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A randomised placebo-controlled trial of a self-help Internet-based intervention for test anxiety

Gili Orbach[a], Stan Lindsay[b,*], Susan Grey[c]

[a]*Child Psychiatry, St. Georges Team, Lanesborough Wing, St. Georges Hospital, Blackshaw Road, London SW17 0QT, UK*
[b]*Psychology Department, Institute of Psychiatry, P.O. 78, De Crespigny Park, London SE5 8AF, UK*
[c]*Maudsley Psychology Centre, The Maudsley Hospital, Denmark Hill, London SE5, UK*

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Abstract

Test anxiety is widespread and associated with poor performance in academic examinations. The Internet, not well-proven for the treatment of anxiety, should be able to deliver highly accessible Cognitive Behavior Therapy (CBT). This study sought to test the hypothesis that CBT, available on the Internet, could reduce test anxiety. Ninety university students were randomly allocated to CBT or a control program, both on the Internet. Before and after treatment, the participants completed the Test Anxiety Inventory (TAI), an Anxiety Hierarchy Questionnaire (AHQ), the Exam Problem-Solving Inventory (EPSI), the General Self-Efficacy Scale (GSES) and the Heim reasoning tests (AH) as a measure of test performance. Of the CBT and control groups 28% and 35%, respectively, withdrew. According to the TAI, 53% of the CBT group showed a reliable and clinically significant improvement with treatment but only 29% of the control group exhibited such a change. On the AHQ, 67% of the CBT group and 36% of the control group showed a clinically significant improvement, more than two standard deviations above the mean of the baseline, a change in favour of CBT. Both groups improved on the GSES, in state anxiety during exams retrospectively assessed, and on the AH tests. The improvement on the AH tests was probably a practice effect and not a reflection of a change in capacity for academic testing. This study thus supports use of CBT on the Internet for the treatment of test anxiety.

Keywords: Test anxiety; Randomised controlled trial; Internet; CBT; Placebo

Introduction

Test anxiety is experienced throughout the world and in all socio-economic groups; it is more common in females and is the most common and most persistent fear in young people. It affects between 25% and 30% of students including those with learning difficulties (McDonald, 2001; Wachelka & Katz, 1999; Zeidner, 1998). Avoidance by students of exams is rarely practicable (Zeidner, 1998). Those with high test anxiety perform more poorly than others (Hembree, 1988) but it is not clear if this is the cause or effect of test anxiety (Cassady & Johnson, 2002; Hembree, 1988; Seipp, 1991). If test anxiety does contribute to poor performance, because

*Corresponding author. Fax: +44 1252 812752.
E-mail address: sjelindsay@aol.com (S. Lindsay).

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many organisations employ tests, the outcome of testing could affect the life-long destiny of candidates. Nevertheless, whatever the causal relationship is, many students believe that anxiety does impair test-taking (Hong & Karstensson, 2002).

Test anxiety has been regarded ubiquitously as a continuous variable rather than a discrete diagnostic category, present or absent (Zeidner, 1998). "Test anxiety" therefore applies to extreme anxiety on that dimension. Reviewed by Zeidner (1998), test anxiety was first seen as excessive arousal which interfered with the performance of tests although moderate anxiety could enhance effectiveness. The remedy for excessive arousal has been relaxation training. Test anxiety was then identified as a situation-specific trait in students evident in a variety of situations in which they were being evaluated. The corresponding treatment has been systematic desensitisation. Morris and Liebert (1969) distinguished worry, a cognitive component, from emotionality, evident as autonomic arousal, and concluded that only worry interfered with task performance. It does so by diverting attention to self-deprecating thoughts which provoke autonomic arousal. Corresponding treatment has consisted of attention training. Highly anxious students are also deficient in skills for studying and taking tests according to Kirkland and Hollandsworth (1979). Those students who believe this and who are aware of impaired performance become anxious accordingly. Self-efficacy theory (Jones & Petruzzi, 1995) has a similar perspective. Cognitive approaches have emphasised dysfunctional beliefs in students such as the need, suggested by rational emotive therapy, to strive for perfection which they find unattainable (Zeidner, 1998). Alternatively they believe that they compare unfavourably with their peers under whose scrutiny they think they fall (Beck, Emery, & Greenberg, 1996). Treatments corresponding to all these perspectives have been successful in reducing test anxiety but cognitive therapy plus skills training or emotion-focussed components have worked best (Ergene, 2003; Vagg & Spielberger, 1995). The simplest hypothesis would therefore suggest that the most effective treatment should include all these approaches as components in "multimodal treatment" (Zeidner, 1998). However, this would require a unifying theory to support the hypothesis that several such components would have an additive effect (Zeidner, 1998).

There has been one attempt at such a theory, that by Spielberger and Vagg (1995). They proposed that differences in trait anxiety interact with situational factors such as the student's perception of the test's difficulty, skills in studying and taking tests and the importance of the exam to determine the extent to which an exam is seen as threatening. This will influence arousal, contribute to difficulties in information processing, cause task irrelevant behaviour, produce a decrement in performance and corresponding self-derogatory cognitions. However, a test of this theory would require structural path analysis (Zeidner, 1998) which has not been done and so corresponding treatments have not been tested. Moreover, there appear to have been no multimodal treatments, of more than two modules, which have included cognitive therapy. Therefore, the present study adopted the simplest and widespread assumption (Zeidner, 1998) that several treatments, shown separately to have treated test anxiety successfully (Ergene, 2003), would be more effective if all, rather than one or two, were included in a multimodal package of Cognitive Behaviour Therapy (CBT).

So widespread is test anxiety, there is a considerable need for effective short treatments. However, the opportunity for treatment is severely limited by cost, the scarcity of therapists and inaccessibility for people who are in full-time learning, long hours of work, night-shift working or in distant communities dependent on tele-learning. Computer-based treatment may be one solution. CBT is well suited to this because of its well-defined procedures (Bloom, 1992). Computer-administered CBT on CDs has been tested for several anxiety disorders (Kaltenhaler, Parry, & Beverley, 2004) but the National Institute for Health and Clinical Excellence (NICE, 2002) concluded that the evidence (Kaltenhaler et al., 2002), although promising, was not strong enough to recommend this for clinical practice. However, NICE has this under review and they would consider the latest study by Marks, Kenwright, McDonough, Whittaker, and Mataix-Cols (2004). They have shown that self-exposure therapy presented mainly by a computer was no less successful in treating phobias and panic disorders than a similar programme conducted by a therapist alone. However, 43% of computer-aided clients dropped out of treatment. That study is typical in that very few studies have included a credible procedure delivered by computer with which to compare the computerised treatment. They seek rather to show that the latter is no less effective than clinician-delivered therapy.

The Internet is another means of delivering programs via a computer. The studies of computer-aided treatment noted above would encourage research on the use of the Internet to treat anxiety