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Predictors of Patient Adherence to Cognitive-Behavioral Therapy for Obsessive-Compulsive Disorder

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Cognitive-behavioral therapy consisting of exposure and response prevention (EX/RP) is an effective treatment for obsessive-compulsive disorder (OCD). However, only about half of patients achieve minimal or no symptoms by the end of treatment [1–3]. Identifying factors that lead to poor outcome and developing interventions to address them is one way to maximize the effects of EX/RP. Patient adherence to EX/RP is a strong predictor of EX/RP outcome [4, 5]. Specifically, during EX/RP treatment, therapists teach patients to face feared situations and thoughts (exposures) and to refrain from compulsive behaviors (response prevention). However, no prior study has systematically examined what predicts patient adherence to EX/RP procedures.

We examined potential predictors of patient adherence to EX/RP and whether patient adherence mediated the relationship between these predictors and post-treatment OCD severity. The sample consisted of 28 adults (18–70 years old) with OCD who received EX/RP as part of a clinical trial described in detail elsewhere [3]. In brief, patients participated in 8 weeks of EX/RP that included 3 introductory sessions and 15 twice-weekly 90-minute exposure sessions following the guidelines of Kozak and Foa. Patient adherence was measured at each exposure session using the Patient EX/RP Adherence Scale (PEAS) [7]; it assessed the quantity and quality of between-session exposures and the degree of response prevention practiced for homework. OCD symptoms were rated by independent evaluators using the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) [8, 9]. We examined four factors hypothesized to affect cognitive-behavioral therapy adherence in other patient groups [3, 10–12]: treatment expectancy using the Expectancy Questionnaire [10], therapeutic alliance using the Working Alliance Inventory – Self Report (WAI-SR) [12], readiness for change using the University of Rhode Island Change Assessment (URICA) [13], and readiness for treat-

ment using the Readiness Ruler [3]. These measures were completed after the 3 introductory sessions and before exposure sessions began. We also examined baseline characteristics that predicted EX/RP outcome in prior OCD studies [14]. These included depressive severity as measured by the 17-item Hamilton Depression Rating Scale [15], insight on the Brown Assessment of Beliefs Scale [16], quality of life as measured by the Quality of Life and Enjoyment Questionnaire [17], Axis I comorbidity using the SCID-I [18], total number of serotonin reuptake inhibitor trials, female gender, employment status, work impairment as measured by an item on the Sheehan Disability Scale [19], and hoarding subtype.

Simple linear regression examined potential bivariate predictors of adherence. Significant predictors ($p < 0.05$) were then considered in subsequent mediation analyses (using Mplus 6.1) that involved simultaneous multiple regressions of adherence on all predictors and of treatment outcome (measured by post-treatment Y-BOCS adjusting for baseline Y-BOCS) on all predictors and adherence. Significant predictors ($p < 0.05$) of adherence and outcome in these multiple regressions were retained and their indirect effects (mediation effects) on treatment outcome through adherence were estimated and delta method standard errors were used for 95% confidence intervals and testing [20]. Data from all patients having a PEAS score were used ($n = 28$) and full information maximum likelihood was implemented in Mplus to account for missing post-treatment Y-BOCS scores (3 subjects dropped out from EX/RP treatment after session 9). Estimates were standardized to facilitate interpretation across predictors with different units.

The relationship between potential predictors and patient adherence to between-session EX/RP assignments based on simple regressions is presented in table 1. The 6 significant ($p < 0.05$) bivariate predictors of patient adherence were entered into mediation analyses and their estimated indirect effects are presented in table 1. Therapeutic alliance (WAI-SR, $\beta = 0.53$), treatment readiness (Readiness Ruler, $\beta = 0.38$), and hoarding status ($\beta = -0.26$) all had significant ($p < 0.05$) independent effects on patient adherence. Patient adherence also had a significant direct effect ($\beta = -0.57$, $p < 0.01$) on outcome and significantly mediated the impact of these other predictors on post-treatment OCD severity (table 1, indirect effects). The effects for treatment expectancy and readiness to change (URICA) were not significant in these mediation analyses. Work impairment (Sheehan Disability Scale) was not significantly associated with patient adherence, although it directly predicted post-treatment OCD severity (0.40, $p < 0.01$).

Our findings have several implications. First, therapeutic alliance (measured by the WAI-SR) predicted treatment outcome through its impact on patient adherence. The WAI-SR assesses patient attitudes about EX/RP strategies and goals presented by the therapist, and patients' trust in the therapist. This suggests that taking time to understand patients' symptoms and to care-

Table 1. Individual predictors of patient adherence (between-session PEAS) and their indirect effects on treatment outcome through patient adherence (n = 28)

Predictors	Mean (SD) or n (%)	Estimated coefficient (beta) ^a	95% CI	p value	Indirect effects		
					estimated coef- ficient (beta) ^b	95% CI	p value
Therapeutic alliance (WAI-SR)	62.14 (8.14)	0.72	0.44, 0.99	<0.001	-0.30	-0.48, -0.12	<0.01
Treatment expectancy (EQ)	-0.04 (2.67)	0.65	0.35, 0.95	<0.001	-0.08	-0.08, 0.05	0.23
Treatment readiness (RR)	8.09 (1.40)	0.53	0.19, 0.86	0.003	-0.21	-0.36, -0.07	<0.01
Hoarding subtype	4 (14%)	-0.44	-0.78, -0.08	0.019	0.15	0.02, 0.28	0.03
Work impairment (SDS)	5.89 (2.75)	-0.38	-0.74, -0.02	0.040	0.01	-0.08, 0.10	0.89
Readiness for change (URICA)	10.78 (1.62)	0.39	0.01, 0.77	0.043	-0.01	-0.10, 0.08	0.89
Depression severity (HAM-D)	8.36 (5.34)	-0.28	-0.66, 0.10	0.136	-	-	-
Baseline OCD severity (Y-BOCS)	27.75 (4.06)	-0.25	-0.67, 0.15	0.202	-	-	-
Number of current Axis-I disorders	1.73 (0.87)	-0.21	-0.60, 0.18	0.273	-	-	-
Insight (BABS)	5.82 (4.85)	-0.19	-0.57, 0.20	0.334	-	-	-
Total number of SRI trials	1.32 (1.74)	-0.28	-0.66, 0.10	0.140	-	-	-
Quality of life (Q-LES-Q)	49.86 (16.90)	0.27	-0.12, 0.66	0.172	-	-	-
Employed or student	17 (61%)	0.14	-0.26, 0.54	0.489	-	-	-
Female gender	13 (46%)	-0.67	-0.47, 0.33	0.733	-	-	-

^a Simple correlation of each predictor with patient adherence.

^b Standardized indirect effect estimates from mediation analyses controlling for baseline Y-BOCS. Estimates represent the independent effect of each predictor on outcome mediated by patient adherence.

BABS = Brown Assessment of Beliefs Scale (measured at baseline); CI = confidence interval; EQ = Expectancy Questionnaire (measured after visit 3); HAM-D = Hamilton Depression Rating Scale (measured at baseline); Q-LES-Q = Quality of Life Satisfac-

tion Scale (measured at baseline); RR = Readiness Ruler (measured after visit 3); SDS = Sheehan Disability Scale (measured at baseline); SRI = serotonin reuptake inhibitor; URICA = University of Rhode Island Change Assessment (measured after visit 3); WAI-SR = Working Alliance Inventory – Self Report (measured after visit 3); Y-BOCS = Yale-Brown Obsessive-Compulsive Scale (measured at baseline). Variables assessed after visit 3 were measured before EX/RP started.

fully explain treatment strategies and goals before conducting exposure can have a strong impact on adherence and outcome. Future studies should examine whether there are specific components of therapeutic alliance that predict patient adherence and how to bolster them to maximize EX/RP outcome.

Second, readiness for treatment (measured by the Readiness Ruler) also predicted treatment outcome through patient adherence. The Readiness Ruler measures readiness to engage in specific EX/RP procedures, unlike the URICA, which measures readiness to change in general. If our findings are replicated, the simplicity of the Readiness Ruler makes it an attractive tool for identifying patients at risk for poor EX/RP adherence, which would permit early intervention to enhance readiness for EX/RP before a lengthy course of treatment is initiated.

Third, hoarding status predicted poorer treatment outcome through patient adherence. This finding is consistent with prior observations that these patients often have low motivation for treatment and poor insight that makes exposure to discarding very difficult [21, 22]. To improve treatment outcome for people who hoard, interventions are needed that enhance patient adherence to EX/RP procedures. Such interventions may need to focus first on addressing motivation for EX/RP treatment and insight into the need to discard.

This study has several limitations. First, the sample was relatively small. Replication in larger samples is needed. Second, this

sample was generally adherent to EX/RP treatment. Different factors might influence patient adherence in treatment-refractory patients. Finally, patients were relatively free of depression and had good insight, limiting inferences that can be made about the impact of either on patient adherence.

If these findings are replicated, future research should develop interventions to enhance therapeutic alliance and treatment readiness, deliver these interventions to those who show poor alliance or treatment readiness, and test whether this leads to improved patient adherence and thereby outcome, as our findings suggest.

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