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Behavioral avoidance predicts treatment outcome with exposure and response prevention for obsessive–compulsive disorder

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Abstract

Background: Many individuals with obsessive–compulsive disorder (OCD) display behavioral avoidance related to their obsessional thoughts and compulsive behaviors. However, how these avoidance behaviors impact treatment outcomes with exposure and response prevention (EX/RP) remains unclear. We examined pretreatment avoidance behaviors as predictors of EX/RP outcomes.

Methods: Data came from a randomized controlled trial of augmentation strategies for inadequate response to serotonin reuptake inhibitors comparing EX/RP ($N = 40$), risperidone ($N = 40$), and placebo ($N = 20$). Baseline avoidance was rated with the avoidance item from the Yale–Brown Obsessive–Compulsive Scale (YBOCS). Primary analyses examined avoidance behaviors as predictors of EX/RP outcomes. To test specificity, we explored whether avoidance also related to outcomes among patients receiving risperidone and placebo.

Results: More than half (69%) of the full sample had moderate or severe avoidance behaviors at baseline. In EX/RP, controlling for baseline severity, pretreatment avoidance predicted posttreatment YBOCS symptoms ($\beta = 0.45$, $P < .01$). Avoidant individuals were less likely to achieve remission with EX/RP (odds ratio = 0.04, 95% confidence interval [CI] range 0.01–0.28, $P = .001$). Baseline avoidance was also associated with degree of patient adherence to between-session EX/RP assignments, which mediated the relationship between baseline avoidance and EX/RP outcomes ($P < .05$). Baseline avoidance did not predict outcomes or wellness among patients receiving risperidone or placebo.

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CONFLICT OF INTEREST

During the parent study, Dr. Simpson received research funds from Transcept Pharmaceuticals (2011–2013) and Neuropharm Ltd (2009), served on a scientific advisory board for Pfizer (for Lyrica, 2009–2010) and Jazz Pharmaceuticals (for Luvox CR [controlled release], 2007–2008), and received royalties from Cambridge University Press and UpToDate Inc. Dr. Foa was a consultant to Jazz Pharmaceuticals (for Acetelion), and she receives royalties from Bantam and Oxford University Press for book sales, including a manual of cognitive-behavioral therapy for OCD. Dr. Wheaton, Dr. Gershkovich, and Dr. Gallagher have nothing to disclose.

Conclusions: These results suggest that avoidance behaviors are an important clinical factor in EX/RP outcomes and indicate that assessing avoidance may provide an efficient method for predicting EX/RP outcomes. Avoidance may be particularly relevant in EX/RP as compared to medication treatment, though future replication of these initial results is required.

Keywords

avoidance; cognitive-behavioral therapy (CBT); exposure and response prevention; obsessive-compulsive disorder (OCD); predictors

1 | INTRODUCTION

Obsessive-compulsive disorder (OCD) affects about 2% of the population and can be disabling when severe (Ruscio, Stein, Chiu, & Kessler, 2010). Cognitive-behavioral therapy (CBT) consisting of exposure and response prevention (EX/RP) is a recommended treatment for adults with OCD (Koran & Simpson, 2013; Koran et al., 2007; NICE, 2013). Yet, not all patients are fully helped by EX/RP. For example, clinical trials show that although 75–80% of randomized patients respond, only up to 40% achieve minimal symptoms (Foa et al., 2005; Simpson et al., 2008, 2013). Many studies have examined predictors of EX/RP treatment response with the aim of maximizing outcomes. However, the literature on EX/RP predictors is replete with mixed results and small effect sizes (Keeley, Storch, Merlo, & Geffken, 2008; Olatunji, Davis, Powers, & Smits, 2013), with one notable exception: patient adherence to EX/RP treatment procedures robustly predicts EX/RP outcomes (Abramowitz, Franklin, Zoellner, & Dibernardo, 2002; Simpson et al., 2011; Tolin, Maltby, Diefenbach, Hannan, & Worhunsky, 2004; Wheaton et al., 2016). This paper investigated another potential EX/RP predictor that has been understudied in the extant literature: pretreatment avoidance behaviors.

Avoidance behaviors are often a prominent feature in OCD, as patients attempt to avoid situations and stimuli that provoke obsessions, distress, and time-consuming rituals (McGuire et al., 2012). For example, an individual with contamination fears might actively plan his day to avoid having to use public restrooms to prevent feeling contaminated and having to complete onerous washing rituals. This type of avoidance has been conceptualized as a form of compulsive ritual, in that avoidance behaviors also reduce distress and are performed in order to prevent feared consequences (Storch et al., 2010). Avoidance behaviors appear to be common in OCD with estimates suggesting that up to 59.7% of patients engaging in OCD-related avoidance (Starcevic et al., 2011). Avoidance may also complicate treatment with EX/RP, which requires patients to eliminate avoidance patterns and instead confront their fears and distress (i.e., conduct exposures). In particular, patients with more extensive avoidance patterns might struggle to comply with between-session EX/RP homework, which requires the patient to confront feared situations and restrict rituals without the therapist present.

Although there have been many studies investigating predictors of EX/RP outcomes (for review see Knopp, Knowles, Bee, Lovell, & Bower, 2013), how pretreatment avoidance might impact EX/RP outcomes has received very little attention. In an early trial, Cottraux,

Messy, Marks, Mollard, and Bouvard (1993) administered a behavioral avoidance test (BAT) at the baseline assessment of a trial that compared behavior therapy, fluvoxamine, and pill placebo (total $N = 60$). Across the complete sample, performance on the BAT significantly predicted treatment response, with highly avoidant patients less likely to respond. Subsequent studies have suggested that avoidance in BATs improves following EX/RP (Cottraux et al., 2001; Steketee, Chambless, Tran, Worden, & Gillis, 1996). Further, in a reanalysis of Cottraux et al. (2001), Olatunji et al. (2013) reported that decreased BAT avoidance was mediated by reductions in OCD symptoms through treatment. However, these subsequent reports did not specifically investigate whether pretreatment avoidance predicts therapy outcome.

One potential reason that avoidance has been understudied in OCD treatment trials is that it is difficult to quantify and reliably measure, and there is no consensus method for assessing OCD avoidance. BAT tests have been criticized for being difficult to translate into clinical practice and have not been widely used in clinical trials, which often employ clinical rating scales because of their brevity and reliability (McGuire et al., 2012). Moreover, the “gold standard” OCD symptom measure, the Yale–Brown Obsessive–Compulsive Scale (YBOCS; Goodman et al., 1989a, 1989b), does not include direct consideration of avoidance in the calculation of its total score of OCD severity, causing some to propose revising the scale (Storch et al., 2010).

However, the original YBOCS does include an assessment of avoidance behavior among its auxiliary items (which are often overlooked in research; Reid, Storch, & Murphy, 2011). For this avoidance assessment, raters ask patients to rate the extent to which they have been avoiding places, situations, or people because of obsessional thoughts or the need to perform compulsions. Although frequently overlooked in research, this YBOCS avoidance item has demonstrated good test–retest reliability and converges with avoidance behavior during BAT performance (Woody, Steketee, & Chambless, 1995). To our knowledge, only one study (De Araujo, Ito, & Marks, 1996) investigated this item as a potential EX/RP predictor. However, it was included among a set of 20 predictors. These were reduced via principal components analysis, with the avoidance item grouped with other YBOCS items, and this combined factor did not predict therapy outcomes.

To address this gap in the literature, the present study investigated the ability of pretreatment avoidance (as assessed by the YBOCS auxiliary item) to predict EX/RP outcomes. We capitalized on existing data from a randomized controlled trial (RCT) of augmentation strategies for inadequate response to serotonin reuptake inhibitors (SRIs) that compared EX/RP, risperidone, and pill placebo. Patients were evaluated with the YBOCS and its auxiliary avoidance item by independent evaluators. Based on the above review, we hypothesized that pretreatment avoidance would predict EX/RP outcomes (posttreatment symptoms). We also hypothesized that pretreatment avoidance would predict wellness, a clinically important end state in which patients achieve minimal OCD symptoms and improved quality of life and functioning. As in previous studies, wellness was defined by attainment of posttreatment YBOCS ≤ 12 (Farris, McLean, Van Meter, Simpson, & Foa, 2013). To test the specificity of avoidance effects, we also explored whether the avoidance item related to outcomes among patients randomized to risperidone and pill placebo.

Finally, we explored how avoidance might impact EX/RP outcomes. As mentioned above, substantial previous research suggests that the degree to which patients adhere to treatment procedures (and specifically to between-session assignments to conduct exposures and refrain from rituals, hereafter referred to as *patient adherence*), predicts EX/RP outcomes (Abramowitz et al., 2002; Simpson et al., 2011; Tolin et al., 2004). Thus, we hypothesized that individuals with behavioral avoidance tendencies also avoid therapy homework and thereby benefit less. To test this hypothesis, we investigated whether patient adherence mediates the relationship between pretreatment avoidance and EX/RP outcomes.

2 | METHOD

2.1 | Overview

The study was conducted at two academic outpatient clinics specializing in OCD treatment: The Center for OCD and Related Disorders at the New York State Psychiatric Institute/Columbia Psychiatry in New York City and the Center for the Treatment and Study of Anxiety at the University of Pennsylvania in Philadelphia. Institutional Review Boards at both sites approved the study protocol, and patients provided written informed consent. For full description of study procedures, see Simpson et al. (2013).

2.2 | Participants

Participants were adults with OCD who participated in an RCT of augmentation strategies for individuals who remained at least moderately symptomatic (YBOCS = 16) while taking a stable dose (12 weeks) of an SRI. To be eligible participants had a primary diagnosis of OCD as determined by the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 2001) and remained symptomatic despite receiving an SRI at a maximally tolerated dose for at least 12 weeks. Exclusion criteria included: (1) diagnosis of bipolar or psychotic disorder; (2) substance abuse or dependence in the past 3 months; (3) clinically significant suicidal ideation; (4) severe depression (≥ 25 on the 17-item Hamilton Depression Rating Scale [HDRS; Hamilton, 1960]); (5) primary hoarding symptoms; or (6) previous trial of SRI augmentation with either risperidone or EX/RP (≥ 8 sessions over 2 months).

2.3 | Study procedures

Full study details are provided elsewhere (Simpson et al., 2013). In brief, eligible participants were randomized to one of three treatments: (1) 17 sessions of EX/RP ($N = 40$), pharmacotherapy with risperidone ($N = 40$), and pill placebo ($N = 20$). EX/RP was delivered according to a manualized protocol (Kozak & Foa, 1997) and included two introductory treatment planning sessions followed by 15 exposures; all sessions were 90 min long. Treatment also included between-session homework assignments (self-directed exposures and response prevention) and phone call check-ins. Therapists were doctoral-level clinicians (PhD or PsyD) who received weekly group supervision in order to standardize treatment delivery across sites.

Risperidone and pill placebo were dispensed by study psychiatrists in identical capsules with the same dosing schedule (first week: 0.25 mg/d for 3 days and then 0.5 mg/d; subsequent

weeks: increases of 0.5 mg per week to a maximum of 4.0 mg/d). Psychiatrist visits occurred weekly for the first 4 weeks and then biweekly. Initial psychiatrist visits lasted 60 min and subsequent visits were 30 min.

Assessments were made by independent evaluators (blinded to treatment condition) who assessed patients' OCD symptoms at baseline (week 0), mid-treatment (week 4), and posttreatment (week 8).

2.4 | Measures

2.4.1 | Yale–Brown obsessive–compulsive scale (YBOCS; Goodman et al., 1989a, 1989b)—The YBOCS is a semi-structured clinician-administered assessment of OCD severity. The YBOCS includes 10 items quantifying the severity of obsessions and compulsions in the past week, each of which is rated on a 5-point Likert scale (0 = no symptoms, 4 = extreme). Total scores range from 0 to 40. The YBOCS has good internal consistency (acceptable in the present study, $\alpha = 0.73$), excellent inter-rater reliability, and good test–retest reliability (Goodman et al., 1989a, 1989b). The YBOCS also includes auxiliary items that are not included in the total score, including ratings of avoidance, insight, and respondent reliability. For the avoidance item, the clinician rates the extent of the patient's OCD-related avoidance behaviors on a 4-point ordinal scale (constituting no avoidance, mild avoidance, moderate avoidance, and extreme avoidance). In the present study, these ordinal categories were grouped to compare those with mild or no avoidance to those with moderate or extreme avoidance prior to beginning EX/RP.¹

2.4.2 | Patient EX/RP adherence scale (PEAS; Simpson et al., 2010)—The PEAS is a clinician-administered measure used to quantify the degree to which patients adhere to EX/RP procedures between therapy sessions. The PEAS is completed by the therapist at every session that was preceded by assigned exposure practices (i.e., sessions 4–17 in the present study). It consists of three items: (a) the quantity of exposures (percentage of assigned homework exposures that were attempted), (b) quality of attempted exposures, and (c) degree of success with response prevention. The therapist rates each item on a 7-point Likert-type scale. Mean PEAS total scores were calculated by averaging the scores for each session and then across sessions. In the present sample, mean PEAS ratings had good internal consistency ($\alpha = 0.89$).

2.5 | Statistical methods

To test whether pretreatment avoidance predicts EX/RP outcomes, we used the YBOCS avoidance item to divide the sample into participants with and without a significant avoidance problem at baseline. This avoidance rating variable was then used as the independent variable in two regression models (each of which was computed in both the completer samples and followed up with sensitivity analysis in the intent-to-treat [ITT] sample using Last Observation Carried Forward [LOCF] to account for missing data due to

¹YBOCS avoidance was examined as a dichotomous variable to ease interpretation of the comparison between patients with and without significant avoidance in the mediational analysis (which would have required comparison of the significance of the difference at the threshold for each ordinal category). The same pattern of results was obtained with the untransformed YBOCS avoidance variable, which significantly predicted outcomes and wellness in EX/RP but not risperidone or placebo.

drop out). The first model used linear regression to predict posttreatment YBOCS *scores*. The second used logistic regression to predict posttreatment *wellness* (a state characterized by remission of OCD symptoms as indicated by YBOCS = 12). Both models controlled for baseline YBOCS severity because the YBOCS avoidance item is positively associated with overall severity (Reid et al., 2011). To test the specificity of the avoidance–outcome relationship to EX/RP we reran these analyses in the risperidone and placebo groups separately.

We also explored the associations between pretreatment avoidance and patient adherence to between sessions EX/RP assignments (PEAS scores), including a mediational model in which avoidance scores relate to posttreatment symptoms through patient adherence. SPSS was used for all analyses. We employed the SPSS macro provided by Preacher and Hayes (2008) to test mediation as in other studies (Rucker, Preacher, Tormala, & Petty, 2011). Overall significance was set at $\alpha < 0.05$.

3 | RESULTS

3.1 | Sample description and EX/RP outcomes

The full sample ($N = 100$) was 48% female and 90% of participants were non-Hispanic White. Participant age ranged from 18 to 67 ($M = 33.9$; $SD = 11.4$). In the full sample, 69% of participants had moderate or severe avoidance behaviors at baseline (i.e., significant avoidance). The remaining 31% of the sample had mild or no avoidance at baseline. Proportion with significant avoidance did not differ by treatment group (EX/RP, RIS, Placebo), $\chi^2(2) = 3.18$, $P = .15$. Pretreatment avoidance was positively and significantly associated with baseline YBOCS severity ($r_s = 0.22$, $P = .03$).

Of the 40 patients assigned to EX/RP, 37 completed treatment. In EX/RP mean scores on the YBOCS decreased significantly from baseline ($M = 27.03$, $SD = 3.98$) to posttreatment ($M = 13.0$, $SD = 6.09$, $t(36) = 12.0$, $P < .001$). Avoidance was moderately and significantly negatively correlated with PEAS scores ($r_s = -0.49$, $P = .002$), indicating that those with significance avoidance adhered less to EX/RP procedures in treatment.

3.2 | Baseline avoidance predicts EX/RP outcomes

The first regression predicted posttreatment YBOCS symptoms among EX/RP patients. Controlling for baseline YBOCS in Step 1 of the regression did not significantly account for variance in posttreatment YBOCS scores ($R^2 = 0.002$, $P = .772$). In Step 2, pretreatment avoidance explained 18% of the variance in posttreatment YBOCS scores, beyond baseline YBOCS ($R^2 = 0.18$, $P = .01$). As shown in Table 1, avoidant patients had higher posttreatment YBOCS in EX/RP ($\beta = 0.43$, $P = .01$). Sensitivity analyses in the LOCF sample show the same pattern of results (Table 1). To test the specificity of these effects to EX/RP, the same analyses were conducted in the groups assigned to risperidone and pill placebo. As shown in Table 1, baseline avoidance did not significantly predict outcomes in either of these two conditions.

The second set of analyses used multiple predictor logistic regression to predict posttreatment wellness (i.e., YBOCS = 12) with EX/RP, entering baseline YBOCS severity

and pretreatment avoidance as predictors. A test of the full model against a constant only model was significant, indicating that the set of predictors reliably distinguished individuals who achieved wellness from those who did not (χ^2 (df = 2) = 13.83, $P = .001$). Overall prediction accuracy was 78.4% (70.6% for wellness, 85% for failure to achieve wellness). As Table 2 illustrates, the Wald criterion demonstrated that pretreatment avoidance significantly contributed to the prediction whereas baseline YBOCS severity did not. The odds ratio for avoidance indicates that individuals with more severe avoidance at baseline were significantly less likely to achieve wellness with EX/RP. Sensitivity analyses in the EX/RP LOCF sample show the same pattern of results (Table 2). Specificity analyses were conducted in the risperidone group.² As shown in the table, baseline avoidance did not significantly predict wellness with risperidone in either the ITT or completer samples.

3.3 | Mediation analysis with patient adherence

Figure 1 presents a model in which patient adherence mediates the association between pretreatment avoidance and posttreatment OCD symptoms with EX/RP. As shown, the significant direct association between avoidance and posttreatment YBOCS (c path) was reduced in magnitude and nonsignificant once the mediator was accounted for (c' path). In line with current recommendations (Preacher & Hayes, 2004, 2008) we tested for mediation by bootstrapping the indirect effect (taking the mean of 5,000 bootstrapped resamples from the data). The point estimate for the indirect effect was 2.52 ($SE = 1.11$). The bias-corrected bootstrapped 95% confidence interval did not contain zero (95% CI = 0.88–5.72), indicating the mediation effect was significant, $P < .05$. To estimate the effect size of the mediation effect we calculated the proportion of the total effect that was mediated ($1 - (c/c')$). This showed that 48.89% of the relationship between pretreatment avoidance and EX/RP treatment outcome was mediated by patient adherence.

4 | DISCUSSION

This study examined the relationship between pretreatment avoidance and treatment outcome via secondary data analysis of an RCT comparing augmentation strategies for SRIs (EX/RP, risperidone, and placebo). Consistent with our hypotheses, among those receiving EX/RP, behavioral avoidance predicted severity of OCD symptoms at posttreatment and attainment of posttreatment wellness, even after controlling for baseline OCD severity. We also found that reduced patient adherence to EX/RP tasks mediated the relationship between avoidance and poor EX/RP outcomes. These results appeared to be specific to EX/RP, as avoidance did not predict outcomes in the risperidone or placebo groups. Although these initial results require confirmation in independent samples, it might be that behavioral avoidance has a greater effect on behavioral therapy (i.e., EX/RP) as compared to medications.

These results have several clinical implications. First, they suggest that assessing pretreatment avoidance might help treating clinicians to identify patients at risk for suboptimal EX/RP outcomes. These patients may benefit from additional clinical support

²The placebo group was not included in the logistic regression analyses because only one of 20 placebo patients achieved wellness.

and encouragement to complete outside of session EX/RP tasks. Second, our results also may have implications for refining how OCD is measured with the YBOCS. As was previously reported on in this sample (Wheaton, Rosenfield, Foa, & Simpson, 2015), baseline severity as measured by the YBOCS total score did not predict EX/RP outcomes, which is consistent with some previous studies (Foa et al., 1983; Maher et al., 2010; Rufer, Fricke, Moritz, Kloss, & Hand, 2006). The present results suggest that accounting for the avoidance facet of baseline severity might improve the predictive power of the YBOCS. For example, some authors have proposed including the avoidance item in the YBOCS total scores (Woody et al., 1995), and others have offered a revision to the YBOCS that more fully incorporated rating avoidance (Storch et al., 2010). Our results suggest that these alternative measures may help clarify the relationship between baseline OCD severity and EX/RP outcomes, which has mixed results (Olatunji et al., 2013).

Although the present report focused on EX/RP for OCD, these results may also have implications for other forms of pathological anxiety, including phobias, social anxiety disorder, panic disorder, and PTSD (APA, 2013), which also respond to exposure-based CBT treatments that aim to decrease avoidance behaviors. Thus, avoidance can be conceptualized as an important transdiagnostic factor, in line with the NIMH's research domain criteria (RDoC) initiative to move beyond diagnostic boundaries (Cuthbert & Insel, 2013). Moreover, severity of pretreatment behavioral avoidance might predict CBT outcomes for a range of conditions. At the same time, cognitive neuroscience work has begun to explore different facets of avoidance behaviors. For example, LeDoux et al. (2017) differentiate between adaptive active avoidance (typically a form of active coping) and maladaptive passive avoidance (often a habitual response that is automatically emitted). Some research suggests that active avoidance behaviors that yield control over threat may attenuate Pavlovian conditioned responses (Boeke, Moscarello, LeDoux, Phelps, & Hartley, 2017). These results suggest heterogeneity among avoidance behaviors, highlighting the need for further study of avoidance in relation to exposure-based psychotherapy.

Our results should be interpreted within the context of study limitations. First, our study was a secondary data analysis of a prior study and as such our analyses were not preplanned and limiting us to the measures included in that trial. Thus our assessment of behavioral avoidance was restricted to the avoidance item on the YBOCS, which does not allow us to parse different aspects of avoidance (Storch et al., 2010) and which also was used as the outcome measure (though avoidance is not included in the YBOCS severity score). Future studies should use prospective designs and more thorough and rigorous assessments of avoidance. These could include both BATs as well as cognitive neuroscience paradigms designed to assess the neural correlates of avoidance (Boeke et al., 2017). In addition, the sample sizes in each treatment condition were relatively small (which may have limited power). The sample also consisted exclusively of individuals also taking SRI medications throughout the trial who were mostly non-Hispanic White. Thus, future research with larger sample sizes (optimally including nonmedicated and more diverse samples) is warranted to confirm these initial results.

5 | CONCLUSIONS

This secondary data analysis provides preliminary evidence that pretreatment avoidance behaviors predict subsequent EX/RP outcomes in adults with OCD. Avoidant patients experienced poorer EX/RP outcomes, accounting for baseline symptom severity. These results appeared to be specific to EX/RP as compared to risperidone and placebo. The present results add to a growing body of recent work focused on the importance of avoidance behaviors in anxiety-related conditions (Beckers & Craske 2017; LeDoux, Moscarello, Sears, & Campese, 2017). Future research is needed to replicate these findings and might also seek to explore heterogeneity in different forms of avoidance and how specific facets of behavioral avoidance might represent transdiagnostic factors relevant to the effectiveness of exposure-based psychotherapies. This research could potentially improve future treatments, as additional interventions might help avoidant patients improve their adherence to treatment procedures and thereby maximize therapeutic outcomes.

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1. Total effect of baseline avoidance on post-treatment OCD symptoms

2. Indirect effect of baseline avoidance on outcome through adherence

FIGURE 1.

Patient adherence as mediator of the relationship between baseline avoidance and treatment outcome

* $p < .01$

Note. YBOCS = Yale-Brown Obsessive-Compulsive Scale

TABLE 1

Association between baseline avoidance and posttreatment YBOCS

EX/RP Predictors	β	B	95% CI	P	s^2
Completer sample (N = 37)					
Baseline YBOCS	-0.05	-0.08	[-0.57, 0.42]	.754	0.002
YBOCS avoidance	0.43	5.30	[1.33, 9.27]	.010	0.178
ITT sample (N = 40)					
Baseline YBOCS	0.03	0.05	[-0.51, 0.61]	.853	<0.001
YBOCS avoidance	0.45	6.64	[2.16, 11.13]	.005	0.192
Risperidone Predictors					
	β	B	95% CI	P	s^2
Completer sample (N = 32)					
Baseline YBOCS	0.59	1.18	[0.61, 1.75]	<.001	0.324
YBOCS avoidance	0.24	5.73	[-1.09, 12.6]	.097	0.054
ITT sample (N = 40)					
Baseline YBOCS	0.62	1.19	[0.70, 1.67]	<.001	0.373
YBOCS avoidance	0.17	3.49	[-1.68, 8.66]	.180	0.028
Placebo Predictors					
	β	B	95% CI	P	s^2
Completer sample (N = 17)					
Baseline YBOCS	0.43	.67	[-0.25, 1.59]	.140	0.147
YBOCS avoidance	-0.31	-4.26	[-12.3, 3.79]	.275	0.077
ITT sample (N = 20)					
Baseline YBOCS	0.47	.70	[-0.05, 1.45]	.067	0.185
YBOCS avoidance	-0.21	-2.84	[-9.66, 3.97]	.391	0.037

Note: YBOCS = Yale-Brown Obsessive-Compulsive Scale; CI = confidence interval; s^2 = squared semipartial correlation, a measure of the unique variance explained by each predictor that is equivalent to the R^2 change in a hierarchical model when each predictor is entered previously.

TABLE 2

Multivariate logistic regression predicting wellness (YBOCS 12)

EX/RP Predictors	B (SE)	OR	95% CI	Wald	P
Completer sample (N = 37)					
Baseline YBOCS	0.13 (0.12)	1.14	[0.91, 1.43]	1.26	.261
YBOCS avoidance	-2.99 (0.95)	0.05	[0.01, 0.33]	9.83	.002
ITT sample (N = 40)					
Baseline YBOCS	0.12 (0.11)	1.23	[0.90, 1.41]	1.11	.292
YBOCS avoidance	-3.13 (0.95)	0.044	[0.01, 0.28]	10.98	.001
Risperidone Predictors					
	B (SE)	OR	95% CI	Wald	P
Completer sample (N = 32)					
Baseline YBOCS	-0.54 (0.23)	0.58	[0.38, 0.91]	5.79	.016
YBOCS avoidance	-1.23 (1.51)	0.29	[0.02, 5.67]	0.66	.416
ITT sample (N = 40)					
Baseline YBOCS	-0.59 (0.24)	0.55	[0.35, 0.88]	6.18	.013
YBOCS avoidance	-1.01 (1.41)	0.36	[0.02, 5.7]	0.52	.471

Note: YBOCS = Yale-Brown Obsessive-Compulsive Scale; OR = odds ratio; CI = confidence interval.