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Hoarding behavior among young children with obsessive-compulsive disorder

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Abstract

Previous research has shown that among the various subtypes of obsessive-compulsive disorder (OCD), adults (e.g. Frost, Krause & Steketee, 1996) and older children and adolescents (Bloch et al., 2009; Storch et al., 2007) with problematic hoarding have distinct features and a poor treatment prognosis. However, there is limited information on the phenomenology and prevalence of hoarding behaviors in young children. The present study characterizes children ages 10 and under who present with OCD and hoarding behaviors.

Sixty-eight children received a structured interview-determined diagnosis of OCD. Clinician administered, parent-report, and child-report measures on demographic, symptomatic, and diagnostic variables were completed. Clinician ratings of hoarding symptoms and parent and child endorsement of the hoarding item on the CY-BOCS checklist (Scahill, Riddle, McSwiggin-Hardin, & Ort, 1997) determined inclusion in the hoarding group (*n*=33).

Compared to children without hoarding symptoms (*n*=35), the presence of hoarding symptoms was associated with an earlier age of primary diagnosis onset and a higher proportion of ADHD and provisional anxiety diagnoses. These results are partially consistent with the adult literature and with findings in older children (Storch et al., 2007). Additional data on clinical presentation and phenomenology of hoarding are needed to form a developmentally appropriate definition of the behavior.

Keywords

OCD; Children; Hoarding

Obsessive-Compulsive Disorder (OCD) is a neurobehavioral disorder characterized by anxiety-invoking thoughts or images (obsessions) and overt behaviors or mental rituals performed to reduce the distress caused by these thoughts (compulsions). OCD has been estimated to affect up to 2-3% of children (Valleni-Basile, Garrison, Jackson, & Waller, 1994), a figure that is likely an underestimate given that reports of “very early onset” OCD (before age 10) have only recently been documented (Garcia et al., 2009; Nakatani et al., 2011). Both studies characterizing children with very early onset OCD note similar

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symptom severity and a similar or greater degree of social, academic and family impairment as in children with later onset OCD.

Much as the broader efforts to characterize OCD started with adults and then gradually moved down the age continuum to young children, the efforts to look for and characterize important subtypes of OCD must also be extended to include young children. Categorical, etiological and factor analytic approaches have all been used as methods to better conceptualize OCD, which remains a heterogeneous diagnosis. Among the various subtypes of OCD, patients with problematic hoarding have been identified in adults (e.g.(Eisen et al., 2013; Frost et al., 1996; Santana, Fontenelle, Yücel, & Fontenelle, 2013) and older children and adolescents (Bloch et al., 2009; Storch et al., 2007) as having distinct features and a poor treatment prognosis.

In an effort toward gaining a better understanding of hoarding, distinctions have recently been made between hoarding within the context of OCD and as part of a separate disorder, Hoarding Disorder (HD), which has been added to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (American Psychiatric Association, 2013). Compulsive hoarding is characterized by difficulty discarding items, often resulting in significant distress and impairment due to excessive accumulation of clutter (Frost & Gross, 1993). Though topographically similar, Frost and colleagues (2012) outline the distinctions between hoarding in OCD and in HD. One prominent difference is in the cognitive process related to hoarding. While thoughts about hoarding are generally distressing within the context of OCD, they are neither distressing nor repetitive in HD. Hoarding within HD only becomes distressing once the amount of clutter accumulated becomes debilitating. Therefore, the act of hoarding is considered ego-syntonic in HD and ego-dystonic in OCD. While the distinction between these disorders has been a source of debate within the literature, several studies have investigated hoarding symptoms as a broader, independent construct (e.g. among people with ADHD (Hacker et al., 2012), in community samples (Samuels et al. 2008)). Regardless of diagnostic classification, there is agreement that symptoms of clinical hoarding result in significant impairment.

In addition to concerns about the consequences of hoarding, its relatively high prevalence is reason for increased attention on this topic. Based on a broad definition of clinical hoarding, prevalence rates have been estimated to be between 2% and 5% of the population (Iervolino et al., 2009; Samuels et al., 2008). Among individuals with OCD, between 25% and 30% are estimated to have symptoms of compulsive hoarding (Samuels et al.,2002; Storch et al., 2007). Though hoarding symptoms are thought to first arise in childhood or early adolescence, reports about its onset and course remain predominantly retrospective (Ayers, Saxena, Golshan, & Wetherell, 2010; Grisham, Frost, Steketee, Kim, & Hood, 2006; Samuels et al. 2007). Few studies have examined specific correlates of hoarding during later childhood and adolescence (Hacker et al., 2012; Storch et al., 2007; Testa, Pantelis, & Fontenelle, 2011; See Storch, Rahman, et al., 2011 for an overview) and none have investigated hoarding during early childhood.

Storch and colleagues (2007) conducted the only study to date that has used non-retrospective methods to characterize hoarding in children (ages 7-17) with OCD. Their

findings suggest that, similar to adults, children with OCD and hoarding have a higher frequency of panic disorder, somatic complaints, and internalizing and externalizing behaviors than children without hoarding. In the context of developing a measure to assess hoarding severity in children (the Children's Saving Inventory; CSI), Storch, Muroff, et al. (2011) summarized additional characteristics of children with hoarding. Consistent with Storch and colleagues' (2007) earlier study, there was a relationship between parent ratings of externalizing and internalizing behavior problems and child hoarding, but there was not a significant relationship between OCD symptom severity and hoarding. In addition, there was a weak, though significant, correlation between hoarding and anxiety symptoms. In terms of comorbidity, Testa and colleagues (2011) found that among children with learning disabilities, 16.4% of children exhibited clinically significant hoarding. Children with ADHD also exhibit higher levels of hoarding behaviors (Hacker et al., 2012). This finding is consistent with adult studies (Hartl, Duffany, Allen, Steketee, & Frost, 2005; Sheppard et al., 2010; Tolin & Villavicencio, 2011), which suggest that hoarding may be related to executive functioning and information processing deficits (Frost & Hartl, 1996; Steketee & Frost, 2003).

In general, both adult and child studies indicate that individuals with hoarding symptoms exhibit lower global functioning across a variety of domains (e.g.(Mataix-Cols, Nakatani, Micali, & Heyman, 2008; Steketee & Frost, 2003). Adult hoarders have: lower Global Assessment of Functioning (GAF) scores, a higher number of suicide attempts, longer duration of illnesses, lower rates of marriage and lower levels of self-control (Santana et al., 2013; Timpano & Schmidt, 2012). Hoarding symptoms in adults and children predict persistence of OCD symptoms over time (Bloch et al., 2009; Eisen et al., 2013). Based on retrospective studies, there is also evidence for a significantly earlier age of OCD onset in those with hoarding symptoms than in those without (Fontenelle, Mendlowicz, Soares, & Versiani, 2004; Samuels et al., 2002). Individuals with hoarding symptoms have higher rates of social phobia, Generalized Anxiety Disorder (GAD), Obsessive Compulsive Personality Disorder (OCPD), Major Depressive Disorder (MDD), and compulsive buying than their non-hoarding counterparts (Chakraborty et al., 2012; Frost, Steketee, & Tolin, 2011; Frost, Tolin, Steketee, Fitch, & Selbo-Bruns, 2009; Samuels et al., 2007). Hoarders also exhibit elevated rates of chronic medical conditions, job loss, financial hardship, and obesity (Tolin, Frost, Steketee, Gray, & Fitch, 2008). Together, these findings represent significant levels of impairment, which result in substantial economic and public health burdens.

Due to the accumulative nature of hoarding, it is important to gain a better understanding of its development. However, given the dearth of research on hoarding in children, additional data on clinical presentation and phenomenology of hoarding are needed to form a developmentally appropriate understanding of the behavior. The present study is a downward age extension and replication of the Storch et al. (2007) study, attempting to characterize children ages 10 and under who present with OCD and hoarding behaviors. Though additional research will be needed to characterize children with hoarding behaviors outside of OCD, the feasibility of such research is limited by the fact that few children present to treatment for hoarding behaviors in the absence of other OCD symptoms.

In order to move toward a clearer understanding the distinction between hoarding in OCD and HD, we must begin by better characterizing hoarding in this group. Perhaps if hoarding can be better recognized and treated during childhood, some of its deleterious long-term effects can be mitigated.

Methods

Participants were a subset of children who completed research evaluations between 2004 and 2012 at the Bradley-Hasbro Pediatric Anxiety Research Clinic (PARC), a specialty psychology/psychiatry clinic housed within a major medical center. Children in the sample were either recruited for one of several ongoing research studies at PARC or were clinical referrals from the community. Sixty-eight children (45.6% male) ages 10 and under (*M*= 7.41, *SD* = 1.43) were selected for inclusion in this study. All study protocols were approved by the Rhode Island Hospital institutional review board.

Inclusion criteria in this study included a structured interview-determined diagnosis of OCD and between ages 4 and 10. Exclusion criteria included current or past diagnosis of an autism spectrum disorder, mental retardation or psychotic disorder. The hoarding group (n=33) was determined by clinician ratings of hoarding behavior through clinical interview and child and parent endorsement of hoarding obsessions and/or compulsions on the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) (Scahill, Riddle, McSwiggin-Hardin, & Ort, 1997) checklist. The remaining children (n=35) were assigned to the non-hoarding group. The sample was predominantly Caucasian (87.5%, followed by 3.1% Asian, 3.1% Hispanic, 3.1% multi-racial, 1.6% not reported, and 1.6% other), with a median yearly household income over $80,000. Table 1 shows demographic characteristics for the sample.

Procedures

Clinicians (pre-doctoral interns, postdoctoral fellows and clinical psychologists) with extensive training in the assessment of childhood disorders conducted all clinical interviews. Children received different diagnostic interviews depending on the research study in which they

participated. All interviews were conducted by a clinician with the parent(s) and child concurrently, with any discrepant reports recorded by the clinician. Parents and children were each offered an opportunity to meet alone with the clinician, if desired. As is standard with semi-structured clinical interviews, the “primary” diagnosis was defined as the disorder causing the most significant functional impairment and clinical distress based on the diagnostic interview with the parent(s) and child. Consultation with the supervising psychologist was used as needed to make final diagnostic decisions. Following completion of the diagnostic interview parents and children completed additional self-report measures, described below. Parents also provided detailed demographic, developmental and treatment history information.

Measures

Mini International Neuropsychiatric Interview Child/Adolescent Version (M.I.N.I.; Sheehan et al. 2010). The M.I.N.I is a brief structured clinician rated diagnostic interview. It is designed to assess current symptoms of psychopathology including social anxiety, generalized anxiety, depression, tics, and other possible psychiatric disorders. The M.I.N.I has demonstrated adequate reliability and validity (Sheehan et al., 2010).

Anxiety Disorders Interview Schedule for Children (ADIS-C; Silverman & Albano, 1996). The ADIS-C is a structured, clinician rated interview that yields Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000) diagnoses for all anxiety, mood, and externalizing disorders and screens for additional disorders (e.g., psychosis, PDD) for children ages 7-17 years. Psychometric properties of the ADIS-C are good to excellent (Silverman, Saavedra, & Pina, 2001; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002).

Kiddie Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version (K-SADS-P/L; Chambers, 1985; Kaufman, Birmaher, Brent, & Rao, 1997). The K-SADS-P/L is a semi-structured, clinician rated interview that yields DSM-IV diagnoses. The K-SADS is used to assess psychiatric diagnoses in children as young as 5 years and has good psychometric properties (Hirshfeld-Becker & Biederman, 2002; Youngstrom, Gracious, Danielson, Findling, & Calabrese, 2003).

Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; (Scahill et al., 1997). The CY-BOCS is a 10-item semi-structured clinician rated interview. It is a well known measure that assesses current OCD symptoms and severity. Obsessions and compulsions are rated on 0-4 point-scales, ordered in severity, in 5 dimensions (time, interference, distress, resistance, control). The CY-BOCS yields a total obsession score (0-20), a total compulsion score (0-20), and a combined total score (0-40). Adequate reliability and validity have been demonstrated (Scahill et al., 1997; Storch et al., 2006)

Global Assessment of Functioning (GAF; (American Psychiatric Association, 2000). The GAF is a clinician-rated measure with scores ranges from 1 to 100. This measure provides an overall index of impairment from psychiatric symptoms, with scores over 70 indicating normal adjustment.

Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al., 2002. The OCI-R is an 18-item parent-report measure that is designed to assess OCD symptoms and severity. It is a brief version of the 42-item OCI (Foa, Kozak, Salkovskis, Coles, & Amir, 1998). The OCI-R has 6 subscales (washing, checking, ordering, obsessing, hoarding, and neutralizing). It has been shown to have good psychometric properties (Abramowitz & Deacon, 2006) and is strongly correlated with the original OCI (Foa et al. 2002).

Results

Thirty-three children with hoarding symptoms were compared to 35 children without hoarding symptoms across a variety of demographic, symptomatic, and diagnostic variables.

To confirm that the groups differed in terms of hoarding symptomology, group differences on the OCI hoarding subscale were explored. Children with hoarding symptoms had higher scores on the OCI hoarding subscale than children without hoarding symptoms, according to parental report ($t(26)=3.16$, $p<.01$) and child report ($t(30)=3.00$, $p<.01$). The two groups did not differ on demographic variables, including gender ($x^2(1, N=68)=.22$, $p=.64$) and income (($x^2(1, N=67)=1.68$, $p=.19$) Refer to table 1 for further demographic characteristics of the two groups.

Specific information on group characteristics is presented in table 2. Children with hoarding symptoms had an earlier age of onset for their primary diagnosis compared to children without hoarding symptoms. However, age of the two groups did not differ at presentation. Functioning, as defined by the GAF scale, also did not differ between groups. In terms of OCD symptomology, there were no group differences in the type of obsessions or compulsions reported using Bonferroni adjusted alpha levels of .01. The two groups did not differ in the type or number of reported obsessions or compulsions. Rates of specific obsessions and compulsions are presented in table 3. Similarly, OCD severity, as measured by the CY-BOCS, did not differ between groups.

Differences in diagnoses between groups were explored, also presented in table 2. When considering full diagnostic criteria, difference between total number of diagnoses in the hoarding and non-hoarding groups did not reach statistical significance. There were also no group differences in the proportion of children assigned a comorbid anxiety diagnosis. However, compared to children without hoarding symptoms, a greater proportion of children with hoarding symptoms were assigned provisional anxiety diagnoses (i.e. separation anxiety, social phobia, GAD). Finally, a greater proportion of children with hoarding symptoms were diagnosed with ADHD than children without hoarding symptoms.

Discussion

In this replication and downward age extension of Storch et al. (2007)'s study, we compared children ages 10 and under who had OCD with and without hoarding. Our results were consistent with many of Storch et al. (2007)'s findings, with some discrepancies that may be explained by developmental and methodological (e.g. criteria for inclusion in the hoarding group) differences.

Our results demonstrate that there is a high prevalence of hoarding in a sample of young children with OCD. Studies of older children and adults have reported hoarding prevalence rates of 25-30% among individuals with OCD (Samuels et al., 2002; Storch et al., 2007), with one study (Mataix-Cols et al. 2008) reporting as high as a 41.9% prevalence rate. Our sample had an even higher rate, with 48.5% of children exhibiting hoarding symptoms. The proportion of children with hoarding in our sample may be comparatively higher than other studies because we may have captured developmentally typical hoarding that parents could not discriminate as normative. Another possible explanation is that collections and emotional attachment to possessions are more common in this young age range than in older youth, meaning that the problematic variant of these behaviors are also more common. By providing evidence for the presence of hoarding behaviors in a younger population than has

previously been examined, these findings again highlight the need for further work on refining a developmentally modified definition of hoarding.

In both children and adults, previous research has documented high rates of comorbidity in those with hoarding symptoms. Within the present sample, approximately 27% of children with hoarding symptoms had comorbid ADHD, similar to the rate reported by Storch and colleagues (2007; 28.57%). However, unlike Storch et al. (2007), we found that the rate of ADHD diagnoses was significantly higher among children with hoarding symptoms than children without hoarding symptoms. In both the adult (Sheppard et al. 2010; Tolin & Villavicencio, 2010; Hartl et al. 2005; Grisham et al. 2007) and child (Hacker et al. 2012) literature, there is evidence of an association between executive functioning deficits and hoarding. Our findings may provide additional support for an association between hoarding and information processing deficits, of which ADHD might be an indicator. Additional research should examine whether particular profiles of neurocognitive functioning are associated with hoarding. Such work may lead to the identification of intervention targets (e.g. Buhlmann et al. 2006).

As might be expected by the nature of the present sample, children in both groups demonstrated a high rate of anxiety disorder comorbidities, but there were not significant differences between children with hoarding symptoms and those without. This is consistent with Storch et al. (2007), who only found group differences in the rate of panic disorder, which was not present in any children in our young sample. However, in the present study, a higher proportion of those in the hoarding group had comorbid provisional anxiety diagnoses than those in the non-hoarding group did. There are several explanations for this finding. First, given that data in adults and older children shows higher levels of comorbidity, this may represent initial emergence of those comorbidities in children with hoarding symptoms. Storch and colleagues' (2011) significant, but weak correlation between anxiety symptoms and hoarding severity may serve as an indication of emerging psychopathology in children with hoarding symptoms. This hypothesis could be tested further if these children were followed longitudinally. Second, it may be that diagnostic categorization is less clear for children with hoarding symptoms. This is consistent with the varied conceptualizations of hoarding that are present in the literature, as well as with the number of comorbidities that are typically present—suggesting a "messier" symptom presentation.

In terms of more specific characteristics of this young sample, those with hoarding symptoms report earlier symptom onset, but present for treatment at similar ages compared with those who do not have hoarding symptoms. This is consistent with retrospective data suggesting earlier onset of symptoms in those with hoarding, though there appears to be a delay in seeking treatment for both groups until similar ages. Children with and without hoarding symptoms were not significantly different on demographic variables, including age, gender and income. Though findings on gender have been mixed in the literature, with some reporting a male preponderance (Samuels et al., 2008) and some reporting a female preponderance (Mataix-Cols et al., 2008), the present study is consistent with Storch et al., (2007) who also found no gender differences among youth with hoarding symptoms.

Aside from differences in hoarding symptoms specific to each group, there were no differences in the types or number of obsessions or compulsions endorsed on the CY-BOCS checklist. Storch et al. (2007) had similar findings, with significantly higher rates of symptom endorsement by hoarders in only one symptom area – ordering/arranging compulsions. Also consistent with Storch et al. (2007) there were no significant differences between groups on CYBOCS scores, suggesting that OCD severity is similar in young children with and without hoarding symptoms. This finding is further supported by parent- and child-report of OCD symptoms, which did not differ between groups. Though comparisons of OCD severity may have been limited by the fact that we were not able to measure hoarding severity, Storch et al. (2011) did measure hoarding severity and still did not find a significant correlation between OCD severity and hoarding severity. This suggests that hoarding occurs independent of other OCD symptoms, which as Storch et al. (2011) indicate, is consistent with the adult literature (Pertusa et al., 2008)

These results should be interpreted in light of several limitations. First, given that this sample consists of clinically referred youth with OCD, diagnostic assessment tools varied across children. However, there were no differences in rates of diagnosis based on diagnostic tool used. Additionally, we did not specifically assess hoarding symptoms or severity and impairment due to hoarding symptoms in this sample; rather, symptoms were assessed as part of a larger battery of intake assessments. However, comparison of parent- and child-reported hoarding symptoms across groups supports the correct classification of children with and without hoarding symptoms. Another limitation is in the generalizability of our findings, given the lack of racial/ethnic and socioeconomic diversity in the sample. Finally, given that the current sample includes only children with OCD, results should be interpreted accordingly. There have yet to be any studies categorizing children with hoarding independent of OCD. Future studies that include children with both OCD and non-OCD hoarding symptoms will be critical for understanding any differences between those groups.

This investigation represents the first attempt to describe hoarding symptoms and their correlates in a group of young children, very close in time to the emergence of OCD and hoarding symptoms. Our results suggest that, in a sample of young children with OCD, hoarding symptoms are highly prevalent and are associated with earlier onset of symptoms, presence of ADHD diagnosis and higher rates of provisional anxiety diagnoses. These findings highlight a number of areas for future research. First, the high rate of hoarding behaviors among young children found in the present study suggests a need to consider refining the hoarding criteria for this age group. Some areas where the current criteria may be lacking when applied to children include: the role of parents in controlling children's possessions, developmentally normative collecting behavior and strong, emotional connection to inanimate objects, and emphasis on cognitive factors and distinguishing ego-syntonic from ego-dystonic thoughts and actions. Examination of the role of each of these concerns will help to elucidate diagnostic criteria for children with hoarding behaviors. Furthermore, further investigation of the function of hoarding behaviors in both adults and children will contribute to this diagnostic refinement and to an improved understanding of variations in the presentation of hoarding across the lifespan. Finally, gaining a better

understanding of hoarding throughout the lifespan will assist in developing interventions for those that might otherwise have a poor treatment prognosis.

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Table 1

Demographic characteristics

	Hoarding Group (*n* = 33)	**Non Hoarding Group (*n* = 35)**	**Total (*N* = 68)**
Gender (Male)	48.5%	42.9%	45.6%
Income (Median = $80,000)	Above median: 53.1%	Above median: 68.6%	Above median: 61.2%
	At or below median: 46.9%	At or below median: 31.4%	At or below median: 38.8%
Race	Caucasian: 83.9%	Caucasian: 90.9%	Caucasian: 87.5%
	Asian: 6.5%	Asian: 0%	Asian: 3.1%
	Hispanic: 3.2%	Hispanic: 3.0%	Hispanic: 3.1%
	Multi-racial: 3.2%	Multi-racial: 3.0%	Multi-racial: 3.1%
	Other: 3.2%	Other: 0%	Other: 1.6%
	No response/unknown: 0%	No response/unknown: 3.0%	No response/unknown: 1.6%

Table 2

Descriptive statistics for key measures of interest

	Hoarding group (*n* = 33) *M or n (SD or %)*	**Non-hoarding group (*n* = 35) *M or n (SD or %)***	**Test value (*t or* χ^2) (DF)**	***p***
Age in years	7.67 (1.57)	7.17 (1.25)	1.44 (66)	0.15
Age in years of onset for primary diagnosis	4.78 (2.16)	5.89 (1.75)	−2.14 (55)	0.04*
GAF score (current)	56.87 (6.07)	59.17 (6.74)	−1.23 (45)	0.23
Highest GAF score within the year prior to presentation	62.20 (6.87)	68.55 (12.70)	−1.97 (29)	0.06
Total CYBOCS score	23.73 (4.97)	22.93 (4.35)	0.66 (58)	0.51
Total obsessions on CYBOCS	6.36 (4.51)	5.17 (2.82)	1.30 (53)	0.20
Total compulsions on CYBOCS	7.03 (3.64)	5.77 (2.83)	1.60 (66)	0.11
Comorbid anxiety diagnosis[1] present	14 (42.42%)	9 (25.71%)	2.12 (1)	0.15
Total diagnoses count	2.39 (1.66)	1.77 (0.91)	1.93 (66)	0.06
Provisional comorbid anxiety diagnosis present[1]	9 (27.27%)	3 (8.57%)	4.09 (1)	0.04*
ADHD diagnosis present	9 (27.27%)	2 (5.71%)	5.82 (1)	0.02*

* $p < .05$

[1] One or more of the following: GAD, Social Anxiety, Separation Anxiety

Table 3

CYBOCS checklist obsessions and compulsions

	Hoarding group (*n* = 33)	Non-hoarding group (n = 35)	Total (*n* =68)
Obsessive Symptoms			
Contaminations	66.67%	71.43%	69.12%
Aggressive	60.61%	60.00%	60.29%
Sexual	6.06%	20.00%	13.23%
Hoarding/saving	72.73%	0.00%	35.29%
Magical	33.33%	22.86%	27.94%
Somatic	18.18%	14.29%	16.18%
Religious	45.45%	28.57%	36.76%
Miscellaneous	51.51%	57.14%	54.41%
Compulsive Symptoms			
Washing/cleaning	60.61%	77.14%	69.12%
Checking	63.64%	57.14%	60.29%
Repeating	57.58%	57.14%	57.35%
Counting	21.21%	11.43%	16.18%
Ordering/arranging	54.54%	42.86%	48.53%
Hoarding/saving	78.79%	0.00%	38.23%
Magical games/superstitious behavior	12.12%	20.00%	16.18%
Rituals involving other persons	63.64%	60.00%	61.76%
Miscellaneous	78.79%	71.43%	75.00%