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Family Accommodation in Adults with Obsessive-Compulsive Disorder: Psychometric Properties of the Family Accommodation Scale - Patient Version

Monica S. Wu
University of South Florida, monicawu@mail.usf.edu

Family Accommodation in Adults with Obsessive-Compulsive Disorder:

Psychometric Properties of the Family Accommodation Scale – Patient Version

by

Monica S. Wu

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Department of Psychology
College of Arts and Sciences
University of South Florida

Co-Major Professor: Eric A. Storch, Ph.D.
Co-Major Professor: Vicky Phares, Ph.D.
Joseph Vandello, Ph.D.

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TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

Family accommodation is a salient construct within the context of obsessive-compulsive disorder (OCD) and occurs in a large majority of affected individuals and their families. Accommodating behaviors can manifest in various ways, including participation in the patient's rituals, modifying everyday routines, facilitating compulsive behaviors, or providing reassurance. It has been repeatedly linked to negative outcomes, such as attenuated treatment response, increased obsessive-compulsive symptom severity, higher levels of family distress, and lower levels of functioning.   As such, it is of significant clinical importance to have a standardized measure that is able to be used in research and clinical practice.

The Family Accommodation Scale for Obsessive-Compulsive Disorder (FAS) was the initial attempt at a measure to systematically assess for family accommodation in patients with OCD, with different clinician-rated and self-reported versions completed by the relative arising thereafter. However, to date, there is not a patient-reported version of the instrument. Existing measures focus on reports from the relative (e.g., the patient's significant other, parent), overlooking information from the patient themselves. Additionally, adult patients with OCD often present to clinical services alone, frequently making it impractical to obtain information from their relative. As such, it is important to have a standardized patient-reported measure to examine the accommodating behaviors.

The present study sought to evaluate the psychometric properties of the Family Accommodation Scale for Obsessive-Compulsive Disorder – Patient Version (FAS-PV). A large

majority of the participants (88.5%) endorsed at least one type of accommodating behavior in the previous week. Provision of reassurance and waiting for completion of compulsions were the most frequently reported behaviors, while helping with personal tasks and making excuses/lying due to OCD-related impairment were the least frequently endorsed. The FAS-PV demonstrated good internal consistency and test-retest reliability, as well as good convergent/divergent validity. The FAS-PV did not significantly differ from the relative-reported measure of family accommodation in terms of internal consistency or mean scores. Ultimately, the FAS-PV demonstrated sound psychometric properties and utility in assessing family accommodation from the patient's perspective.

INTRODUCTION

Obsessive-compulsive disorder (OCD) is a heterogeneous disorder characterized by intrusive obsessions and/or repetitive compulsions (American Psychiatric Association, 2013), affecting an estimated 1% of the adult population (Crino, Slade, & Andrews, 2005; Subramaniam, Abdin, Vaingankar, & Chong, 2012). Obsessions present in the form of intrusive thoughts, images, or phrases that continually enter into the individual's mind. Compulsions manifest by rituals or mental acts that need to be repeatedly carried out, often in response to experiencing anxiety or distress due to an obsession. Individuals with OCD experience significant interference in various aspects of their lives, including social, occupational, academic, or family impairment (Piacentini, Bergman, Keller, & McCracken, 2003; Vikas, Avasthi, & Sharan, 2009). Over the past two decades, there has been a growing interest in the interplay between the disorder and family dynamics. Family accommodation is an especially salient construct within OCD, and it possesses significant implications for symptom maintenance and refractory treatment response.

Family Accommodation in OCD: Frequency, Correlates, and Impact

Family accommodation is a phenomenon that applies to individuals of all ages with OCD. It typically involves the participation of a family member in obsessive-compulsive symptoms, as well as adjustments to the family's routine (Calvocoressi et al., 1995). Such accommodation can manifest by carrying out certain duties for the individual, providing reassurance, or aiding in avoidance of anxiety-provoking situations that trigger obsessive-

compulsive symptoms. For instance, an individual with OCD may experience significant distress when touching a doorknob, due to the consequent intrusive thoughts about contracting an illness. A family member can accommodate by reassuring the individual that they will not become sick after touching the doorknob, or allowing them to avoid touching doorknobs by opening every door for them. Accommodation can also include the facilitation of obsessive-compulsive symptoms, such as providing numerous bottles of hand sanitizer for the patient to use in their cleaning compulsions. On the other hand, family accommodation can involve modification of the family's entire routine, such as complete rearrangement of family members' work schedules to accommodate for the patient's extensive cleaning rituals in the morning, or ceasing to participate in any leisure activities for fear of triggering obsessions or compulsions in certain situations.

Family accommodation is common and prevalent in families of a person with OCD; accommodation by the relative (i.e., family members or significant others) has been documented to occur between 60% to 97% of families, and a majority of those accommodate on a daily basis (Calvocoressi et al., 1995; Peris et al., 2008; Ramos-Cerqueira, Torres, Torresan, Negreiros, & Vitorino, 2008; Shafran, Ralph, & Tallis, 1995; Stewart et al., 2008; Storch, Geffken, et al., 2007). Significant differences in family accommodation across the type of relative or gender have not been found. However, certain obsessive-compulsive symptom dimensions have been linked to higher family accommodation, especially cleaning rituals/contamination fears (Lebowitz, Panza, Su, & Bloch, 2012; Stewart et al., 2008). Additionally, the types of accommodation that were most frequently engaged in included offering reassurance (e.g., assuaging the patient that the feared outcome would not unfold) and participating in the actual rituals (Peris et al., 2008; Storch, Geffken, et al., 2007).

Relatives typically engage in family accommodation with positive intentions, in hopes of reducing the patient's distress, functional impairment, or time spent on compulsions (Calvocoressi et al., 1999; Storch, Björgvinsson, et al., 2010). However, engaging in accommodation has shown associations with deleterious outcomes for the patient. It has been widely associated with augmented obsessive-compulsive symptom severity and functional impairment (Storch, Geffken, et al., 2007; Storch, Larson, Muroff, et al., 2010). Upon further investigation, Caporino et al. (2012) found that family accommodation mediated the relationship between obsessive-compulsive symptom severity and relative-rated functional impairment. Moreover, family accommodation conflicts with the goals of cognitive-behavioral treatment for OCD. Indeed, numerous studies have shown that family accommodation is related to poorer treatment outcome, and serves as an obstacle to symptom improvement (Merlo, Lehmkuhl, Geffken, & Storch, 2009; Peris et al., 2008; Renshaw, Steketee, & Chambless, 2005; Storch, Geffken, et al., 2007). While helping facilitate compulsions or reassuring a patient will temporarily reduce their distress, it prevents the patient from habituating to the anxiety that occurs with the obsessive-compulsive symptoms, inhibiting it from naturally subsiding. Additionally, by engaging in accommodation, the cycle is negatively reinforced and fortifies a co-dependent relationship and the need to receive accommodation when the distress arises again (Cooper, 1996). Consequently, accommodation is not conducive to symptom improvement in the long run, and negatively impacts the lives of the patient and the accommodating relatives further.

The significant, expansive impact of OCD can be detected beyond the level of the patient, causing substantial familial distress (Albert et al., 2010; Amir, Freshman, & Foa, 2000; Ferrao et al., 2006; Futh, Simonds, & Micali, 2012). Family accommodation can affect the family as a

whole by consuming a considerable amount of time, altering daily routines, and generating strain on family relationships (Calvocoressi et al., 1995). Specifically, it has been linked to poorer family organization, disharmony, and functioning (Calvocoressi et al., 1995; Maina, Saracco, & Albert, 2006; Peris et al., 2008; Steketee & Van Noppen, 2003). Additionally, more recent studies have conducted preliminary investigations into the anger experienced by the patient and its subsequent effect on family accommodation. Lebowitz, Vitulano, and Omer (2011) qualitatively examined family accommodation as being coerced and imposed onto the relatives, based on the patient's volatile reactions to non-accommodation. This anger is described as qualitatively unique to patients with OCD, and binds the relatives to accommodate based on their threats, emotional distress, and possible violence, indubitably causing more strain on family relationships (Vikas et al., 2009). As evidenced collectively, family accommodation is associated with significant impairment at the patient and family level, necessitating further research that systematically details and assesses this phenomenon (Storch et al., 2012; Wu, Lewin, Murphy, Geffken, & Storch, 2014).

Measuring Family Accommodation in OCD

Family Accommodation Scale for Obsessive-Compulsive Disorder (FAS and FAS-IR).
Calvocoressi et al. (1995) pioneered the initial attempt to systematically investigate family accommodation in obsessive-compulsive disorder. They developed a measure, the Family Accommodation Scale for Obsessive-Compulsive Disorder (FAS), to examine the type and frequency of accommodation behaviors (first 9 items), as well as the consequences and distress experienced due to refraining from accommodating (last 4 items). To pilot the measure, the authors administered this original 13-item measure as a clinician-rated instrument to 34 relatives

of patients with OCD. Relatives were able to provide a frequency response for the initial 9 items on a 5-point Likert scale (Never, 1-2 times a month, 1 or 2 times a week, 3-6 times a week, Daily), and a severity rating for the last 4 items on a 5-point Likert scale (Never, Mild, Moderate, Severe, Extreme).

Albert et al. (2010) conducted the first and only study to date examining the factor structure of the FAS. The authors recruited 97 patients with OCD and 141 adult relatives that had been cohabiting with the patient for at least two years. Through Principal Component Analysis (PCA), three factors emerged: Modification (items 5-9), Distress and Consequences (items 10-13), and Participation (items 1-4). The three factors accounted for 55.74% of the variance in the FAS-PR responses; the first two factors each explained 19% of the variance, and the last factor explained 18% of the variance. In measuring internal consistency, Modification, Distress and Consequences, Participation, and the 13-item total score yielded Cronbach's α scores of .76, .75, .67, and .83, respectively.

Calvocoressi et al. (1999) finalized the measure after the piloting stage, concluding with a revised 12-item clinician-rated measure called the interviewer-rated Family Accommodation Scale for Obsessive-Compulsive Disorder (FAS-IR). Similar to the FAS, answers on the FAS-IR are garnered through relative reports on the patient with OCD, and the measure follows a clinician-rated, semi-structured interview format. However, the FAS-IR strictly assesses accommodating behavior, only extrapolating the 9 items from the FAS that directly inquire about specific accommodating behaviors, and adds 3 additional behaviors.

The FAS-IR consists of two sections; the first section includes an OCD symptom checklist, and the second section assesses family accommodation. The first section was adapted from the symptom checklist in the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS), which

is considered the gold standard in assessing the presence and severity of OCD symptoms in adults (Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989). The authors note that this section was not designed to obtain a comprehensive list of all obsessive-compulsive symptoms in the patient; rather, it is primarily used to assess the relative's awareness of the symptoms and to use the reported OCD symptoms as probes when querying about family accommodation in the next section. The second section examines the relative's accommodating behaviors by assessing modifications of routines (e.g. family routine), provision of reassurance, facilitation of compulsions, direct participation in rituals, avoidance of certain situations, modifying patient responsibilities, and permitting compulsions to happen (e.g. waiting for them, tolerating disruptions). Relatives are asked to provide the frequency of such accommodating behaviors on a Likert scale from 0 to 4 (0 = Never, 1 = Once a week, 2 = 2-3 times a week, 3 = 4-6 times a week, 4 = Every day). The FAS-IR is scored by summing the 12 items in the second section to garner a total score.

Respondents in the study by Calvocoressi et al. (1999) were 36 pairs of adult patients and their relatives. Patients were asked to only provide information on the Y-BOCS, while the relatives were asked to complete the FAS-IR interview and fill out additional measures to assess family functioning and attitudes toward the patient. The FAS-IR had good internal consistency ($\alpha = .82$) and strong agreement across raters (Intraclass Correlation Coefficients [ICC] between .72 to 1.0). In support of convergent validity, the FAS-IR total score was significantly correlated with Y-BOCS ($r = .49$, $p < .003$) and Global Assessment of Functioning (GAF) scores ($r = -.45$, $p < .009$). Family accommodation was significantly related to poorer global family functioning ($r = .50$, $p < .002$), as assessed by the Family Assessment Device (FAD; Epstein, Baldwin, &

Bishop, 1983). Discriminant validity was supported by non-significant correlations between the FAS-IR total score and items on the Questionnaire on Resources and Stress that assessed familial stress unrelated to OCD. In sum, the FAS-IR possesses generally strong psychometric properties and has been extensively used since its inception. However, given its clinician-rated nature and consequent costliness, researchers and clinicians searched for an alternative, more streamlined manner of assessing family accommodation.

Family Accommodation Scale for Obsessive-Compulsive Disorder – Parent Report (FAS-PR). Modified self-reported (by the relative about the patient with OCD) versions of the FAS instrument have surfaced in recent years (Albert et al., 2010; Geffken et al., 2006; Piacentini et al., 2011). The self-reported version for parents reporting on their youth has had several monikers, but is most commonly referred to as the Family Accommodation Scale – Parent Report (FAS-PR). The FAS-PR is an abridged version of the original clinician-rated FAS (but not the FAS-IR), and includes 9 items specifically assessing accommodating behaviors, as well as the latter 4 exploratory items investigating the consequences and distress related to withholding accommodation.

The FAS-PR has been increasingly used due to its appealing advantages, such as cost-efficiency and considerable decrease in responder burden due to a shorter completion time. In excluding the need for clinicians to administer the family accommodation scale, the self-reported FAS-PR allows for more efficient dissemination of the measure. Additionally, the relatives are able to report on the accommodating behavior freely, without concern about answering the questions face-to-face with a clinician. As such, due to its budding usage and sizable advantages, Flessner et al. (2010) endeavored to formally investigate the psychometric properties of the FAS-PR.

Flessner et al. (2010) recognized the widespread usage of the FAS-PR, but noted its lack of systematic investigation in pediatric populations. Their sample of youth was taken from the larger Pediatric OCD Treatment Study (POTS), including 96 youth with OCD and their parent(s) (The Pediatric OCD Treatment Study (POTS) Team, 2004). An Exploratory Factor Analysis (EFA) was conducted to determine the factor structure, yielding two factors each containing 6 items: Avoidance of Triggers and Involvement in Compulsions. Avoidance of Triggers and Involvement in Compulsions garnered good (Cronbach's α = .80) to excellent (Cronbach's α = .90) internal consistency, respectively. In examining the relationship between the two factors, they were found to be largely related (r = .51), but still tapping into disparate constructs. To examine convergent validity, the FAS-PR total score and its two factors were correlated with the Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS; Scahill et al., 1997), Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983) total t-score, and Child OCD Impact Scale-Child Report (COIS-C; Piacentini et al., 2003) total score. The CY-BOCS is the youth version of the aforementioned Y-BOCS, the BSI reports on general parental psychopathology, and the COIS-C examines the effect of OCD on pediatric psychosocial functioning. Generally, the FAS-PR total score and its factors showed significant low to moderate correlations with the majority of the measures, demonstrating adequate to good convergent validity. The FAS-PR total score and its two factors were also shown to have no significant correlations with disparate constructs, such as self-concept (as measured by the Piers-Harris Children's Self-Concept Scale; Piers & Harris, 1969) and trauma (as measured by the Child and Adolescent Trauma Survey; March, Amaya-Jackson, Terry, & Costanzo, 1997), demonstrating adequate discriminant validity (March et al., 1997; Piers & Harris, 1969).

Although the FAS-PR has generally demonstrated adequate psychometric properties, there are still a number of problems with its usage. For instance, there has been a lack of consistency in its utilization across studies, as some will incorporate the 9 items exclusively when calculating the total score, while others will include all 13 items. As such, there is increased difficulty in interpreting findings across different studies, and the FAS-PR has yet to be directly compared to the finalized clinician-rated instrument (FAS-IR). Additionally, as the FAS-PR is based on the original FAS, it fails to assess the additional three items included in the FAS-IR about accommodating behaviors. The FAS-PR also excludes the detailed OCD symptom checklist, precluding any probes of patient symptoms to apply to the subsequent questions about accommodating behaviors. In light of these shortcomings, Pinto, Van Noppen, and Calvocoressi (2012) sought to create a more standardized and user-friendly version of a self-report version about family accommodation in OCD for the relative to complete.

Family Accommodation Scale for Obsessive-Compulsive Disorder – Self-Rated Version (FAS-SR). Pinto et al. (2012) developed and examined the Family Accommodation Scale for Obsessive-Compulsive Disorder – Self-Rated Version (FAS-SR) as a self-report measure assessing accommodating behaviors in the past week, which is completed by the relative of the patient with OCD. Contrary to previous self-report measures, the FAS-SR is based on the finalized, gold-standard FAS-IR. As such, the FAS-SR parallels the structure of the FAS-IR by including two separate sections; the first section includes a retailed OCD symptom checklist, and the second section includes items that strictly address family accommodation. The recorded responses are identical across both measures, utilizing a 5-point Likert scale assessing the frequency of the accommodating behaviors in the past week (None, 1 day, 2-3 days, 4-6 days, Every day). However, as this is a self-reported version for the relative to complete, the language

and structure of the questions were slightly modified to provide clarity and increase ease-of-use, while maintaining fidelity to the original content.

The FAS-SR OCD symptom checklist remains largely identical to the FAS-IR, as the wording was only modified to be read as a self-report measure instead of a clinician-rated interview. The second portion of the FAS-SR is also largely identical to the second section in the FAS-IR in regards to the content, as they both assess accommodating behaviors. However, the wording and the structuring of these questions have been modified more thoroughly to simplify the language and make it easier for the reporting relative to comprehend. Specifically, several questions from the FAS-IR that were originally assessed by one item were now assessed by two items in the FAS-SR in hopes of garnering specificity and improving clarity. For instance, the FAS-IR question about reassurance is scripted as:

> During the past week, when (name of patient) has expressed worries, fears, or doubts related to obsessions or compulsions, have you reassured him/her that s/he doesn't have to worry, that there are no grounds for his/her concerns, or that the rituals s/he already performed have taken care of his/her concerns? Examples might include telling your relative that s/he is not contaminated, or that s/he has done enough cleaning or checking. (Calvocoressi et al., 1999)

In the FAS-SR, the same question is assessed with two items, worded as "I reassured my relative that there were no grounds for his/her OCD-related worries. *Examples: reassuring my relative that s/he is not contaminated or that s/he is not terminally ill*" and "I reassured my relative that the rituals he/she already performed took care of the OCD-related concern. *Examples: reassuring my relative that s/he did enough ritualized cleaning or checking*" (Pinto et al., 2012). As evidenced by the direct comparison of the questions, both the FAS-SR and FAS-IR are tapping

into the same construct of providing reassurance, but the FAS-SR version phrases the query in a lay manner by reducing the complexity of the question.

To examine the utility and validity of the FAS-SR, the authors sought out to receive feedback about the items. Specifically, they asked five OCD experts in the field to rate the relevance of the items to the construct of family accommodation, how representative the items were to the construct of family accommodation, and the appropriateness of the structure and wording used in the measure. Based on the positive feedback, all 20 items in the second section of the FAS-SR were retained for administration and analyses.

Once the measure received feedback and was finalized for piloting, it was completed by 41 relatives of patients with OCD. After running corrected correlations at the item-level in the second section, one item (assessing time spent watching the patient complete rituals) garnered a low correlation ($r = -.01$), and was thus removed from the self-report measure. The remaining data analyses were then run on the final 19-item measure, and the FAS-SR was found to possess good psychometric properties.

The FAS-SR had excellent internal consistency (Cronbach's $\alpha = .90$). It also demonstrated good convergent validity with related constructs such as OCD symptom severity measured on the Y-BOCS, overall psychosocial functioning as measured on the GAF, overall family functioning as measured on the FAD, and distress experienced by the relative as measured on the Symptom Checklist-90-R (Derogatis, 1993). Regarding agreement between relative's reports on the FAS-SR and FAS-IR, the endorsement of OCD symptoms on both measures were generally significant in agreement, except for several symptom dimensions (i.e., religious, sexual, and harming obsessions, as well as counting compulsions). The total scores tapping into the frequency of accommodating behaviors on the FAS-IR and FAS-SR were highly

correlated (ICC = .78), and no significant differences in means were found between the measures in relatives that responded to both.

Unlike the FAS-PR, the FAS-SR has a detailed OCD symptom checklist, which helps relatives to report symptoms that they may not have considered otherwise, and enables them to apply these symptoms to subsequent questions about accommodating behaviors. Additionally, the FAS-SR parallels the FAS-IR in structure and content, which has not been previously attempted. The language and wording of the items in the measure have also been modified to be read at a comprehension level appropriate for non-clinicians, importantly increasing the accuracy of responses provided by the relatives.

Present Study

Family accommodation in OCD is a salient construct that has considerable impact at the patient and family level. Given its implications and association with deleterious outcomes, the need to systematically investigate and assess family accommodation is imperative. While the FAS-IR is a well-established measure that is able to assess family accommodation in OCD in a standardized manner, the clinician-rated nature of the measure presents with numerous disadvantages. First, hiring and training clinicians on FAS-IR administration is costly and labor intensive. Second, the actual time spent on administering the FAS-IR (i.e., 30 to 45 minutes) is much longer than its self-reported counterparts, causing subject burden and is not particularly conducive to real-world settings. Lastly, the respondent may feel less willing to disclose certain information when asked directly by a clinician. For instance, s/he may feel uncomfortable disclosing obsessions of an aggressive or sexual nature, or may be embarrassed to admit how much accommodation takes place.

In response to these disadvantages, self-report versions of the measure have demonstrated utility and present solutions to many of the issues. However, there has been a striking omission in the field, as there is no self-reported measure of family accommodation completed by the patient with OCD. This lack of a patient-reported measure is problematic, as the patient is a direct source of information regarding their OCD symptoms and related behaviors, such as accommodation. Furthermore, the patient with OCD is frequently the primary person that attends the evaluation and treatment sessions, making it burdensome and often impractical to contact the relatives for information. As a result, valuable information from the patient regarding family accommodation is being overlooked due to the lack of a standardized, patient-report measure.

In hopes of filling the current gap in the field, this study investigates the psychometric properties of a standardized patient-reported measure of family accommodation in OCD, namely the Family Accommodation Scale for Obsessive-Compulsive Disorder, Patient Version (FAS-PV). The research aims and hypotheses for the present study are as follows:

Hypothesis 1/Specific Aim 1. Examine frequency data for the individual FAS-PV items. These data will allow for a better understanding of the phenomenology of family accommodation. Based on previous reports, it is anticipated that a large majority (i.e., over 60%-70%) of families will report engaging in accommodation (Shafran et al., 1995; Stewart et al., 2008). The most common type of accommodation is predicted to be providing reassurance (Peris et al., 2008; Pinto et al., 2012; Storch, Geffken, et al., 2007).

Hypothesis 2/Specific Aim 2. Investigate the internal consistency of the FAS-PV and FAS-SR and compare values. The structure and content of the FAS-PV closely parallels that of the FAS-SR and the FAS-IR, so it is expected to have similar good to excellent internal

consistency, as the FAS-SR and FAS-IR garnered Cronbach's α scores of .90 and .82, respectively (Calvocoressi et al., 1999; Pinto et al., 2012).

Hypothesis 3/Specific Aim 3. Examine mean item-level differences and mean total score differences between the relative's and patient's ratings on the FAS-SR and FAS-PV. Based on Pinto et al. (2012), the agreement between the relative's endorsement of OCD symptoms on the FAS-IR and FAS-SR were generally significant (with the exception of a few symptom dimensions), and the total scores on the FAS-IR and FAS-SR were also highly correlated. Although no direct comparison has been made between the second section (both between a self-reported version and the FAS-IR and between the present measure and the FAS-SR), it is expected that the item means and total score means on the FAS-SR and FAS-PV will be highly comparable based on the agreement between related measures.

Hypothesis 4/Specific Aim 4. This study will assess test-retest reliability of the FAS-PV total score within a one-week period. Investigation of the measure's stability can provide fruitful information in support of detecting changes in family accommodation over time, which would make the FAS-PV especially useful in treatment outcome trials. It is predicted that the test-retest reliability of the FAS-PV will demonstrate a strong correlation with an $r \geq 0.7$.

Hypothesis 5/Specific Aim 5. Examine the convergent validity of the FAS-PV total score with the FAS-SR total score and other related constructs (i.e., family functioning (FAD, OFF), obsessive-compulsive symptoms (Y-BOCS-II), functional impairment (SDS), overall functioning (GAF), and symptom severity (CGI-Severity, NIMH GOCS)). Previous research has shown good convergent validity for the clinician-rated and relative-reported versions of the measure, also showing significant associations with family functioning, overall, functioning, and

OCD symptoms. Therefore, the FAS-PV is hypothesized to have good construct validity and should positively correlate with the constructs it purports to measure.

Hypothesis 6/ Specific Aim 6. Investigate the divergent validity of the FAS-PV total score with measures of depression and anxiety (DASS) and impulsiveness (BIS-11). The FAS-IR and FAS-PR have both shown discriminant validity, demonstrating non-significant relations with general familial stress unrelated to OCD, trauma symptoms, and self-concept (Calvocoressi et al., 1999; Flessner et al., 2010). It is hypothesized that the FAS-PV will have good divergent validity by demonstrating weak correlations with unrelated constructs, such as depression, anxiety, and impulsiveness.

METHOD

Participants

Participants included 61 adult patients with OCD that were seen at the Rothman Center for Neuropsychiatry. The sample size was pre-determined based on power calculations (see Analytic Plan). To meet inclusion criteria, all patients must have had a principal diagnosis of OCD and be 18 years of age or older. Over half (57.4%) of the participants reported that they were currently taking medication for their OCD, and 31.1% of them were currently enrolled in cognitive-behavioral therapy. Independent t-tests revealed that there were no significant mean differences in OCD symptom severity, age, gender, or family accommodation when comparing individuals that were receiving pharmacological or cognitive-behavioral treatment to individuals that were not receiving either treatment. The mean age of the total sample was 32.57 years old ($SD = 14.91$) and 55.7% ($n = 34$) were females. Most participants were Caucasian (98.4%) and one participant was Hispanic (1.6%). At least 29.5% of the participants had completed high school, while 19.7% completed partial college, 23% completed standard college/university, 18% completed a graduate degree, and 6.6% only received partial high school education. The majority of participants were single (54.1%) or married (34.4%).

Fifty-four relatives of the patients (89%) participated as well, and were defined as someone (e.g., significant other, parent, adult child, etc.) that was either currently living with the patient or had "substantial contact" with them. Parents were the most frequently involved relative (52.5%), followed by the spouse (32.8%). To qualify for having "substantial contact," the relative should have had at least one hour of contact with the patient a day. If the contact was

brief and intermittent, causing the total time to be incalculable, the total time was estimated by the frequency of contact and hours of the day that it occurs; this is identical to how time occupied by obsessive-compulsive symptoms are calculated on the Y-BOCS (Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989). "Contact" was defined as any interactions conducted through face-to-face contact or electronic modalities (e.g., cell phone, computer).

Procedures

The study protocol was approved by the Institutional Review Board (IRB) prior to commencing participant enrollment. Patients at the Rothman Center for Neuropsychiatry were approached about their potential interest in the present study by a staff member at the clinic during their regularly scheduled appointment. Upon confirmation of their interest, a trained clinic staff member discussed the study in more detail and reviewed the informed consent process. After reviewing the study in detail, the participants were able to discuss any questions with the staff member before signing the consent document. It was emphasized that participation in the present study was entirely voluntary, and that agreement or disagreement to participate would not affect their relationship with the clinic in any way. Additionally, all participants were informed that they could terminate study enrollment at any time and/or refuse to answer any questions they do not wish to. Once all queries and concerns were addressed and the participant agreed to continue, the participant signed the informed consent document.

Once obtaining written consent, study procedures began immediately thereafter. All clinician-administered and self-report measures took about 60 to 90 minutes of the patient's time. Additionally, the diagnosis based on the DSM-5 was determined by a clinical consensus attained by the researcher and the attending psychologists/physicians at the Rothman Center for

Neuropsychiatry, based on their clinical experience with the participants and data garnered from the measures (American Psychiatric Association, 2013; Leckman, Sholomskas, Thompson, Belanger, & Weissman, 1982; Storch et al., 2012).

Once the patient agreed to participate in the study, the clinic staff member obtained verbal consent from the patient to contact their relative in hopes of gathering data about their OCD symptoms and accommodating behaviors. Additionally, it was requested that the patient inform the relative that a clinician will be contacting them to complete measures with them over the phone. The relative was then contacted within a week of the patient's completion of their measures. Before commencing any study procedures with the relative, the study was discussed in detail and they were given the same opportunities as the patient to ask questions or terminate participation when desired. Once all questions and concerns were addressed and verbal consent was documented by the staff member, study procedures commenced immediately thereafter.

To reduce subject burden and prevent a sizable loss of data from the relative, all measures with the relative were administered via the phone. Previous studies have shown no statistically significant differences in reported symptomology and ultimate diagnoses when assessed by interviews administered face-to-face versus over the phone (Crippa et al., 2008; Lyneham & Rapee, 2005). All clinician-administered and self-report measures took about 30 to 60 minutes of the relative's time. For self-report measures (i.e., demographics form, FAS-SR, FAD), special care was taken to standardize its administration across relatives. Specifically, all instructions and items were read verbatim, and elaborations were not voluntarily given to prevent deviation from the original measure. However, as patient participants were at the clinic in person and may ask questions to a present staff member, relatives were allowed the same opportunity over the phone when they requested clarification.

All patient participants were asked to complete the FAS-PV and Y-BOCS-II within one week of the initial assessment (with up to another week of delay) to determine test-retest reliability of the FAS-PV. However, patients that were receiving cognitive-behavioral therapy for their OCD symptoms were not asked to complete the test-retest, as it may confound changes in the FAS-PV and Y-BOCS-II scores and render it impossible to attribute the score fluctuations to time or to therapy. As such, only 33% ($n = 20$) of the sample completed the test-retest assessment. All study assessments were audio taped for quality assurance purposes. Inter-rater reliability for the Y-BOCS-II was randomly assessed for a subset (20%) of the sample by clinicians trained on the measure.

Measures

All study measures and their respective time points of administration are presented in Table 2.

Family Accommodation Scale – Patient Version (FAS-PV). The FAS-PV is a self-report measure assessing OCD symptoms and family accommodation within the past week. The individual with OCD is the respondent, and provides information about their own OCD symptoms and the frequency of accommodating behaviors carried out by their relative. The first section consists of an OCD symptom checklist, allowing the individual to endorse the presence of certain OCD symptomology within several domains. The second section examines the frequency of accommodating behaviors carried out by their relative through 19 items. Each item in the second section assesses the frequency in a 5-point scale from 0-4; "0" means none/never, "1" means 1 day, "2" means 2-3 days, "3" means 4-6 days, and "4" means every day this past week. The total score of the FAS-PV is calculated by summing all 19 items in the second

section. Ultimately, the FAS-PV closely resembles the structure and content of the FAS-SR, and is only modified to read as a self-report by the individual with OCD instead of by the relative engaging in the accommodating behaviors.

Family Accommodation Scale – Self-Rated Version (FAS-SR). The FAS-SR is a self-report measure completed by the relative of the patient with OCD, assessing the presence of the patient's OCD symptoms and frequency of family accommodation in the past week (Pinto et al., 2012). The first section includes an OCD symptom checklist that assesses the presence of certain OCD symptoms based on the relative's knowledge, including common examples under each OC-symptom dimension examined. For instance, for "repeating rituals," text under the symptom dimension includes examples of "rereading and/or rewriting things; repeating routine activities (e.g., going in/out of door, getting up/down from chair)." The second section of the FAS-SR includes 19 items assessing the frequency of accommodating behaviors. Responses are provided on a 5-point scale, with "0" meaning none/never, "1" meaning 1 day, "2" meaning 2-3 days, "3" meaning 4-6 days, and "4" meaning every day this past week. Psychometric properties of the FAS-SR were detailed above.

Family Assessment Device – 12-Item Version (FAD-12). The FAD-12 is a 12-item self-report measure that assesses a family's general functioning, which is extrapolated from the original 53-item FAD measure (Epstein et al., 1983). Statements about the family's overall functioning are provided, such as "There are lots of bad feelings in the family" and "We don't get along well together." The respondent can answer based on a 4-point scale (1- Strongly Agree, 2 - Agree, 3 - Disagree, 4 - Strongly Disagree), with a higher score indicating more problems with family functioning (Ryan, Epstein, Keitner, Miller, & Bishop, 2005).

The FAD-12 was chosen over the original 53-item FAD to decrease subject burden and to use the same items that have been used in previous family accommodation research (Barrett, Healy-Farrell, & March, 2004; Calvocoressi et al., 1999; Pinto et al., 2012). Additionally, the 12 items from the General Functioning subscale is composed of items from each of the dimension scales from the FAD (i.e., Problem Solving, Communication, Roles, Affective Responses, Affective Involvement, Behavior Control), only including the items that were most intercorrelated among the other subscales. The General Functioning subscale had the highest internal consistency of the subscales (Cronbach's α = .92) as well, and is adequately able to distinguish between clinical and nonclinical populations.

OCD Family Functioning Scale (OFF). The OFF is a 42-item self-report questionnaire that assesses the severity of family impairment due to the patient's current and/or worst ever OCD (Stewart et al., 2011). The OFF consists of three subscales: Family Functioning Impairment, Symptom-Specific Impairment, and Family Role-Specific Impairment. Responses are recorded on a 4-point scale for all subscales. For the first subscale, items examine the frequency of interference with family, social, and work/school performance, as well as emotions experienced due to the interference. Responses for the initial part of the first subscale can be recorded as 0 – Never, 1 – Monthly, 2 – Weekly, or 3 – Daily. The frequency of emotions experienced can be recorded as 0 – Never, 1 – A Little, 2 – Often, or 3 – Always. The second subscale examines the frequency of specific OCD symptoms interfering with family functioning (e.g., cleaning, counting, checking). Responses can be recorded as 0 – Never, 1 – A Little, 2 – Often, or 3 – Always. The last subscale examines how the patient's OCD has impacted their ability to play a specific role in their family. Responses are recorded as 0 – Never, 1 – A little, 2 – A lot, 3 – Entirely.

Scores can be calculated for each subscale, as well as a total score (out of a potential 100 points). The first subscale is scored by simply adding the item responses, while the last two subscales are dichotomized (i.e., scores of 0 mean a "negative response," and scores of 1, 2, or 3 indicate a "positive response") per the measure's developers. The total score is calculated by adding up the raw score of the first subscale and the weighted, dichotomized scores for the other two subscales ("positive responses" in Part 2 are valued as 2 points and "positive responses" in Part 3 are valued as 1 point).

The internal consistency of the OFF is excellent for the entire measure as well as its subscales (Cronbach's $\alpha = .85 - .97$). The test-retest reliability is also sufficient for the entire measure and its subscales (ICC $= .79 - .83$). The OFF displays good convergent validity, showing significant correlations with the FAS and the Work and Social Adjustment Scale (WSA; Mundt, Marks, Shear, & Greist, 2002). It also exhibits discriminant validity regarding different types of impact (i.e., social, occupational, emotional) on family functioning, not correlating with information it did not purport to measure (i.e., specific accommodating behaviors), while capturing other unique information not detected by the FAS or WSA (Stewart et al., 2011).

Demographics Forms. The demographic forms are self-report forms completed by the relative and by the patient. The measure includes general sociodemographic information, such as age, gender, and ethnicity. Additionally, it assesses the informant's psychiatric history, including diagnoses of OCD and treatment received.

Yale-Brown Obsessive-Compulsive Scale – Second Edition (Y-BOCS-II). The Y-BOCS-II is a clinician-rated semi-structured interview that assesses the presence and severity of OCD symptoms, based on the original Y-BOCS (Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989; Storch, Rasmussen, et

al., 2010). Identical to the Y-BOCS, the Y-BOCS-II also consists of a detailed Symptom

Checklist and Severity scale. However, modifications were implemented to the content and

structure of the Symptom Checklist, and certain items in the Severity scale and scaling of

responses were changed as well.

In the 67-item Symptom Checklist, clinicians are able to indicate the presence of certain

Obsessions, Compulsions, or Avoidance behaviors. The general symptom is presented first (e.g.

"Checking that nothing terrible did/will happen"), followed by specific examples (e.g. "makes

sure that did not run over a pedestrian or did not leave cabinet open to poisonous substance,

etc."). Additionally, there are asterisked indicators if the symptom endorsed may be better

attributed to separate pathology (e.g. "checking tied to somatic obsessions" should be

distinguished from hypochondriasis).

In the Severity scale, 5 items assess the severity of obsessions and 5 items assess the

severity of the compulsions, with avoidance incorporated into each. Responses can be provided

on a 0 to 5 scale (0 – None, 1 – Mild, 2 – Moderate, 3 – Severe, 4 – Very severe, 5 – Extreme),

with each response followed by anchors to aid the clinician's decision (e.g. in evaluating

interference due to obsessive thoughts, the anchor states "2 – moderate, definite interference with

social or occupational performance, but still manageable, some avoidance"). A severity score is

calculated separately for obsessions and compulsions, and the Total score is calculated by adding

the two severity scores. Scoring for the Y-BOCS-II can be compared directly to the original Y-

BOCS if the clinician administers item 4 from the Y-BOCS ("resistance against obsessions"), as

it was replaced with another item. Insight into obsessive-compulsive symptoms is assessed at

the end on a scale from 0 to 4 (with higher values indicating lower insight). Global severity of

the patient's illness, global improvement, and reliability of the ratings can be provided at the end of the instrument as well.

The Y-BOCS-II demonstrates good reliability; internal consistency was excellent for the Symptom Checklist (Kuder–Richardson-20 = .91; Storch, Larson, Price, et al., 2010) and Severity scale (α = .84 − .89), inter-rater reliability was excellent (ICC = .96), and test-retest reliability was high (ICC = .85). The Y-BOCS-II also exhibits good construct validity, showing significant correlations with other measures assessing OCD symptom severity and more moderate correlations with instruments examining depressive symptoms and worry.

For the purposes of this study, the scores will be translated into Y-BOCS scores to help interpretability and comparability. The inter-rater reliability of the Y-BOCS was tested by two graduate-level clinicians trained on the measure. Based on a randomly selected 20% subsample of participants, inter-rater agreement was excellent for the Y-BOCS Obsessions Severity scale (ICC = .98, 95% CI [.95, 1.00]), Y-BOCS Compulsions Severity scale (ICC = .91, 95% CI [.73, .98]), Y-BOCS Total score (ICC = .96, 95% CI [.87, .99]), and the CGI-S (ICC = .99, 95% CI [.98, 1.00]).

National Institute of Mental Health Global Obsessive Compulsive Scale (NIMH-GOCS). The NIMH GOCS is a clinician-rated measure that assesses the severity of obsessive-compulsive symptoms and their impairment on the patient's functioning (Murphy, Pickar, & Alterman, 1982). Clinicians respond to the one item based on a scale from 1 to 15, where 1-3 indicate "minimal within range of normal or very mild symptoms," 4-6 indicate "subclinical," 7-9 indicate "clinical," 10-12 indicate "severe," and 13-15 indicate "very severe" obsessive-compulsive behavior. The NIMH GOCS has been widely used in pediatric and adult treatment

trials to track the severity of OCD symptoms and demonstrates treatment sensitivity (Franklin et al., 2011; Jenike, Baer, Minichiello, Rauch, & Buttolph, 1997; March et al., 1998).

Clinical Global Impression – Severity (CGI-Severity). The CGI-Severity is a clinician-rated measure assessing global severity of the patient's psychopathology (National Institute of Mental Health, 1976). This one-item instrument can be rated on a scale from 0-6, 0 meaning "no illness," 3 meaning "moderate symptoms, functions with effort," and 6 meaning "extremely severe symptoms, completely nonfunctional." The CGI-Severity has also been used extensively in a wide array of clinical research studies for numerous disorders, including OCD (Geller et al., 2001; March et al., 1998).

Global Assessment of Functioning (GAF). The GAF is a rating scale included by the American Psychiatric Association (2000) in the Diagnostic and Statistical Manual of Mental Disorders (fourth edition, text revision) for clinicians to rate a patient's level of overall functioning. Potential scores can range from 0 to 100, with higher scores indicating higher levels of functioning. The instrument has been used extensively for a variety of disorders in both clinical and research settings, and has shown satisfactory reliability and validity (Jones, Thornicroft, Coffey, & Dunn, 1995).

Sheehan Disability Scale (SDS). The SDS is a 3-item self-report measure that assesses the impact of the patient's symptomology on their functioning (Sheehan, 1983). It examines the level of functional impairment experienced in the patient's (1) work, (2) social, and (3) family/home life. Disability in each life domain is rated on a 0 to 10 scale, 0 meaning "not at all" and 10 meaning "extremely." A total score can also be garnered by summing up the disability ratings form the three domains. The SDS has demonstrated excellent internal

consistency (Cronbach's α = .89), acceptable test-retest reliability (ICC =.73), and adequate

convergent and divergent validity (Arbuckle et al., 2009).

Depression Anxiety Stress Scale – Short Version (DASS21). The DASS21 is a 21-item

self-report questionnaire assessing the severity of depressive symptoms, anxiety, and stress over

the past week (Lovibond & Lovibond, 1995). Respondents rate answers on a scale from 0 to 3,

with 0 meaning "did not apply to me at all," 1 meaning "applied to me to some degree, or some

of the time," 2 meaning "applied to me a considerable degree, or a good part of time," and 3

meaning "applied to me very much, or most of the time." Scores can be summed per scale (i.e.,

depression, anxiety, stress), and each scale score can be added to garner the total score. When

interpreting the raw scores, each summed score will be multiplied by two to obtain accurate

comparisons to the norms established for the original DASS.

The DASS21 is based on the original 42-item DASS, garnering comparable means for

each item and possessing a similar factor structure. Additionally, the DASS21 contains the same

subscales as the full DASS, and only requires half of the completion time. The DASS21

possesses acceptable to excellent internal consistency and concurrent validity (Antony, Bieling,

Cox, Enns, & Swinson, 1998). Furthermore, it has shown treatment sensitivity and convergent

validity with measures assessing overall functioning (Ng et al., 2007).

Barratt Impulsiveness Scale (BIS-11). The BIS-11 is a 30-item self-report questionnaire

that assesses the individual's level of impulsiveness (Patton, Stanford, & Barratt, 1995).

Respondents answer each question on a 4-point scale ranging from 1-4, 1 meaning

"Rarely/Never," 2 meaning "Occasionally," 3 meaning "Often," and 4 meaning "Almost

Always/Always." The BIS series of questionnaires has been widely used to assess impulsiveness

both internationally and nationally, and is one of the oldest measures assessing this construct.

The BIS-11 is the most up-to-date version of the BIS, and possesses good internal consistency

(Cronbach's α = .83), strong test-retest reliability (Spearman's rho = .83), and adequate

convergent and divergent validity (Stanford et al., 2009).

RESULTS

Analytic Plan

To examine frequency data for the individual FAS-PV items (Specific Aim 1), descriptive statistics (i.e., mean, standard deviation, range, percentages) were calculated. Cronbach's α values were calculated for the FAS-PV and FAS-SR to investigate the internal consistency (Specific Aim 2). The Cronbach's α values will be compared via confidence interval comparisons. Mean item-level differences and mean total score differences (Specific Aim 3) were calculated via multivariate analysis of variance (MANOVA) and dependent t-tests, respectively. Inter-rater reliability for the Y-BOCS-II was tested through a calculation of the ICC using a two-way random effects model with absolute agreement. Pearson product-moment correlations were calculated for the remaining aims: to assess the short-term stability of the FAS-PV (Specific Aim 4) and examine convergent and divergent validity of the FAS-PV (Specific Aims 5 and 6). Holm-Bonferroni corrections were applied for the Pearson correlations due to multiple comparisons (Holm, 1979). Utilizing the G*Power application, the target sample size of 61 was determined in order to detect a correlation of $\geq$ .35 with a power of .80 and a two-tailed alpha level of .05, as weaker correlations are not of interest for the present study. Factor analyses were not conducted for the present study, as previous literature investigating the instrument lacks evidence of well-defined subscales and typically examines a unidimensional outcome (i.e., total score for family accommodation).

Missing data were resolved through hot deck imputation (Myers, 2011), if no more than 10% of data on a measure were missing. Hot deck imputation is carried out by replacing a

missing value from one participant with a value provided from a separate, "matched" participant. Participants are "matched" on researcher-chosen variables that are purported to be related, but not of vital importance to the main outcome variables. To impute missing data on the FAS-PV, FAS-SR, and OFF, the NIMH GOCS was utilized given its association with the related OCD variables. Based on the NIMH GOCS anchors, the NIMH GOCS total score was divided into minimal (1-3), subclinical (4-6), clinical (7-9), severe (10-12), and very severe (13-15) categories. To impute missing data on the BIS, the GAF was utilized given its relationship with general mental health. Based on the GAF anchors, the GAF score was divided into subgroups of 10, consistent with how the measure is presented (e.g., a range from 51-60 indicates "moderate symptoms"). The NIMH GOCS and GAF were chosen as the adjustment variables for imputation due to the redundant nature of having two variables measuring the same construct; the CGI-S (OCD severity) and SDS (functional impairment) were retained for the primary analyses, so the NIMH GOCS (OCD severity) and GAF (general functioning), respectively, could be utilized for hot deck imputation.

Frequency Data for FAS-PV

Frequency data for items on the FAS-PV at baseline were determined (Table 3). Overall, 88.5% of participants endorsed at least one type of accommodating behavior in the past week. Both the provision of reassurance related to obsessions (55.7%) and waiting for the completion of compulsions (55.7%) occurred with the most frequency, occurring at least once in the past week for over half of the sample. Additionally, around half of patients reported that their relatives helped facilitate avoidance (54.1%), put up with unusual conditions in their home (50.8%), made simple decisions (47.5%), and tolerated unusual behavior due to their OCD

(45.9%). The least frequently endorsed accommodating behaviors included helping the patients with personal tasks (6.6%) and making excuses/lying (9.8%) due to their OCD-related impairment.

Internal Consistency

The internal consistency for the FAS-PV was good, Cronbach's α = .88, 95% Confidence Interval (CI) [.83, .92]. The internal consistency for the FAS-SR was excellent, Cronbach's α = .90, 95% CI [.85, .93]. To determine statistically significant differences between the internal consistencies, the 95% CI was examined; because the CIs for the FAS-PV and FAS-SR overlap in values, no significant differences are found between their internal consistencies.

Mean Item-Level and Mean Total Score Differences

A MANOVA was utilized to determine mean item-level differences between the FAS-PV and the FAS-SR. The multivariate F test was not statistically significant (Pillai's Trace = 0.22, $F(19,95)$ = 1.38, p = .16), indicating that there were no mean differences (when considering the conglomerate of the items) between the two measures. A dependent t-test was conducted to determine mean total score differences on the FAS-PV and the FAS-SR. The t-test was non-significant, demonstrating that there were no significant differences in the means between the total scores on both measures, $t(53)$ = -0.66, p = .51.

Short-Term Stability

A Pearson product-moment correlation was conducted for the total score to examine the test-retest reliability of the FAS-PV. Twenty participants (33%) completed this portion of the

study. A strong correlation was observed for the FAS-PV total score between the two time points, $r(18) = .63$, $p < .01$, demonstrating good short-term stability. An independent t-test revealed that there were no significant mean differences on OCD symptom severity, family accommodation, age, or sex, between participants that completed the test-retest assessment and those who did not.

Convergent/Divergent Validity

Convergent and divergent validity were examined through Pearson product-moment correlations between the FAS-PV and various variables (Table 4). To examine convergent validity, potential correlations between the FAS-PV total score and OCD symptom severity (Y-BOCS Total score), family impairment due to OCD symptoms (OFF total score), family functioning in general (FAD total score), and OCD-related impairment (SDS total score) were investigated. There was a strong, positive relationship between the FAS-PV and FAS-SR ($r = .58$, $p < .001$), CGI-S ($r = .53$, $p < .001$), and SDS ($r = .52$, $p < .001$). Moderate relationships were observed between patient-reported family accommodation and the Y-BOCS total score ($r = .37$, $p < .01$) and OFF ($r = .34$, $p < .01$). All of these correlations remained significant even after Holm-Bonferroni corrections were applied. No statistically significant relationship was observed between family accommodation and the FAD total score ($r = -.07$, $p = .61$).

To evaluate divergent validity, potential correlations between the FAS-PV total score and impulsiveness (BIS total score), anxiety (DASS anxiety subscale), and depressive symptoms (DASS depression subscale) were examined. There was a moderate, positive association between patient-reported family accommodation and the DASS anxiety subscale ($r = .45$, $p < .001$). However, there was no statistically significant relationship between family

accommodation and the BIS total score ($r = .14$, $p = .30$). A weak relationship was found between family accommodation and the DASS depression subscale ($r = .27$, $p < .05$), but it was no longer significant after applying Holm-Bonferroni corrections.

DISCUSSION

Consistent with previous findings, family accommodation emerged as a frequent phenomenon that occurred in the vast majority of participants (Shafran et al., 1995; Stewart et al., 2008). Indeed, this further confirms the salience and impact that family accommodation has among many patients with OCD, corroborating the importance of having a measure that can systematically assess for these problematic behaviors. Additionally, the existing measures that assess for family accommodation can be burdensome to go through, accruing costs related to clinician training and additional time spent on administering the measure. They also typically only consider the relative's point of view, neglecting invaluable input from the patients themselves.

Regarding specific accommodating behaviors, the provision of reassurance was endorsed as one of the most common types of accommodation (Peris et al., 2008; Pinto et al., 2012; Storch, Geffken, et al., 2007), along with waiting for the patient to complete compulsions. These two acts of accommodation are likely to apply across various types of OCD symptoms, possibly contributing to the heightened frequency of these behaviors (relative to others). Alternatively, it may be that these two methods of accommodation are perceived as more "passive," with less direct involvement when compared to other behaviors (e.g., obvious participation in compulsions, such as washing of the relative's hands). While these behaviors may appear to be relatively innocuous, they unfortunately still serve as a method to maintain and reinforce the OCD symptomology in the long run (Maina et al., 2006; Renshaw et al., 2005; Steketee & Van Noppen, 2003; Storch, Björgvinsson, et al., 2010). As such, proper psychoeducation about the

deleterious effects of accommodation, implementation of a treatment plan targeting these behaviors, tactful discussions on how to appropriately respond to OCD symptoms, and buttressing family support would be pertinent to ensure the elimination of these maladaptive behaviors (Noppen, 2002; Piacentini et al., 2011; Renshaw et al., 2005; Steketee & Van Noppen, 2003). On the other hand, helping out with personal tasks (e.g., bathing, changing) and making excuses/lying for the patient due to OCD-related impairment occurred with much less frequency. In a related vein, these may be more overt tasks that clearly reflect accommodation, which are more apparent and labor-intensive than the aforementioned behaviors. Alternatively, this could be a function of the average OCD symptom severity of the sample; the present participants fell in the "moderate" range of severity, and engaging in behaviors that involve private activities (e.g., bathing) and observing impairment in various domains of life (e.g., lying to individuals in the work and social domains) may be more highly endorsed in individuals that are severely impaired by OCD.

The internal consistency for the FAS-PV total score was good, indicating that the items were highly related but still garnered unique information. Similarly, the FAS-SR total score also achieved excellent internal consistency, consistent with previous findings (Pinto et al., 2012). When comparing the internal consistency across both measures, no significant differences emerged. As such, the FAS-PV and FAS-SR total scores appear to be comparable and internally reliable; both patient and relative self-report responses on family accommodation were internally consistent and neither respondent systematically differed on the reliability of their responses.

No mean differences were found between the FAS-PV and FAS-SR when considering the total scores or conglomerate of all items. In other words, patients and their relatives did not significantly differ in their endorsements regarding the average frequency of accommodating

behaviors. As expected, these results further reflect the comparability of the responses across respondents, demonstrating the utility and practicality of obtaining reports of family accommodation from the patients.

Adequate short-term stability was confirmed by a strong correlation between the FAS-PV total score between the two time points (7-14 days apart). While the test-retest reliability was not as high as it was predicted to be, the findings are not completely surprising; given the fluctuating nature of OCD symptoms and situation-dependent nature of family accommodation (Zohar, 1999), it is reasonable to expect natural, minor variations in these behaviors, causing the test-retest reliability to be slightly lower. For instance, it is not uncommon for patients with OCD to come across multiple OCD-related triggers in one week (e.g., coming into contact with "contaminated" public surfaces due to social gatherings, eliciting multiple instances of accommodation), but experience a milder week on the following days (e.g., staying at home to work on projects, resulting in less exposure to public surfaces, and thus less opportunities for accommodation).

Convergent validity for the FAS-PV was supported by positive correlations with OCD symptom severity, OCD-related family impairment, and functional impairment. While many relatives engage in accommodating behaviors in hopes of alleviating distress, it unfortunately results in the undesired consequences of symptom maintenance and impairment in a variety of life domains (Caporino et al., 2012; Storch, Geffken, et al., 2007; Storch, Larson, Muroff, et al., 2010). Somewhat surprisingly, no significant correlations were found between family accommodation and general family functioning. It is possible that general aspects of the family environment may not be as influential towards family accommodation when compared to specific aspects of family functioning as they relate to OCD symptomology; that may explain the

significant correlation with the OFF scale but not with the abbreviated measure assessing general family functioning (FAD). Alternatively, a more comprehensive and nuanced measure of the family environment may be needed to pick up on potential relationships with family accommodation; previous investigations examining phenomenological aspects of family accommodation and family environment found correlations between different aspects of family accommodation (e.g., distress related to not accommodating) and the family environment (e.g., organization, conflict; Peris et al., 2008; Wu et al., 2014). Lastly, and perhaps most importantly, the FAS-PV demonstrated a strong, positive relationship with the FAS-SR, supporting its utility as a patient-report. Although the correlation was strong, it was not exceedingly high. As such, even though there seems to be general agreement across reporters, it would still be beneficial to obtain reports from both the patient and the relative, as they likely have unique but complementary viewpoints regarding these behaviors.

Divergent validity was confirmed through non-significant correlations with impulsiveness and depressive symptoms. The FAS-PV was not purported to measures these constructs, so the lack of relationships between them supports its specificity. However, the FAS-PV did display a moderate, positive association with anxiety symptoms. It may be a matter of nosological differences, as OCD was previously conceptualized as an anxiety disorder due to the shared distress in the presence of anxiogenic triggers and consequent behaviors used to mitigate the anxiety (American Psychiatric Association, 2000). In this light, some of the DASS anxiety questions may have been capturing anxiety due to OCD-related triggers (e.g., "I experienced breathing difficulty," "I felt I was close to panic"), and not necessarily general anxiety symptomology. Alternatively, anxiety could be the driving force behind family accommodation; when individuals with OCD come into contact with threatening situations, they experience

heightened anxiety, which may thereby increase their need to seek accommodation (or the relative's perceived need to provide accommodation) in hopes of attenuating the distress (Calvocoressi et al., 1999; Futh et al., 2012; Storch, Björgvinsson, et al., 2010). Individuals with OCD also often present with comorbid anxiety disorders (Heyman et al., 2001; Zohar, 1999), which could have contributed to the positive relationship. At any rate, psychometrically sound measures designed to assess OCD symptoms, such as the Florida Obsessive-Compulsive Inventory (Storch, Bagner, et al., 2007) and the Obsessive-Compulsive Inventory-Revised (Abramowitz & Deacon, 2006), have also similarly displayed moderate relationships with anxiety-specific measures in the past.

While these preliminary findings show promise for the utility of the FAS-PV, several areas are recommended for further examination. First, it would be important to investigate the treatment sensitivity of the FAS-PV and test its ability to pick up on changes in family accommodation after therapy, given the importance of targeting accommodation in cognitive-behavioral therapy (Boeding et al., 2013; Lebowitz et al., 2012; Lewin et al., 2014; Piacentini et al., 2011; Rudy, Lewin, Geffken, Murphy, & Storch, 2014; Storch, Björgvinsson, et al., 2010; Storch, Geffken, et al., 2007; Storch et al., 2008; Thompson-Hollands, Edson, Tompson, & Comer, 2014). Additionally, an examination of the test-retest reliability of the FAS-PV in a larger sample would be beneficial, given the relatively low percentage of participants that completed this portion of the study. The use of participants already in treatment may have contributed to the lower test-retest sample size, as they were disqualified from participating in the test-retest portion of the study to avoid the confounding effects of therapy on family accommodation. However, it is important to recognize that examining the measure in patients that were in therapy and were not in therapy was vital, and there were ultimately no significant

differences between the two samples in terms of mean OCD symptom severity, family

accommodation, age, or sex. A test-retest interval beyond 7-14 days could also be valuable, in

order to test the stability over a longer duration of time. Furthermore, an examination of the

relationship between the FAS-PV and more comprehensive measures of family functioning

would be helpful. Specifically, there may be different aspects of the general family environment

that may demonstrate stronger relationships with family accommodation, such as hostility and

over-involvement (Chambless & Steketee, 1999; Cherian, Pandian, Bada Math, Kandavel, &

Janardhan Reddy, 2014; Steketee, Van Noppen, Lam, & Shapiro, 1998), which an abbreviated

measure of family functioning (i.e., FAD) may not be able to detect. Lastly, given the salience

of family accommodation in pediatric OCD, it would be beneficial to adapt the FAS-PV for use

as a youth self-report, and determine the psychometric properties of the measure in a pediatric

sample.

Ultimately, the present study aimed to fill a current gap in the field by providing a

patient-reported instrument that will allow for a standardized method of assessing family

accommodation in adults with OCD. Due to the link between family accommodation and

negative outcomes (e.g., poorer treatment response, familial distress, greater OCD symptom

severity, impaired functioning), there is a necessity for a systematic way to assess these

detrimental behaviors. In obtaining pertinent information about the prevalence and types of

accommodating behaviors, researchers and clinicians will be able to target the behaviors more

effectively when working with patients with OCD. As such, creating a self-report questionnaire

completed by the patient with OCD is of significant importance; it carries the same advantages

of self-report questionnaires (e.g., cost effectiveness, time) and assesses these behaviors directly

from the patient in a practical manner. Collectively, the FAS-PV appears to possess sound

psychometric properties when considering the internal consistency, short-term reliability, and convergent/divergent validity, reflecting its utility for assessing family accommodation from the patient's perspective in a reliable and valid manner.

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APPENDIX 1

Tables

Table 1

Study Overview

Definitions of Important Terms and Measures	
Term	*Definition*
"Self-Report" Measure	A questionnaire filled out directly by the respondent (patient or relative) without an interviewer.
FAS	Family Accommodation Scale for Obsessive-Compulsive Disorder (*Clinician-administered*)
FAS-IR	Family Accommodation Scale for Obsessive-Compulsive Disorder – Interviewer-Rated (*Clinician-administered*)
FAS-PR	Family Accommodation Scale for Obsessive-Compulsive Disorder – Parent-Report (*Self-report by relative*)
FAS-SR	Family Accommodation Scale for Obsessive-Compulsive Disorder – Self-Rated Version (*Self-report by relative*)
FAS-PV	Family Accommodation Scale for Obsessive-Compulsive Disorder – Patient-Version (*Self-report by patient*)

Table 2

Table of Clinician-Rated, Patient-Rated, and Relative-Rated Measures

	Baseline			Test-Retest		
	Patient	*Relative*	*Clinician*	*Patient*	*Relative*	*Clinician*
FAS-PV	X			X		
FAS-SR		X				
FAD	X	X				
OFF	X					
Demographics	X	X				
Y-BOCS-II	X		X	X		X
NIMH GOCS	X	X	X			
CGI-Severity	X	X	X			
GAF			X			
SDS	X					
DASS	X					
BIS-11	X					

Table 3

Frequency Data for Items on the FAS-PV at Baseline

FAS-PV Item	Mean (*SD*)	Range	Percentage[a]	Frequency of Endorsement				
				0	1	2	3	4
1. Reassurance (obsession)	1.15 (1.28)	0 – 4	55.7%	27	12	12	6	4
2. Reassurance (compulsion)	0.66 (1.14)	0 – 4	31.1%	42	6	8	2	3
3. Waited due to compulsions	1.16 (1.32)	0 – 4	55.7%	27	12	13	3	6
4. Participated in compulsions	0.61 (1.05)	0 – 4	32.8%	41	10	5	3	2
5. Facilitated compulsions	0.66 (1.28)	0 – 4	26.2%	45	5	3	3	5
6. Provided items	0.46 (.94)	0 – 4	23%	47	4	7	2	1
7. Facilitated avoidance	1.31 (1.51)	0 – 4	54.1%	28	12	3	10	8
8. Helped with decisions	0.93 (1.17)	0 – 4	47.5%	32	10	12	5	2
9. Helped with personal tasks	0.20 (0.77)	0 – 4	6.6%	57	0	1	2	1
10. Prepared food	0.48 (1.09)	0 – 4	19.7%	49	3	4	2	3
11. Family/household responsibilities	0.85 (1.25)	0 – 4	41%	36	10	7	4	4
12. Avoided talking	0.92 (1.44)	0 – 4	36.1%	39	7	3	5	7
13. Stopped from doing things	0.79 (1.32)	0 – 4	34.4%	40	9	2	5	5
14. Excuses/lied	0.11 (.37)	0 – 2	9.8%	55	5	1	0	0
15. Tolerated	1.23 (1.54)	0 – 4	45.9%	33	5	8	6	9
16. Unusual conditions	1.51 (1.72)	0 – 4	50.8%	30	5	7	3	16
17. Cut back on leisure activities	0.57 (1.16)	0 – 4	26.2%	45	7	3	2	4
18. Changed work/school schedule	0.33 (0.93)	0 – 4	14.8%	52	4	1	2	2
19. Family responsibilities	0.43 (0.90)	0 – 4	23%	47	6	5	2	1

Note. FAS-PV = Family Accommodation Scale for Obsessive-Compulsive Disorder, Patient Version; 0 = None/Never, 1 = 1 day, 2 = 2-3 days, 3 = 4-6 days, 4 = every day.

[a] Percentage indicates percent of participants that endorsed the accommodating behavior as occurring at least once the previous week.

Table 4

Means, Standard Deviations, Ranges, and Correlations between the FAS-PV and Study Variables

	FAS-PV	FAS-SR	Y-BOCS	CGI-S	OFF	FAD	SDS	BIS	DASS Anxiety	DASS Depression
FAS-PV	-	.58***	.37**	.53***	.34**	-.07	.52***	.14	.45***	.27*[a]
Mean	14.34	16.19	22.33	3.39	38.69	23.49	15.62	64.24	10.52	16.41
SD	12.87	12.87	6.02	0.95	19.33	7.18	7.61	11.47	10.24	12.56
Range	0 – 53	0 – 67	9 – 32	2 – 6	5 – 79	12 – 46	1 – 30	40 – 101	0 – 36	0 – 42

$* p < .05, ** p < .01, p < .001;$ [a] = no longer significant after Holm-Bonferroni correction.