



Association between miscellaneous symptoms and primary symptom dimensions among chinese adults with obsessive-compulsive disorder

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ABSTRACT

Obsessive compulsive-disorder (OCD) is a common mental illness characterized by the presence of obsessions and/or compulsions. Symptom presence and severity is typically evaluated through the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS). However, miscellaneous symptoms embedded within the Y-BOCS Symptom Checklist have often been overlooked despite being associated with certain dimensions. In this study, we used exploratory factor analysis and logistic regression to explore the relationship between various miscellaneous symptoms and OCD symptom dimensions among 123 Chinese adults with OCD. A four-dimensional model was factorially derived: Obsessions, Symmetry/Ritual, Contamination/Cleaning and Contamination/Cleaning. In general, 11 out of 17 miscellaneous symptoms were associated with one or more of the symptom dimensions. Among them, the Obsessions dimension was significantly associated with seven miscellaneous symptoms: “Fear of not saying just the right thing,” “Intrusive (non-violent) images,” “Intrusive nonsense sounds, words”, etc. The Symmetry/Ritual dimension was significantly associated with “Need to tell, ask, or confess.” The Contamination/Cleaning dimension was related to “Need to know or remember”. The Hoarding/Religion dimension was related to “Fear of losing things,” and “Superstitious fears”. Results contribute to the clinical assessment, diagnosis and treatment of Chinese patients with OCD by understanding the extent to which certain miscellaneous symptoms are associated with primary symptom dimensions.

1. Introduction

Obsessive-compulsive disorder (OCD) is a chronic, potentially disabling mental illness (Karno et al., 1988; Kessler et al., 2005) with lifetime prevalence of 1–2% world-wide (Kessler et al., 2005). If not actively treated, patients with OCD often experience a chronic course (Rasmussen and Tsuang, 1986; Marcks et al., 2011; Fineberg et al., 2013) with escalating impairment (Rapaport et al., 2005; Eisen et al., 2006a, 2006b). The symptoms of OCD are quite heterogeneous with affected individuals experiencing a broad range of obsessions and compulsions (Pinto et al., 2006; Stasik et al., 2012).

The Yale–Brown Obsessive-Compulsive Scale (Y-BOCS) is widely used in the clinical evaluation of obsessive-compulsive symptoms (Goodman et al., 1989). The Severity Scale assesses the severity of obsessions and compulsions. The Symptom Checklist (Y-BOCS-SC) assesses the current and past presence of 62 obsessions and compulsions. The Symptom Checklist has 15 total categories which include 13 main symptom categories (e.g. aggressive

obsessions, sexual obsessions, somatic obsessions) and 2 miscellaneous symptom categories (i.e., miscellaneous obsession and miscellaneous compulsion). In order to classify these symptoms among adults, many studies have grouped the 13 main symptom categories (62 items) into different factors based on factor analytic results. The four-factor solution consists of Contamination/Cleaning, Obsessions/Checking, Symmetry/Ordering, and Hoarding factors (Leckman et al., 1997; Summerfeldt et al., 1999; Mataix-Cols et al., 2005; Cullen et al., 2007; Masi et al., 2010). The five-factor solution consists of either Taboo obsessions, Contamination/Cleaning, Doubt, Superstitions/Rituals, and Symmetry/Hoarding (Katerberg et al., 2010) or Hoarding, Contamination/Cleaning, Doubt/checking, Symmetry/Ordering and Unacceptable/Taboo thoughts (Brakoulias et al., 2013). The six-factor solution consists of Contamination/Washing, Hoarding, Sexual Obsessions/Reassurance, Aggression /Mental Compulsions, Symmetry/Perfectionism, and Doubt/Checking (Williams et al., 2012).

The two Y-BOCS miscellaneous categories were not included in prior factor analytic work despite the clear clinical relevance and

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Table 1
Miscellaneous symptoms associated with major OCD symptoms factor (four-factor model) in previous studies.

Factor	Obsessions/checking	Symmetry/ Ordering	Contamination/Cleaning	Hoarding
Miscellaneous symptoms	<ol style="list-style-type: none"> 1. Fear of saying certain things (Leckman et al., 1997; Summerfeldt et al., 2004; Storch et al., 2007) 2. Fear of not saying just the right thing (Storch et al., 2008) 3. Fear of losing things (Storch et al., 2008) 4. Intrusive non-violent images (Storch et al., 2007) 5. Intrusive nonsense sounds/noises, bothered by sounds, colors with significance (Summerfeldt et al., 2004) 6. Superstitious fears (Summerfeldt et al., 2004; Storch et al., 2008) 7. Mental rituals (Summerfeldt et al., 2004; Storch et al., 2007) 8. Need to tell, ask, or confess (Summerfeldt et al., 2004; Leckman et al., 1997; Storch et al., 2008) 9. Measures to prevent harm to self (Leckman et al., 1997; Summerfeldt et al., 2004; Storch et al., 2007, 2008) 10. Need to touch tap, rub (Storch et al., 2007, 2008) 11. Rituals involving blinking or staring (Storch et al., 2007) 	<ol style="list-style-type: none"> 1. Fear of not saying just the right thing (Leckman et al., 1997; Storch et al., 2007) 2. Fear of losing things (Summerfeldt et al., 2004) 3. Intrusive (non-violent) images (Storch et al., 2008) 4. Intrusive sounds, words, music, or numbers, ritualized eating behaviors (Storch et al., 2007, 2008) 5. Lucky/unlucky numbers (Summerfeldt et al., 2004) 6. Need to know/remember details (Storch et al., 2007) 7. Need to touch, tap or rub (Summerfeldt et al., 2004; Storch et al., 2007, 2008) 8. Need to do things until it feels right (Storch et al., 2007) 9. Rituals involving blinking/staring (Storch et al., 2007, 2008) 	<ol style="list-style-type: none"> 1. Intrusive non-violent images (Storch et al., 2007) 2. Being bothered by sounds and needing to tell, ask or confess (Summerfeldt et al., 2004; Storch et al., 2007) 3. Need to know or remember (Storch et al., 2007, 2008) 4. Measures to prevent harm to self (Storch et al., 2007) 5. Excessive list making (Storch et al., 2007) 	<ol style="list-style-type: none"> 1. Excessive list making (Summerfeldt et al., 2004)

common occurrence. Previous studies have explored the association between miscellaneous symptoms and the major symptom dimensions. Table 1 shows miscellaneous symptoms associated with major OCD symptoms factor (four-factor model) in previous studies (Leckman et al., 1997; Summerfeldt et al., 2004; Storch et al., 2007a, 2008b). These studies show that Obsessions/Checking and Symmetry/Ordering are significantly associated with certain miscellaneous symptoms consistent with the symptom content. For example, “Fear of saying certain things,” “measures to prevent harm to self,” “mental rituals,” and “non-violent intrusive images” all express a tendency to prevent noxious or catastrophic consequences, which is related to the over-interpretation of life events in OCD (Summerfeldt et al., 2004). Only one article shows that Hoarding is related to a need to know or remember (Storch et al., 2008), consistent with the notion that hoarding is a separate symptom from OCD (Pertusa et al., 2008; Marchand and Phillips, 2012).

Mataix-Cols et al. (1999) (N = 354) found a five-factor model. The Symmetry/Ordering symptom dimension was significantly associated with five items: need to know/remember details, fear of not saying just the right thing, lucky/unlucky numbers, and need to touch, tap or rub. The Sexual/Religious Obsessions symptom factor was associated with six items: “fears of saying certain things,” “intrusive non-violent images,” “intrusive nonsense sounds, words, or music,” “lucky/unlucky numbers,” “colors with special significance,” and “need to tell, ask, or confess”. The Hoarding symptom factor was significantly related to “need to know/remember details”.

Although informative, the subjects of all previous published studies and their samples were from western countries (Leckman et al., 2001; Summerfeldt et al., 2004; Storch et al., 2008). The association of miscellaneous symptoms to established symptom dimensions has not yet been conducted in Eastern countries. With the development of Chinese society, the incidence of OCD has risen significantly (Xiao and Zhang, 2012). Given differences in cultural expression of symptoms, it is possible that certain miscellaneous symptoms may load onto different factors, or that the factor structure found in past Western samples (e.g., Mataix-Cols et al., 1999) may differ among those from China. Previous studies suggest that multicultural factors such as religion or social taboo may influence obsessive-compulsive symptoms (Okasha et al., 1994; Shooka et al., 1998). Among Chinese people who are influenced by traditional culture, individuals are reluctant to talk about sex in public, and their attitude towards sex tends towards conservative. This may explain why the score on sexual obsessional content is lower (e.g., reduced expression and/or reporting). As well, Chinese Confucianism, which promotes harmonious interpersonal relationships and avoids conflicts between people, may be related to reduced expression/endorsement of aggressive obsessions. The Hoarding dimension also shows low frequency, which may be explained since China is still a developing country with low per capita income, and many people are frugal and unwilling to discard. Thus, people who have hoarding symptoms are not treated as having a problem (Juang and Liu, 2001; Li et al., 2009). Collectively, there are potential reasons why findings in Western samples may differ with a Chinese sample; yet, there are currently no data published exploring the association between miscellaneous symptoms in the Y-BOCS and OCD symptoms in Chinese patients. In the present study, we initially conducted a category-level and item-level exploratory factor analysis among Chinese OCD patients to determine the primary symptom dimensions. Thereafter, we examined the associations of miscellaneous symptoms obtained in our study and miscellaneous symptoms in Chinese patients with OCD.

2. Materials and methods

2.1. Participants

A total of 123 patients (58 females) from Shanghai Mental Health Center aged 18–52 years ($M = 29.2 \pm 6.97$) participated in the study. All patients were diagnosed by experienced psychiatrists across varied

Shanghai mental health centers through a structured clinical interview (see below). In addition, patients' audio-visual ability (i.e., ability to understand spoken language and see written text) was informally assessed at the assessment. Participants were interviewed with the Mini International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998). Inclusion criteria included: (a) at least 18 years of age; (b) meet DSM-IV OCD diagnostic criteria (on the M.I.N.I.; Sheehan et al., 1998); (d) Y-BOCS score ≥ 16 points; (e) an education level of junior high school or above; and (f) sufficient audio-visual ability to complete assessments. Exclusion criteria included: (a) Diagnosed with other DSM-IV Axis I diagnoses other than OCD on the M.I.N.I.; (b) Elevated risk of suicide; (c) Unable to complete assessments due to severity of OCD and/or other psychopathology; (d) Currently suffering from serious physical illness or central nervous system disease and substance abuse. This study was granted ethical approval by the Shanghai mental health center.

Participants' average years of education was 15 years (± 2.18). The average Y-BOCS Obsessions Severity scale score was 14.02 (± 3.08). The average Y-BOCS Compulsions Severity score was 11.12 (± 4.49), while the mean Y-BOCS total score (total) is 25.15 (± 5.65).

2.2. Procedure

All subjects were assessed using the Y-BOCS which was translated to Chinese with approval (Yong, 2006). In past research, the internal consistency of the Y-BOCS was good ($\alpha = 0.75$) as were inter-rater and test-retest reliability ($ICC < 0.82$ and $ICC < 0.75$, respectively). The Chinese version of the Y-BOCS has good construct and content validity (Yong, 2006). After administration of the Chinese Y-BOCS severity scale, the patients were assessed using the Y-BOCS-SC, which consists of 15 categories with a total of 67 items. Eight of 15 categories include an open-ended question and two of the 15 categories assess miscellaneous obsessions and compulsions. Because the explanations of open-ended questions are subjective and in the process of self-evaluation, no subjects (0 of 123) answered these questions. Thus, open-ended questions were excluded from data analysis.

After data collection, the catalogues of 13 main symptoms were integrated and analyzed by factor analysis to examine the factor structure of obsessive-compulsive symptoms in China relative to 4-factor and 5-factor models found in non-Chinese samples. A correlation analysis was performed with the various items to understand the association between the miscellaneous symptoms and the primary symptom dimensions in Chinese patients with OCD.

2.3. Data analysis

Data analysis was applied to SPSS 19.0. Factorial validity was determined by principal component factor analysis. The suitability of the factor model was tested by Kaiser-Meyer-Olkin (KMO) measure and Bartlett's spherical test. Characteristic value ≥ 1 will be selected into the model. Component loading ≥ 0.6 is the criterion for the inclusion factor matrix. For each of the 13 symptom categories within the above four-factor models, weighted scores were calculated by adding up items chosen in each category and then dividing the score by the total number of items in the particular category. Thereafter, the 13 weighted category scores were summed to create the four-factor scores used in the regressions. The significance level of $p < 0.01$ was used to control for Type I error.

3. Results

The sample has a KMO of =0.679 and Bartlett's test $p < 0.05$, which has good structural validity and thus continues factor analysis. Table 2 shows the characteristic value and contribution rate of the factor analysis. There were four components whose characteristic value > 1 , with a cumulative contribution rate of 63.028. The results of

Table 2
Characteristic value, contribution rate and cumulative contribution rate.

Component	Characteristic value	Contribution rate	Cumulative%
1	3.360	25.846	25.846
2	1.945	14.960	40.806
3	1.700	13.076	53.882
4	1.189	9.146	63.028
5	0.894	6.875	69.903
6	0.808	6.213	76.116
7	0.759	5.839	81.955
8	0.583	4.482	86.437
9	0.467	3.593	90.030
10	0.443	3.408	93.438
11	0.377	2.903	96.340
12	0.322	2.474	98.814
13	0.154	1.186	100.000

Table 3
4-factor variance oblique rotation load matrix.

Component	1	2	3	4
Symmetry obsessions	0.743			
Repeating compulsions	0.738			
Counting compulsions	0.699			
Ordering/arranging compulsions	0.671			
Checking compulsions	0.666			
Hoarding/saving obsessions		-0.889		
Hoarding/collection compulsions		-0.883		
Religious obsessions		-0.718		0.321
Aggressive obsessions			0.752	
Sexual obsessions			0.688	
Somatic obsessions			0.619	
Cleaning compulsions				0.894
Contamination obsessions				0.798

the 4-factor variance oblique rotation loaded matrix are in Table 3. According to the component loadings, Symmetry obsessions, Repeating compulsions, Counting compulsions, Ordering/arranging compulsions, Checking compulsions comprise the first factor; Hoarding/saving obsessions, Hoarding/collection compulsions, Religious obsessions comprise the second factor; Aggressive obsessions, Sexual obsessions, Somatic obsessions comprise the third factor. Finally, Cleaning compulsions and Contamination obsessions comprise the fourth factor. The new four-factor model obtained: obsessions (aggressive obsessions, sexual obsessions, somatic obsessions, 15 total items), symmetry/repetition (symmetry obsessions, repeating compulsions, counting compulsions, ordering/arranging compulsions, checking compulsions, 12 total items), contamination/cleaning (cleaning compulsions and contamination obsessions, 12 total items), and hoarding/religion (hoarding/saving obsessions, hoarding/collection compulsions, Religious obsessions, 4 total items).

For the four-factor model, the results of logistic regression are reported in Table 4, including the 95% confidence intervals, odds ratios, and significance levels. The regression coefficients (B) and Wald statistics are also reported for statistically significant results. Seven miscellaneous symptoms were significantly associated with the Obsessions dimension: fear of not saying just the right thing ($B = 1.52$, Wald = 14.21); intrusive (non-violent) images ($B = 1.35$, Wald = 11.02); intrusive nonsense sounds, words, or music ($B = 2.06$, Wald = 15.16); lucky/unlucky numbers ($B = 1.29$, Wald = 10.87); colors with special significance ($B = 1.80$, Wald = 8.97); need to tell, ask, or confess ($B = 1.30$, Wald = 11.38); and measures (not checking) to prevent harm to self ($B = 1.42$, Wald = 9.57). One miscellaneous symptom demonstrated a significant relation with the Symmetry/Repetition symptom dimension: need to tell, ask, or confess ($B = 0.49$, Wald = 11.71). One miscellaneous symptom was significantly associated with the Contamination/Cleaning symptom dimension: need to know or remember ($B = -1.05$, Wald = 6.73). Two miscellaneous

Table 4
Summary of logistic regressions predicting miscellaneous Y-BOCS symptoms from symptom factors for the four-factor model.

Miscellaneous item	Y-BOCS-SC symptom dimension			Symmetry/ Ritual		Contamination/ Cleaning		Hoarding/ Religion	
	% with	Odds ratio (95% CI)	<i>p</i>	Odds ratio (95% CI)	<i>p</i>	Odds ratio (95% CI)	<i>p</i>	Odds ratio (95% CI)	<i>p</i>
Obsessions									
Need to know or remember	31.7	1.2(0.6–2.4)	0.643	1.0(0.8–1.4)	0.727	0.3(0.2–0.8)	0.009*	1.5(1.0–2.4)	0.048
Fear of saying certain things	22.0	2.1(1.0–4.7)	0.055	1.1(0.8–1.5)	0.458	1.7(0.9–3.6)	0.128	1.7(1.1–2.6)	0.015
Fear of not saying just the right thing	26.8	4.6(2.1–10.1)	0.000*	0.9(0.7–1.2)	0.560	1.3(0.7–2.7)	0.438	1.6(1.0–2.4)	0.047
Fear of losing things	18.7	2.2(1.9–5.2)	0.064	0.9(0.7–1.3)	0.757	2.6(1.2–5.5)	0.018	2.0(1.3–3.2)	0.003*
Intrusive (non-violent) images	20.3	3.9(1.7–8.6)	0.001*	1.1(0.8–1.5)	0.593	1.3(0.6–2.7)	0.472	0.8(0.4–1.4)	0.466
Intrusive nonsense sounds, words, or music	15.4	7.8(2.8–22.0)	0.000*	1.1(0.7–1.5)	0.776	0.9(0.4–2.3)	0.872	1.4(0.9–2.4)	0.150
Bothered by certain sounds/noises	12.2	3.4(1.3–9.0)	0.014	1.1(0.8–1.6)	0.526	2.5(1.1–6.1)	0.037	1.3(0.7–2.3)	0.400
Lucky/unlucky numbers	26.0	3.6(1.7–7.8)	0.001*	1.2(0.9–1.5)	0.244	0.9(0.5–1.9)	0.868	1.4(0.9–2.1)	0.132
Colors with special significance	9.8	6.0(1.9–19.7)	0.003*	1.1(0.7–1.7)	0.672	1.3(0.5–3.6)	0.593	1.4(0.8–2.6)	0.220
Superstitious fears	15.4	3.1(1.2–8.0)	0.021	1.1(0.8–1.6)	0.551	2.8(1.1–6.6)	0.021	2.0(1.2–3.2)	0.004*
Compulsions									
Mental rituals (other than checking/counting)	25.2	1.8(0.9–3.7)	0.108	1.0(0.7–1.3)	0.744	1.4(0.7–2.7)	0.382	1.6(1.1–2.4)	0.025
Need to tell, ask, or confess	31.7	3.7(1.7–7.8)	0.001*	1.6(1.2–2.2)	0.001*	1.1(0.5–2.1)	0.877	0.9(0.6–1.5)	0.701
Need to touch, tap, or rub	4.1	801.2(0.5-E)	0.072	2.0(0.5–7.9)	0.316	0.4(0.0–6.8)	0.546	4.0(1.0–16.8)	0.055
Measures (not checking) to prevent harm to self	17.9	4.1(1.7–10.1)	0.002*	1.2(0.8–1.6)	0.361	1.9(0.9–4.2)	0.108	1.5(0.9–2.4)	0.083
Ritualized eating behaviors	4.1	0.7(0.1–4.0)	0.725	1.5(0.9–2.4)	0.111	3.1(0.8–12.0)	0.106	1.1(0.4–2.7)	0.880
Superstitious behaviors	6.5	3.3(1.0–11.3)	0.057	1.2(0.8–1.9)	0.384	1.4(0.4–4.6)	0.558	1.6(0.9–2.8)	0.121
Trichotillomania	1.6	E(0.0-E)	0.246	E(0.02-E)	0.284	1.6(0.0-E)	0.871	5.6(0.1-E)	0.405

symptoms were significantly associated with the Hoarding/ Religion dimension: fear of losing things ($B = 0.70$, Wald = 8.78) and superstitious fears ($B = 0.69$, Wald = 8.20).

4. Discussion

Through factor analysis of the Y-BOCS-SC among Chinese OCD patients, a new four-dimensional model was derived, which has some similarities and differences compared with other commonly used four-factors model (Leckman et al., 1997). First, there were no differences in the Contamination/Clean factor in this sample relative to Western subjects suggesting that OCD patients with contamination obsessions and compulsions present similarly, regardless of East and West, and are not closely related to other symptoms. Second, the Checking compulsion category moved from the Obsession/checking factor to the symmetry/ordering factor. Patients with checking compulsions often present with intolerance of uncertainty, which may lead to further expression of compulsions, such as repeating compulsions, counting compulsions, and ordering/arranging compulsions (Grayson, 2010). Third, in our study, hoarding symptoms were yoked with the religious obsession category. This may be due to the fact that patients with Hoarding symptoms in China often maintain a frugal lifestyle and are reluctant to throw away old things (Juang and Liu, 2001; Li et al., 2009). As well, the majority of patients in China with strong religiosity – and by virtue potential scrupulosity – are elderly people (Du and Wang, 2014), both of which may occur in the same Chinese group. Overall, the factor structure we found has more similarities than differences between the four-dimensional model derived from the Western population (Leckman et al., 1997).

We found that 11 of 17 miscellaneous symptom items were linked with one or more major symptom dimensions. The obsession symptom dimension was strongly related with miscellaneous symptoms. Indeed, 7 of the 17 miscellaneous symptom items were significantly associated with the obsession symptoms dimension. The hoarding/religion dimension was significantly related with two miscellaneous symptoms. However, the Symmetry/ Ritual, Contamination/Cleaning were each significantly associated with only 1 of the 17 miscellaneous symptoms.

Fear of not saying just the right thing, intrusive nonsense sounds/noises, intrusive (non-violent) mental images, need to tell, ask, or

confess, measures (not checking) to prevent harm to self were significantly related with the Obsessions symptom dimension, which is similar to others. The main features of the above miscellaneous symptoms involve intrusive negative thoughts, a strong sense of fear over the incapacity of making a correct judgment, mental compulsions, and violent thoughts or the intrusive voices or words. Universally, each symptom suggests efforts to reduce obsessional distress by virtue of an array of rituals. Notably, many involve others (e.g., confessing) consist with the high rates of family accommodation demonstrated in adults and children with OCD (Wu et al., 2014).

In previous studies, there was no association between lucky/ unlucky numbers and the Obsessions symptom dimension. Rather, it was found to be associated with the Symmetry/ Ritual symptom dimension (Summerfeldt et al., 2004; Storch et al., 2007a, 2008b). We also found that many patients with OCD have a strong fear of unlucky numbers, which is directly related to religious beliefs. For example, several Chinese patients with OCD have a strong fear or conflict with the number “4” or “13”. The number “4” and “13” are believed to have an ominous meaning in Chinese traditional culture (Westjohn et al., 2016). Therefore, many people often check for these numbers (e.g., door number, license plate number, telephone number) before making decisions. In Western cultures, some people are also sensitive to certain numbers; however, these numbers are typically related to personal experiences rather than religious beliefs perhaps with the exception of numbers related to Satan (e.g., 666). There was no significant association between fear of saying certain things and the Symmetry/ Ordering symptom dimension in the present study, which may suggest that this item was not clearly understood by patients (our experiences suggested that some did not understand the meaning) and/or independence of this miscellaneous symptom from the core dimension.

Need to tell, ask, or confess was predicted by the Symmetry/ Ritual symptom dimension. This item was the only miscellaneous symptom that was significantly associated with two major symptom dimensions. Need to tell, ask, or confess indicates need to seek assurance continuously, receive confirmation from others, repeatedly acknowledge something which they have (not) done correctly or be sure that they have said words in a specific way to others. Moreover, no significant associations were found between needing to know or remember details, fear of not saying just the right thing, touching and tapping

compulsions and the Symmetry/ Ritual symptom dimension. Unlike among Western OCD patients, Chinese patients with OCD may exhibit less touching, tapping or rubbing behaviors. In this study, only 5 of 123 patients endorsed this symptom which is consistent with our experience. One potential reason for this is Chinese culture's emphasis on collectivism. People are encouraged to hide intense emotions and thus may not show excessive behaviors even when they are anxious. (Triandis, 1989; Morris and Peng, 1994).

The Contamination/Cleaning symptom dimension predicted 'need to know or remember'. Storch et al. (2007) also found a significant association between this miscellaneous symptom item and the Contamination/Cleaning symptoms dimension in children. This association may reflect efforts by individuals to monitor exposure to contaminating triggers potentially through research or accommodating behaviors.

We also found that the Hoarding/religion symptom dimension predicted 'fear of losing things'. Previous studies have shown that hoarding symptoms were not significantly associated with miscellaneous symptoms (Storch et al., 2007) perhaps reflecting its unique diagnostic status (Pertusa et al., 2008; Marchand and Phillips, 2012). Our results may reflect a fear of losing tangibly or emotionally valued possessions, which may manifest in compulsive checking behavior (Haan et al., 2015). Moreover, the hoarding/religion symptom dimension also predicted superstitious fears which may reflect overlap in the presentations of those who collect with superstitious obsessions (Juang and Liu, 2001; Li et al., 2009).

Study results are similar to others with some modest differences which we believe are due to cultural factors. The Confucian culture in China advocates harmonious interpersonal relationships, resulting in low scores on the aggression dimension and potentially more robust linkages with symptoms engaging other people. Many people in China are frugal and like to save, so hoarding symptoms may demonstrate stronger relationships with varied compulsions (Juang and Liu, 2001; Li et al., 2009).

The present study had several limitations. First, the sample size of this study is not large. On balance, commonalities in the factor analysis were strong, and our structure made conceptual sense. Second, the age span of subjects was relatively large, from 18 to 52 years old. Third, our results may not generalize to Chinese patients in other regions.

Within these limitations, the present study demonstrated: 1) a relatively similar factor structure of the Y-BOCS-SC across Chinese and Western cultures; 2) meaningful relationships between symptom dimensions and key miscellaneous symptoms. This will aid in clinical assessment of individuals in China with OCD in terms of understanding which miscellaneous symptoms may present with core symptom dimensions, as well as how symptoms may 'load' together during clinical presentation.

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