A Clinical Validation of the Obsessive Compulsive Consequences Scale-Revised

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Given the high rates of treatment drop-out and non-compliance within empirically-based treatments for OCD, it is important to increase our understanding of factors that impact the treatment process. Two studies were conducted to evaluate the clinical utility of the Obsessive Compulsive Consequences Scale-Revised (OCCS-R) and increase understanding of the relationships between the prognostic factors of motivation, insight, treatment compliance and treatment outcome. Study 1 used maximum likelihood Confirmatory Factor Analysis to show the OCCS-R's four factor solution was an adequate fit in a sub-clinical college population. Study 2 evaluated the clinical utility of the OCCS-R for predicting treatment outcome and its relationship to identified predictor variables. The OCCS-R predicted treatment drop-out but did not predict symptom improvement. Some support was found for predicted relationships between the OCCS-R and its factors, a general measure of motivation and treatment compliance. No variables predicted symptom improvement. Insight and initial symptom severity predicted treatment motivation which in turn predicted treatment compliance.

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Introduction

Earning titles such as the "silent epidemic," obsessive compulsive disorder (OCD) is the fourth most common psychiatric illness (Karno, Golding, Sorenson, & Burnam, 1988; Rasmussen & Eisen, 1992). Epidemiological studies indicate OCD's lifetime prevalence rate is as high as 3.1% (Kessler et al., 2005). In addition, approximately 25% of individuals are classified as having sub-clinical OCD symptoms (Zucker, Craske, Blackmore, & Nitz, 2006). These rates are troubling when one considers the high levels of impairment (Lensi, Cassano, Correddu, Ravagli, & Kunovac, 1996) and isolation these symptoms create. While the efficacy of OCD treatment has been repeatedly demonstrated, optimal outcomes are not evidenced for all sufferers; with many demonstrating low level symptomatology following treatment (Simpson & Liebowttz, 2006).

Exposure and response prevention (ERP) is currently the front line treatment for OCD. The efficacy of ERP has been repeatedly demonstrated (e.g. Foa et al., 2005; Simpson, Zuckoff, Page, Franklin, & Foa, 2008), with a meta-analytic mean effect size of 1.41 (Abramowitz, 1996). Similar outcomes have been found for cognitive behavioral therapy (CBT) approaches, which are most widely used in clinical practice. A meta-analysis by Eddy, Dutra, Bradley, and Westen (2004) found CBT to have a pre- to post- treatment effect size of 1.39. Further, the majority of evidence indicates there is no significant difference in the effectiveness of ERP vs. CBT with regards to obsessive compulsive (OC) symptom reduction (see Abramowitz, Franklin, Zoellner, & Dibernardo, 2002).

However, these outcomes are only found in those who complete the treatment protocol and ERP has been plagued by the presence of treatment non-adherence and drop-out. In addition, some individuals have been considered to be treatment-refractory as they do not demonstrate a

significant response to many empirically-supported treatments. When treatment refractory and drop-out rates are combined, treatment non-response rates were found to be as high as 50% (Vogel, Hansen, Stiles, & Götestam, 2006). The addition of cognitive techniques aimed at identifying and modifying dysfunctional beliefs resulted in a slight decrease in drop-out rates (Vogel, Stiles, & Götestam, 2004). However, many still do not engage fully in the treatment process, leading to attenuated treatment outcomes.

The high number of individuals who do not respond as expected to empirically-based treatments demonstrates the need to further our understanding of why people may drop-out or not comply with the treatment protocol. To date, few studies have focused on specifying the relationship between prognostic factors and compliance/persistence in treatment specific behaviors. Furthermore, studies of the relationship between compliance and treatment outcome have produced inconsistent results, which Keeley, Storch, Merlo, and Geffken (2008) suggested may be due to the variations in how compliance is conceptualized. In a notable study by Abramowitz et al. (2002), the prognostic role of treatment compliance was supported by assessing treatment compliance across multiple treatment domains. These findings align with the majority of other studies (see Keeley, Storch, Merlo, & Geffken, 2008), indicating compliance is a viable prognostic factor when measured adequately. However, further research is necessary to understand which factors may promote or attenuate treatment compliance and solidify the relationship between compliance and treatment outcome.

As researchers attempt to understand why many individuals do not respond to OCD treatment, studies have evaluated a variety of prognostic factors thought to be associated with treatment outcome (see Keeley et al., 2008). While many factors, such as insight, motivation, and symptom severity have found support for their prognostic role, the literature has encountered difficulties, including variations in the assessment methods, different operationalization of

treatment outcome, and a limited focus on predictive models. Further research with validated measures is necessary to solidify the prognostic roles of these factors and understand what other factors may influence treatment outcome.

Insight

One of the most commonly evaluated prognostic factors in both the clinical and research domains is insight. Insight is defined by the DSM-5 as the ability to see one's disorder as unreasonable or excessive (American Psychological Association, 2013). A lack of insight produces an inability to view such beliefs as irrational (Foa et al., 1995; Neziroglu, Stevens, McKay, & Yaryura-Tobias, 2001) and was recently included in the DSM-5 as a clinical specifier in the OCD diagnostic criteria. Insight within OCD is conceptualized to exist along a continuum, ranging from good insight to delusional conviction, in which individuals possess no insight into the excessiveness of their concerns or behaviors (Insel & Akiskal, 1986).

While the importance of this construct has been reinforced with its addition to the DSM-5 diagnostic criteria, current review articles show inconsistencies in the empirical evidence surrounding insight's relationship to treatment outcome (Keeley, et al., 2008; Steketee & Shapiro, 1995). It has been suggested that this lack of consistency is caused by variability in the assessment and operationalization of the insight construct (Keeley, et al., 2008;Ravi Kishore, Samar, Janardhan Reddy, Chandrasekhar, & Thennarasu, 2004). Recent studies have begun using more valid measures of insight, such as the Brown Assessment of Beliefs Scale (BABS) (Eisen, Phillips, Baer, Beer, Atala & Rasmussen, 1998) and Overvalued Ideas Scale (OIS) (Neziroglu, Stevens, McKay, & Yaryura-Tobias, 2001).

The use of validated measures to assess insight has produced more consistent results, indicating a lack of insight is related to worse treatment outcomes. For example, Neziroglu et al.

(2001) used the OIS and found that a greater presence of overvalued ideas (which is used synonymously with the concept of insight in the literature) was related to worse ERP treatment outcomes. Similar results were found in psychopharmacology studies utilizing the BABS (Ravi Kishore et al., 2004), suggesting the presence of poor insight attenuates both psychological and psychopharmacological treatments. While less comprehensive measures of insight have been criticized, two recent studies have found a predictive relationship between treatment outcomes and insight, using question 11 on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) (Himle, Van Etten, Janeck, & Fischer, 2006; Raffin, Fachel, Ferrão, de Souza, & Cordioli, 2009). Given these findings, it is reasonable to conclude that a lack of insight attenuates treatment outcome in OCD.

Motivation

Motivation has also been identified as a factor that can have an impact on treatment outcome. Clinical practice reinforces this assertion; many severe OCD patients do not enter treatment under their own accord, but instead due to the persuasive influence of those close to them. Overall, treatment motivation has found support for its prognostic role (Keeley, et al., 2008), however, how to best assess such a broad construct is debated, resulting in some inconsistency in the literature. Recent methods for assessing motivation in OCD have included the University of Rhode Island Change Assessment (URICA) and Nijmegan Motivation List. Vogel, Hansen, Stiles, and Gotestam (2006) did not find motivation to be a significant predictor of treatment outcome when using the URICA, while Simpson, Zuckoff, Page, Franklin and Foa (2008) found URICA scores related to treatment response to a combination of Motivational Interviewing and ERP for OCD. When motivation was operationalized using the Nijmegan Motivation List, low motivation negatively predicted treatment outcome. Based on these variable

findings it is evident that there is no clear consensus on the best method to conceptualize treatment motivation in OCD and additional conceptualizations should be considered.

In order to provide an additional method to conceptualize motivation in OCD treatment, Van Kirk and Clum (2011b) proposed Self-Determination Theory (SDT) as an avenue for conceptualizing the treatment process in OCD through a motivational lens. SDT conceptualizes motivation as existing on a continuum spanning various degrees of self-determined regulation of target behaviors. At the least self-determined end, motivation is highly controlled by external forces (i.e. extrinsic) and, if the primary source of motivation, might result in individuals feeling unmotivated to engage in the desired behavior. As a person's motives become more internally driven, the likelihood of the desired behavior increases, as it becomes more self-determined (Ryan & Deci, 2000). Empirical support has been found for the relationship between autonomous motivation and treatment compliance (Markland, Ryan, Tobin, & Rollnick, 2005); along with better treatment outcomes across multiple problematic behaviors (e.g. Darcy et al., 2010; Silva et al., 2010; Pelletier, Tuscon, & Haddad, 1997).

While SDT has not been widely tested in the OCD literature, this dynamic model has been supported in multiple domains of psychology. More specifically, it has been used to conceptualize motivation in relation to drop-out in sports-related physical activity, demonstrating more controlled forms of motivation for sports related activities were related to greater drop-out (Calvo, Cervello, Iglesias, & Murcia, 2010). Further, SDT augmented interventions, using the premise of autonomy-support, have been developed to promote behavior change in the domain of health psychology. One such example comes from Silva et al. (2010), who created interventions for physical activity, weight loss, and body composition using the concept of autonomy-support to enhance individual motivation to engage in health related behaviors. The use of SDT-based treatments enhanced autonomous regulation of health related behaviors and enhanced

intervention outcomes, including increased weight loss (Silva et al., 2010). Furthermore, SDT principles have been transitioned into the domains of substance use, eating disorders, and major depression, evaluating the impact of motivation on processes such as treatment engagement (Darcy, Fitzpatrick, Forsberg, Ultzinger, & Lock, 2010; Dwyer, Hornsey, Smith, OEI, & Dingle, 2011; Ryan & Deci, 2008; Urbanoski, 2010). Finally, Ryan, Lynch, Vansteenkiste, and Deci (2011) and Markland, Ryan, Tobin, and Rollnick (2005) discussed how various approaches to psychotherapy are consistent with the tenants of SDT and can be used to increase treatment motivation within CBT and Motivational Interviewing, respectively. Given SDT's broad empirical support for successfully conceptualizing treatment motivation and its relationship to treatment process, the application of SDT to OCD may provide clarification of the nature of motivation as a prognostic factor. Building upon this link, a theoretical integration of the SDT and OCD literatures demonstrated how SDT was uniquely suited to conceptualize the dynamic nature of motivation and its prognostic utility in OCD treatment (see Van Kirk & Clum, in preparation).

While insight and motivation increase understanding regarding why individuals may not respond to empirically validated treatments for OCD, they may not capture the full spectrum of why OCD sufferers cling to the symptoms that cause them distress. To further understand why individuals hold tenaciously onto their OC symptoms, Van Kirk and Clum (in press) developed the Obsessive Compulsive Consequences Scale (OCCS) to asses a more broad-based construct that may influence motivation, compliance, and the treatment process, the Functional Consequences (FCs) of obsessive compulsive behavior.

Functional Consequences

Functional consequences, as measured by the OCCS, are the perceived everyday positive and negative functional outcomes of one's OC behavior. Unlike the construct of insight, functional consequences are more evenly distributed among individuals with OC symptoms, regardless of the severity of symptoms experienced. They tap into reasons individuals identify for both the utility of their symptoms and negative outcomes associated with their symptoms, and thus may relate to reasons to engage or not engage fully in treatment.

The validity of the OCCS was supported in a study that evaluated its relationship with motivation as characterized by stage of change, based on the URICA (Van Kirk, in press). Components that measured negatively biased FCs were positively correlated with the contemplation, action, and maintenance stages and negatively correlated with the pre-contemplation stage. Thus, individuals who identified more negatively biased outcomes of their OCD behavior were more active in considering treatment and likely to take steps to overcome their OC symptoms or work to maintain gains. More positively biased components on the other hand, correlated with the pre-contemplation stage, indicating perceived positive FCs are associated with having not yet actively considered reasons for changing OC symptoms.

This earlier study also showed that the OCCS was related to stage of change independent of symptom severity (Van Kirk, 2010). The implication, using the theoretical foundations of SDT, is that negative FCs are related to more autonomous forms of motivation, while positive FCs are related to more controlled forms of motivation. Unanswered in this early study is whether increased motivation as assessed by the OCCS predicts behaviors associated with treatment compliance and improvement across treatment. While the initial version of the OCCS evidenced sound psychometric properties and was found valid in cross-sectional studies (Van Kirk, 2010), it was revised to create a more parsimonious measure (Van Kirk & Clum, 2011a). Further, to reduce instructional confusion and increase functionality, the response format was

changed to a 1-5 Likert scale, eliminating the "not applicable" response option. Finally, items were deleted that did not load onto a component or that loaded on a weak component. The resulting scale was again analyzed using principal components analysis, revealing a four component solution: Negative Consequences, Positive Consequences, Keeping People Safe, and Adequacy. The item loadings for Positive Consequences and Keeping People Safe closely replicated the previous component structures, while the three previously identified negative components (General Negatives, Social Negatives, and Social Isolation) were combined in this component analysis to create the Negative Consequences component. Items that did not adequately load onto one of the four components were deleted, resulting in 36 items that load onto four underlying latent constructs.

It is this latter measure that was utilized in the two studies described herein. Two questions were addressed: 1) Will the component structure identified in an unselected sample be replicated in another sub-clinical sample who report OCD symptoms in the mild or greater severity range and 2) Will the OCCS-R predict motivation for treatment, treatment compliance, and treatment outcome in a longitudinal study of severe sufferers of OCD. Also examined was the incremental validity of the OCCS-R when compared to a currently-used measure of insight. Two studies follow: study one examines the factor structure of the OCCS-R using Confirmatory Factor Analysis; study two evaluates the ability of the OCCS-R to predict various outcomes in a treatment-seeking sample of OCD sufferers.

Hypotheses

Following an overview of the literature and concurrent validation studies of the OCCS, it is expected that the OCCS-R will demonstrate a robust factor structure and relate to treatment motivation and outcome. More specifically:

Study 1, Hypothesis 1. Confirmatory Factor Analysis of the OCCS-R in a college sample of individuals with sub-clinical OCD symptoms will replicate a four factor solution previously identified in a general college sample.

Study 2, Hypothesis 1. The OCCS-R will be related to symptom severity, drop-out and symptom reduction in a sample of treatment-seeking OCD sufferers. Specifically: *a)* The OCCS-R will positively correlate with symptom severity in the treatment seeking sample, as measured by Y-BOCS scores at intake; *b)* The OCCS-R will predict treatment drop-out such that individuals who identify more positively biased FCs will be more likely to drop-out of treatment against therapist advice; *c)* The OCCS-R will predict treatment outcome as conceptualized by the Y-BOCS residual change score such that higher scores on Negative Consequences will predict greater symptom reduction and Positive Consequences will predict lower levels of symptom reduction; *d)* The OCCS-R will predict Y-BOCS residual change score independently of insight; *e)* The OCCS-R will be sensitive to treatment effects, demonstrating a significant reduction across treatment; *f)* The OCCS-R will positively correlate with participant expectation of treatment outcome.

Study 2, Hypothesis 2. The OCCS-R and its components will be related to treatment motivation. Specifically: *a)* OCCS-R total score will correlate positively with a general measure of motivation for therapy, as measured by the Client Motivation for Therapy Scale (CMOTS); *b)* Negatively biased FCs will predict higher scores on scales related to autonomous motivation as measured by the CMOTS; *c)* Positive Consequences, Safety, and Adequacy components of the OCCS-R will independently predict higher scores on scales related to more controlled forms of motivation; *d)* The OCCS-R will predict treatment motivation independent of insight and symptom severity.

Study 2, Hypothesis 3. The OCCS-R and its components will be related to treatment compliance behaviors. Specifically: *a)* OCCS-R will significantly correlate with participants degree of compliance with treatment protocols as measured by their primary behavior therapist; *b)* Positive Consequences, Safety, and Adequacy will predict lower levels of compliance; *c)* OCCS-R total score and the Negative Consequences component will predict higher levels of compliance.

Study 2, Hypothesis 4. Treatment compliance will be related to symptom reduction and will mediate the relationship between the OCCS-R and symptoms reduction. Specifically: *a)* Treatment compliance will predict Y-BOCS residual change scores such that greater compliance will predict greater symptom reduction; *b)* Treatment compliance will mediate the relationship between the OCCS-R and treatment outcome (operationalized by Y-BOCS residual change score).

Study 2, Hypothesis 5. Autonomous motivation for treatment will predict greater overall compliance with treatment.

Method

Participants

Study 1. Participants for the CFA (n=210) included individuals recruited from the Virginia Tech student community. Each participant was enrolled in a psychology class at Virginia Tech and received credit for their participation in the study. Analyses were conducted on those participants who reported a Y-BOCS Self-Report score in the mild or greater range (i.e. a score of 8 or higher; see measures section). The sample was primarily female (65.7%), Caucasian (78.6%), and single (96.7%). Participants ranged from 18 to 28 years old, with a mean

age of 19.33 years of age. Mean severity of OCD symptoms (based on Y-BOCS-Self Report score) was in the mild range with a score of 13.41.

Study 2. Participants included individuals who were enrolled in a residential/intensive outpatient OCD treatment facility. Each participant was 18 years of age or older, had a primary diagnosis of OCD and received cognitive-behaviorally based treatment. Participants were self-referred to the program or referred by a therapist. Throughout the course of the study, 61 participants qualified for the study. Of those, six participants were not included in the final sample based on participant choice not to participate in the study, not completing the intake assessment, or not returning the intake packet to be entered. Thus, the final participant sample included 55 individuals that ranged in age from 18 to 55 years old, with a mean age of 30.22 years. The sample was 43.6% male, 67.3% Caucasian, and 52.7% single. It should be noted that 20% of participants did not identify a primary sex, while 21.8% and 18.2% did not identify their ethnicity or marital status, respectively. A mean symptom severity score of 25.79 was reported at time of intake on the Y-BOCS, which is in the severe range. Each participant was diagnosed via clinical interview, by either a behavior therapist or residential counselor as part of the program's intake process, as having a primary diagnosis of OCD. Further, 41.8% of participants were identified as having one or more comorbid diagnoses, with generalized anxiety disorder (21.7%) and major depressive disorder (21.6%) being the most common comorbid diagnosis. Length of stay in the program varied from 1 week to 21 weeks, with an average stay of 6.28 weeks.

Procedure

Study 1. Each participant completed an online Informed Consent (Appendix E) at the beginning of the study. Following completion of the Informed Consent, participants were

presented with an online version of the OCCS-R. Two extra credit points were given to each participant for his/her participation in the study.

Study 2. At time of intake to a private residential/intensive outpatient treatment program specializing in the treatment of severe OCD, each participant was given the opportunity to participate in this study and presented with an Informed Consent (Appendix F). Following completion of the Informed Consent, participants were administered the OCCS-R and Y-BOCS as part of the program's intake process. The Y-BOCS was administered by a trained behavior therapist or residential counselor who was a member of the treatment team. During participants second week of treatment, they were administered the BABS by a trained staff member and the Client Motivation for Treatment Scale (CMOTS). Clinician administered interviews were not recorded, however, all staff involved in clinical assessments were trained and supervised by behavior therapists who have extensive experience with the assessment and treatment of OCD in a specialized setting.

Compliance was evaluated by the behavior therapist on a weekly basis using an online survey. At the time of discharge, participants were re-administered the Y-BOCS and OCCS-R. The participants' primary behavior therapist also completed an internet based discharge survey to determine if the participant left treatment against professional advice.

Measures

Obsessive Compulsive Consequences Scale-Revised (OCCS-R; see Appendix A). The OCCS-R is a 36 item measure of perceived Functional Consequences that result from an individual's OC behavior. Items were generated by a clinical psychologist and a doctoral-level graduate student in a clinical psychology program, using their own experience with sufferers with OC symptoms, and extrapolating from treatment motivation literature on Anorexia Nervosa,

considered in some ways similar to OCD (Baldock & Tchanturia 2007; McElroy, Phillips, & Keck, 1994). Each item is provided in statement form and rated on a 1 (“not at all consistent”) to 5 (“extremely consistent”) Likert scale, based on how consistent each statement was with how individuals viewed their OCD symptoms. The OCCS-R was shown to have good psychometric properties and to be a valid measure of functional consequences (Van Kirk and Clum, 2011). Moderate item-total correlations were evidenced, with all correlations equal to or above .4. Reliability was evaluated through the split-halves method, resulting in an alpha coefficient of .95 and a Spearman-Brown coefficient of .92. Reliability was evaluated for each component, with all components evidencing an alpha coefficient of .79 or higher and a Spearman-Brown coefficient of .78 or higher (Van Kirk and Clum, 2011).

Brown Assessment of Belief Scale (BABS). The Brown Assessment of Beliefs Scale is a validated semi-structured clinical interview for assessing the degree of delusional quality/insight in OCD. The BABS has primarily been used to determine the prognostic ability of the insight construct in pharmacological outcome studies with OCD (Eisen et al., 2001;Ravi Kishore et al., 2004). Insight is measured through 7 items which are scored from 0-4. Eisen et al. (1998) found the BABS to have good inter-rater reliability, item-total correlations ranging from .38 to .85, and a median test-retest inter-class correlation of .95 for the individual items.

Treatment Expectations (see Appendix B). Participant expectations for treatment were evaluated using a single item that rated where the participant would like their symptom severity to be following treatment (rated from 0 “no symptoms” to 10 “current symptom level”).

Y-BOCS Clinical Interview (Y-BOCS). The Yale-Brown Obsessive Compulsive Scale (Goodman, Price, Rasmussen, Mazure, Delgado et al., 1989; Goodman, Price, Rasmussen, Mazure, Feleischmann et al., 1989) is considered the gold standard assessment for obsessive

compulsive symptoms. It includes ten items; rated 0 to 4 based on time, level of interference, and perceived control of OCD symptoms, with a total score indicating overall level of severity. Y-BOCS total score is divided among four severity indexes indicating sub-clinical (0-7), mild (8-15), moderate (16-23), severe (24-31), and extreme (32-40).

The Y-BOCS was found to have good criterion-related and convergent (mean r=.51) validity with other measures of OCD (Taylor, 1995). Furthermore, Taylor's (1995) review showed the Y-BOCS to have good internal consistency and test-retest reliability, .69-.91 and .81-.97, respectively.

Yale-Brown Obsessive Compulsive Scale-Self-Report (Y-BOCS-SR). The Y-BOCS-SR is a self-report version of the original Y-BOCS clinical interview. Similarly to the clinical interview, the Y-BOCS-SR consists of 10 questions rated from 0 to 4. Steketee, Frost, and Bogart (1996) compared the Y-BOCS interview standard to the Y-BOCS-SR, finding the Y-BOCS-SR to have good psychometric properties, in some cases better than the interview. An Internal Consistency rating of .84 or higher, excellent test-retest reliability, and comparable content validity to the Y-BOCS interview were found. The Y-BOCS-SR was found to have good convergent validity with the original Y-BOCS interview with correlations of .75 for the total score and .69 and .65 for obsessions and compulsions subscales, respectively (Steketee et al., 1996).

Client Motivation for Therapy Scale (CMOTS). The Client Motivation for Therapy Scale is a self-report measure of motivation for therapy stemming from the Self-Determination Theory conceptualization. The measure consists of 24 items rated on a 1 to 7 Likert scale (from "does not correspond at all" to "corresponds exactly") and demonstrated sound psychometric properties with internal consistency estimates between .70 and .92 for each subscale (Pelletier,

Tuson, & Haddad, 1997). Further, exploratory factor analysis of the CMOTS demonstrated a 6 factor solution that represents the six domains of motivation identified in SDT. The domains include amotivation, external regulation, introjected regulation, identified regulation, internalized regulation, and intrinsic motivation, and lay on a continuum ranging from controlled (i.e. the behavior is not self-determined and, rather, is based on highly external motives) to autonomous (i.e. self-determined behavior that is internally driven/intrinsic in nature) motivation. Correlations between the CMOTS sub-scales further supported this continuum construct where the more autonomous and controlled subscales were found to differentially correlate with motivational consequences, including importance of therapy, satisfaction, intentions to persist, self-esteem, and locus of control (see Pelletier, Tuson, & Haddad, 1997). This provides additional support for the construct validity of the CMOTS.

Various studies have suggested more controlled domains of motivation (specifically, amotivation, external regulation, and introjected regulation) are related to greater negative outcomes, while autonomously oriented domains are related to more positive outcomes (Pelletier, Tuson, & Haddad, 1997). Similarly, Pelletier et al. (1997) demonstrated that intrinsic motivation, integrated regulation, and identified regulation were positively correlated with scores on an internal locus of control subscale and negatively correlated with subscales related to more external feelings of control. An opposite pattern was found for the subscales of amotivation, external regulation, and introjected regulation. Consistent with these findings, summary statistics for autonomous and controlled motivation were constructed in the present study by summing the subscales reflective of autonomous motivation (AutMotSum: intrinsic motivation + integrated regulation + identified regulation) and by summing the subscales reflective of controlled motivation (ConMotSum: amotivation + external regulation + introjected regulation). Finally, an overall composite variable representing overall level of self-determination for engaging in a

behavior was created by subtracting the overall total controlled motivation score from the total autonomous motivation score. It should be noted that this variable should be interpreted with caution as it has not been validated as part of the scale and represents a first attempt to determine how best to characterize where an individual lays on the SDT continuum.

Compliance Ratings (see Appendix C). Following the precedent set by Abramowitz et al. (2002), compliance was evaluated by the behavior therapist across four domains. Therapists used a 0 to 4 Likert scale to rate participant compliance with the psycho-education treatment component, staff assisted exposures, independent/homework exposures, and compliance with group based treatments. An individual item was tailored to each category and averaged to create an overall compliance score for each administration. Compliance was rated on a weekly basis for the duration of the participants' treatment and each week's ratings were averaged to get a general measure of overall compliance across treatment.

Treatment Drop-Out (Appendix D). Treatment drop-out was identified by the behavior therapists through a dichotomous question indicating if the client did or did not drop-out of treatment. Individuals who left treatment without a consensus by the treatment team (indicated by the behavior therapist) were considered as a drop-out.

Data Analysis

Study 1

The first study sought to validate the factor structure of the OCCS-R on a college sample of 210 individuals with self-reported OC symptoms. A maximum likelihood Confirmatory Factor Analysis (CFA) was completed using the IBS SPSS AMOS 21 statistical package in order to determine goodness-of-fit for the OCCS-R four factor structure (Van Kirk & Clum, 2011a) with the variance and covariance matrix of the sample (Brown, 2006). The CFA was conducted using

a sub-sample of college participants with OC symptoms classified in the mild range or higher (based on a Y-BOCS-SR score of 8 or higher; Goodman et al., 1989a).

Study 2

Concurrent validity for the OCCS-R was established at baseline assessment for the treatment seeking sample through correlational analysis between the OCCS-R, participant expectation of treatment success, Y-BOCS scores at intake, BABS/CMOTS scores at one week post-intake, and overall compliance with treatment (hypotheses 1a, 2a, and 3a). Next, regression analyses (both linear and binomial logistic regression) were employed to evaluate the predictive relationships between the OCCS-R and its subscales, treatment motivation (hypothesis 2b and c), treatment compliance (hypotheses 3a, b, c), treatment drop-out (hypothesis 1b) , and treatment outcome (operationalized by the Y-BOCS residual change score; Kim-Kang & Weiss, 2008; Manning & DuBois, 1962; hypothesis 1c). Subsequently, linear regression was used to control for the constructs of insight and initial severity, to determine if the OCCS-R predicts treatment motivation (hypothesis 2d) and treatment outcome (hypothesis 1d) independently of these constructs. Mediational analyses were used to determine if degree of treatment compliance mediates the relationship between the OCCS-R and treatment outcome based on the Y-BOCS residual change score, evaluating hypotheses 3 and 5. To this end, Y-BOCS residual change scores were regressed onto overall treatment compliance and compliance was subsequently regressed on the OCCS-R total score and component scores. Paired sample t-tests were used to determine OCCS-R's sensitivity to treatment (hypothesis 1e). In addition to evaluating the role of the OCCS-R in the treatment process, treatment compliance was regressed on the CMOTS to determine if motivation predicts compliance with treatment protocols (hypothesis 4).

Missing Data. Given the naturalistic design of the study, some missing data was observed across the study measures. Out of the total sample of 55 participants, at intake 48 completed the OCCS-R, 46 completed the Y-BOCS, 36 completed the BABS, and 31 completed the CMOTS. Further, compliance ratings were recorded by behavior therapists for 51 participants. Of the 55 participants, the question regarding if they dropped out of treatment prematurely was not reported for 14 participants, while Y-BOCS discharge scores were not reported for 28 participants. Four of those participants who did not have Y-BOCS discharge scores were still receiving treatment and had only completed the intake and one week assessments. As a result no discharge data on the OCCS-R or Y-BOCS were available. Missing data for the remaining 24 participants was reportedly due to a variety of reasons, including the participant did not return or complete the discharge packet prior to discharge, chose to discharge at a date prior to their next scheduled assessment, dropped out of treatment prematurely, or were not administered due to clinical duties/time constraints. For individuals with single missing items, mean imputation was utilized to address the missing item. For 25 of the participants who completed both intake and discharge Y-BOCS scores residual change scores were computed.

In order to determine if significant differences existed between those who completed/returned each measure compared to those who did not, one-way ANOVAs were computed to compare the sub-samples. No significant differences were found between those who did and did not complete across the OCCS-R, BABS, or CMOTS for initial severity or length of stay. Additionally, no significant differences in age or gender were found between those who completed/did not complete the BABS or CMOTS. One-way ANOVAs for age and gender on the OCCS-R sub-sample could not be computed due to a lack of variance stemming from missing demographic data in that sample. Further, when participants who completed the Y-BOCS discharge assessment were compared to those who did not, using a one-way ANOVA, no

significant differences were found between the two sub-samples on age, gender, length of stay, or severity scores at intake. Similarly, no differences were found between sub-samples of individuals for whom Y-BOCS residual change scores could be computed compared to those whose residual change scores were not available. The lack of significant findings between the sub-samples suggests the sample can be analyzed as a whole.

Results

Study 1

Confirmatory Factor Analysis. IBM SPSS Amos 21 was used to complete a maximum likelihood Confirmatory Factor Analysis on the sample variance-covariance matrix in order to evaluate the previously identified four component structure of the OCCS-R (Van Kirk & Clum, 2010; Van Kirk & Clum, 2011a). The CFA was conducted on a separate college sample of 210 individuals who endorsed a Y-BOCS-SR score of 8 or higher. Missing data was accounted for using expectation maximization procedures. The model includes thirty-six indicator variables, loading on four latent factors. Overall Chi-square and the model's minimum discrepancy (CMIN/DF) were used to provide a measure of absolute fit for the model. Evaluation of fit was augmented using the comparative fit index (CFI) and Tucker-Lewis coefficient (T-L), which compare the specified model to a base model, typically referred to as the "null" model (Brown, 2006). Values for the CFI and T-L range from 0-1, with 1 indicating good fit. Additionally, the T-L coefficient is designed to compensate for model complexity, penalizing the model for adding parameter estimates that do not improve the model (Brown, 2006). Finally, the RMSEA with a 90% confidence interval was used as a population level fit statistic that compensates for model complexity. This provides a test of "closeness of fit" (Browne & Cudek, 1993; Brown, 2006), with suggested values less than .08 being accepted as indicating adequate fit when using

continuous data (Brown, 2006; Browne and Cudek, 1993; Schreiber et al. 2006). Observing an upper limit of the confidence interval (using a 90% CI) less than .08 also reinforces the acceptability of the model fit (Brown, 2006).

In the initial model (Figure 1) each indicator variable was designated to load on only one latent factor and measurement errors were presumed to be independent and uncorrelated. Based on previous analyses that demonstrated significant correlations between each of the factors of the OCCS-R and correlational analyses of the proposed factors in this sample (Table 3), the four latent factors were allowed to co-vary. Analysis of the initial model suggested it was not an optimal fit for the data, with goodness-of-fit analyses resulting in a chi-squared value of 1620.93 with 591 degrees of freedom and probability level of .000. The minimum discrepancy (CMIN/DF) was reported at 2.74, comparative fit index (CFI) of .765, RMSEA of .091 and a Tucker-Lewis Coefficient of .749. Overall, these findings do not support a strong fit of the model to the data, particularly regarding the RMSEA. Model fit was explored through evaluation of the parameter estimates. Variance estimates were all found to be significant for the model; however, covariance between the exogenous variables was not significant for the Positive Consequences and Negative Consequences factors. Further, covariance between the indicator error terms was evaluated using the modification indices. As described by Brown (2006), multiple articles have pointed to the importance of using both the modification indices and underlying theory to justify model re-specification. Based on this convention, modification indices that exceeded the critical value of 3.84 (Brown, 2006) and represented covariance between same factor error terms were included in the re-specified model. Given that OCCS-R factors are proposed to independently predict motivation and treatment outcome, cross factor covariance between error terms was not included in the re-specification to maintain the theoretical foundations of the scale. Additionally, the non-significant covariance between positive and negative consequences factors was removed

in the re-specified model. The second model (Figure 2) demonstrated a better fit to the data (Table 2); however, eleven non-significant parameter estimates were observed between error terms. Non-significant covariances were deleted from the model (Figure 3) and the model was re-analyzed, maintaining an equivalent level of fit, indicating the four factor solution is acceptable. Based on these findings all factors are retained with covariance between each factor with the exception of Negative Consequences and Positive Consequences. Further, all items were retained as they demonstrated significant loadings on each of their assigned factors.

In order to determine if the study had adequate sample size to reliably evaluate the OCCS-R factor structure, guidelines based on component saturation were used. Based on Guadagnoli and Velicer's (1988) Monte Carlo study, sample size can be determined as adequate if four or more loadings for each factor/component are above .60 in absolute value (Stevens, 2009). Additionally, Stevens (2009) suggested if values above .80 are found for at least three factor loadings within a factor, that factor can be presumed to be reliable. Based on these metrics, the sample of 210 participants is adequate as each factor demonstrated loadings (i.e. unstandardized regression coefficients between the factor and observed variables) above .60 for each item and at least three loadings above .80.

Reliability. Evaluation of the reliability of the OCCS-R in this sample of individuals who evidenced mild or greater symptoms confirmed previous studies demonstrating strong reliability (Van Kirk & Clum, 2011). The OCCS-R total scale demonstrated a Spearman-Brown Coefficient of equal length of .93 and a Cronbach's Alpha of .92. Reliability of the individual factors was also evaluated. Cronbach's alpha estimates ranged from .70 to .93 across all four OCCS-R factors, while Spearman-Brown Coefficients of equal length ranged from .72 to .90 (Table 4).

Study 2

Power Analysis. Power analysis has been repeatedly identified as an effective method for determining the minimum sample size necessary to reasonably detect an effect given a particular power and effect size (Cohen, 2008; Cohen, Cohen, West, & Aiken, 2003). A power analysis for linear multiple regression using a fixed model was completed using the G*Power[3] software to determine the minimum sample size necessary to complete the analyses. An estimated effect size of f^2=.35 (derived from previous evaluations of the OCCS), power of .8 (based on guidelines presented by Cohen et al., (2003) and Cohen (1988)), and significance level of .05 were used to compute the necessary sample size. Based on these analyses, a sample size of 32 was required to complete a regression analysis in which all 5 predictors were entered simultaneously. However, the majority of the analyses conducted on this sample examined each predictor's impact on treatment outcome independently or used a series of independent regressions to determine which factors act as partial mediators. To complete the independent regression analyses, a minimum of 25 participants were needed.

OCCS-R. Correlations between the OCCS-R and its four factors at intake, symptoms severity at intake (n=46), treatment expectation (n=48), and the CMOTS (n=26) at one week were computed (Table 5). The OCCS-R total score (r=.43, p=.003, n=46), Negative Consequences (r=.48, p=.001, n=46), and Safety (r=.31, p=.035, n=46) factors were positively correlated with Y-BOCS scores at intake, partially confirming hypothesis 1a. However, OCCS-R total score and factor scores were not significantly correlated with participant expectation of treatment outcome (rejecting hypothesis 1e).

Regression analyses demonstrated that the four factors of the OCCS-R (Table 6) and OCCS-R total score (β=-.060, t=-.290, p=.775) did not significantly predict treatment outcome

based on the Y-BOCS residual change score, rejecting hypotheses 1c and d. Accordingly, all planned regression analyses designed to determine the unique contribution of the OCCS-R to treatment outcome were not conducted, including the proposed mediational analysis.

Next examined were the relationships between the OCCS-R and treatment drop-out. Treatment drop-out variance was limited, however, as only 8 of 41 participants dropped out of treatment prematurely. Nonetheless, binomial logistic regression demonstrated OCCS-R total score significantly predicted which participants would drop-out of treatment against therapist advice (B=-.077, p=.041, Exp (B) =.926, n=34) supporting hypothesis 1b. However, the individual factors of the OCCS-R did not significantly predict treatment drop-out independently of one another (Table 7).

Next evaluated was whether the OCCS-R was sensitive to treatment effects. The OCCS-R evidenced a significant reduction in total score (t (23) =4.32, p=.000) from intake (M=92.04, SD=16.01) to discharge (M=78.58, SD=17.65), confirming hypothesis 1d. Significant reductions were also observed for each of the individual factors, with the exception of the Adequacy factor which did not change significantly across treatment (Table 8).

OCCS-R and Treatment Motivation. To determine overall motivation, three summary statistics were created from the CMOTS subscales. Participant level of AutMotSum (r=.464, p=.017, n=26) and their scores on the intrinsic motivation subscale of the CMOTS (r=.489, p=.011, n=26) significantly correlated with the OCCS-R total score, partially confirming hypothesis 3a. However, level of self-determination (r=.249, p=.220, n=26) and ConMotSum (r=.1, p=.626, n=26) were not significantly correlated with OCCS-R total score. Further, correlations between the OCCS-R and individual subscales of the CMOTS varied in strength and significance across factors (Table 5). Specifically, positive correlations were found between the

Positive Consequences factor and intrinsic motivation subscale and the Safety factor and the integrated regulation, introjected regulation, and AutMotSum scores. These relationships are contrary to the expected directions of the relationships between positively biased factors and treatment motivation.

To evaluate the predictive relationships between these constructs, linear regression was employed to determine if the OCCS-R and its factors predicted treatment motivation at the end of the first week of intensive treatment. Only autonomous motivation (β=.464, t=2.57, p=.017) was found to be significantly predicted by the OCCS-R total score, while controlled motivation (β=.100, t=.493, p=.626) and overall motivation (β=.249, t=1.26, p=.220) were not significant. Further, when controlling for the constructs of insight (operationalized by the BABS total score; β=.628, t=3.77, p=.001) and initial Y-BOCS scores (β=.606, t=3.27, p=.004), the OCCS-R total score continued to predict autonomous motivation independent of these constructs. These findings support hypotheses, 2a and 2d. Hypotheses 2b and 2c were not supported when the differential predictive ability of the Negative Consequences factor (β=.269, t=1.37, p=.184) and Positive Consequences (β=.175, t=.713, p=.483), Safety (β=.-.011, t=-.043, p=.966), and Adequacy (β=.-.094, t=-.442, p=.663) factors were regressed on AutMotSum and ConMotSum respectively.

Next examined were the relationships between specific OCCS-R factors at baseline and the specific motivational domains (Table 9). In line with the study hypotheses, the Positive Consequences factor significantly predicted higher levels of amotivation for treatment (β=.526, t=2.373, p=.027) and lower levels of identified regulation (β=-.461, t=-2.093, p=.049), while the Safety factor predicted higher levels of integrated regulation (β=.626, t=2.693, p=.014). This information partially supports hypothesis 2c, suggesting the identification of Positive Consequences predicts more controlled domains of motivation for treatment. However,

hypothesis 2b was not supported as Negative Consequences did not significantly predict scores on any specific sub-scale of the CMOTS. Of additional interest was the predictive ability of the OCCS-R total score, which predicted participant scores on the intrinsic motivation sub-scale (β=.489, t=2.748, p=.011).

OCCS-R and Treatment Compliance. The OCCS-R total score was not found to correlate significantly with participants overall rating of compliance with treatment procedures (r=.100, p=.520, n=44), or compliance within three of the four individual domains: psycho-education (r=.017, p=.914, n=44), staff assisted exposures (r=.035, p=.823, n=44), and independent/homework exposures (r=.016, p=.916, n=44); the OCCS-R total score did, however, correlated with compliance with group therapy (r=.298, p=.05, n=44). When compliance was decomposed into the individual items assessing each of the four domains of compliance, factors of the OCCS-R did not significantly predict the individual sub-domains in regression analyses (Table 10), with the exception of compliance with group therapy. Further, the individual factors of the OCCS-R did not significantly predict overall compliance (Table 10). However, the OCCS-R total score did significantly predict compliance with group therapy (β=.298, t=20.21, p=.05). Overall, these results don't support the hypothesized relationships between the OCCS-R and treatment compliance, disconfirming hypotheses 3 a, b, and c. It should be noted that the significant regression of compliance with group therapy on OCCS-R total score provides partial support for hypothesis 3c, suggesting higher identification of the overall consequences of OCD behavior is related to participant engagement in group based treatment activities.

In relation to treatment outcome, overall compliance was not found to significantly predict Y-BOCS residual change score (β=-.049, t=-.223, p=.825), refuting hypotheses 4a and b. Although, binomial logistic regression did demonstrate that overall compliance predicted who would drop-out of treatment prematurely (B=-2.150, p=.005, Exp (B) =.116).

Motivation and the Treatment Process. In line with previous research from the SDT literature, participants total score on the autonomous (β=.484, t=2.948, p=.007) and controlled (β=.-.339, t=-2.067, p=.049) motivation composite variables differentially predicted participant compliance with treatment. Further, participants level of self-determination (autonomous motivation-controlled motivation) significantly predicted overall compliance (β=.534, t=3.282, p=.003), supporting hypothesis 5. When compliance was decomposed into the individual domains, motivation continued to predict each of the sub-domains of treatment compliance (Table 12).

Exploratory Analyses. Evaluation of the OCCS-R in a clinical sample has demonstrated the relationships between prognostic factors and treatment outcome are complex. In order to increase our understanding of the relationship between these prognostic factors, exploratory analyses were conducted to clarify these relationships.

Insight and Symptom Severity. Both initial symptom severity and insight have found support as predictors of treatment outcome in traditional CBT/ERP based treatments (Keeley et al. 2008). However, in the intensive treatment sample, regression of the Y-BOCS residual change score on the BABS total score (β=.088, t=.385, p=.705) was not significant. When evaluating the relationship between symptom severity and insight, participants' Y-BOCS scores at intake were not significantly correlated with the BABS total score (r=.178, p=.345, n=30) at one week. However, when a Y-BOCS difference score was computed by subtracting participant discharge scores from intake scores and then regressed onto Y-BOCS scores at intake, initial severity significantly predicted the amount of reduction in symptom severity across treatment (β=.579, t=3.408, p=.002). Although, initial Y-BOCS scores were not significantly correlated with length of stay in the program in number of weeks (r=.152, p=.319, n=45).

In relation to treatment motivation, the insight and severity constructs demonstrated varying levels of predictive ability (Table 11). While the BABS total score was found to significantly predict lower self-determination (β=-.540, t=-3.164, p=.005) and greater endorsement of controlled motivation for treatment related behaviors (β=.490, t=2.882, p=.009), initial Y-BOCS scores positively predicted scores on controlled motivation (Table 11).

Change in OCCS-R. Given the significant change in OCCS-R scores (with the exception of the Adequacy factor) and Y-BOCS scores across treatment (Table 8), the relationship between change in OCCS-R and its factors and treatment outcome were evaluated. Difference scores for the OCCS-R total score, Negative Consequences, and Positive Consequences were computed and correlated with Y-BOCS residual change scores. Change in OCCS-R total score (r=-.497, p=.016, n=23) and Positive Consequences (r=-.457, p=.028, n=23) across treatment significantly correlated with Y-BOCS residual change scores; however, change in the Safety factor did not (r=-.366, p=.086, n=23).

Discussion

Overall, the OCCS-R demonstrated a robust factor structure and variable predictive validity based on multiple process and outcome measures. Study 1 supported the four factor solution evidenced in previous studies, thus demonstrating adequate fit in a college sample of individuals who reported mild to extreme OCD symptoms. While the initial model did not demonstrate adequate fit to the data, the use of the modification indices to guide re-specification of the four factor model resulted in an adequate fit. The final model evidenced a chi squared minimum discrepancy less than two and a RMSEA/upper boundary below.08, supporting adequate fit. Unfortunately, the CFI and T-L, which evaluate comparative fit indices (Brown, 2006) did not exceed .9, which has been suggested as indicative of acceptable fit (Brown, 2006;

Hu & Bentler, 1999). This suggests that while the current four factor model achieves adequate fit using absolute fit and parsimony correction indices, further refinement of the OCCS-R may be warranted. In order to determine future directions for the scale, modification indices pertaining to the regression weights were evaluated; demonstrating that four items were predicted by both the Positive and Negative Consequences factors. While these cross-loadings are not supported by the theoretical underpinning of the OCCS-R, it does suggest rewording or dropping these items in future iterations may increase model fit.

Interestingly, when the Adequacy factor was evaluated in the treatment seeking sample (i.e. study 2) it was not found to significantly correlate with any of the other factors or total score on the OCCS-R, with the exception of the Negative Consequences factor. Further, the Adequacy factor did not significantly correlate or predict treatment motivation or compliance with treatment, symptom reduction, or drop-out. It also was not sensitive to treatment effects. However, significant covariance between Adequacy and the other factors were demonstrated in the CFA model. Taken together these results suggest there is significant overlap between the variance accounted for by the Adequacy factor and the other three factors and that the Adequacy factor provides minimal predictive utility independent of the other three factors. Future evaluations of the OCCS-R should further evaluate the value of the Adequacy factor, determining if deletion of the factor would increase model fit.

In the treatment seeking sample, relationships between total score on the OCCS-R varied greatly across dependent variables. In line with previous findings from cross-sectional evaluations (Van Kirk, 2010; Van Kirk & Clum, 2011) the total number of FCs identified was significantly related to the severity of OCD symptoms at intake. Given that the Y-BOCS uses aspects such as distress, interference, and time to judge symptom severity, it was expected that individuals whose symptoms cause more interference, take up more time, or cause greater

distress (i.e. are more severe) would identify a greater number of consequences resulting from their symptoms. A positive correlation between symptom severity at intake and the OCCS-R factors of Negative Consequences and Safety were also found. The relationship between severity and identification of Negative Consequences aligns with the above assumption, that the greater an impact one's OCD symptoms have on one's life across multiple domains, the more negative outcomes will be identified. Further, the relationship between Safety and symptom severity may be understood in terms of the higher perceived cost of challenging beliefs pertaining to the safety of one's self and those around them. As challenging safety related beliefs may evoke concerns related to harming one's self or others or being harmed, these individuals may be less likely to actively challenge safety related symptoms and embrace them as a method of maintaining safety for themselves and important others, increasing the severity of the symptoms over time. Given the above explanation has not been empirically tested, further evaluation of the relationship between the Safety factor and symptoms severity is necessary in order to truly understand what leads to higher levels of symptom severity in those who identify more safety related FCs.

Regarding change in symptom severity across treatment, the OCCS-R total score did not significantly predict Y-BOCS residual change scores; indicating the number of FCs identified at the outset of treatment did not influence subsequent response to treatment. However, the OCCS-R total score did predict who dropped out of treatment prematurely, indicating those who had identified a greater number of FCs overall were less likely to drop-out of treatment prematurely. Given the limited variance associated with the number of participants who dropped out of treatment compared to those who completed, the generalizability of this finding should be interpreted with caution. This finding may suggest the ability to identify a variety of FCs is more important for persisting in treatment than whether the FCs are positive or negative. The lack of

significant regression coefficients when drop-out was regressed onto the OCCS-R factors further supports this assertion.

As the first study to evaluate the OCCS-R in a treatment seeking sample, relationship to treatment outcome was of primary interest; however, the OCCS-R was conceptualized as measuring factors that influence motivation. A previous study supported the relationship between the OCCS-R and motivation using the Transtheoretical Stages of Change Model (Van Kirk, 2010) as measured by the URICA. The present study extends the examination of this relationship by evaluating the OCCS-R in relation to the CMOTS, a scale designed to directly measure motivation for therapy from the perspective of Self-Determination Theory. The OCCS-R demonstrated significant relationships with levels of autonomous and controlled motivation. More specifically, OCCS-R total scores were positively correlated with participants' autonomous motivation score and the intrinsic motivation sub-scale. Further, the ability to identify more FCs at intake predicted higher levels of autonomous motivation for treatment related behaviors after one week in treatment; again suggesting the ability to identify FCs of multiple types may be more important in promoting higher levels of motivation than their classification into specific domains. Additionally, when controlling for insight and initial symptom severity, the OCCS-R total score continued to predict autonomous motivation. This finding supports a previous study in which FCs were found to be an independent construct from insight (Van Kirk, 2010).

Surprisingly, the Positive Consequences factor positively correlated with participant scores on the integrated regulation sub-scale of the CMOTS while the Safety factor positively correlated with higher levels of integrated regulation, introjected regulation, and total autonomous motivation. This suggests the identification of Positive Consequences and Safety related FCs is related to greater integration/internalization of treatment related behaviors into one's value system. Based on SDT, internalization /integration leads to more internally driven

(i.e. self-determined) motivation for treatment, which is contrary to the expected direction of the relationships. Based on the identified sample, it is important to consider the possibility that a selection bias may influence the magnitude of these relationships. Given the intensive nature of the specialized treatment program, services focus on those who are at the most severe end of the OCD spectrum and have typically tried more traditional, outpatient treatments with limited success. It is possible that individuals who identify more positive or safety related functions of their symptoms may find it more difficult to fully engage in outpatient treatment that requires more independent work. If they are unsure about giving up what they identify as positive outcomes of their symptoms, greater support throughout the treatment process may be required. Since individuals who typically attend a specialized treatment program are often in need of a higher level of care/support and have struggled in outpatient services, they may be more internally driven to engage in an intensive treatment, possibly identifying it as a last resort.

Interestingly, specific factors within the OCCS-R were found to predict specific domains of motivation that lie across the self-determined continuum. Perceived Positive Consequences of OC symptoms predicted higher levels of amotivation for treatment and lower levels of identified regulation. This supports previous findings suggesting those who identify more positive outcomes of their OCD symptoms experience more controlled forms of motivation for treatment and evidence less self-determination of treatment specific behaviors. Within SDT, identified regulation encompasses the initial domain of autonomously oriented/self-determined motivation and is associated with finding personal importance in the activity and beginning to integrate/internalize these behaviors into their value system (Deci & Ryan, 2002; Ryan & Deci, 2000).Thus, those who see their OCD behaviors as resulting in positive outcomes are less likely to integrate treatment related behaviors into their value system and find personal importance in treatment, resulting in more controlled motivation. Contrary to previous findings which found

the Safety component to predict lower levels of motivation on the URICA (Van Kirk, 2010), scores on the Safety factor predicted greater levels of integrated regulation. Integrated regulation is related to more self-determined behaviors and higher levels of autonomous motivation as individuals internalize the values of treatment. The variation in the direction of Safety's relationship to motivation across these two studies may suggest the impact of safety related beliefs is influenced by symptom severity. One possible explanation is that individuals with clinical OCD symptoms experience a higher frequency and intensity of Safety-related obsessions/compulsions, which produce significantly more distress than in sub-clinical samples. Exploratory evaluation of the samples from studies 1 and 2 further supports the presence of greater safety related FCs in a clinical sample as the mean score on the Safety factor in the non-clinical college sample (including all participants regardless of Y-BOCS-SR scores) was 11.98 (SD=5.96, n=502) while the clinical sample had a mean of 16.40 (SD=6.18, n=48). This increased distress may motivate individuals to further integrate/internalize the treatment related behaviors into their value system, increasing their internal motivation to seek treatment in order to obtain relief from being overwhelmed by safety related concerns. The above CFA also demonstrated that the Safety factor covaried with both the Positive Consequences and Negative Consequences factors, suggesting some of the safety related FCs evaluated by the OCCS-R can be interpreted in either a positive or negative manner. Future comparisons between non-clinical and clinical samples evaluating the magnitude of the covariance between the Safety factor and Positive/Negative Consequences may increase our understanding of how an individual's view of safety related FCs as positive or negative may change as a function of symptom severity

As a whole, these findings provide inconsistent support for the relationship between the OCCS-R's FCs and treatment motivation. While OCCS-R total score and Positive Consequences/Safety factors demonstrated significant relationships with different aspects of

treatment motivation, this relationship appears to vary between sub-clinical and clinical populations. Further, Negative Consequences failed to predict treatment motivation in a clinical sample, while Positive Consequences predicted more controlled forms of motivation. A previous evaluation using a non-clinical sample found Negative Consequences to be related to greater willingness to engage in future treatment and greater motivation based on higher scores on the contemplation and action stages of the URICA (Van Kirk & Clum, 2011). While this is contrary to the findings of the current study, it may indicate the impact of Negative Consequences on motivation is not as powerful, once an individual enters treatment, as the presence of positively biased FCs. Future research should seek to provide clarification regarding how FCs impact motivation to enter treatment compared to motivation to persist in treatment.

When determining who will comply with treatment protocols, the OCCS-R did not significantly predict overall compliance or any of the specific domains of compliance, with the exception of group compliance. Results suggest those who are able to identify a greater total number of FCs related to their OCD behaviors are more likely to engage/comply with group therapy protocols. While these findings did not support the hypothesis that OCCS-R factor scores would predict compliance with treatment across all four domains, it does support the complexity of the compliance construct. Even though the ability to identify FCs may influence compliance with specific treatment behaviors (i.e. group therapy), it does not necessarily influence compliance across treatment behaviors.

Given the lack of support for many of the predictive relationships between the OCCS-R and treatment outcome, exploratory analyses were conducted to provide further insight into how FCs may relate to the treatment process. An interesting observation was the sensitivity of the OCCS-R to treatment effects. OCCS-R total score and the Negative Consequences, Positive Consequences, and Safety factors evidenced significant decreases across treatment. In order to

understand the role of changing perceptions of FCs in the treatment process, change in OCCS-R scores were correlated with symptom reduction across treatment. Interestingly, overall reduction in the number of FCs identified was significantly related to reduction in symptom severity independent of initial severity (based on the Y-BOCS residual change score). This make sense given that a reduction in FCs may suggest an individual's OCD behaviors are playing a smaller role in their day to day life, which would be captured by the Y-BOCS severity rating. A similar pattern was discovered for the Positive Consequences factor. While previous evaluations suggest FCs are related to an individual's willingness to enter treatment (Van Kirk, 2010; Van Kirk & Clum, 2011), the current findings suggest how FCs change across treatment may be more indicative of treatment outcome than initial score. Further evaluation of the relationship between change in OCCS-R scores and the treatment process is necessary to better understand the role of FCs and the OCCS-R in treatment outcome.

Motivation from a SDT Framework. The ability of SDT to conceptualize motivation within the treatment process has been demonstrated for multiple treatment modalities including Motivational Interviewing (Markland, Ryan, Tobin, & Rollnick, 2005) and Cognitive Behavioral Therapy (Ryan, Lynch, Vansteenkiste, & Deci, 2011). This study is one of the first to extend SDT to the treatment of OCD in a longitudinal evaluation. Initial findings support SDT as a valid theory for conceptualizing treatment motivation within OCD. In order to evaluate motivation in more global terms, composite variables representing general autonomous and controlled motivation were created. Previous research has demonstrated that higher levels of autonomous motivation are related to greater adherence and persistence with treatment related behaviors. For example, autonomous motivation was found to facilitate adherence to intervention protocols in domains such as weight management (Silva et al. 2010); a position re-iterated by Ryan et al. (2011) who suggest higher levels of autonomous motivation predict compliance with treatment

related behaviors. In line with the extant literature, level of autonomous motivation significantly predicted participant compliance with treatment related activities across the domains of psycho-education, staff-assisted exposures, independent/homework exposures, and group treatment. Further support comes from the significant relationship between scores on the controlled motivation composite variable and overall compliance, indicating participants with higher levels of controlled motivation demonstrated lower compliance with treatment when averaged across the four domains.

A similar pattern was found when compliance was decomposed into individual domains. Higher levels of autonomous motivation predicted significantly greater compliance with psycho-education related treatment activities, staff-assisted exposures, and conducting independent or homework based exposures/ritual prevention. Further, having higher levels of controlled motivation significantly predicted lower compliance with independent or homework based exposures/ritual prevention and lower compliance with group treatment protocols. This supports previous research in SDT suggesting those who are high in autonomous motivation are more likely to persist (Silva et al., 2010), adhere to a treatment related task (Markland et al., 2005; Williams, Rodin, Ryan, & Grolnick, 1998), demonstrate greater attendance at treatment sessions (Williams, Grow, Freedman, Ryan & Deci, 1996), and evidence greater participation (Ryan, Plant & O'Malley, 1995).

While support for the prognostic role of motivation within OCD treatment has varied across studies (Keeley et al., 2008), this study provides preliminary support for the relationship between SDT-based motivation and the treatment process. Further, it provides insight into how motivation may impact the treatment process based on its significant relationship to treatment compliance; supporting the applicability of SDT as a method of conceptualizing treatment motivation in OCD. As it appears autonomous and controlled motivation can be successfully

measured within the context of OCD treatment, the concept of autonomy support discussed in the SDT literature may provide an avenue to increase treatment compliance by enhancing treatment factors that are integral to autonomous motivation, such as feelings of autonomy, relatedness, and competence (Ryan et al., 2011).

Treatment Compliance. Clinical experience typically suggests there is a substantial link between treatment compliance and symptom reduction. However, in the current study, overall compliance did not predict Y-BOCS residual change score, suggesting overall compliance does not predict symptom reduction above and beyond what would be expected based on mean reduction in the sample. While this is contrary to previous results using multi-dimensional evaluations of treatment compliance (Abramowitz et al., 2002), the current finding may be due to the intensive nature of the specialized treatment, which is designed to promote symptom reduction in those who did not respond or did not comply with previous treatments. Evaluation of the standard deviation for participant Y-BOCS scores at discharge provides limited support for this assertion, as discharge scores had a relatively small standard deviation (SD=6.90). These finding should be interpreted with caution as the lack of consistent discharge clinical interviews significantly reduced power for outcome analyses. Given the variations in the prognostic research concerning compliance (Keeley et al., 2008), further evaluations should be conducted using more comprehensive measures of treatment compliance and greater power.

Insight and Severity. Insight and initial symptom severity have found substantial support for their prognostic role in more traditional outpatient treatment (Abramowitz et al., 2002; Eisen et al., 1998; Himle, Van Etten, Janeck, & Fischer, 2006, Keijers et al., 1994; Mataix-Cols, Marks, Geist, Kobak, & Baer, 2002; Neziroglu et al., 2001; Stewart Yen, Stack, & Jenike, 2006). However, contrary to previous findings, level of insight, operationalized by total score on the BABS, did not significantly predict Y-BOCS residual change scores across treatment. This is to

be expected within an intensive setting, as the treatment approach was designed to help those who have not responded to more traditional treatments. This suggests significant differences may exist between prognostic factors in outpatient and intensive treatment paradigms and that intensive treatment is effective for reducing symptom severity in those who have been previously unresponsive. Interestingly, higher scores on the BABS total score did predict significantly higher scores on controlled motivation, suggesting those with lower insight are more likely to endorse lower self-determined motivation for treatment related behaviors.

Conversely, when participant difference scores on the Y-BOCS (Y-BOCS score at intake – Y-BOCS scores at discharge) were regressed onto their intake Y-BOCS scores, higher initial severity significantly predicted a greater decrease in symptom severity across treatment. This is contrary to previous prognostic evaluations of initial symptom severity in which higher initial severity was predictive of worse treatment outcomes (Keeley et al., 2008). However, this may be in support of the effectiveness of intensive treatments for individuals who failed to respond optimally to outpatient treatments. It should be noted that this may also be related to the statistical probability that individuals with higher severity will regress more towards the mean. Further, initial severity did not significantly correlate with length of stay in the intensive treatment program, which is contrary to previous findings in intensive/residential treatment programs (Stewart, Yen, Stack, & Jenike, 2006).

Limitations. While this study provides a first look into the interaction of prognostic factors within the treatment process for OCD, certain limitations to the study should be noted. First, the use of a college sample in the CFA limits the generalizability of the OCCS-R's factor structure. While the Y-BOCS-SR has substantial convergent validity with the Y-BOCS clinical interview (Steketee, Frost, & Bogart, 1996), future studies of the OCCS-R's factor structure

should focus on individuals with a primary diagnosis of OCD who are seeking treatment to determine if the factor structure is robust in a sample with clinical levels of OCD.

A second limitation centers on the variation in number of responses between the study measures. This study was constructed as a naturalistic study and evaluated individuals seeking treatment in a private clinic. A more controlled evaluation of the relationship between prognostic factors would reinforce the significance of these findings. In order to limit the impact of this variability, listwise deletion was used on an analysis by analysis basis to delete those individuals who were missing responses on an entire scale. For those who were only missing specific item responses, mean imputation was used to create complete data. Additionally, the use of a power analysis to demonstrate adequate power for the conducted regressions reinforces the applicability of these findings; however, the relationship between compliance and residual change scores included the minimum number of cases necessary to have acceptable power and should be further evaluated with a larger sample.

Further, a large number of analyses were conducted on the identified sample. While the use of a power analysis supported adequate power for the individual analyses, one must interpret data with caution due to the large number of tests conducted. Analyses did not control for type 1 error, thus the number of tests may increase the chance of observing a false positive. However, given the exploratory nature of the study, the increased risk for type 1 error was determined to be acceptable in order to provide a framework for further validation of the identified relationships.

Finally, the self-determination variable created by subtracting scores on controlled motivation sub-scales of the CMOTS from the more autonomous sub-scales warrants further validation. While this overall score was not evaluated as part of the development of the CMOTS, it aligns with the SDT conceptualization of motivation, in which motivation for a behavior is

thought to lie on a continuum based on how much an individual internalizes and integrates the goals of the behavior into their value system (Deci & Ryan, 2002; Ryan & Deci, 2000; Ryan et al. 2011). Initial evaluation within this study supports the predictive ability of the self-determined motivation score; however, more systematic evaluation is still necessary.

Conclusions. Overall, the current study provides significant insight into the relationship between individual prognostic factors, the treatment process, and subsequent outcome in a longitudinal evaluation of an intensive treatment sample. While the primary evaluation of the clinical utility of the OCCS-R for predicting treatment outcome did not universally support its prognostic ability, it did provide insight into the relationship between FCs and motivation/treatment drop-out. Further, it provided new directions for evaluation of the OCCS-R. Preliminary support for the identified four factor structure in a sample of individuals with significant OCD symptoms was also provided. Future research on the OCCS-R should seek to reduce the ambiguity of cross-loaded items in an attempt to increase fit with the four factor model. Further, the impact of change in FCs across treatment on the treatment process should be evaluated. Understanding what factors cause individual perceptions of the function of their OC symptoms to change and if that change is predictive of other treatment mechanisms such as compliance with exposure activities may provide another avenue to enhance treatment outcomes.

In addition to increasing our understanding of FCs and the OCCS-R, this study provided one of the first evaluations of the directional relationship between previously identified prognostic factors. More specifically, a possible structure for how these prognostic factors interact with one another was identified (Figure 4). While further evaluation of these relationships is necessary, it provides a preliminary framework to guide future studies. Further, results from this study demonstrated the directional relationship between self-determined motivation and weekly compliance with treatment protocols and treatment drop-out.

These findings suggest new avenues for future research, such as determining if the principles of autonomy support described in SDT can be integrated into existing empirically-based treatments to increase compliance and reduce drop-out. Additionally, further evaluation of the utility of SDT for conceptualizing motivation should be undertaken, focusing on the role of the three basic psychological needs of autonomy, relatedness, and competence within OCD treatment. Finally, a comparison of the impact of prognostic factors on treatment outcome between more traditional outpatient treatment and intensive treatment protocols would be beneficial in determining who would receive the most benefit from each treatment modality.

While certain limitations were encountered, the above study provides valuable insights into the treatment process for OCD. The longitudinal evaluation of prognostic factors in a treatment seeking sample supports the complexity of the treatment process and reinforces the importance of understanding how multiple factors may interact and influence treatment outcome. Further, by increasing our understanding of how prognostic factors impact the treatment process we will be better able to tailor empirically-based interventions for those who have been labeled as treatment refractory.

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Table 1. *Descriptive Statistics on all measures for all time periods*

Measure	Time of Administration	Mean (SD)	n
Y-BOCS	Intake	25.87 (6.20)	46
	Discharge	15.48 (6.90)	27
OCCS-R: Total Score	Intake	94.25 (15.72)	48
	Discharge	78.58 (17.65)	24
OCCS-R: Negative Consequences	Intake	43.44 (9.92)	48
	Discharge	39.17 (11.66)	24
OCCS-R: Positive Consequences	Intake	25.65 (8.10)	48
	Discharge	18.75 (5.15)	24
OCCS-R: Safety	Intake	16.40 (5.18)	48
	Discharge	11.38 (4.66)	24
OCCS-R: Adequacy	Intake	8.77 (2.03)	48
	Discharge	9.29 (2.88)	24
CMOTS: Intrinsic Motivation	1 Week	15.55 (4.99)	31
CMOTS: Integrated Regulation	1 Week	20.42 (5.22)	31
CMOTS: Identified Regulation	1 Week	25.29 (3.07)	31
CMOTS: Introjected Regulation	1 Week	15.48 (5.76)	31
CMOTS: External Regulation	1 Week	13.52 (6.52)	31
CMOTS: Amotivation	1 Week	6.71 (3.34)	31
Compliance: Overall	Across Treatment	2.87 (.74)	51
Compliance: Psycho-education	Across Treatment	3.02 (.84)	51
Compliance: Staff Assisted Exposures	Across Treatment	2.67 (.86)	51
Compliance: Independent/HW Exposures	Across Treatment	2.536 (.87)	51
Compliance: Group Therapy	Across Treatment	3.24 (.84)	51
BABS Total Score	1 Week	8.08 (5.62)	36

Table 2. *CFA Model Summaries*

	Model 1	Model 2	Model 3
χ^2 (df)	1531.51 (588)	1066.53 (539)	1088.95 (550)
CMIN/DF	2.61	1.98	1.98
CFI	.784	.879	.877
Tucker Lewis	.769	.859	.859
RMSEA (upper boundary with 90% CI)	.088 (.096)	.068 (.079)	.068 (.074)

Table 3. *Correlations Between OCCS-R Total Score and Factor Scores*

OCCS-R Factors	Negative Consequences	Positive Consequences	Safety	Adequacy
Negative Consequences				
Positive Consequences	.194* (210)			
Safety	.341* (210)	.690* (210)		
Adequacy	-.213* (210)	.476* (210)	.304** (210)	
Total Score	.557* (210)	.886* (210)	.818* (210)	.450* (210)

**Significant at p≤.05*

Table 4. *OCCS-R Reliability Analyses*

	Spearman-Brown Coefficient of Equal Length	Cronbach's Alpha
Total Scale	.932	.917
Negative Consequences	.899	.925
Positive Consequences	.887	.917
Safety	.804	.828
Adequacy	.718	.700

Table 5. Correlations between OCCS-R, Y-BOCS, and Treatment Expectation at Intake and CMOTS at One Week

Variable	Y-BOCS at Intake	OCCS-R Negative Consequences	OCCS-R Positive Consequences	OCCS-R Safety	OCCS-R Adequacy	OCCS-R Total Score	CMOTS: Intrinsic	CMOTS: Integrated Regulation	CMOTS: Identified Regulation	CMOTS: Introjected Regulation	CMOTS: External Regulation	CMOTS: Amotivation	Total Autonomous Motivation	Total Controlled Motivation	Treatment Expectation
Y-BOCS at Intake															
OCCS-R Negative Consequences	.482** (46)														
OCCS-R Positive Consequences	.048 (46)	-.067 (48)													
OCCS-R Safety	.311* (46)	.383** (48)	.502** (48)												
OCCS-R Adequacy	-.099 (46)	-.381** (48)	.075 (48)	-.278 (48)											
OCCS-R Total Score	.426** (46)	.673** (48)	.649** (48)	.794** (48)	-.164 (48)										
CMOTS: Intrinsic	-.175 (25)	.166 (26)	.422* (26)	.380 (26)	.243 (26)	.489* (26)									
CMOTS: Integrated Regulation	-.001 (25)	.166 (26)	.116 (26)	.500** (26)	.055 (26)	.333 (26)	.460** (31)								
CMOTS: Identified Regulation	.299 (25)	.314 (26)	-.222 (26)	.288 (26)	-.148 (26)	.142 (26)	-.091 (31)	.435* (3.1)							
CMOTS: Introjected Regulation	-.194 (25)	.091 (26)	.219 (26)	.401* (26)	-.025 (26)	.306 (26)	.628** (31)	.584** (31)	.092 (31)						
CMOTS: External Regulation	-.436* (25)	.015 (26)	-.033 (26)	-.066 (26)	-.180 (26)	-.058 (26)	.200 (31)	-.155 (31)	-.416* (31)	.302 (31)					
CMOTS: Amotivation	-.361 (25)	-.248 (26)	.282 (26)	-.232 (26)	.053 (26)	-.066 (26)	.040 (31)	-.446* (31)	-.756** (31)	-.048 (31)	.512** (31)				
Total Autonomous Motivation	-.009 (25)	.269 (26)	.201 (26)	.545** (26)	.077 (26)	.464* (26)	.723** (31)	.900 (31)	.497** (31)	.657** (31)	-.111 (31)	-.452* (31)			
Total Controlled Motivation	-.417* (25)	-.018 (26)	.170 (26)	.095 (26)	-.093 (26)	.100 (26)	.443* (31)	.075 (31)	-.413* (31)	.664** (31)	.874** (31)	.562** (31)	.136 (31)		
Treatment Expectation	-.249 (44)	-.101 (46)	-.092 (46)	-.254 (46)	-.077 (46)	-.208 (46)	-.133 (26)	-.350 (26)	-.515** (31)	-.042 (26)	.470* (31)	.456* (26)	-.414* (26)	.359 (26)	
Level of Self-Determination	.374 (25)	.207 (26)	.003 (26)	.311 (26)	.132 (26)	.249 (26)	.147 (31)	.571** (31)	.685** (31)	-.079 (31)	-.790** (31)	-.775** (31)	.591** (31)	-.718** (31)	-.594** (26)

*Note***Correlation is significant at the 0.01 level (2-tailed).
*Note**Correlation is significant at the 0.05 level (2-tailed)

Table 6. *Summary of Linear Regression for Y-BOCS Residual Change Score on OCCS-R Factors*

OCCS-R Factors	β	t	Sig.
Negative Consequences	.004	.015	.988
Positive Consequences	-.116	-.445	.661
Safety	.005	.018	.986
Adequacy	-.312	-1.390	.180

a. Dependent Variable: Y-BOCS Residual Change Score

Table 7. *Summary of Logistic Regression for Treatment Drop-out on OCCS-R*

	B	Sig.	Exp(B)	N
Negative Consequences	-.053	.331	.948	34
Positive Consequences	-.055	.625	.946	34
Safety	-.161	.339	.851	34
Adequacy	-.400	.235	670	34

a. Dependent Variable: Treatment Drop-out (o=no, 1=yes)

Table 8. *Paired Sample T-Test of Pre to Post OCCS-R Factors and Y-BOCS*

		Mean	Standard Deviation	t(df)	Sig.
OCCS-R: Negative Consequences	Intake	43.75	9.52	2.37 (23)	.027
	Discharge	39.17	11.66		
OCCSS-R: Positive Consequences	Intake	23.38	6.50	3.68 (23)	.001
	Discharge	18.75	5.15		
OCCS-R: Safety	Intake	15.83	5.06	4.85 (23)	.000
	Discharge	11.38	4.66		
OCCS-R: Adequacy	Intake	9.08	1.91	-.359 (23)	.723
	Discharge	9.29	2.88		
Y-BOCS	Intake	26.00	7.08	7.299 (24)	.000
	Discharge	14.88	6.76		

Table 9. *Summary of Linear Regression of CMOTS Subscales on OCCS-R Factors*

	Client Motivation for Therapy Scale Subscales																	
	Intrinsic			Integrated Regulation			Identified Regulation			Introjected Regulation			External Regulation			Amotivation		
OCCS-R Factors	β	T	Sig.	β	T	Sig.	β	T	Sig.	β	T	Sig.	β	T	Sig.	β	t	Sig.
Negative Consequences	.179	.920	.368	-.002	-.010	.992	.152	.760	.456	-.021	-.098	.923	.007	.032	.975	-.100	-.495	.626
Positive Consequences	.316	1.470	.157	-.206	-.932	.362	-.461	-2.093	.049	.007	.030	.976	.026	.103	.919	.526	2.373	.027
Safety	.220	.970	.343	.626	2.693	.014	.474	2.042	.054	.411	1.631	.118	-.116	-.431	.671	-.481	-2.060	.052
Adequacy	.320	1.727	.099	.111	.587	.564	-.035	-.186	.854	.041	.200	.843	-.198	-.900	.378	-.049	-.257	.800

Table 10. *Summary of Linear Regression for Treatment Compliance on OCCS-R Factors*

	Behavior Therapist Rated Compliance														
	Overall Compliance			Psycho-education			Staff Assisted Exposures			Independent exposures/Homework			Group Therapy		
OCCS-R Factors	β	t	Sig.	β	t	Sig.	β	t	Sig.	β	t	Sig.	β	t	Sig.
Negative Consequences	-.072	-.405	.688	-.126	-.712	.481	-.104	-.583	.563	-.107	-.612	.544	.118	.684	.498
Positive Consequences	.082	.406	.687	.100	.493	.625	-.001	-.004	.997	.001	.006	.995	.202	1.030	.309
Safety	.124	.579	.566	.010	.047	.963	.152	.707	.484	.144	.683	.499	.104	.500	.620
Adequacy	.049	.283	.779	-.177	-1.023	.313	.119	.686	.497	.211	1.236	.224	-.016	-.094	.926

Table 11. *Summary of Linear Regression for Treatment Motivation on Insight and Y-BOCS at Intake*

	Level of Self-Determination			Autonomous Motivation			Controlled Motivation		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
BABS Total Score	-.540	-3.164	.005	-.113	-.516	.611	.490	2.882	.009
Y-BOCS at Intake	.392	2.001	.058	-.-.027	-.129	.899	-.459	-2.421	.024

Table 12. *Summary of Linear Regression for Treatment Compliance on Treatment Motivation*

	Compliance Domains											
	Psycho-education			Staff Assisted Exposures			Independent exposures/Homework			Group		
	β	t	Sig.	β	t	Sig.	β	t	Sig.	β	t	Sig.
Level of Self-Determination	.328	1.807	.082	.532	3.266	.003	.578	3.683	.001	.419	2.396	.024
Autonomous Motivation	.397	2.192	.038	.517	3.187	.004	.549	3.515	.002	.181	1.021	.317
Controlled Motivation	-.128	-.708	.485	-.310	-1.907	.068	-.347	-2.225	.035	-.428	-2.420	.023

Table 13. *OCCS-R Item-Factor Breakdown*

Negative Consequences	**Positive Consequences**
• Bad things happen to me because of my obsessive-compulsive behavior.	• I am happy with the quality of life my obsessions and/or compulsions provide.
• My obsessions and/or compulsions make my life miserable.	• My value as a person is attributable to my obsessive-compulsive behavior.
• My obsessive-compulsive behaviors feel like they are being carried out by a person other than myself.	• My compulsive behaviors give me a sense of control over my life.
• My obsessive-compulsive behavior limits my ability to engage in social activities.	• I am a better person because of my obsessive-compulsive behavior.
• My obsessive-compulsive behavior negatively affects my relationships with people close to me.	• In general, good things happen because of my obsessive-compulsive behavior.
• My obsessions and/or compulsions make it hard to get close to people.	• My compulsive behaviors keep my life structured and orderly.
• My obsessive-compulsive behaviors stress people who are around me.	• On balance, my obsessive-compulsive behavior has resulted in more positives than negatives.
• The quality of my life is negatively affected by my obsessive-compulsive behavior	• My obsessive-compulsive behaviors reinforce my sense of self.
• My obsessive-compulsive behaviors put me in a class by myself.	• My rituals keep me healthy.
• When I am engaged in my rituals I feel alienated from myself.	• My obsessive-compulsive behaviors make me unique.
• I feel left out because of my obsessions and/or compulsions.	• My obsessive-compulsive behaviors reflect my value system.
• People I know are critical of me because of my obsessive-compulsive behavior.	• My rituals are based on behaviors (organization; cleanliness) valued by others.
• I don't even recognize myself when I am engaged in obsessive-compulsive behavior.	• I like what my obsessive-compulsive behavior does for me.
Safety	**Adequacy**
• My obsessive-compulsive behaviors help me be mindful of dangers.	• My obsessive-compulsive behaviors are socially acceptable.
• My obsessions and/or compulsions keep people I care about safe.	• The level of my obsessive-compulsive behavior is as low as I want it to be.
• My rituals help give me a feeling of control in my life.	• My obsessions and/or compulsions do not define who I am.
• My obsessions and/or compulsions reflect my concern for the welfare of other.	• I am not trying to eliminate my obsessive-compulsive behaviors from my life
• My obsessive thoughts alert me to risky situations.	
• My rituals prepare me for the unforeseen future.	

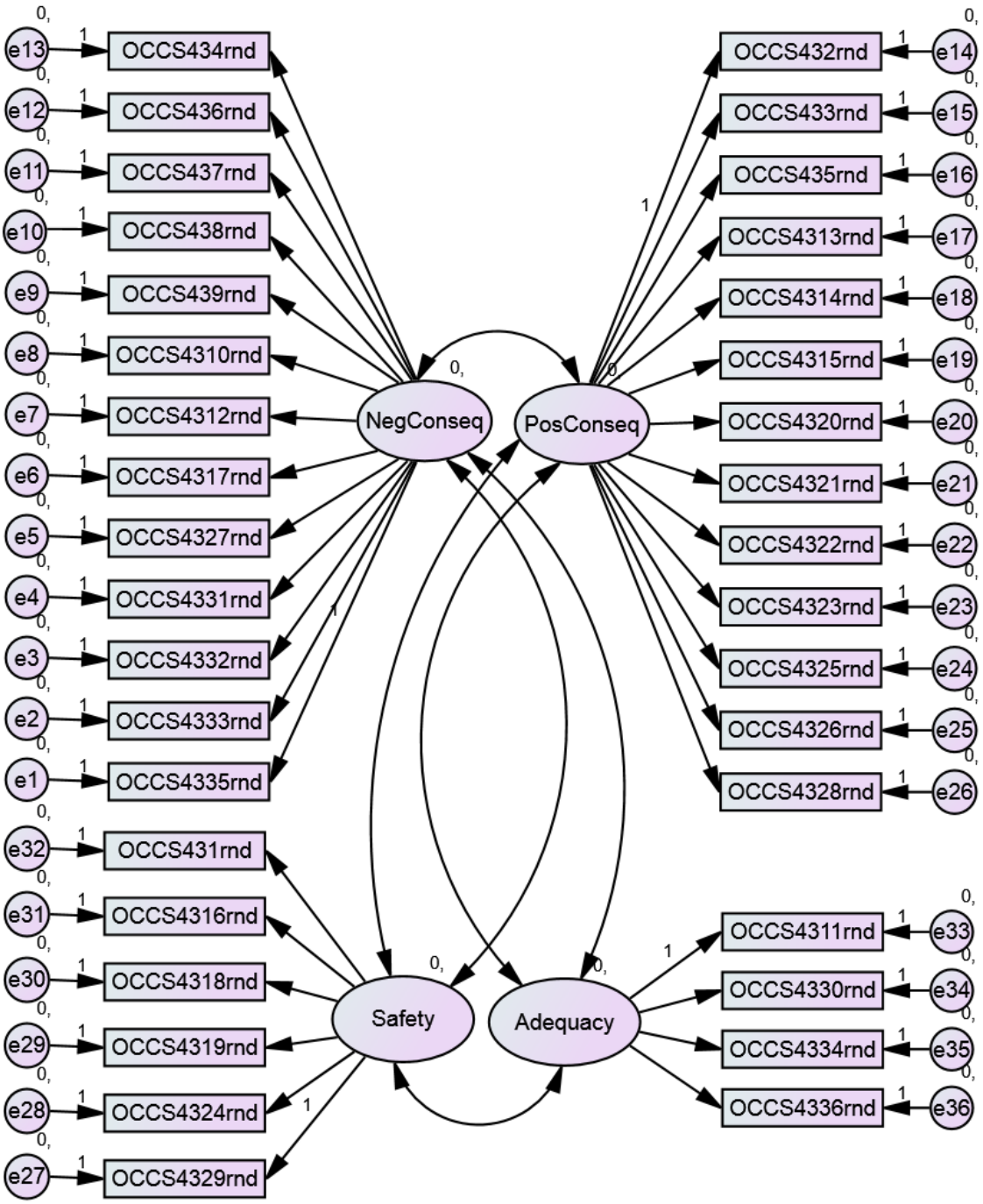

Figure 1. CFA path model 1. This figure depicts the initial path model constructed in SPSS Amos 21 to test the proposed four factor solution for the OCC-R.

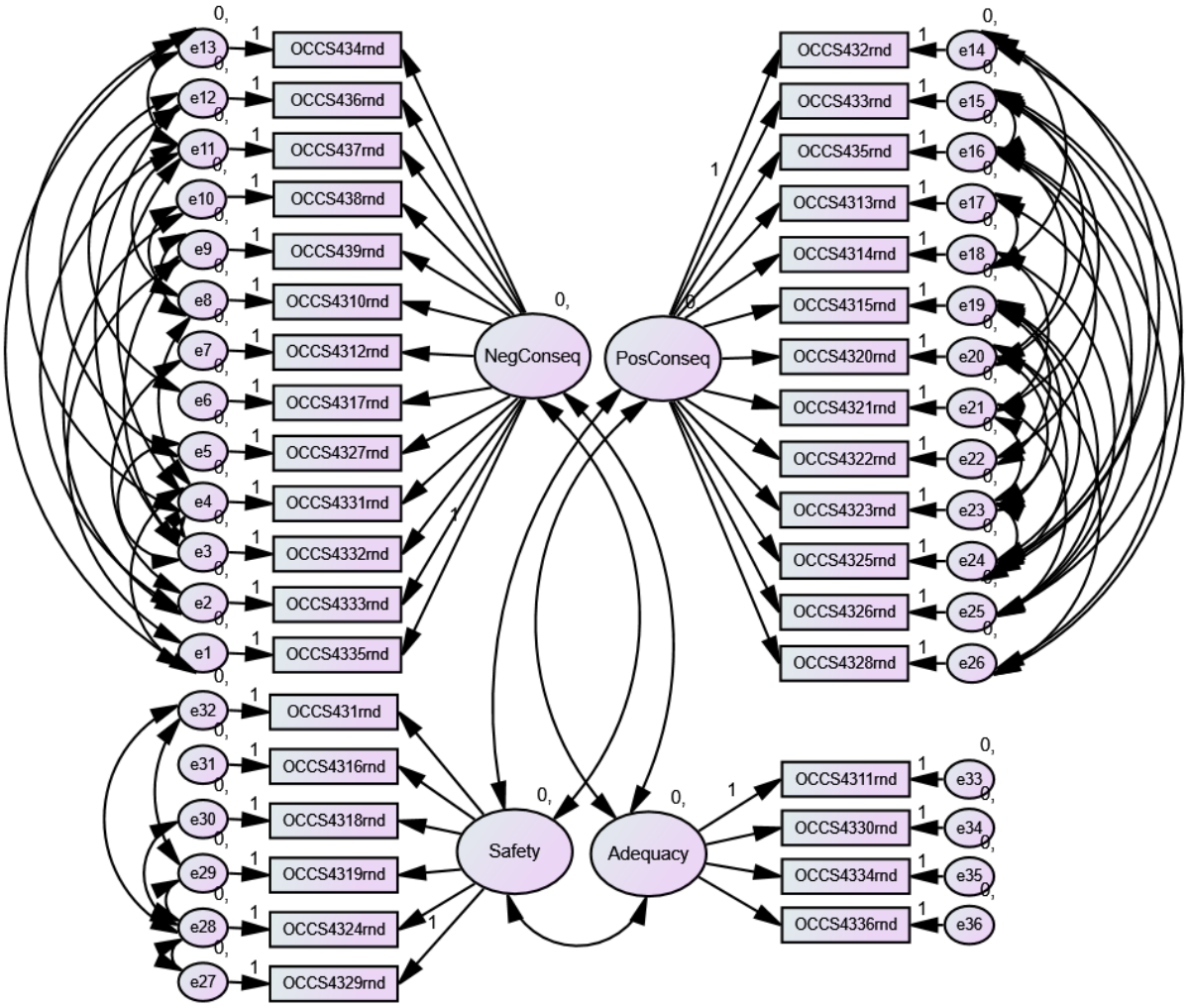

Figure 2. CFA path model 2. This figure represents the second path model evaluated using SPSS AMOS 21. Re-specification of the initial model was based on the identified Modification Indices and underlying conceptualization of the OCCS-R.

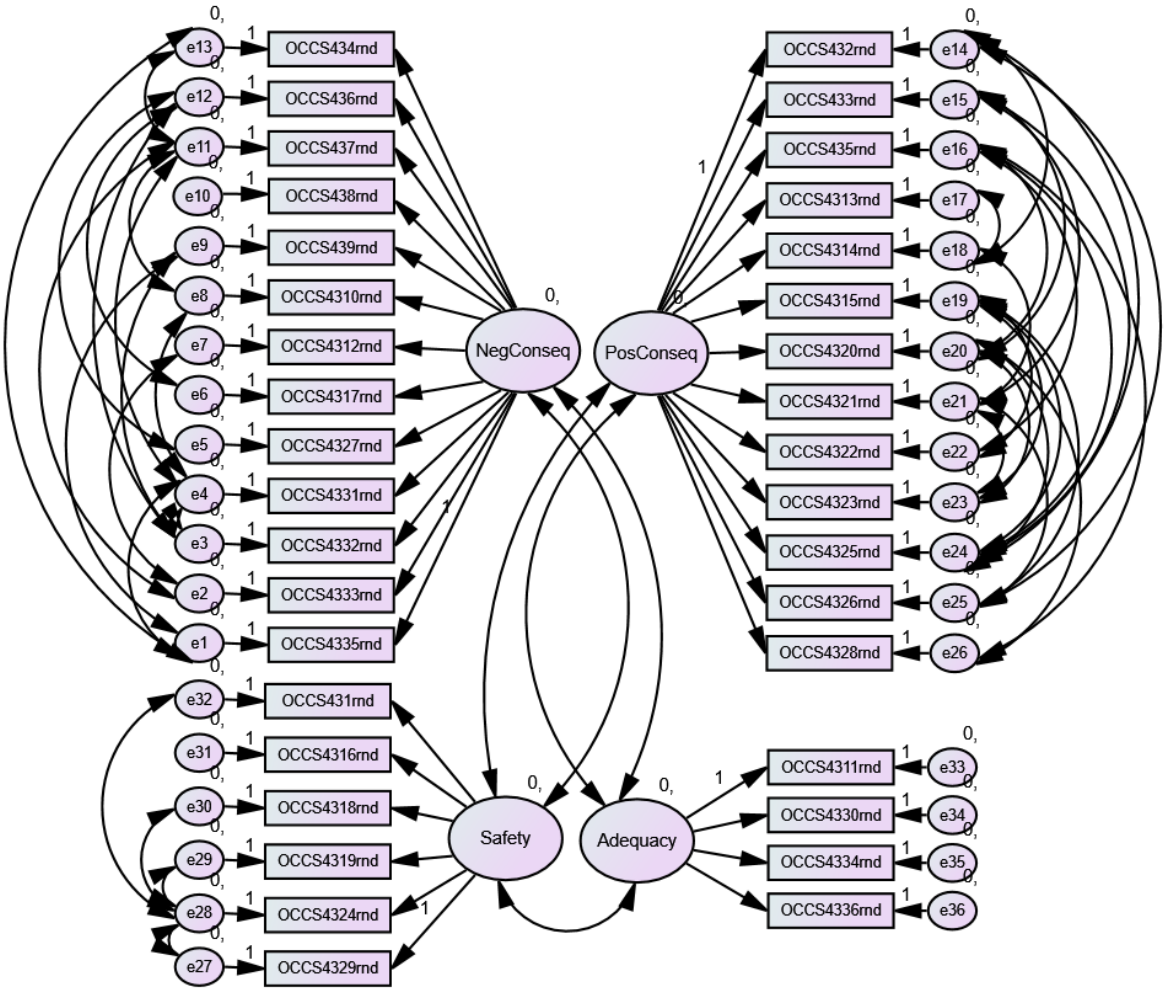

Figure 3. CFA path model 3. This figure illustrates the final path model that found adequate fit to the sample data.

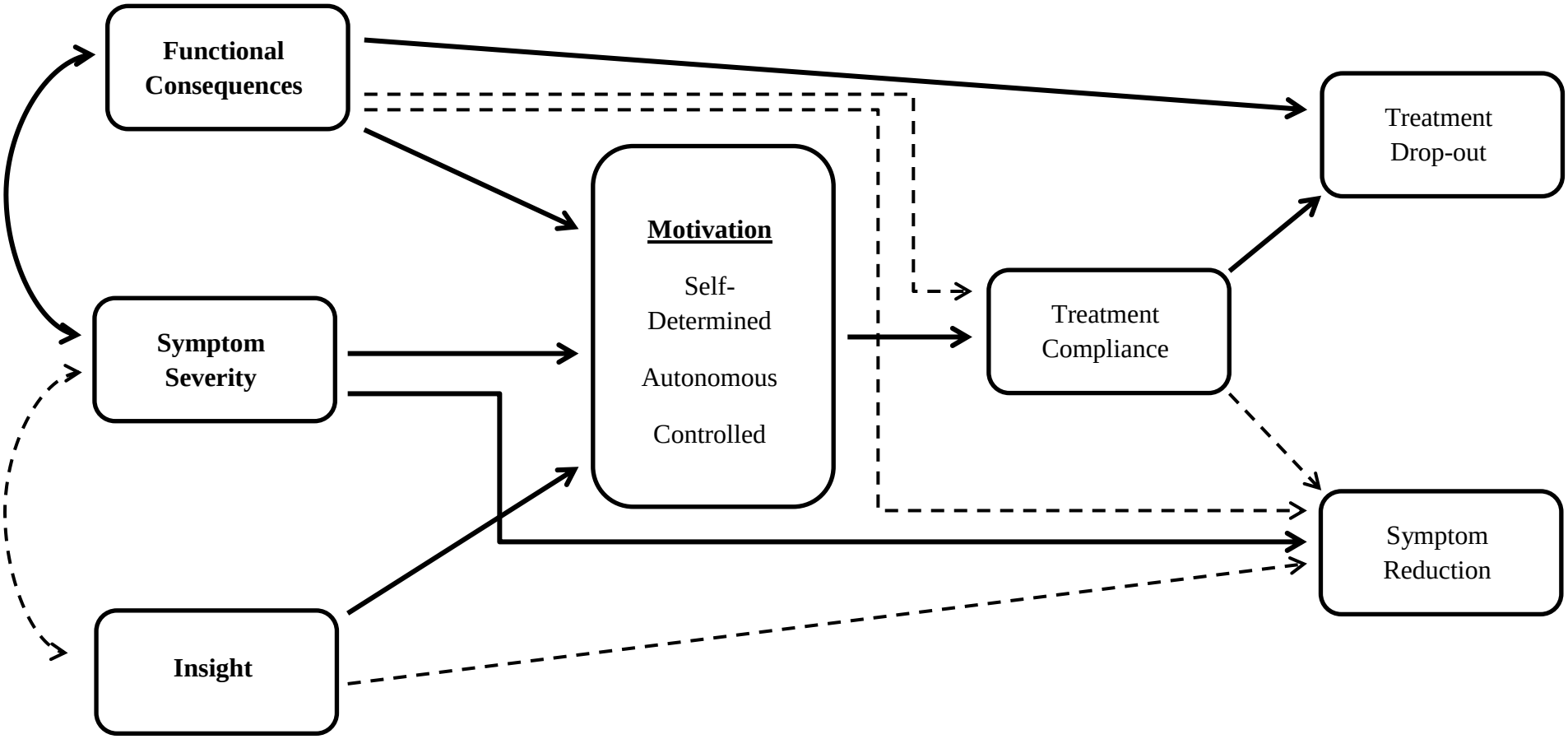

Figure 4. Preliminary Framework outlining the observed relationships between identified prognostic factors and treatment outcome.

Note*a. Solid lines represent significant relationships; dashed lines represent non-significant relationships at the $p \leq .05$ level.

Appendix A

Obsessive Compulsive Consequences Scale-Revised (OCCS – R)

Nathaniel Van Kirk, M.S. & George Clum, Ph.D.

Instructions: Rate the following statements on a scale of 1-5 based on how consistent they are with how you think and feel about your obsessive and/or compulsive behaviors. Use the following scale to rate each statement and circle the rating below each question:

1	2	3	4	5
Not At All Consistent	Slightly Consistent	Partially Consistent	Fairly Consistent	Extremely Consistent

1. My obsessive-compulsive behaviors help me be mindful of dangers.
   1 2 3 4 5
2. I am happy with the quality of life my obsessions and/or compulsions provide.
   1 2 3 4 5
3. My value as a person is attributable to my obsessive-compulsive behavior.
   1 2 3 4 5
4. Bad things happen to me because of my obsessive-compulsive behavior.
   1 2 3 4 5
5. My compulsive behaviors give me a sense of control over my life.
   1 2 3 4 5
6. My obsessions and/or compulsions make my life miserable.
   1 2 3 4 5
7. My obsessive-compulsive behaviors feel like they are being carried out by a person other than myself.
   1 2 3 4 5
8. My obsessive-compulsive behavior limits my ability to engage in social activities.
   1 2 3 4 5
9. My obsessive-compulsive behavior negatively affects my relationships with people close to me.
   1 2 3 4 5
10. My obsessions and/or compulsions make it hard to get close to people.
    1 2 3 4 5
11. My obsessive-compulsive behaviors are socially acceptable.
    1 2 3 4 5
12. My obsessive-compulsive behaviors stress people who are around me.
    1 2 3 4 5
13. I am a better person because of my obsessive-compulsive behavior.
    1 2 3 4 5
14. In general, good things happen because of my obsessive-compulsive behavior.
    1 2 3 4 5
15. My compulsive behaviors keep my life structured and orderly.
    1 2 3 4 5
16. My obsessions and/or compulsions keep people I care about safe.

1 2 3 4 5

17. The quality of my life is negatively affected by my obsessive-compulsive behavior
1 2 3 4 5
18. My rituals help give me a feeling of control in my life.
1 2 3 4 5
19. My obsessions and/or compulsions reflect my concern for the welfare of other.
1 2 3 4 5
20. On balance, my obsessive-compulsive behavior has resulted in more positives than negatives.
1 2 3 4 5
21. My obsessive-compulsive behaviors reinforce my sense of self.
1 2 3 4 5
22. My rituals keep me healthy.
1 2 3 4 5
23. My obsessive-compulsive behaviors make me unique.
1 2 3 4 5
24. My obsessive thoughts alert me to risky situations.
1 2 3 4 5
25. My obsessive-compulsive behaviors reflect my value system.
1 2 3 4 5
26. My rituals are based on behaviors (organization; cleanliness) valued by others.
1 2 3 4 5
27. My obsessive-compulsive behaviors put me in a class by myself.
1 2 3 4 5
28. I like what my obsessive-compulsive behavior does for me.
1 2 3 4 5
29. My rituals prepare me for the unforeseen future.
1 2 3 4 5
30. The level of my obsessive-compulsive behavior is as low as I want it to be.
1 2 3 4 5
31. When I am engaged in my rituals I feel alienated from myself.
1 2 3 4 5
32. I feel left out because of my obsessions and/or compulsions.
1 2 3 4 5
33. People I know are critical of me because of my obsessive-compulsive behavior.
1 2 3 4 5
34. My obsessions and/or compulsions do not define who I am.
1 2 3 4 5
35. I don't even recognize myself when I am engaged in obsessive-compulsive behavior.
1 2 3 4 5
36. I am not trying to eliminate my obsessive-compulsive behaviors from my life.
1 2 3 4 5

Appendix B

Treatment Expectations

On the following scale please rate where you would like your symptoms to be following the completion of time in the treatment program, given that a rating of 10 would be your current symptom level and 0 would be no symptoms.

0 1 2 3 4 5 6 7 8 9 10

Appendix C

Compliance Rating Form

Please rate the participant based on their adherence to the treatment protocol on the following dimensions:

Psycho-education: Please rate the degree to which the client adhered to the psycho-education protocol. Give consideration to their willingness to engage and understand the presented information about OCD, along with the treatment rationale.
0-the patient was not willing to engage/ademately resisted psycho-education
1-the patient reluctancly engaged in limited psycho-education, but was resistant to the information
2-the patient engaged in moderate psycho-education
3-the patient willingly engaged/was receptiable to psycho-education
4-the patient actively engaged/sought out psycho-education

Staff Assisted Exposures. Please rate the patient's compliance with discussed exposures when assisted by staff. Give consideration to their willingness to engage in new and difficult exposure and how well they adhered to the ritual prevention component of the exposure process.

0-the patient was not willing/refused to engage in exposures/did not attempt to resist their rituals
1-the patient reluctantly engaged in exposures and showed limited resistance to rituals
2-the patient demonstrated moderate compliance with exposures and ritual prevention protocols
3-the patient willingly engaged in exposures and actively resisted the majority of their rituals
4-the patient actively engaged/sought out exposures and performed no rituals

Independent/Homework Exposures. Please rate the patient's compliance with discussed exposures when conducting them without staff assistance/independently. Give consideration to how often they engaged in newly assigned and difficult exposure and how well they adhered to the ritual prevention component of the exposure process.

0-the patient was not willing/refused to engage in exposures/did not attempt to resist their rituals
1-the patient reluctantly engaged in exposures and showed limited resistance to rituals
2-the patient demonstrated moderate compliance with exposures and ritual prevention protocols
3-the patient willingly engaged in exposures and actively resisted the majority of their rituals
4-the patient actively engaged/sought out exposures and performed no rituals

Group Compliance. Please rate how well the client complied to group treatment protocols. Give consideration to their attendance and participation.
0-the patient did not attend/refused to participate in group sessions
1-the patient reluctantly attended groups/had minimal participation in group sessions
2-the patient attended approximately 50% /participated moderately in group sessions
3-the patient attended the majority of groups sessions/participated the majority of the time
4-the patient attended all sessions/actively participated in all group sessions

Appendix D

Discharge Rating Form

Was the client's discharge from the treatment program in line with the advice of the behavior therapist (i.e. did the client drop-out of treatment)?
1-yes
2-no

Appendix E

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants in Research Projects Involving Human Subjects

Obsessive Compulsive Self-Syntonicity of Symptoms Scale: Development, Reliability and Validity

I. Purpose of this Research/Project
The purpose of this project is to validate the Obsessive Compulsive Self-Syntonicity of Symptoms Scale (OCSSSS) and understand how it relates to motivation to change. The OCSSSS was developed in order to evaluate the extent to which individuals view their obsessive compulsive symptoms as consistent with their sense of self.

To participate you must be at least 18 years of age and be a student from Virginia Tech taking a Psychology class that offers extra credit for research participation. You have been selected for this portion of the study if you met our requirements for number and severity of obsessive-compulsive symptoms.

II. Procedures
In this section of the study you will be given an interview lasting 20-30 minutes regarding your beliefs about your obsessive and/or compulsive symptoms, a pencil and paper version of the Obsessive Compulsive Inventory and Yale-Brown Obsessive Compulsive Scale-Self Report. Your interview will be recorded. In total, this phase of the study will last approximately 35-60 minutes.

III. Risks
Potential risks may include increased awareness of a problem with obsessive-compulsive symptoms and heightened anxiety. If your anxiety is heightened by participation in the study you may contact the researchers. Following the completion of the study, you will be sent a description of the study, explaining the purpose and findings of the study.

IV. Benefits
There are no direct benefits to the participant. There may be societal benefits in the form of improving our understanding of how beliefs about obsessive compulsive symptoms relate to motivation to engage in treatment.

V. Extent of Anonymity and Confidentiality
All questionnaire data will use a personalized identification number as the only way to identify who has completed the measures. Your personal information linking you to the identification number will be stored separately in a locked cabinet. All questionnaire data will be stored on a locked computer, accessible only by the experimenters. Your interview data, which will be audio-recorded, may be randomly selected to be reviewed by another individual on the research team who will not be apprised of your identity. At no time will the researchers release the results

of the study to anyone other than individuals working on the project without your written consent. Upon completion of the study and analysis of the results, all identifying information will be deleted and/or shredded to assure anonymity. It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research.

VI. Compensation

Compensation will be provided for participation in the study in the form of course credit. Participation in this section of the study entitles you to one extra credit point.

VII. Freedom to Withdraw

Participation is on a voluntary basis. You have the right to ask and discuss any questions or concerns you may have with the experimenter. You may withdraw from the study at any point without penalty. If you elect not to participate in this section of the study you will not lose any previously accumulated credit. You will not be penalized by reduction in points or grade in a course and are free not to answer any questions or respond to any part of the interview or questionnaires.

VIII. Subject's Responsibilities

I voluntarily agree to participate in this study. I have the following responsibilities: respond to the interview questions related to the Brown Assessment of Beliefs Scale, and complete the Obsessive Compulsive Inventory, and Yale -Brown Obsessive Compulsive Scale-Self Report Paper versions.

IX. Subject's Permission

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

_____ Date_____

Subject signature

_____ Date _____

Witness (Optional except for certain classes of subjects)

Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

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Appendix F

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants
in Research Projects Involving Human Subjects

Obsessive Compulsive Consequences Scale – Revised: A Clinical Validation

I. Purpose of this Research/Project
The purpose of this project is to validate the Obsessive Compulsive Consequences Scale – Revised (OCCS-R) and understand how it relates to motivation and treatment outcome. The OCCS-R was developed to evaluate the everyday functional consequences of obsessive compulsive disorder (OCD) symptoms.

To participate you must be at least 18 years of age and currently seeking treatment at the Houston OCD Program for a diagnosis of OCD.

II. Procedures
The following study will use data from the standard assessment protocol for the facility. If you agree to participate in the study you are providing permission for the research team to use your data in the following study. The measures included in this study are the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), Obsessive Compulsive Consequences Scale – Revised (OCCS-R), Client Motivation for Treatment Scale (CMOTS), an expectations for treatment question, and Brown Assessment of Beliefs Scale (BABS). No identifying information will be provided to the research team.

Upon entrance into the program, you will be administered the Y-BOCS (15-30 minutes) and the OCCS-R (10-15 minutes) as part of the standard intake assessment and one question of your expectations for treatment. One week following the intake assessment you will be administered the BABS (10-15 minutes) as part of the standard assessment protocol and the CMOTS (10-15 minutes). At discharge you will again be administered the Obsessive Compulsive Consequences Scale - Revised and Yale-Brown Obsessive Compulsive Scale (30 minutes). Compliance with treatment will be rated weekly by the staff.

III. Risks
No potential risks are anticipated above and beyond a potential increase in anxiety that may accompany the standard assessment practice. If you experience an increase in anxiety throughout the assessment process please consult facility staff.

IV. Benefits
You will not receive any direct benefits, however, some indirect benefit may be found in the additional data that will be available to the facility staff in order to further specialize your therapeutic experience. Societal benefits exist in the further understanding of how obsessive compulsive symptoms relate to motivation to engage in treatment. Furthermore, this will clarify the relationship between functional consequences assessed by the Obsessive Compulsive

Consequences Scale-Revised and treatment motivation, compliance, and outcome. The clinical validation of this scale may benefit clinicians by allowing them to identify and address issues that are detrimental to the treatment process, thereby increasing treatment effectiveness and efficiency.

V. Extent of Anonymity and Confidentiality

All assessment data will be collected by the staff at the Houston OCD Program and subsequently de-identified, using numeric ID numbers in place of identifying information. The research team will collect the scores from the above identified assessment measures in an electronic format, using numeric ID numbers only. No identifying information will be released to the research team in order to protect your anonymity.

VI. Freedom to Withdraw

Participation is on a voluntary basis. You have the right to ask and discuss any questions or concerns you may have with the experimenter. You may withdraw from the study at any point.

VII. Subject's Responsibilities

I voluntarily agree to participate in this study and give permission to the research team to use my information for the study. I have the responsibility to complete the assessment protocol outlined above when presented by the facility staff.

VIII. Subject's Permission

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

_____ Date_____

Subject signature

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