Tackling anxiety disorders: A working memory intervention

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The present study is aimed at investigating cognitive underpinnings of anxiety, by focusing on working memory abilities in anxious individuals. A therapeutic intervention targeting working memory deficits will be tested in patients with anxiety...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Anxiety disorders and symptoms
Study type	Interventional

Summary

ID

NL-OMON38354

Source
ToetsingOnline

Brief title
A working memory intervention

Condition

- Anxiety disorders and symptoms

Synonym
anxiety, Anxiety disorder

Research involving
Human

Sponsors and support

Primary sponsor: Erasmus Universiteit Rotterdam
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Anxiety, Mood induction, Treatment, Working memory

Outcome measures

Primary outcome

Anxiety disorder symptoms measured with the SCID-I and the STAI.

Secondary outcome

- Scores on questionnaries:

SCID-I: anxiety

STAI: anxiety

- Score on moodinduction

- Scores on workingmemorytests

Study description

Background summary

An anxiety disorder consists of an ongoing and severe kind of anxiety without the presence of a realistic threat. There are different kinds of anxiety disorders, for example panic disorders, agoraphobia, social phobia, generalized anxiety disorders (GAD) and obsessive compulsive disorders (OCD). Together with mood disorders and substance use disorders, anxiety disorders are among the most prevalent mental disorders (Brysbaert, 2006). The World Health Organisation (WHO; 2010) estimates that around 12% of the population suffers from clinical anxiety every year. The life of people with an anxiety disorder changes significantly. Symptoms of anxiety are frequently associated with a variety of physical symptoms like sweating, heart palpitations and trembling. Anxiety causes a great deal of distress to the patients and to their families. In addition, anxiety disorders cause significant economic costs. For example, these disorders were costing the Netherlands 285,6 million euros in 2005 (Van Wieren, Schoemaker, & Van Balkom, 2010). Treatment strategies for anxiety disorders include cognitive therapy, cognitive-behavioral therapy, psychopharmacology, exposure therapy, relaxation training, biofeedback, meditation, supportive psychotherapy, psychodynamic psychotherapy, and other forms of psychotherapy (Miller, Fletcher, & Kabat-Zinn, 1995). The most common

treatment strategies these days are cognitive-behavioral therapy and psychopharmacology. Past research indicates that both genetics and important events in a person*s life are playing a significant role in the development of anxiety disorders. However, because there is still a lot unknown about the aetiology and maintenance of these disorders, more research is needed to address these issues and to enhance prevention and treatment. Therefore the current proposal aims to examine important cognitive processes involved in anxiety and aspires to set up a new approach to a clinical treatment method targeting these processes.

Over the past three decades cognitive models of anxiety disorders have demonstrated that selective information processing plays an important role in the development and maintenance of anxiety (Williams, Watts, MacLeod, & Mattews, 1988). More specifically, recent studies provide considerable evidence to state that anxiety is strongly associated with an attentional bias towards threatening stimuli and biases in interpretation and memory (Mathews & MacLeod, 1994; Mathews & MacLeod, 2005). Patients with an anxiety disorder tend to interpret ambiguous information in a negative way. Several researches demonstrate that individuals reporting high levels of anxiety display a disproportionate ability to identify or detect emotionally negative words (e.g. Foa & McNally 1986; as described in Mathews & MacLeod, 1994). For example, during Stroop tasks, anxious individuals display problems ignoring the emotionally negative content of threat-related stimulus words (e.g. Mathews & MacLeod 1985; as described in Mathews & MacLeod, 1994). However, the nature of the relation between anxiety and cognition is far from clear. Therefore, it is necessary to get more insight in the cognitive processes behind anxiety.

A lot of past research shows that high levels of anxiety are associated with a reduced ability to perform complex cognitive tasks (Mueller 1992, Watts & Cooper 1989; as described in Mathews & MacLeod, 1994). A lot of researchers state that these reductions are being caused by a depletion of capacity-limited cognitive resources, especially working memory (Eysenck & Calvo 1992, Ellis & Ashbrook 1988; as described in Mathews & MacLeod, 1994). Therefore, working memory is an important concept in understanding the cognitive biases associated with anxiety disorders. Working memory can be described as a limited capacity system for the temporary, active maintenance and storage of information (Baddeley, 2003). This system is critical for human thought processes. The ability to retain and manipulate information in working memory is linked with the prefrontal cortex (Fuster, 1989; Goldman-Rakic, 1987; as described in Klingberg, Forssberg, & Westerberg, 2002) and underlies different executive functions, such as problem solving and reasoning (Engle, Kane, & Tuholski, 1999; Hulme & Roodenrys, 1995; Klingberg, 2000; as described in Klingberg et al., 2002). The theoretical concept of working memory argues that working memory is important for human thought processes because it provides an interface between perception, long-term memory and action (Andrade, 2001; Miyake & Shah, 1999; Conway, Jarrold, Kane, Miyake, & Towse, 2007; as described in Klingberg et al., 2002). Reduced working memory capacity is associated with

several neurological and psychiatric disorders like schizophrenia and ADHD (Goldman-Rakic, 1994; Castellanos & Tannock, 2002; as described in McNab et al., 2009).

Several researchers showed that working memory can be trained. Klingberg and colleagues (2002) demonstrated that training of working memory in children and adults with ADHD (with working memory deficits) significantly enhanced not only performance on the trained working memory tasks, but also on non-trained tasks requiring working memory. Their results suggest that working memory can be significantly improved by training. In 2005 Klingberg and colleagues also found a significant reduction of ADHD symptoms as a result of the working memory training. McNab and colleagues (2009) showed that effective training of working memory is also associated with changes in cortical activity.

These interesting findings lead to an important question for this proposal. Is it possible to reduce symptoms of anxiety disorders by improving working memory in patients with these disorders? This proposal aims to study the question whether an improved working memory will influence overt behaviour and reduce cognitively related clinical symptoms in patients with anxiety disorders.

Study objective

The present study is aimed at investigating cognitive underpinnings of anxiety, by focusing on working memory abilities in anxious individuals. A therapeutic intervention targeting working memory deficits will be tested in patients with anxiety disorders, both on a short and longer term. In doing so, this project ought to yield novel approaches of clinical treatment by targeting cognitive deficits related to anxiety, in that way bridging the gap between basic cognitive science and clinical psychological treatments for anxiety disorders.

Study design

This study will focus on the outcome of a working memory intervention in a large sample of individuals with an anxiety disorder. Additionally, it will be studied whether the outcome effects are resistant to a mood provocation test.

A randomised controlled trial (RCT) will be used in people diagnosed with an anxiety disorder: 120 individuals will be randomly allocated to either a working memory training or a bogus working memory training (i.e., simple arithmetic tasks that do not significantly load working memory ability). All participants will be recruited from mental health care centres in which they are waiting for a treatment after having had a diagnostic intake for anxiety. During an initial session (i.e., Pretest), the researcher (blind to condition) will use the Structured Clinical Interview for DSM-IV disorders (SCID) to confirm the diagnosis of an anxiety disorder. Also, the STAI will be used as a self-report measure for the severity of individuals* anxiety symptomatology.

In the four weeks following this pretest, participants will perform the working memory intervention three times a week. This intervention will take about half an hour and is easily accessible via a website that participants can access from their computer at home. The researcher monitors whether participants have performed the training and will alert participants in case they have missed a session. The training will systematically teach individuals to utilize their working memory on a variety of domains. The tasks will target the specific working memory abilities that are deficient in anxiety disorders.

After the four-week intervention, the researcher and the participant meet again (i.e., Posttest). In this posttest, the same measures will be performed as during the pretest (i.e., SCID, STAI, and appropriate working memory tests). It is predicted that participants who received the working memory training will show an increased performance on working memory tests and a decrease in anxiety symptoms (on the SCID and and the STAI), relative to the pretest and to control participants.

One of the essential questions is whether this pattern of reduced symptomatology holds when confronted with stressors. Would the participants still react with increased working memory performance and reduced anxiety symptoms when they are temporarily brought into an anxious state? To examine this issue, an anxious mood provocation (i.e., Velten mood procedure; Velten, 1968) will be used. Indeed, recent research has shown that relapse can best be predicted by performance on such a mood induction procedure (Segal et al., 2006). If the working memory training appears to be successful, one would expect that compared to controls, individuals in the intervention condition are more resistant to the mood induction and still show increased working memory performance (hypothesized to be similar as in the posttest), indicating that relapse is unlikely.

A follow-up test (Follow-up) after two months will be the final step. Assuming that individuals in the training condition have benefited from the working memory intervention, one would assume that their anxiety disorder symptoms (SCID, STAI) would still be lower after such a time interval, relative to individuals in the control condition. Additionally, one would assume that their working memory ability is still improved, indicated by a better performance on the working memory tasks.

Intervention

Workingmemory tasks at pre- and posttests and at home:
- AB-AC-AD taak
- Number-letter taak

Workingmemory task only at pre- and posttests:
Sternberg taak

Moodinduction

Study burden and risks

No risks are associated with participation. The benefit is an earlier treatment and a possible effective treatment.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- Suffering from an anxiety disorder
- Being on a waitinglist in one of the participating treatment centres

Exclusion criteria

- Suffering from a specific phobia
- Suffering from psychotic complaints
- Drugs or alcohol abuse

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Double blinded (masking used)
Control:	Placebo
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	23-04-2012
Enrollment:	120
Type:	Actual

Ethics review

Approved WMO

Date:	17-01-2012
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL35126.078.11