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Comparison of relaxation training with a cognitive-behavioural intervention for indicated prevention of depression in university students: A randomized controlled trial

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ABSTRACT

Although cognitive-behavioural programmes for preventing depression have produced promising findings, their administration requires extensive training. Relaxation techniques are more straightforward psychological strategies, but they have not been investigated in the prevention of depression. This trial aimed to compare the results of relaxation training (RT) with that of a cognitive-behavioural programme (CBT) for prevention of depression in university students with elevated depressive symptoms. The 133 participants (mean age 23.3 years, 82% women) were randomly assigned to CBT or RT. Both programmes were administered to groups of 5 or 6 participants in eight weekly 90-min sessions. Participants were evaluated by independent raters before, immediately after, and 3 and 6 months after taking part in the programmes. By itself, intervention type had no significant effect on either depression or anxiety scores. The scores were lower at the follow-up time points with respect to pre-intervention scores. Effect size was greatest between pre- and immediately post-intervention scores for CBT, $d = 1.32$, 95% CI [1.00, 1.64], and between pre- and 6-month post-intervention scores for RT, $d = 0.75$, 95% CI [0.47, 1.03]. Anxiety symptoms were significantly improved by both interventions at 3-month follow-up, and by CBT at 6-month follow-up also. In the medium term (3–6 months), relaxation training produced similar reductions in depressive and anxiety symptoms as a more complex cognitive-behavioural programme.

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1. Introduction

Throughout the world, depression is one of the most prevalent and damaging mental disorders among the population, with highly negative personal, social and economic effects (Hammen and Watkins, 2008). Depression is a common disorder in young people, especially in university students. Moreover, university students account for approximately half of the people within their age group in developed countries (for example, see US Department of Education [2009] for the case of the United States). Young adulthood is the time of highest risk for the onset of the majority of mental disorders, including depression. In fact, many young adults suffer depression, with the current prevalence at 8.7% (Vázquez and Blanco, 2008) and with 12-month prevalence between 10.6% and 19.8% (Blanco et al., 2008; Tomoda et al., 2000; Vázquez et al., 2011; Verger et al., 2010). Depression is a significant predictor of not only academic performance but also the likelihood of dropping out of the university (Eisenberg et al., 2009); depression is also a major risk factor for suicide (Garlow et al., 2008).

Its serious consequences have given rise to increasing efforts aimed at its prevention. The preventive interventions for which most empirical evidence has been gathered are cognitive-behavioural programmes for indicated prevention, i.e., interventions focused on individuals who show significant symptoms of depression but have not crossed the threshold into a clinical episode (Muñoz et al., 2010). Individuals who report high levels of depressive symptoms are at a substantially increased risk for major depression (Lewinsohn et al., 1988). An intervention that treats or reduces high levels of symptoms may prevent depressive episodes (Muñoz, 1993). Several cognitive-behavioural indicated prevention programmes applied face-to-face have been found to improve depressive symptoms in the short and/or long term among adolescents (Clarke et al., 1995, 2001; Garber et al., 2009; Stice et al., 2006, 2008, 2010), adults (Allart van Dam et al., 2003, 2007), and seniors (Konnert et al., 2009; Van't Veer Tazelaar et al., 2009), and some have been shown to reduce the incidence of clinical

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depression (Clarke et al., 1995, 2001; Garber et al., 2009). In university students, just selective prevention studies aimed at first-year university students have been performed (Seligman et al., 1999, 2007). In these two studies, an intervention adapted from Beck's cognitive therapy was implemented, achieving positive results in the decrease of symptoms of depression and anxiety, but its efficacy in decreasing the incidence of depression could not be established.

One of the main limitations of these cognitive-behavioural programmes is that, though they have been administered by lay personnel in some indicated prevention studies (e.g., Spence et al., 2003; Young et al., 2006) they obtain the largest effect sizes when they are administered by professionals with a high degree of specialized training (Jané-Llopis et al., 2003), who are a scarce resource. Relaxation techniques, by contrast, are a simple psychological treatment that can be administered after brief training. Although relaxation training (especially muscle relaxation training), has been reported to reduce depressive symptoms in depression treatment in randomized controlled trials (Reynolds and Coats, 1986; Wilson, 1982), its effectiveness for indicated prevention has not been evaluated. Jorm et al. (2008) pointed out that relaxation could act through a specific mechanism, such as anxiety reduction, but that it could also simply represent a way of demonstrating care and of providing hope of improvement. Stice et al. (2006) hypothesized that one of the mechanisms through which such different procedures could function to prevent depression is an increment in self-efficacy. This idea is in line with that proposed by Bandura (1977), in that self-efficacy was a process central to therapeutic change. The basic tenet of self-efficacy theory was that people's appraisals of their own capabilities to perform actions to cope with challenging environments are proximal determinants of affective arousal, cognitive processing, and motivation. Psychological treatments, regardless of what they are, would serve as a means to create or strengthen the expectations of personal effectiveness.

The present study aimed to compare the effects of relaxation training (RT) with those of a cognitive-behavioural training programme (CBT; currently the best available intervention) in a sample of university students. Our primary outcome was reductions in depressive symptoms. Anxiety was also measured, in view of the frequent comorbidity of these two disorders. It was hypothesized that RT and CBT would both significantly reduce depressive symptoms and anxiety scores in post-treatment and follow-ups, but would also differ significantly in the degree of improvement achieved.

2. Materials and methods

2.1. Sample

Participants were recruited over a two-year period through advertisements placed on campus notice boards, in the press, and on local radio and television. Participants were required to be university students, to score 16 or more on the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), and not to satisfy the diagnostic criteria for having suffered a major depressive episode at any time in their lives. Candidates fulfilling these conditions were excluded if they (a) were taking part in other psychological or medical studies, (b) intended to move their residence elsewhere within the next 9 months, (c) satisfied the criteria for other Axis I disorders that might interfere with fulfilment of the objectives of the study (dysthymia, bipolar disorders I and II, cyclothymia, anorexia, psychotic disorders, dependence on alcohol or other substances, panic disorder, obsessive-compulsive disorder, somatization disorder, hypochondria, undifferentiated somatoform disorder), or (d) were deemed to be at risk for suicide.

The sample size was calculated on the basis of the expected difference in depression symptoms between the RT and the CBT conditions, which was the main result variable considered. A power analysis was performed to determine the sample size following the procedures described by Cohen (1988). A necessary N of 96 was estimated on the basis of an effect size estimated at 0.3 (the majority of depression prevention programmes has obtained effects ranging from small to moderate, (e.g., Allart-van Dam et al., 2003; Clarke et al., 1995; Stice et al., 2008, 2010)) an assumed experimental mortality of 0.2%, a significance level of 0.05 and a power of 0.80. Fig. 1 summarizes sample selection, randomization, intervention and evaluation in terms of numbers of participants. Of the 177 candidates screened for inclusion in the study, 142 (80.2%) satisfied the inclusion criteria, of whom nine excluded themselves upon learning of the nature of the study. The remaining 133 (mean age 23.3 years, 82.0% women) were randomly assigned to the cognitive-behavioural prevention of depression programme (CBT; 70 participants) or to relaxation training (RT; 63 participants) by a statistician who played no other role in the study.

In order to minimize the loss of subjects, some of the strategies recommended by Grady et al. (2007) for this kind of study were implemented; for example, exclusion of possible losses, making the intervention easy, conducting sessions at convenient times, encouraging participants to participate in the trial, or sending e-mail reminders. During the course of the study, seven participants (5 CBT, 2 RT) dropped out due to lack of time, incompatible timetables, illness, or the initiation of individual psychological treatment for depression. Two CBT subjects did not undergo 3-month follow-up, nor two RT subjects 6-month follow-up, due to illness or failure to locate them.

The investigation was carried out in accordance with the latest version of the Declaration of Helsinki. The study was approved by the ethics committee of the University of Santiago de Compostela. Participation was totally voluntary, without any economic or other incentive, and all participants gave written informed consent after the nature of the procedures had fully been explained.

2.2. Measures

Following inclusion in the study, each participant was evaluated before and immediately, 3 months, and 6 months after intervention by trained raters, who were blind to the intervention to which the rater had been assigned. Symptoms of depression were rated using the CES-D (Radloff, 1977), whose internal consistency (alpha) in Radloff's study ranges from 0.85 to 0.90 (0.80 for the present study). Symptoms of anxiety were assessed using the Beck Anxiety Inventory (BAI; Beck et al., 1988); according these authors its internal consistency ranges from 0.90 to 0.94 (0.85 for our research), item–total correlation ranges from 0.30 to 0.71 and test–retest reliability from 0.70 to 0.93. To assess Axis I disorders (including major depressive episode) the Structured Clinical Interview for DSM-IV – Clinical Version (SCID-CV; First et al., 1997) was used, being informed by these authors inter-rater reliability (kappa) ranges from 0.70 to 1.00. Other existing studies in the literature also demonstrated that those three instruments have adequate psychometric properties (see Rush et al., 2008).

2.3. Treatment

The content of the CBT programme is summarized in Table 1, and that of the RT programme in Table 2. Each intervention was performed in accordance with a previously drawn up protocol. The cognitive-behavioural intervention was adapted from the

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