The Bonferroni test for the 4 time-points showed that there were only significant differences between post-treatment and one-year follow-up scores ($\rho < .05$).

d) "How am I feeling?" report:

To analyze the differences in the self-report "How am I feeling?" completed in all sessions, we divided the whole program in 3 parts: first part of intervention (from session 1 to 4), second part of intervention (from session 5 to 8), and third part of intervention (from session 9 to 12). Table 3 shows descriptive statistics of this self-report in these parts. No interaction effects Time x Group were found [$F(2)= .825$; $\rho=.44$], nor differences between groups [$F(1)= .884$; $\rho=.36$]. However, we found differences in main effect of time factor, that shows a significant reduction of the mean level of anxiety perceived by participants as the intervention program progressed in both groups [$F(2)=7.44$; $\rho=.003$, $\eta^2_p = .36$]. Bonferroni test for the 3 time-points showed that there were only significant differences between the first and the third part of the intervention ($\rho<.05$).

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**Treatment satisfaction:**

Twelve participants from the group with additional videoconference sessions and 17 from the group without additional videoconference sessions rated their satisfaction with therapists' intervention and their general satisfaction with the program. Participants were satisfied with the therapists' intervention [group with additional videoconference sessions: Mean(SD)=3.83(.39); group without additional videoconference sessions: Mean(SD)=3.71(.59)] and with the program in general [group with additional videoconference sessions: Mean(SD)= 3.58 (.52), group without additional videoconference sessions: Mean(SD)=3.59(.62)]. No differences regarding satisfaction

were found between groups in either of the satisfaction variables [therapists' intervention t(27)=.66(p=.52); general satisfaction t(27)=-.02(ρ=.98)].

## Discussion

The aim of our study was to analyze whether adding two videoconference guidance sessions - changing the level of contact with the therapist - affects program efficacy, participants' adherence and satisfaction, as well as to study short and long-term effectiveness of the intervention program. What we have found is that our program showed significant reductions in depression and anxiety. Related to these symptoms we found an increase in levels of assertiveness in both groups by the end of the treatment, what confirms the relation of social skills with anxiety and depressions symptoms in the workplace. This is consistent with the hypothesis that our program would produce significant effects in both groups, without significant differences between the groups with and without additional videoconference sessions. With respect to the ongoing assessment data on perceived anxiety ("How am I feeling?"), changes in participants may have occurred gradually, as the sessions progressed. The results showed a significant reduction of the mean level of anxiety perceived by participants as the intervention program progressed, with no significant differences between groups. Additionally, it is important to note that there were no significant changes in depression one year after the end of the treatment period, whereas there was an increment in the level of anxiety one year after finishing the program. In both cases, there were no significant differences between groups. We think that future programs should require a more intensive training in skills to cope with a high demanding work context, so the improvements in anxiety symptoms could be maintained over time. For the depression symptoms, given the sample was subclinical, we hypothesize that the changes

introduced to improve mood are more controllable, easy to carry out, and pleasant for individuals (e.g. increase reinforcing activities), and this could explain the maintenance over the time.

However, and contrary to what we expected, no significant differences between groups regarding satisfaction and treatment completion were found. Thus, satisfaction was high in both groups, both with therapists' intervention and with the program in general. In addition, the adherence rate was low for both groups, with no differences in the pattern of session completion. The lack of differences between both groups perhaps could be due to a different participation in the forums for participants in both groups, which could counter the effect of adding videoconference sessions. We have not analyzed the participation in forums in this paper, which is highlighted as a limitation later.

Our results are similar to those found in other studies analyzing different Internet-based CBT programs for subclinical phases of anxiety and depression. For example, Clark et al. (2014), Ellis et al. (2011), Newby at al. (2014), and Titov et al. (2014) proposed intervention programs for people suffering from low to moderate levels of anxiety and/or depression and all these studies found their programs effective. In addition, the satisfaction of the participants, when assessed, was generally positive. The same goes for specific programs for anxiety and depression at workplace (Kuribayashi et al., 2019; Phillips et al., 2014; Schneider, Sarrami, Grime, & Thornicroft, 2014). The therapeutic components in the cited programs were quite similar to ours, mainly: psychoeducation, self-monitoring, relaxation, cognitive restructuring, graded exposure, problem solving and behavioral activation. In general, these programs did not deal with assertiveness training, whereas ours did because we consider it an important factor in the anxiety and depression symptoms at workplace.

Regarding adherence, the percentages of people completing the whole programs (when calculated) ranged from to 20% to 56%; our completion rate was 36.4%, in the middle of this range. Thus, we can conclude that our proposal is similar to others in relation to the therapeutic components, effectiveness, satisfaction of the participants and attrition rates, which is high. This could be possibly due to the fact that task demand of this kind of programs is high and some people asking for online treatments are not enough motivated for these demands; additionally, it must be taken into consideration that our sample was subclinical and might not be suffering (from a pathological view), which could explain lower commitment with the training. This could be also related to the need of more personalized web-based interventions, instead of protocolized interventions that overload the participants with unnecessary tasks (Ludden van Rompay, Kelders, & van Gemert-Pijnen, 2015). Thus, taking into account the personal characteristics of each participants, they could go through the necessary modules making more personal and efficient interventions.

As other colleagues have done before, we attempted to clarify the role of the contact with the therapist in iCBT (Andersson & Cuijpers, 2009; Baumeister et al., 2014; Mohr et at., 2011). We found no differences between groups in any of the variables studied, and even more, the differences point out that perhaps with a larger sample the results could might have been superior in the condition without additional videoconference sessions. We hypothesize that a ceiling effect might be working as we have a subclinical sample that might have limited room for improvement, and we cannot forget the low rate of participants completing the program to interpret these results.

In any case, our results contradict previous research that when it comes to guiding online interventions, more is better. For example, Andersson (2009) informs a

correlation of .75 between the amount of contact with the therapist and the effect size of the online interventions; Johansson und Andersson (2012) make a review and conclude a strong correlation between the degree of support and outcome; and small-to-moderate, but not statistically significant effects in favor of the guided condition were found on all measured dimensions in the online interventions proposed by Berger, Hämmerli, Gubser, Andersson & Caspar (2011). It seems clear from our study that two skype sessions are not enough to cause an effect in the studied variables, probably because these two videoconferences just represent a small difference between the two conditions: both groups had a guided treatment with a daily supervision from the therapists, and participants with additional videoconference sessions probably did not perceive an increase in this guidance. For this reason, it would be necessary to study more in depth the relevance of the contact and guidance of therapists in iCBT, as has been done in face-to-face therapy (Froján-Parga, Calero-Elvira, & Montaño-Fidalgo, 2009; Froján-Parga, Ruiz-Sancho, & Calero-Elvira, 2016).

To date, in the literature there are not studies that analyze the effects of videoconferences on efficacy and adherence of iCBT. We have analyzed it and this is one of the main strengths of this study. However, we need to continue searching what is the amount of videoconference time to cause an effect, or even if it depends on other factors such as the population (clinical or subclinical) or the psychological problem to treat (depression, anxiety, etc.). This objective would be crucial to optimize iCBT efficiency, as many authors suggest (Andersson et al., 2018; Arnberg et al., 2014; Olthius et al., 2016; and Thew, 2020).

In this study, we did not study the relationship between the guidance and the therapeutic alliance, but in the future, it would also be desirable to analyze it in online psychological treatments. Several studies have analyzed the therapeutic alliance

between psychologists and clients in online treatments and they have concluded that it is possible to develop an adequate alliance (Andersson et al., 2012; Berry, Ashby, Matheny, & Gnilka, 2011; Cook & Doyle, 2002; Holmes & Foster, 2012; Klein, Austin, et al., 2009; Klein, Mitchell, et al., 2009; Leibert, Archer, Munson, & York, 2006; Reynolds, Stiles, & Grohol, 2006). Additionally, two studies have made a direct comparison between face-to-face and online modalities and they have concluded that the alliance is similar in both (Kay-Lambkin, Baker, Lewin, & Carr, 2011; Presch, Maercker, & Wagner, 2011). Thus, we need to continue with an in-depth process research on this topic and, as Andersson et al. (2012) and Knaevelsrud and Maercker (2006) conclude, we think it is important to consider that the therapist in online treatments might have a different role than in traditional treatments.

Some limitations of our study should be acknowledged. Firstly, given the attrition rate, a larger sample would be required in order to generalize our findings, and considering the specific population studied, the application to other professions would be necessary. Secondly, there was no control group, and this would be desirable to measure changes due to natural remission. Thirdly, the inclusion and exclusion criteria need to be improved, so we could control for any unusual variables (for example, previous or current psychological or pharmacological treatments, motivation for the treatment, previous experience with internet treatments, abuse or dependence on substances, etc.). In fourth place, we only measured therapy satisfaction in participants who completed the 12 sessions, which yields a biased outcome. We should have measured satisfaction in all the participants who quitted before session 12. In the fourth place, our program needs to be improved to take into account the experience gained over the last few years; specifically, homework assignments for each session should be reduced, which would probably improve the adherence rates, that is an important

problem in many iCBT programs. We highlight as a fifth limitation that regarding the anxiety symptoms, it is necessary to include modules aimed at the management of a highly demanding work context to promote the maintenance of the changes in the long term. Finally, we did not analyze in this paper the participation in forums as these data are not available, and it would have been desirable to do it.

Even considering the aforementioned limitations, this study represents a first attempt to study the effect of additional videoconference sessions on efficacy, adherence and satisfaction of an online iCBT program, which had not been done before. It is also one of the few iCBT programs applied in subclinical phases of anxiety and depression at workplaces. It is one of the few studies evaluating the program with ongoing assessment indicators (measures in each treatment session, beyond the pre-post data), as well as with short and long term measurements.

This program has been effective for people with mild to moderate work-related anxiety and depression, helping them to reduce anxiety, depression. Additionally, some of these changes were maintained over a one-year period. Therefore, one might expect that the program helps to reduce the high levels of social and economic impact caused by this occupational health problem, especially in a population at risk, as police workers. It has been highlighted the scarcity of follow-up measures in online treatments (Andersson et al., 2018), which gives more value to this study.

## References

Almlöv, J., Carlbring, P., Källqvist, K., Paxling, B., Cuijpers, P., & Andersson, G. (2011). Therapist effects in guided Internet-delivered CBT for anxiety disorders. *Behavioural and Cognitive Psychotherapy, 39*(3), 311-322. doi:10.1017/S135246581000069X

Andersson, G. (2009). Using the InternetInternet to provide cognitive behaviour therapy. *Behaviour Research and Therapy, 47*, 175–180. doi:10.1016/j.brat.2009.01.010

Andersson, G., & Cuijpers, P. (2009). Internet-based and other computerized psychological treatments for adult depression: a meta-analysis. *Cognitive behaviour therapy, 38*(4), 196-205. doi: 10.1080/16506070903318960

Andersson, G., Paxling, B., Wiwe, M., Vernmark, K., Felix, C.B., Lundborg, L.,… Carlbring, P. (2012). Therapeutic Alliance in guided Internet-delivered cognitive behavioural treatment of depression, generalized anxiety disorder and social anxiety disorder. *Behaviour Research and Therapy, 50*, 544-550. doi:10.1016/j.brat.2012.05.003

Andersson, G., Rozental, A., Shafran, R., & Carlbring, P. (2018). Long-term effects of internet-supported cognitive behaviour therapy. *Expert review of neurotherapeutics, 18*(1), 21-28. doi: 10.1080/14737175.2018.1400381

Andersson, G., & Titov, N. (2014). Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry, 13*(1), 4-11. doi: 10.1002/wps.20083

Andersson, G., Titov, N., Dear, B. F., Rozental, A., & Carlbring, P. (2019). Internet-delivered psychological treatments: from innovation to implementation. *World Psychiatry, 18*(1), 20-28. doi: 10.1002/wps.20610

Andrews, G., Basu, A., Cuijpers, P., Craske, M. G., McEvoy, P., English, C. L., & Newby, J. M. (2018). Computer therapy for the anxiety and depression disorders is

effective, acceptable and practical health care: an updated meta-analysis. *Journal of anxiety disorders, 55,* 70-78. doi:10.1016/j.janxdis.2018.01.001

Arnberg, F. K., Linton, S. J., Hultcrantz, M., Heintz, E., & Jonsson, U. (2014). Internet-delivered psychological treatments for mood and anxiety disorders: a systematic review of their efficacy, safety, and cost-effectiveness. *PloS one, 9*(5), e98118. doi: 10.1371/journal.pone.0098118

Asplund, R. P., Jäderlind, A., Björk, I. H., Ljótsson, B., Carlbring, P., & Andersson, G. (2019). Experiences of internet-delivered and work-focused cognitive behavioral therapy for stress: A qualitative study. *Internet interventions, 18,* 100282. doi: 10.1016/j.invent.2019.100282

Barak, A., Klein, B., & Proudfoot, J. G. (2009). Defining Internet-supported therapeutic interventions. *Annals of Behavioral Medicine, 38,* 4-17. doi:10.1007/s12160-009-9130-7

Baumeister, H., Reichler, L., Munzinger, M., & Lin, J. (2014). The impact of guidance on Internet-based mental health interventions—A systematic review. *Internet Interventions, 1*(4), 205-215. doi: 10.1016/j.invent.2014.08.003

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression: A treatment manual*. New York, NY: Guilford Press.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck Depression Inventory – Second Edition*. USA: NCS Pearson.

Berger, T., Hämmerli, K., Gubser, N., Andersson, G., & Caspar, F. (2011). Internet-based treatment of depression: A randomized controlled trial comparing guided with

unguided self-help. *Cognitive Behaviour Therapy, 40,* 251–266. doi:10.1080/16506073.2011.616531

Bergström, J., Andersson, G., Ljótsson, B., Rück, C., Andréewitch, S., Karlsson, A., … Lindefors, N. (2010). Internet-versus group-administered cognitive behaviour therapy for panic disorder in a psychiatric setting: a randomised trial. *BMC psychiatry*, *10*(1), 54. Retrieved from http://www.biomedcentral.com

Berry, R. M., Ashby, J. S, Matheny, K. B., & Gnilka, P. B. (2011). A comparison of face-to face and distance coaching practices: coaches' perceptions of the role of the working alliance in problem resolution. *Consulting Psychology Journal: Practice and Research*, *63*, 243-253. doi:10.1037/a0026735

Buela-Casal, G., Guillén-Riquelme, A., & Seisdedos, N. (2011). *STAI, Cuestionario de Ansiedad Estado-Rasgo* [*STAI, State-Trait Anxiety Questionnaire*]. Madrid, Spain: TEA Ediciones.

Caballo, V. E. (2002). *Manual de evaluación y entrenamiento de las habilidades sociales* [*Handbook on social skills assessment and training*]. Madrid, Spain: Siglo XXI de España Editores.

Carlbring, P., Andersson, G., Cuijpers, P., Riper, H., & Hedman-Lagerlöf, E. (2018). Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. *Cognitive Behaviour Therapy, 47*(1), 1-18. doi: 10.1080/16506073.2017.1401115

Carlbring, P., Nilsson-Ihrfelt, E., Waara, J., Kollenstam, C., Buhrman, M., Kaldo, V., … Andersson, G. (2005). Treatment of panic disorder: live therapy vs. self-help via

the Internet. *Behaviour research and therapy, 43*(10), 1321-1333. doi:10.1016/j.brat.2004.10.002

Chakraborty, B., Maiti, R., & Strecher, V. J. (2018). The effectiveness of web-based tailored smoking cessation interventions on the quitting process (Project Quit): secondary analysis of a randomized controlled trial. *Journal of Medical Internet Research, 20*(6), e213. doi: 10.2196/jmir.9555

Christensen, H., Griffiths, K. M., & Farrer, L. (2009). Adherence in Internet interventions for anxiety and depression: systematic review. *Journal of Medical Internet Research,* 11(2): e13. doi:10.2196/jmir.1194

Clarke, J., Proudfoot, J., Birch, M. R., Whitton, A. E., Parker, G., Manicavasagar, V., … Hadzi-Pavlovic, D. (2014). Effects of mental health self-efficacy on outcomes of a mobile phone and web intervention for mild-to-moderate depression, anxiety and stress: secondary analysis of a randomised controlled trial. *BMC Psychiatry, 14*(1), 272. doi: 10.1186/s12888-014-0272-1

Comeche, M. I., Díaz, M. I., & Vallejo, M. A. (1995). *Cuestionarios, inventarios y escalas. Ansiedad, depresión y habilidades sociales [Questionnaires, inventories and scales. Anxiety, depression and social skills]*. Madrid, Spain: Fundación Universidad-Empresa.

Cook, J. E. & Doyle, C. (2002). Working alliance in online therapy as compared to face-to-face therapy: Preliminary results. *Cyber Psychology & Behavior, 5*, 95-105. doi:10.1089/109493102753770480

D'Zurilla, T. & Goldfried, M. (1971). Problem solving and behavior modification. *Journal of Abnormal Psychology, 78*(1), 107-126. doi:10.1037/h0031360

Davis, M., McKay, M., & Eshelman, E. R. (1985). *Técnicas de autocontrol emocional* [*Emotional self-control techniques*]. Barcelona, Spain: Martínez Roca

Day, V., McGrath, P. J., & Wojtowicz, M. (2013). Internet-based guided self-help for university students with anxiety, depression and stress: A randomized controlled clinical trial. *Behaviour Research and Therapy, 51*, 344-351. doi:10.1016/j.brat.2013.03.003

Derogatis, L. R. (1993). *Brief Symptom Inventory (BSI) administration, scoring, and procedures manual* (3rd ed.). Minneapolis, MN: Nacional Computer Systems.

Di Nota, P. M., Anderson, G. S., Ricciardelli, R., Carleton, R. N., & Groll, D. (2020). Mental disorders, suicidal ideation, plans and attempts among Canadian police. *Occupational medicine, 70*(3), 183-190. doi: 10.1093/occmed/kqaa026

Ellis, L.A., Campbell, A. J., Sethi, S., & O'Dea, B. M. (2011). Comparative randomized trial of an online cognitive-behavioral therapy program and an online support group for depression and anxiety. *Journal of CyberTherapy & Rehabilitation, 4*, 461-467. Retrieved from https://www.journalofcybertherapy.webs.com/

Ellis, A. & Grieger, R. (1977). *Handbook of rational emotive therapy*. New York, NY: Springer.

European Agency for Safety and Health at Work (EU-OSHA) (2009). *OSH in figures: stress at work — facts and figures*. Luxembourg: Publication Office of European Union. Retrieved from https://www.osha.europa.eu/en/tools-and-publications/publications/reports/TE-81-08-478-EN-C_OSH_in_figures_stress_at_work

European Agency for Safety and Health at Work (EU-OSHA) (2014). Calculating the cost of work-related stress and psychosocial risks, Fourth European Working Conditions Survey, Office for Official Publications of the European Communities, Luxembourg, 2006. Retrieved from http://www.eurofound.europa.eu/ewco/surveys/EWCS2005/index.htm

Froján-Parga, M.X., Calero-Elvira, A., & Montaño-Fidalgo, M. (2009). Analysis of therapist´s verbal behavior during dispute in cognitive restructuring. A case study. *Psychotherapy Research, 19,* 30-41. doi:10.1080/10503300802326046

Froján Parga, M. X., Ruiz Sancho, E. M., & Calero Elvira, A. (2016). A theoretical and methodological proposal for the descriptive assessment of therapeutic interactions. *Psychotherapy Research, 24,* 1-22. doi:10.1080/10503307.2014.935518

Gratzer, D., & Goldbloom, D. (2020). Therapy and E-therapy—Preparing Future Psychiatrists in the Era of Apps and Chatbots. *Academic Psychiatry,* 1-4. doi: 10.1007/s40596-019-01170-3

Klein, B., Austin, D., Pier, C. Kiropoulos, L., Shandley, K., Mitchell, J., … Ciechomski, L. (2009). Internet-based treatment for panic disorder: Does frequency of therapist contact make a difference? *Cognitive Behaviour Therapy, 38,* 100- 113. doi:10.1080/16506070802561132

Klein, B., Mitchell, J., Gilson, K., Shandley, K., Austin, D., Kiropoulos, L., … Cannard, G. (2009). A therapist-assisted Internet-based CBT intervention for posttraumatic stress disorder: Preliminary results. *Cognitive Behaviour Therapy, 38,* 121-131. doi:10.1080/16506070902803483

Hadjistavropoulos, H. D., Alberts, N. M., Nugent, M., & Marchildon, G. (2014). Improving access to psychological services through therapist-assisted, Internet-delivered cognitive behaviour therapy. *Canadian Psychology/Psychologie canadienne, 55*(4), 303. doi:10.1037/a0037716

Harvey, S. B., Modini, M., Joyce, S., Milligan-Saville, J. S., Tan, L., Mykletun, A., ... Mitchell, P. B. (2017). Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. *Occupational and Environmental Medicine*, *74*(4), 301-310. doi:10.1136/oemed-2016-104015

Hedman, E., Ljótsson, B., & Lindefors, N. (2012). Cognitive behavior therapy via the Internet: a systematic review of applications, clinical efficacy and cost–effectiveness. *Expert review of pharmacoeconomics & outcomes research, 12*(6), 745-764. doi: 10.1586/erp.12.67

Hersch, R. K., Cook, R. F., Deitz, D. K., Kaplan, S., Hughes, D., Friesen, M. A., & Vezina, M. (2016). Reducing nurses' stress: A randomized controlled trial of a web-based stress management program for nurses. *Applied nursing research, 32*, 18-25. doi: 10.1016/j.apnr.2016.04.003

Hollon, S. D. & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive therapy and Research, 4*, 383-395.

Holmes, C. & Foster, V. (2012). A preliminary comparison study of online and face-to-face counseling: Client perceptions of three factors. *Journal of Technology in Human Service, 30*, 14-31. doi:10.1080/15228835.2012.662848

Hunter, B., Fenwick, J., Sidebotham, M., & Henley, J. (2019). Midwives in the United Kingdom: Levels of burnout, depression, anxiety and stress and associated predictors. *Midwifery, 79,* 102526. doi: 10.1016/j.midw.2019.08.008

Husain, W. (2014). The levels of depression, anxiety and stress in police officers. *Academic Research International*, *5*(4), 458-65. Retrieved from http://www.journals.savap.org.pk/

Husain, W. (2019). Depression, Anxiety, and Stress Among Urban and Rural Police Officers. *Journal of Police and Criminal Psychology, 1-5.* doi: 10.1007/s11896-019-09358-x

Johansson, R. & Andersson, G. (2012). Internet-based psychological treatments for Depression. *Expert Review of Neurotherapeutics, 12,* 861–870. Doi:10.1586/ern.12.63

Jones-Rincon, A., & Howard, K. J. (2019). Anxiety in the workplace: A comprehensive occupational health evaluation of anxiety disorder in public school teachers. *Journal of Applied Biobehavioral Research*, *24*(1), e12133. doi: : 10.1111/jabr.12160

Joyce, S., Modini, M., Christensen, H., Mykletun, A., Bryant, R., Mitchell, P.B., & Harvey, S.B. (2016). Workplace interventions for common mental disorders: a systematic meta-review. *Psychological Medicine, 46*, 683–697. doi: 10.1017/S0033291715002408

Kay-Lambkin, F., Baker, A., Lewin, T., & Carr, V. (2011). Acceptability of a clinician-assisted computerized psychological intervention for comorbid mental health and substance use problems: treatment adherence data from a randomized controlled

trial. *Journal of Medical InternetInternet Research, 13*(1): e11. doi:10.2196/jmir.1522

Kim, J., Chen, S. T., & Hwang, S. H. (2018). Effectiveness of Web-based physical activity interventions for older adults: A systematic review of randomized controlled trials. *International Journal of Human Movement Science*, *12*(2), 69-87. doi: 10.23949/IJHMS.2018.08.12.2.5

Kiropoulos, L. A., Klein, B., Austin, D. W., Gilson, K., Pier, C., Mitchell, J., & Ciechomski, L. (2008). Is internet-based CBT for panic disorder and agoraphobia as effective as face-toface CBT? *Journal of Anxiety Disorders, 22*, 1273–1284. doi:10.1016/j.janxdis.2008.01.008

Kivimäki, M., Jokela, M., Nyberg, S. T., Singh-Manoux, A., Fransson, E. I., Alfredsson, L., ... Clays, E. (2015). Long working hours and risk of coronary heart disease and stroke: a systematic review and meta-analysis of published and unpublished data for 603 838 individuals. *The Lancet*, *386*(10005), 1739-1746. doi: 10.1016/S0140-6736(15)60295-1

Knaevelsrud, C. & Maercker, A. (2006). Does the quality of the working alliance predict treatment outcome in online psychotherapy for traumatized patients? *Journal of Medical Internet Research, 8*(4): e31. doi:10.2196/jmir.8.4.e31

Kuribayashi, K., Imamura, K., Watanabe, K., Miyamoto, Y., Takano, A., Sawada, U., ... Iida, M. (2019). Effects of an internet-based cognitive behavioral therapy (iCBT) intervention on improving depressive symptoms and work-related outcomes among nurses in Japan: a protocol for a randomized controlled trial. *BMC Psychiatry*, *19*(1), 1-12. doi: 10.1186/s12888-019-2221-5

Lara, J., O'Brien, N., Godfrey, A., Heaven, B., Evans, E. H., Lloyd, S., ... Sniehotta, F. F. (2016). Pilot randomised controlled trial of a web-based intervention to promote healthy eating, physical activity and meaningful social connections compared with usual care control in people of retirement age recruited from workplaces. *PloS one*, *11*(7). doi: 10.1371/journal.pone.0159703

Leibert, T., Archer, J., Munson, J., & York, G. (2006). An exploratory study of client perceptions of InternetInternet counseling and the therapeutic Alliance. *Journal of mental health counseling, 28*, 69-83. doi:10.17744/mehc.28.1.f0h37djrw89nv6vb

Ludden, G.D., van Rompay, T.J., Kelders, S.M., & van Gemert-Pijnen, J.E. (2015). How to increase reach and adherence of web-based interventions: a design research viewpoint. *Journal of medical Internet research, 17*(7): e172. doi: 10.2196/jmir.4201

Martin, A., Sanderson, K., & Cocker, F. (2009). Meta-analysis of the effects of health promotion intervention in the workplace on depression and anxiety symptoms. *Scandinavian Journal of Work, Environment & Health, 36*, 7-18. Retrieved from https://www.jstor.org/publisher/sjweh

Matrix (2013). *Economic analysis of workplace mental health promotion and mental disorder prevention programmes and of their potential contribution to EU health, social and economic policy objectives*, Executive Agency for Health and Consumers, Specific Request EAHC/2011/Health/19 for the Implementation of Framework Contract EAHC/2010/Health/01Lot 2, 2013.

Mohr, D., Cuijpers, P., & Lehman, K. (2011). Supportive accountability: a model for providing human support to enhance adherence to eHealth interventions. *Journal of Medical Internet Research, 13*, e30. doi: 10.2196/jmir.1602

Newby, J. M., Mewton, L., Williams, A. D., & Andrews, G. (2014). Effectiveness of transdiagnostic internet cognitive behavioural treatment for mixed anxiety and depression in primary care. *Journal of Affective Disorders, 165*, 45-52. doi: 10.1016/j.jad.2014.04.037

Norcross, J. C. (Ed.). (2011). *Psychotherapy relationships that work. Evidence-based responsiveness.* New York, NY: Oxford University Press.

Norcross, J. C., & Lambert, M. J. (2019). *Psychotherapy relationships that work: Volume 1: Evidence-based therapist contributions* (3ª ed.). New York, NY: Oxford University Press.

Oishi, S., Takizawa, T., Kamata, N., Miyaji, S., Tanaka, K., & Miyaoka, H. (2018). Web-based training program using cognitive behavioral therapy to enhance cognitive flexibility and alleviate psychological distress among schoolteachers: pilot randomized controlled trial. *JMIR Research Protocols, 7*(1), e32. doi: 10.2196/resprot.8541

Olthuis, J. V., Watt, M. C., Bailey, K., Hayden, J. A., & Stewart, S. H. (2016). Therapist-supported Internet cognitive behavioural therapy for anxiety disorders in adults. *Cochrane Database of Systematic Reviews, 3.* Art. No.: CD011565. doi: 10.1002/14651858.CD011565.pub2

Palmqvist, B., Carlbring, P. & Andersson, G. (2007). Internet-delivered treatments with or without therapist input: does the therapist factor have implications for efficacy

and cost? *Expert Review of Pharmacoeconomics & Outcomes Research, 7*, 291–297. doi: 10.1586/14737167.7.3.291

Phillips, R., Schneider, J., Molosankwe, I., Leese, M., Foroushani, P. S., Grime, P., ... Thornicroft, G. (2014). Randomized controlled trial of computerized cognitive behavioural therapy for depressive symptoms: effectiveness and costs of a workplace intervention. *Psychological medicine, 44*(4), 741-752. doi: 0.1017/S0033291713001323

Pieper, C., Schröer, S., & Eilerts, A. L. (2019). Evidence of Workplace Interventions—A Systematic Review of Systematic Reviews. *International Journal of Environmental Research and Public Health, 16*(19), 3553. doi: 10.3390/ijerph16193553

Postel, M. G., de Haan, H. A., Ter Huurne, E. D., Becker, E. S., & de Jong, C. A. (2010). Effectiveness of a web-based intervention for problem drinkers and reasons for dropout: randomized controlled trial. *Journal of medical Internet research, 12*(4), e68. doi: 10.2196/jmir.1642

Preschl, B., Maercker, A., & Wagner, B. (2011). The working alliance in a randomized controlled trial comparing online with face-to-face cognitive-behavioral therapy for depression. *BMC Psychiatry, 11*: 189. Retrieved from http://www.biomedcentral.com

Proper, K. I., & van Oostrom, S. H. (2019). The effectiveness of workplace health promotion interventions on physical and mental health outcomes–a systematic review of reviews. *Scandinavian journal of work, environment & health, 45*(6), 546-559. doi:10.5271/sjweh.3833

Rathus, S. (1973). Thirty-item schedule for assessing assertive behavior. *Behavior Therapy, 4,* 398-406.

Reynolds, D. J., Stiles, W. B., & Grohol, J. M. (2006). An investigation of session impact and alliance in Internet based psychotherapy: Preliminary results. *Counselling and Psychotherapy Research, 6*, 164-168. doi:10.1080/14733140600853617

Ruipérez, M. A., Ibáñez, M. I., Lorente, E., Moró, M., & Ortet, G. (2001). Psychometric Properties of the Spanish Version of the BSI. *European Journal of Psychological Assessment, 17*, 241-250. doi: 10.1027//1015-5759.17.3.241

Sanz, J., Gutiérrez, S., Gesteira, C., & García-Vera, M. P. (2014). Criterios y baremos para interpretar el" Inventario de depresión de Beck-II"(BDI-II). *Behavioral Psychology, 22*(1), 37-59. Retrieved from https://www.behavioralpsycho.com/

Sanz, J. & Vázquez, C. (2011). *Inventario de Depresión de Beck-II.* Madrid, Spain: Pearson Educación.

Schneider, J., Sarrami, P., Grime, P., & Thornicroft, G. (2014). Acceptability of Online Self-Help to People With Depression: Users' Views of MoodGYM Versus Informational Websites. *Journal of Medical Internet Research, 16*(3):e90. doi: 10.2196/jmir.2871

Speed, B. C., Goldstein, B. L., & Goldfried, M. R. (2018). Assertiveness training: A forgotten evidence-based treatment. *Clinical Psychology: Science and Practice, 25*(1), e12216. doi: 10.1111/cpsp.12216

Spek, V., Nyklíček, I., Smits, N., Cuijpers, P. I. M., Riper, H., Keyzer, J., & Pop, V. (2007). Internet-based cognitive behavioural therapy for subthreshold depression in people over 50 years old: a randomized controlled clinical trial. *Psychological medicine, 37*(12), 1797-1806. doi:10.1017/S0033291707000542

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *STAI, Manual for the State-Trait Anxiety Inventory (Self Evaluation Questionnaire).* California, CA: Consulting Psychologists Press.

Sunnhed, R., Hesser, H., Andersson, G., Carlbring, P., Morin, C. M., Harvey, A. G., & Jansson-Fröjmark, M. (2020). Comparing internet-delivered cognitive therapy and behavior therapy with telephone support for insomnia disorder: a randomized controlled trial. *Sleep, 43*(2), 1-15. doi: 10.1093/sleep/zsz245

Sztein, D. M., Koransky, C. E., Fegan, L., & Himelhoch, S. (2018). Efficacy of cognitive behavioural therapy delivered over the Internet for depressive symptoms: A systematic review and meta-analysis. *Journal of telemedicine and telecare, 24*(8), 527-539. doi:10.1177/1357633X17717402

Tarcan, M., Hikmet, N., Schooley, B., Top, M., & Tarcan, G. Y. (2017). An analysis of the relationship between burnout, socio-demographic and workplace factors and job satisfaction among emergency department health professionals. *Applied nursing research, 34*, 40-47. doi: 10.1016/j.apnr.2017.02.011

ter Huurne, E. D., de Haan, H. A., Postel, M. G., van der Palen, J., VanDerNagel, J. E., & DeJong, C. A. (2015). Web-based cognitive behavioral therapy for female patients with eating disorders: randomized controlled trial. *Journal of medical Internet research, 17*(6), e152. doi: 10.2196/jmir.3946

Theorell, T., Jood, K., Järvholm, L. S., Vingård, E., Perk, J., Östergren, P. O., & Hall, C. (2016). A systematic review of studies in the contributions of the work environment to ischaemic heart disease development. *The European Journal of Public Health, 26*(3), 470-477. doi: 10.1093/eurpub/ckw025

Thew, G. R. (2020). IAPT and the internet: the current and future role of therapist-guided internet interventions within routine care settings. *The Cognitive Behaviour Therapist, 13*: e4. doi: 10.1017/S1754470X20000033

Titov, N., Dear, B. F., Johnston, L., McEvoy, P. M., Wootton, B., Terides, M. D,… Rapee, R. M. (2014). Improving adherence and clinical outcomes in self-guided internet treatment for anxiety and depression: a 12-month follow-up of a randomised controlled trial. *PLoS One, 9*(2), e89591. doi: 10.1371/journal.pone.0089591

Välimäki, M., Anttila, K., Anttila, M., & Lahti, M. (2017). Web-based interventions supporting adolescents and young people with depressive symptoms: systematic review and meta-analysis. *JMIR mHealth and uHealth, 5*(12), e180. doi: 10.2196/mhealth.8624

Vanoh, D., Ishak, I. H., Shahar, S., Manaf, Z. A., Ali, N. M., & Noah, S. A. M. (2018). Development and assessment of a web-based intervention for educating older people on strategies promoting healthy cognition. *Clinical interventions in aging*, *13*, 1787. doi: 10.2147/CIA.S157324

Vercamer, S. (2018). *Stress at work. Report to committee on social affairs, health and sustainable development*. Council of Europe. Retrieved from http://website-

pace.net/documents/19855/4491159/20181204-WorkStress-EN. pdf/6c87997b-366a-4a92-8e80-b540d4cc06d8

Wu, X., Liu, Q., Li, Q., Tian, Z., & Tan, H. (2019). Health-related quality of life and its determinants among criminal police officers. *International journal of environmental research and public health*, *16*(8), 1398. doi: 10.3390/ijerph16081398

Xu, H. G., Kynoch, K., Tuckett, A., Eley, R., & Newcombe, P. (2019). Effectiveness of interventions to reduce occupational stress among emergency department staff: a systematic review protocol. *JBI database of systematic reviews and implementation reports*, *17*(4), 513-519. doi: 10.11124/JBISRIR-2017-003955