


BRIEF CLINICAL REPORT

Frequency and level of self-efficacy predict the effectiveness of therapist- and self-guided exposure in obsessive compulsive disorder

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Abstract

Background: While exposure and response prevention (ERP) is the most effective treatment for obsessive compulsive disorder (OCD), less is known about the specific mechanisms underlying symptom change after ERP.

Aims: We tested the hypothesis that the frequency of self- and therapist-guided ERP related to the extent of symptom reduction and that this link is mediated by increased self-efficacy.

Method: In a sample of 377 in-patients with a primary diagnosis of OCD receiving in-patient CBT, we assessed symptoms (YBOCS-SR) and self-efficacy (General Self-Efficacy Scale), before and after treatment, as well as the frequency of therapist- and self-guided ERP sessions.

Results: Patients with more therapist-guided ERP sessions during treatment showed more symptom reduction and the association of self-guided ERP on outcome was mediated by enhanced self-efficacy.

Conclusions: These findings highlight the importance of both therapist- and self-guided ERP sessions and suggest that therapists should conduct a sufficient number of ERP sessions to optimise treatment.

Keywords: cognitive behaviour therapy; exposure; mediation; obsessive compulsive disorder; self-efficacy

Introduction

The global positive effect of cognitive behavioural therapy (CBT) including exposure and response prevention (ERP) for obsessive compulsive disorder (OCD) is evident with inhibitory learning being considered an important therapeutic agent (Craske *et al.*, 2014). Inhibitory learning describes a context-dependent and temporary loss of effect of a conditioned stimulus due to new operant behaviours. The association between trigger and compulsive behaviour is, hence, inhibited through the establishment of a new association. This definition implies that for ERP to be effective, it needs to be performed as often as possible and in as many contexts as possible (e.g. in the patients' homes) to strengthen the new association (Craske *et al.*, 2014).

Beyond the dose of ERP and its implementation in varied contexts, patient characteristics, including mastery experience (Schwartz *et al.*, 2017) or self-efficacy, which describe people's beliefs about their capabilities to achieve designated levels of performance, may influence the outcome of OCD treatment. During ERP, patients' realisation that they are able to refrain from acting out compulsions might increase their self-efficacy. While one study described an increase in self-efficacy that was paralleled by a decrease in OCD symptoms during treatment

with ERP (O'Connor *et al.*, 1999), no study examined self-efficacy as a potential underlying mechanism of the effectiveness of ERP for OCD.

The present study aimed to investigate (1) the association between the number of self- and therapist-guided ERP sessions and OCD symptom change during in-patient treatment and (2) whether this dose–response relationship of ERP frequency with OCD symptoms is mediated by self-efficacy.

Method

Sample and procedures

We included in-patients with a primary diagnosis of OCD from a specialised OCD ward who were treated between 2015 and 2017. Exclusion criteria were suicidality, current or past psychotic or bipolar disorder, current or past severe neurological disorders, and drug abuse. Upon admission to the clinic, all patients signed informed consent for the scientific analysis and publication of their routine data. All patients completed psychometric assessments before and after treatment, including the following instruments.

Measures

OCD symptom severity was assessed with the Yale–Brown Obsessive Compulsive Scale–Self Report (Y-BOCS-SR; Goodman *et al.*, 1989). The Y-BOCS-SR includes ten items (e.g. ‘How much distress do your obsessive thoughts cause you?’), that are rated on a scale ranging from 0 (lowest severity) to 4 (highest severity). A total sum score can be calculated, ranging from 0 to 40 points. Change in OCD symptoms from pre- to post-treatment was operationalised as the difference of respective Y-BOCS total scores.

The General Self-Efficacy Scale (GSE; Schwarzer and Jerusalem, 1995) is a self-rating questionnaire assessing self-efficacy. Participants were asked to rate its ten questions (e.g. ‘I can always manage to solve difficult problems if I try hard enough’) on a 4-point scale ranging from 1 (not at all) to 4 (exactly true). The total sum-score consists of values from 10 to 40, with higher scores representing higher levels of self-efficacy. Change in self-efficacy from pre- to post-treatment was operationalised as the difference of respective GSE total scores.

In-patient therapy

Patients received a multi-modal, intensive in-patient treatment program including both individual and group psychotherapy. Individual therapy took place once or twice a week for 50 minutes. Group therapies included occupational therapy, music therapy, sports therapy and a manualised disorder-specific group. Individual therapy and the disorder-specific group were both based on the cognitive behavioural model. They included the following elements: psycho-education about OCD symptoms and the CBT rationale, individualised case formulation (including the identification of potential functions of the symptoms), *in vivo* ERP and the modification of interpretations of obsessive thoughts as well as of obsessive beliefs. However, the focus of the treatment lay on therapist- and self-guided ERP. ERP sessions were conducted according to guidelines (Foa *et al.*, 2012) with preparatory and debriefing sessions. Treatment was conducted by clinical psychologists and/or psychiatrists who were all trained in CBT and supervised by experienced therapists.

Statistical analysis

All analyses were conducted using the statistical software R. Assumptions of linear regression (e.g. multivariate normality) were sufficiently met. The research questions were tested using

Table 1. Results of the mediation analyses

	Estimate	SEM	t	p
Direct models OCD				
SE → OCD	-.246	.069	-3.555	<.001
S-ERP → OCD	.109	.064	1.703	.090
T-ERP → OCD	.198	.069	2.882	.004
Direct models SE				
S-ERP → SE	-.164	.080	-2.064	.041
T-ERP → SE	-.073	.098	-.745	.458
Mediation models SE → OCD				
SE → OCD	-.246	.073	-3.351	.001
S-ERP → OCD	.066	.070	.950	.344
Indirect effect S-ERP → SE → OCD: .040; $p = .039$; $R^2_{\text{adjusted}} = .096$				
SE → OCD	-.252	.077	-3.279	.001
T-ERP → OCD	.166	.087	1.913	.058
Indirect effect T-ERP → SE → OCD: .018; $p = .234$; $R^2_{\text{adjusted}} = .096$				

SE, change in self-efficacy according to the General Self-Efficacy Scale; OCD, change in obsessive compulsive symptoms according to the Yale-Brown Obsessive-Compulsive Scale-Self Report; S-ERP, self-guided exposure and response prevention; T-ERP, therapist-guided exposure and response prevention; Estimate, standardised regression coefficient; SEM, standard error of the regression coefficient, R^2_{adjusted} , total amount of variance explained, adjusted for the number of covariates. Dashed lines separate different models.

the classical three model procedure for both self- and therapist-guided ERP sessions. To test for the direct effects of self-guided and therapist-guided ERP sessions as well as change in self-efficacy on the change in OCD symptoms, independent linear regression models were estimated. The same procedure was applied to test for the direct effects of self- and therapist-guided ERP sessions on self-efficacy. In addition, linear regression models with self-efficacy and either self- or therapist-guided ERP sessions as covariables for the prediction of change in OCD symptoms were performed. Indirect effects were tested for significance using the standard error formulated by Sobel.

Results

Three-hundred seventy-seven (60.5% female) patients with OCD were included. Their mean age was 32.60 years ($SD = 14.44$, range 13–80). On average, patients completed 3.27 ($SD = 0.99$, range 1–6) therapist-guided and 4.70 ($SD = 1.25$, range 1–6) self-guided ERP sessions during an average treatment duration of 10.06 weeks ($SD = 3.72$, range 0.43–25.71). Y-BOCS total scores decreased from admission (mean = 24.04, $SD = 6.61$, range 7–40) to discharge (mean = 13.83, $SD = 7.00$, range 0–38), $t = 24.58$, $p < .001$, Cohen's $d = 1.50$. GSE total scores increased from admission (mean = 22.14, $SD = 5.69$) to discharge (mean = 25.81, $SD = 7.00$), $t = -8.18$, $p < .001$, Cohen's $d = -0.56$.

As depicted in Table 1, self-efficacy and the number of therapist-guided ERP sessions showed a significant effect on OCD symptoms in the direct models, in which they served as sole predictors. Even though the amount of self-guided ERP sessions did not directly predict OCD symptoms, a significant indirect effect, mediated by self-efficacy, was observed in the mediation model. The direct effect of the number of therapist-guided ERP sessions did not reach statistical significance any more when self-efficacy entered the regression model as a covariate, and a significant indirect effect was not observed either.

Discussion

The present study investigated (1) whether the total number of self- and therapist-guided ERP sessions during CBT in-patient treatment impacted OCD symptom reduction and (2) whether the link between the number of ERP sessions and OCD symptoms was mediated by an

increase in self-efficacy. A higher number of therapist-guided ERP sessions was associated with better therapeutic outcome but not with an increase in self-efficacy. Thus, the related mediation hypothesis (self-efficacy as mediator of therapist-guided ERP) was refuted. While the number of self-guided ERP sessions did not predict change in OCD symptoms, self-efficacy moderated this association.

The absence of a direct effect in the presence of an indirect effect of the number of self-guided ERP sessions on OCD symptoms through an increase in self-efficacy indicates that our formal mediation model was incomplete. There might be indirect paths between the number of self-guided ERP sessions and OCD symptoms in addition to the one through self-efficacy, possibly in the opposite direction. For example, it is plausible that the total number of self-guided ERP sessions not only affected self-efficacy but also avoidance, as patients had greater freedom regarding how and to what extent they confronted themselves with feared situations. This mechanism might serve as one explanation that the total effect of self-guided ERP session on OCD symptoms did not reach significance. A further explanation for the absence of a direct effect of self-efficacy might be due to the GSE measuring general self-efficacy and not a specific construct related to ERP.

Our findings are in line with the inhibitory learning hypothesis of ERP (Craske *et al.*, 2014) and provide tentative evidence of a dose–response relationship between therapist-guided ERP and OCD symptom reduction. Studies examining the effect of massed exposure in OCD (Hansen *et al.*, 2019) reported similar findings, further supporting the notion that more is better when it comes to exposure and inhibitory learning. Therapists are, hence, advised to ensure that patients with OCD receive a high number of ERP sessions, preferably in varying contexts including their usual environment. Current technical developments aim to facilitate these efforts through therapist-guided videoconference ERP.

Our study has several limitations. As our sample consisted of in-patients, the findings might not apply to other patient populations, who might have less severe OCD. Also, we did not conduct follow-ups after discharge, which precludes any statements about long-term effects of ERP. Furthermore, the GSE does not measure self-efficacy with regard to ERP. A scale explicitly developed for this purpose might have been better able to detect changes in self-efficacy during treatment for OCD. Considering an average stay of 10 weeks with preparatory and debriefing sessions, ERP was conducted about every 2 weeks. The total number of ERP sessions, however, was rather low. In addition, we had no data on the exact course of the ERP sessions, precluding any statements about the influence of this variable. Strengths of our study include the relatively large sample and the routine care conditions, which lend high ecological validity to our results.

Further studies need to replicate our results in samples with higher numbers of ERP sessions and should focus on identifying other factors that might serve as mediators of the link between self-guided ERP and OCD symptoms. Also, an investigation of the presented hypothesis in an out-patient context might be useful.

Conclusion

In an in-patient setting, a higher number of therapist-guided ERP sessions lead to better outcomes at the end of treatment, and self-guided ERP may partly exert its effect through an increase in self-efficacy.

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Conflicts of interest. The authors declare no conflicts of interest.

Ethical statements. All procedures performed in studies involving human participants were in accordance with 1964 Helsinki declaration and its later amendments or comparable ethical standards. The authors have abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the APA (<http://www.apa.org/ethics/code/>). Informed consent was obtained from the parents of all individual participants included in the study.

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