

Metacognitive Therapy versus Exposure and Response Prevention for Pediatric Obsessive-Compulsive Disorder

A Case Series with Randomized Allocation

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Key Words

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Abstract

Background: Exposure with ritual prevention (ERP) is the psychotherapeutic treatment of choice for pediatric obsessive-compulsive disorder (OCD). In the present study, a new treatment rationale – metacognitive therapy (MCT) for children – was developed and evaluated. **Methods:** Ten children and adolescents with OCD were randomly assigned to either MCT or ERP therapy condition. Patients were assessed before and after treatment and at the 3-month and 2-year follow-up by means of symptom severity interviews. Depressive symptoms were also assessed. Manualized treatment involved up to 20 sessions on a weekly basis. **Results:** We found clinically and statistically significant improvements in symptom severity after treatment. At the 3-month and 2-year follow-up, the attained improvements during treatment were retained. **Conclusions:** Despite some methodological limitations, results showed that MCT proved to be a promising psy-

chotherapeutic alternative to the well-established ERP in the treatment of pediatric OCD. Further investigations into the efficacy of MCT are necessary to answer questions as to the working mechanisms underlying therapy for OCD.

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Introduction

Obsessive-compulsive disorder (OCD) is a debilitating disorder with an estimated lifetime prevalence rate of 2–3% [1]. Besides pharmacotherapy with (selective) serotonin reuptake inhibitors [2], cognitive-behavioral treatment (CBT) is the psychotherapy of choice for this disorder, both for adults and young people. The empirically validated method is exposure with ritual prevention (ERP) accompanied by cognitive and – in children and adolescents – by family interventions [3–5]. Until now, there have been three controlled studies providing evidence for the efficacy of CBT (ERP) for pediatric OCD. De Haan et al. [6] found a slight superiority of ERP over pharmacotherapy (i.e., clomipramine), and Barrett et al. [3] found no significant differences between individual

and group cognitive-behavioral family treatment regarding efficacy and durability of treatment gains. In a very recent study, the combination of CBT and pharmacotherapy (i.e., sertraline) proved to be superior to CBT alone and to sertraline alone [5]. The effectiveness of ERP is limited by high rates of treatment rejection and drop-outs [7]. This strongly indicates that there is a need for a psychotherapeutic alternative to ERP. Furthermore, the efficacy of ERP cannot be attributed solely to habituation [8]. In some cases, symptom reduction could be better explained by cognitive changes or by changes in self-efficacy. This makes cognitive therapy a promising alternative or additional treatment strategy [9].

New cognitive and metacognitive OCD models [10–12] led to new intervention techniques – at least in the treatment of adult patients. Until now, there have been only a few case studies [13, 14] and a case series [15] applying these new interventions to children and adolescents.

OCD – A Metacognitive Model

According to the cognitive model of Salkovskis and McGuire [16] and Wells' metacognitive model [11, 12], obsessional thoughts develop from normal intrusive thoughts that are interpreted and dealt with in special ways. OCD patients tend to confuse these thoughts with real actions, or events, or intentions (metacognitive misinterpretation) [17, 18]. They tend to make use of several dysfunctional metacognitive processes, such as increased cognitive self-consciousness ('too much thinking about thinking') [19, 20], thought suppression, and selective attention to further intrusive thoughts. Moreover, they often are not sure when to stop the ritual, and make use of dysfunctional stop signals like 'emotional reasoning' (e.g. they have to repeat the ritual until they 'feel' safe or clean).

These various metacognitive appraisals (e.g. thought-action fusion) and metacognitive processes (thought control strategies, selective attention) can be understood as dysfunctional solutions which lead to further exacerbations of the vicious cycle of OCD. Recently, Mather and Cartwright-Hatton [21] have found these metacognitions to be good predictors of obsessive-compulsive symptoms in adolescents and proposed a more metacognitively enhanced therapy.

Metacognitive Therapy

Metacognitive therapy (MCT) aims to change dysfunctional metacognitive appraisals and strategies. The new term 'metacognitive therapy' [22, 23] marks the major differences to standard cognitive therapy. In the latter,

the contents of thoughts are discussed and examined with regard to their truthfulness and probability [24]. In MCT, the focus does not lie on the content of obsessions and intrusive thoughts, but on the appraisal and the management of these thoughts. These thoughts are normalized by simply accepting them. Furthermore, probability ratings (e.g. 'How probable do you think it is that you could contaminate your parents?') are seldom useful in OCD patients. Although they often know that the risk is very low, they are not sure that they can take it.

In psychoeducation, the patient's specific problem-maintaining metacognitive appraisals and strategies are to be discovered, while the therapist emphasizes the normality of these processes [10]. Socratic dialogue, thought control experiments, and behavioral experiments aim to change these metacognitive strategies and appraisals.

Cottraux et al. [25] conducted one of the few studies that compare cognitive therapy and behavior therapy in adult OCD. In the present study, the efficacy of MCT for children and adolescents with OCD was investigated. According to the Task Force criteria of the American Psychological Association for the identification of empirically supported treatments [26], MCT was tested against the already established ERP treatment. Both treatment strategies were protocol driven according to two different manuals written by the first author [22]. It was hypothesized that both treatment strategies would be effective at post-treatment and would have lasting effects after 3 months and after 2 years.

Method

Participants and Procedure

Eleven children and adolescents (7 males and 4 females) with OCD, aged 8–17 years, participated in the study. All were treated in a child and adolescent psychiatric outpatient setting and were assigned either to narrative ERP or to MCT by simple randomization. One (male) patient dropped out of MCT, as it demanded too much self-reflection on his part. He was successfully treated with ERP but excluded from further calculations. None of the remaining 10 patients ($n = 5$ in each group) received pharmacotherapy against OCD.

All participants were diagnosed according to the DSM-IV/ICD-10 diagnosis of OCD based on the German structured clinical interview 'Kinder-DIPS' [27] with the patients and their families and on the well-established clinical interview Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS). Patients were excluded if they had a diagnosis of mental retardation, autism, psychosis, and current treatment using pharmacotherapy for OCD.

Five patients had one or more comorbid diagnoses, including agoraphobia ($n = 2$), Tourette's syndrome ($n = 1$), chronic tic disorder ($n = 2$), and attention deficit hyperactivity disorder (ADHD) ($n = 2$).

Table 1. Details of obsessive-compulsive psychopathology and metacognitive therapy suggestions for the five MCT patients

No.	Obsession	Compulsion	Dysfunctional metacognitive appraisal/strategy	Metacognitive intervention	ERP?
6	Intrusion: thinking bad things during activities of daily life	Repeating the activity when thinking good things	Thought suppression	Try different ways to handle thoughts (suppressing, evoking, accepting) and count the number of intrusions	–
7	Religious intrusions (voices) about death, dying, magical numbers (e.g., '14')	Repeatedly telling herself that she wants to live	Thought suppression Thought-intention fusion ('thinking about dying means, I want to die') Thought-event fusion ('if I think I die, I will die')	Thought suppression experiment Thought experiments: – Try to think of something that you don't want to happen! – Try hard to fall asleep! – Try to win the lottery just by mental power!	–
8	Fear of contamination (a contaminating wart at one foot)	Hand washing until they smell clean; showering; not touching the wart; needing reassurance that she is not contaminated	Dysfunctional stop signal (smell) Thought-fact fusion ('thinking I am contaminated means I really am')	Behavioral experiment: Use unflavoured soap – how long will you wash? Thought-fact defusion: Try to turn the thought of an elephant into a real elephant	1 session ERP as behavioral experiment (Touch the wart!) – Not successful: she didn't habituate and prematurely broke off
9	Intrusive thoughts about orientation in time and space (Where am I? Which month is now?); fear of dissociation	Thought control; trying to think more pleasant thoughts; reassuring himself where he is	Thought suppression Selective attention towards the potential dissociative sensations Thought-event fusion ('thinking this thought increases the risk that it comes true')	Thought suppression experiments Selective attention experiment Thought-event defusion: Try to win the lottery just by mental power!	–
10	Bad commanding thoughts; blasphemous thoughts; 'just right' thoughts	Touching and licking the floor, the furniture, etc.	Thought suppression Thought-commandment fusion ('if I think ..., I have to do it')	Try different ways to handle thoughts (suppressing, evoking, accepting) and count the number of intrusions Thought-imperative defusion: you cannot do everything that you think of Metacognitive reframing (you could not suffer from these thoughts unless God is very important to you)	–

ERP = Exposure with ritual prevention.

Measures

The primary outcome was a change in OCD symptom severity, measured with the CY-BOCS. The CY-BOCS is a clinician-rated scale with two subscales (obsessions and compulsions). In each subscale, frequency, interference, distress, resistance (to obsessions/compulsions), and control are rated. The total score ranges from 0 to 40. Scahill et al. [28] found good reliability and validity for the CY-BOCS. A recent study [29] found the two resistance items to be unreliable. This is in accordance with the metacognitive theory claiming that resistance to obsessions maintains obsessive-compulsive symptoms.

The second outcome was a change in severity of depressive symptoms (self-rating), assessed using the German version of the Children's Depression Inventory (CDI) [30]. The authors of the German version [31] report good reliability and validity. The 26 items are scored on a 3-point scale. In the present study, the standardized T scores were used.

All instruments were administered by the therapists at pretreatment, post-treatment, 3 months and 2 years after the completion of the therapy. At the 2-year follow-up, the clinical status regarding OCD was assessed using a structured psychiatric interview for the parents and the child (Kinder-DIPS) [27]. At the time of the last assessment, all interviews were performed by two experienced child and adolescent psychiatrists who were blinded to the patient's treatment condition.

Treatment

All patients received up to 20 treatment sessions on a weekly basis provided mainly by the first author. Treatment was finished before the twentieth sessions if according to the estimation of both therapist and patient treatment goals were already met before. Parents were generally included in the therapy sessions except in cases, where the (older) adolescents did not permit it. There were no parent sessions without the patients.

Table 2. Demographic and clinical characters of the two treatment groups

Sample	ERP	MCT	U	p (2-tailed) ¹
Sex: m/f	4/1	2/3		
Age, years: Md, M, SD	14.08 13.39 3.06	15.33 14.53 3.09	8.0	0.347
IQ score: Md, M, SD	90.00 99.40 25.06	106.00 105.50 9.88	8.0	0.624
Duration, months: Md, M, SD	3.00 9.80 14.68	5.00 5.60 4.15	12.5	1.000
CY-BOCS: Md, M, SD Range: 0–40	20.00 17.00 6.28	26.00 27.00 5.87	2.00	0.032*
CDI: Md, M, SD T score	50.00 47.80 9.68	53.00 51.20 5.89	9.5	0.528

¹ Mann-Whitney U-Test.

Alpha level 0.05. Md = median; M = mean; SD = standard deviation; ERP = exposure with ritual prevention; MCT = metacognitive therapy; CY-BOCS = Children's Yale-Brown Obsessive Scale; CDI = Child Depression Inventory (German version).

The ERP treatment was similar to the published manual by March and Mulle [32] in combining ERP with narrative therapy. In contrast to this manual, however, no anxiety management techniques (such as relaxation training) were applied. In cases where the motivation for ERP began to decrease, home-based contingency management was added.

MCT was based on techniques described by Salkovskis [10] and Wells [11, 12], adapted by the first author for children and adolescents. They were grossly comparable with already published cognitive interventions for adolescents with OCD [13–15]. The main differences between the two manuals were the interpretation of obsessions and the presumed working mechanism: in ERP, obsessions were conceptualized as meaningless and metaphorically described as 'brain hiccups' [32]. Therapy was explained to work by habituation. In MCT, obsessions were conceptualized as revealing the personal values and the deepest fears of the patient. Therapy aimed at challenging metacognitive appraisals (metacognitive restructuring) and changing metacognitive strategies (e.g. from suppressing thoughts to permitting/accepting them). Following Wells [12], in this metacognitive framework ERP could be utilized as behavioral experiment intended to challenge dysfunctional metacognitions, but not in an intensive, repeated, or habituation-oriented manner. Accordingly, MCT patients were not encouraged to do ERP as homework. Details of the 5 MCT patients and their treatment can be seen in table 1.

Statistical Analysis

Because of the small sample size only nonparametric tests were used. To examine the comparability of the two treatment groups,

age, duration of complaints, IQ test scores, and the scores of the CY-BOCS and CDI before treatment were compared using the Mann-Whitney U test. The CY-BOCS total score as the primary outcome measure and the CDI T score were compared at pretreatment, post-treatment, and follow-up by calculating the nonparametric Wilcoxon paired rank sum test for every single treatment group. Using the Statistical Package for Social Sciences for Windows (SPSS) version 11.0, all hypotheses were examined at an alpha level of 0.05. Furthermore, the percentage of improvement and the effect sizes were evaluated using Cohen's d [33]. Due to the small sample size, the effect sizes were corrected as recommended by Hedges and Olkin [34].

Results

Comparability of the Treatment Groups

Both treatment groups were comparable regarding their age, duration of complaints, IQ test scores, and depression scores (table 2). The patients in the MCT condition had significantly higher CY-BOCS scores before treatment.

Treatment Effects

All patients showed a significant decrease in OCD symptom severity from pre- to post-treatment assess-

Fig. 1. CY-BOCS total scores for each patient treated with exposure and response prevention at pre- and post-treatment and at follow-up 3 months and 2 years after treatment; range 0–40.

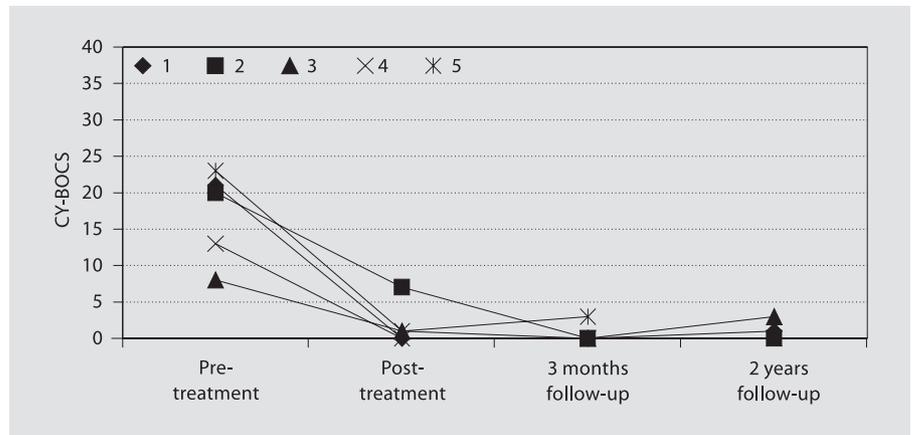
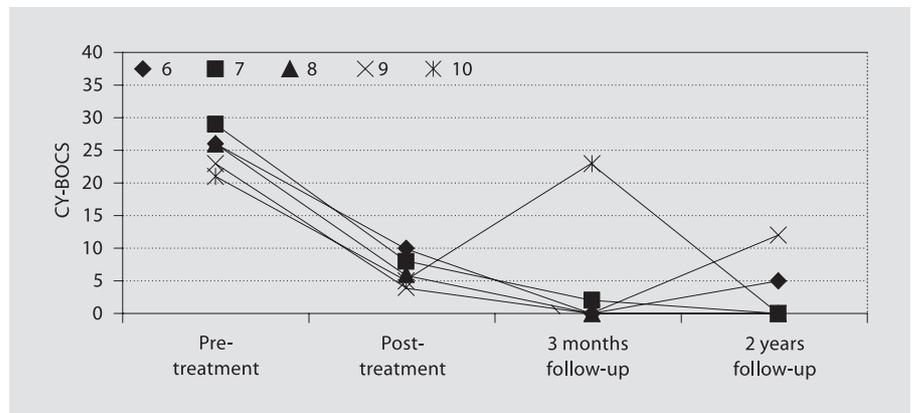


Fig. 2. CY-BOCS total scores for each patient treated with metacognitive therapy at pre- and post-treatment and at follow-up 3 months and 2 years after treatment; range 0–40.



ments (fig. 1, 2). In the ERP condition, the CY-BOCS total scores decreased from 20 to 1 ($z = -2.032$, $p = 0.042$). In the MCT condition, the CY-BOCS total scores decreased from 26 to 6 ($z = -2.032$, $p = 0.042$).

In both groups, depression scores tended to decrease from pre- to post-treatment assessments, but the differences were not statistically significant. CDI T scores decreased from 50 to 38 ($z = -1.512$, $p = 0.131$) in ERP and from 53 to 41 ($z = -1.461$, $p = 0.144$) in the MCT condition. However, the scores were already in the average range before treatment.

The average treatment duration was 13 sessions for ERP (mean = 13.0; SD = 6.04) and 9 sessions for MCT (mean = 10.2; SD = 3.3). There was no significant difference in treatment duration between the two groups ($U = 10.0$; $p = 0.69$).

Estimating Treatment Effects

Computing improvement rates across treatment in the two groups showed a mean improvement in the CY-BOCS total score of 89.6% for the ERP group and of 75%

in the MCT group. Given that an improvement of more than 30% is defined as success [35], all 10 patients can be considered as responders in both treatment conditions. The corrected effect sizes on the CY-BOCS were 2.2 for the ERP condition and 2.92 for the MCT condition. According to the criteria of Cohen [33], both effect sizes were large.

Treatment Effects after 3 Months

At the 3-month follow-up, treatment gains were maintained. No significant differences emerged in the CY-BOCS scores when compared to post-treatment (ERP: $z = -0.535$, $p = 0.593$; MCT: $z = -0.677$, $p = 0.498$). All but one (metacognitively treated) patient were fully recovered at the 3-month follow-up.

Treatment Effects after 2 Years

At the 2-year follow-up, 4 out of 5 patients in the ERP condition and all 5 MCT patients could be assessed. Improvements in the CY-BOCS were maintained, i.e., no significant differences emerged between post-treatment

and the 2-year follow-up (ERP: $z = 0.000$, $p = 1.000$; MCT: $z = -0.816$, $p = 0.414$).

Diagnostic Status and Utilization of Therapy during the 2-Year Period

Based on the structured interview (Kinder-DIPS), all 5 patients in the ERP condition and 4 out of 5 patients in the MCT condition did not fulfil the DSM-IV/ICD-10 criteria of OCD anymore.

In the ERP group, 1 patient received 6 booster sessions of ERP because of recurring OCD symptoms. At the 2-year follow-up, he was fully recovered. Another one received 13 booster sessions because of recurring OCD symptoms accompanied by motor tics and ADHD symptoms. At follow-up, he showed subclinical compulsive symptoms.

In the MCT group, 1 patient obtained 2 MCT booster sessions because of recurring obsessions shortly after the 3-month follow-up. At the 2-year follow-up, she was fully recovered. One further patient received 15 booster sessions and additional pharmacotherapy (sertraline 50 mg/day) because of OCD symptoms and motor tics. At follow-up, he fulfilled the DSM-IV/ICD-10 criteria of mild OCD.

Discussion

To the authors' knowledge, this is the first study testing MCT for childhood OCD and the first one applying two different psychotherapeutic approaches. Both MCT and ERP produced significant and robust reductions in obsessive-compulsive symptom severity. These effects were observed during a short time span (13 sessions of ERP and 9 sessions of MCT) and were still observed 2 years after commencement of the therapy. All patients treated with ERP and 4 out of 5 patients treated with MCT were (nearly) fully recovered 3 months and 2 years after therapy. Two patients with comorbid Tourette's syndrome/ADHD and with tic disorder were in need of more intensive therapeutic support after the actual therapy. This is in accordance with previous findings of a severer long-term outcome of OCD in the presence of comorbid tic disorder [36, 37].

Regarding depressive symptoms, the scores declined after therapy. The calculated differences failed to reach statistical significance, which can be attributed to the small sample size.

Treatment duration, response rate, and treatment effects were comparable with previously reported studies reviewed elsewhere [3, 38] for both ERP and MCT. In 9

out of these 13 studies, some children and adolescents received concomitant serotonin reuptake inhibitors/selective serotonin reuptake inhibitors pharmacotherapy without controlling for the specific effects of combination therapy. In the present study, no patient received concomitant pharmacotherapy. Hence, improvements in symptom severity can be attributed to the psychotherapeutic interventions. In addition, only a few studies comprised a follow-up assessment and if they did, the duration of follow-up in previous studies ranged from 3 to 9 months. In the present study, follow-up assessments were conducted after 3 months and after 2 years, thus demonstrating stable treatment effects.

Since MCT included a metacognitively modified version of ERP one could argue that MCT actually works by ERP. However, only 1 MCT patient received this kind of ERP in only 1 session. Thus, it can be ruled out that MCT is a masked kind of ERP.

Limitations

The present study had several limitations. First, therapists' factors could not be varied (in 9 out of 10 cases the first author was the therapist). Hence, it remains unclear to what degree therapist-specific versus treatment-specific factors accounted for the therapy success. Further, treatment integrity (i.e., the therapist's adherence to the treatment protocol) was not assessed.

The small sample does not allow generalizations to other children and adolescents with OCD, especially those with a severer or chronic disorder, or to those of younger age. The youngest patient treated with MCT was 9 years old. It has yet to be clarified at which age MCT can be implemented into treatment. Similar to the patients in the previous studies, the patients in the present study suffered from moderate OCD. Further studies are required to demonstrate that patients with severer and chronic OCD can benefit from ERP and/or MCT.

Because of the small sample size and higher symptom severity (prior to therapy) in the MCT condition, no between-group differences were analyzed. Larger-scale comparisons between MCT and ERP are therefore warranted to investigate differences in the efficacy of the two therapy strategies.

Clinical Implications and Future Directions

Notwithstanding these limitations, the present study advocates MCT to be a promising alternative to ERP. Thus, it challenges previous findings and recommendations suggesting that a successful psychotherapy for children and adolescents with OCD has to be based on

ERP. Williams et al. [15] pointed out that cognitive interventions – especially the normalizing of intrusive thoughts – can serve to enable ERP as a treatment strategy. Insofar, metacognitive interventions can be seen as an addition or expansion of CBT (ERP).

Larger-scale randomized controlled trials examining the short- and long-term effects of MCT are warranted. Furthermore, relative efficacy, indications, and contraindications for MCT vs. ERP need to be investigated. Lee and Kwon [39] speculated that (adult) patients with reactive obsessions (i.e., obsessions evoked by identifiable stimuli) might benefit more from ERP, whereas patients with autogenous obsessions (i.e., obsessions which enter consciousness without identifiable stimuli) may be better

treated with a more cognitively oriented therapy. Our impression was that MCT seems to require a higher level of self-reflection, whereas ERP demands a higher level of emotion regulation (especially, coping with anxious arousal). In future studies, longer follow-up intervals should be conducted. Special attention has to be paid to children with comorbid tic disorder who may show a poorer outcome (i.e., a need for further interventions/more booster sessions) in the long run.

If MCT proves to be efficacious in OCD treatment, then habituation may not be the only working mechanism underlying a successful therapy [40]. The efficacy of MCT may thus lead to further questions as to ‘what really works in therapy’ [41, 42].

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