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Augmentation of Treatment As Usual with online Cognitive Bias Modification of Interpretation training in adolescents with Obsessive Compulsive Disorder: A pilot study



Elske Salemink^{a, b, *}, Lidewij Wolters^{b, c}, Else de Haan^{b, d}

^a Addiction, Development and Psychopathology Lab (Adapt Lab), Department of Developmental Psychology, Research Priority Areas 'Yield', and 'Amsterdam Brain and Cognition', University of Amsterdam, The Netherlands

^b Department of Obsessive Compulsive-, Anxiety- and Tic Disorders, Academic Center for Child and Adolescent Psychiatry, de Bascule, Amsterdam, The Netherlands

^c Academic Medical Center, Department of Child and Adolescent Psychiatry, Amsterdam, The Netherlands

^d Child Development and Education, University of Amsterdam, The Netherlands

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ABSTRACT

Background and objectives: Cognitive Behavioral Therapy for children and adolescents with Obsessive Compulsive Disorder (OCD) is effective. However, since almost half of patients remain symptomatic after treatment, there remains room for improvement. Cognitive Bias Modification training of Interpretations (CBM-I) is a promising new intervention, as it targets misinterpretation of intrusions, which is seen as an important characteristic in OCD. To date, there have been no published studies of CBM-I in adolescents with OCD. The aim of the current pilot study was to examine the added value of online CBM-I training as an adjunctive treatment to the Treatment As Usual (TAU; that included CBT and pharmacotherapy) in adolescents with OCD.

Methods: Patients receiving TAU were randomly assigned to either an additional CBM-I training ($n = 9$), or to an additional placebo variant of this procedure ($n = 7$).

Results: Immediate, on-line interpretations changed in response to the CBM-I training, while no such effects were observed on slower retrospective off-line interpretations. Patients in the CBM-I training condition reported fewer obsessive compulsive symptoms after training, and clinicians rated them as having fewer obsessive symptoms (corresponding to medium-large effect sizes). No such changes were observed in the placebo group.

Limitations: The small sample size precludes strong conclusions and replication is necessary to test the robustness of the findings.

Conclusions: This small randomized controlled trial is suggestive, although not conclusive, regarding the promising additive value of OC-related CBM-I training as an adjunctive intervention to TAU in an adolescent clinical population.

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1. Introduction

Cognitive theories of Obsessive Compulsive Disorder (OCD) argue that the misinterpretation of normal intrusions is the core problem in the development and maintenance of OCD (Salkovskis, 1985). Patients with OCD are assumed to interpret such intrusions

* Corresponding author. Department of Developmental Psychology, University of Amsterdam, Weesperplein 4, 1018 XA, Amsterdam, The Netherlands. Tel.: +31 205258663.

E-mail address: E.Salemink@uva.nl (E. Salemink).

as potentially dangerous, bad, or as predicting harm, resulting in anxiety and distress. Consequently, compulsions (recurrent behaviors) are performed in an attempt to reduce the anxiety and distress. There is a wealth of empirical evidence suggesting that such misinterpretations of intrusions are related to OC symptoms in adults (Frost & Steketee, 2002) as well as in children and adolescents (Matthews, Reynolds, & Derisley, 2007; Reeves, Reynolds, Coker, & Wilson, 2010). According to this cognitive theory, more benign interpretations of normal intrusions may prevent anxiety and distress as well as compulsions.

The first-line treatment for youth with OCD is cognitive behavioral therapy (CBT) (Geller & March, 2012), with exposure

with response prevention and the modification of misinterpretations as the most important strategies. Meta-analyses have shown that these treatment strategies are effective in reducing OC symptoms in youth (large effect sizes; Sánchez-Meca, Rosa-Alcázar, Iniesta-Sepúlveda, & Rosa-Alcázar, 2014). However, as response rates vary between 40 and 65%, almost half of the patients continue to have significant levels of symptoms after standard treatment. There seems to be substantial room for improvement of OCD treatment in youth.

A recent development is Cognitive Bias Modification of Interpretation (CBM-I) training; a computerized training paradigm developed to modify dysfunctional interpretations in anxiety. Participants receive short ambiguous scenarios with a missing word fragment in the last sentence. Resolution of the fragment results in a positive interpretation of the scenario. A recent meta-analysis focusing on adult samples revealed that CBM-I training was successful in increasing positive interpretations and decreasing negative mood states (Menne-Lothmann et al., 2014). In contrast to CBT, CBM-I changes interpretation bias directly, through practicing interpreting information more positively, rather than through verbal instructions and explicitly challenging dysfunctional thoughts (Baert, De Raedt, & Koster, 2011). Based on these differences, adding CBM-I training to CBT might enhance treatment effects and response rates.

CBM-I studies in adolescents are accumulating. Promising effects of CBM-I in adolescents have been observed in unselected adolescent volunteers and sub-clinical samples (e.g., Lau, Belli, & Chopra, 2013; Lothmann, Holmes, Chan, & Lau, 2011; Salemink & Wiers, 2011; Vassilopoulos, Banerjee, & Prantzalou, 2009). In the only CBM-I study in a clinical sample of adolescents with anxiety disorders, one session of CBM-I training affected interpretations, but not anxiety (Fu, Du, Au, & Lau, 2013).

There has been limited application of CBM-I to OCD; to the best of our knowledge, there are three studies in adults. Clerkin and Teachman (2011) presented students with elevated levels of OC symptoms with one session of CBM-I training designed to change interpretations of intrusive thoughts. Compared to a neutral training group, participants in the CBM-I group endorsed healthier OC-relevant interpretations and beliefs after the training. No OC symptoms were measured, but there was a non-significant trend for participants in the CBM-I condition to report less negative affect in response to a stressor. Recently, the effects of (single-session) CBM-I training were examined in a sample of students with high levels of OC symptoms and in a selected sample of adult community members with varying levels of OC symptoms (Beadel, Smyth, & Teachman, 2014; Williams & Grisham, 2013 respectively). Again, CBM-I training resulted in less OC-relevant interpretations and obsessive beliefs. However, more mixed (or even null) effects were observed on the more clinically relevant measures in response to a stressor. These latter findings might be related to the use of sub-clinical samples. They may also be related to the provision of just a single session of training as a recent meta-analysis indicated that providing repeated training sessions increased training effectiveness (Menne-Lothmann et al., 2014).

In sum, negative interpretation of intrusive thoughts is assumed to play an important role in OCD and three studies in adults suggested that single-session CBM-I training can modify such interpretations. However, there is a lack of studies of CBM-I training in adolescents with OCD. The aim of the current pilot study was to explore the effectiveness of eight-sessions of online CBM-I training as an adjunctive treatment in a clinical sample of adolescents with OCD. In a small randomized placebo-controlled trial of adolescents who were already receiving Treatment As Usual (TAU) for OCD, we randomly allocated participants to receive i) additional CBM-I training to interpret intrusions as less threatening, or ii) placebo

training. Consistent with the cognitive model of OCD (Salkovskis, 1985), adolescents in the CBM-I condition were trained to interpret intrusive thoughts in a healthier, more benign way.

We predicted that adolescents who completed the CBM-I training would 1) make fewer OC-relevant and more OC-irrelevant interpretations of normal intrusions, and 2) have fewer OC symptoms compared to the placebo condition. We made a distinction between “on-line” interpretations that are made immediately at the time the ambiguous information is first encountered, and slower “off-line” interpretations in which judgments are made retrospectively (see also Hirsch & Clark, 2004). The time taken to solve OC-relevant and OC-irrelevant word fragments during the training was used as an index of immediate on-line interpretations and it was expected that, compared to the placebo control condition, adolescents who follow the CBM-I training would show faster responses to OC-irrelevant and slower responses to OC-relevant word fragments. To assess off-line interpretations, adolescents completed a recognition task before and after training (Salemink & van den Hout, 2010), and it was predicted that the CBM-I training would result in stronger endorsement of OC-irrelevant and less endorsement of OC-relevant interpretations. With respect to clinical outcome measures, we expected that adolescents who followed the CBM-I training would have fewer obsessive beliefs, as assessed with the Obsessive Beliefs Questionnaire-Child Version (OBQ-CV, Coles et al., 2010). A multi-informant approach was taken to assess CBM-I effects on OC symptoms; we expected a reduction in self-reported OC-symptoms assessed with the Revised Child Anxiety and Depression Scale – Child Version (RCADS, Chorhita, Moffitt, & Gray, 2005) and in clinician-rated OC-symptoms assessed with the Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS, Scahill et al., 1997) in the CBM-I group compared to the placebo group. Finally, we explored generalization to anxiety and depressive symptoms.

2. Method

2.1. Participants

Participants were adolescents referred for either inpatient or outpatient treatment of OCD at the academic center for child and adolescent psychiatry, the Bascule, Amsterdam. Inclusion criteria for the study were a primary diagnosis of OCD according to DSM-IV TR criteria (APA, 2000), a score of 8 or more on the CY-BOCS total score, and a score of 4 or more on the CY-BOCS obsession subscale (Scahill et al., 1997). Exclusion criteria were psychosis and insufficient Dutch literacy. Both adolescents and their parents received an information letter. The study was introduced as a test of a potentially new type of treatment: an online computerized training. The rationale of the study design, including the placebo control condition, was explained and participants were informed that they had equal chance of receiving ‘the real training’ or the placebo training. It was also explained that a lottery system determined allocation. All information and computerized instructions presented to the participants were identical in the two conditions. After written informed consent was obtained, 21 patients were randomly allocated (stratified on gender, age, and school level) to either the CBM-I training ($n = 12$) or the placebo variant of this procedure ($n = 9$). Four patients were excluded (one patient scored below the clinical cut-off and three patients did not complete the training and/or assessments); they did not differ significantly from the completers on any of the measures. Finally, one additional patient was excluded as they completed 60% of the word fragments incorrectly. The final sample consisted of 16 patients (10 females) with nine individuals in the CBM-I condition

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