

A Cross-cultural Test of the Cognitive Theory of Obsessions and Compulsions: A Comparison of Greek, Italian, and American Individuals—a Preliminary Study

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Abstract A widely-held theory is that obsessions arise from the misinterpretation of normal intrusive thoughts (e.g., misinterpreting unwanted harm-related thoughts as a sign that one is going to act on them). This leads the person to perform compulsions such as repeated checking. Misinterpretations are said to arise from various types of beliefs (e.g., the belief that thoughts inevitably give rise to actions). In support of this theory, some studies have shown that such beliefs are correlated with obsessive-compulsive (OC) symptoms. We investigated whether the theory can be extended to conditions in which cultural differences are taken in consideration. Measures of OC beliefs and symptoms were completed by participants in Greece ($n = 46$) and Italy ($n = 348$) and, for comparison purposes, the US ($n = 73$). Beliefs were correlated with symptoms in all three groups. There were significant, albeit modest, cross-cultural effects. In particular, the relation between beliefs and cleaning and checking compulsions tended to be low in Greek participants, compared to Italian and US counterparts. Although the results generally support the cognitive model, some culture-specific modifications may be required, possibly by including variables that moderate or attenuate the correlations between OC symptoms and putatively related beliefs.

Keywords Obsessive-compulsive disorder · Intrusive thoughts · Cognitive theory · Cross-cultural

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Introduction

Psychological phenomena are influenced by many things, including cultural factors (Best & Williams, 1997). Culture entails behavioral patterns and belief systems shared by a group of people (Soudijn, Hutschemaekers, & van de Vijver, 1990). A growing body of research has documented cross-cultural similarities and differences in the prevalence and nature of psychopathology (Tanaka-Matsumi & Draguns, 1997; Tseng & Streltzer, 1997; Weissman et al., 1994). There are several ways that culture can influence psychopathology. Culture may shape the way people experience and communicate their symptoms, and culturally transmitted beliefs can influence the sorts of things that evoke distress (Sica, Novara, Sanavio, Coradeschi, & Dorz, 2002). To illustrate, in India it is widely believed that semen is the elixir of life, and that the loss of this fluid can deplete one's mental and physical energy (Chadda & Ahuja, 1990). Such beliefs can give rise to the Dhat syndrome, in which men become anxious, hypochondriacal, and preoccupied with semen loss.

Most contemporary models of psychopathology have been derived from observations made in a small number of societies, particularly the US cross-cultural research is needed to determine whether these models are useful in explaining psychopathology in different cultures, including comparisons across Western societies, and between Western and non-Western societies. If cross-cultural differences are identified, then the models may need to be amended to account for cultural diversity. The purpose of the present study was to investigate whether the cognitive model of obsessions and compulsions developed by Salkovskis (1985, 1996) and elaborated by others (Frost & Steketee, 2002) is supported in different cultures. Obsessions and compulsions were chosen for investigation because they are common, particularly in their mild or subclinical forms (Frost, Sher, & Geen, 1986; Salkovskis & Harrison, 1984).

The cognitive model (Frost & Steketee, 2002; Salkovskis, 1985, 1996) was selected because it is one of the most widely used models of obsessions and compulsions. It is supported by a good deal of evidence (Taylor, 2002), although it remains to be seen whether it is useful in explaining obsessions and compulsions in cultures different from North-American and English ones. The cognitive model of obsessions and compulsions is among the most promising of several leading models. Other leading models are primarily biological in nature, emphasizing dysregulation of the basal ganglia and the orbital-frontal cortex of the brain (e.g., Swedo, 2002). Although biological models are not necessarily inconsistent with the cognitive model, there have yet to be any attempts to integrate the two.

This model begins with the well-established finding that cognitive intrusions (i.e., thoughts, images, and impulses that intrude into consciousness) are experienced by most people (e.g., Salkovskis & Harrison, 1984). An important task for any theory is to explain why almost everyone experiences intrusions (at least at some point in their lives), yet only some people experience intrusions in the form of obsessions (i.e., intrusions that are unwanted, distressing, and difficult to remove from consciousness). Salkovskis argued that cognitive intrusions—whether wanted or unwanted—reflect the person's current concerns. The concerns are automatically triggered by internal or external reminders. For example, intrusive thoughts of harming befalling others may be triggered by encountering potentially dangerous objects (e.g., the sight of sharp kitchen knives). Salkovskis proposed that intrusions develop into obsessions when intrusions are appraised as posing a threat for which the individual is personally responsible. To

illustrate, consider the intrusive image of stabbing one's child. Most people experiencing such an intrusion would regard it as a meaningless cognitive event—mental flotsam—with no harm-related implications. Such an intrusion would develop into an obsession if the person appraises it as having serious consequences for which he or she is personally responsible. Likewise, compulsions are conceptualized as efforts to remove intrusions and to prevent any perceived harmful consequences.

In addition to beliefs about personal responsibility, several other types of beliefs are thought to be important in producing obsessions and compulsions, including beliefs about (a) the importance of one's thoughts (e.g., the belief that thoughts inevitably translate into actions), (b) the importance of controlling one's thoughts, (c) perfectionism, (d) overestimation of threat, and (e) intolerance of uncertainty (Frost & Steketee, 2002). Life experiences shape the basic assumptions we hold about ourselves and the world, and are therefore thought to produce these beliefs. For instance, a strict moral or religious upbringing, or other experiences that teach the person codes of conduct, can shape beliefs about personal responsibility. It may be that different cultural habits, by shaping different beliefs and attitudes, effect the phenomenology and prevalence of obsessions and compulsions (Sica, Novara, & Sanavio 2002; Sica et al., 2002).

The cognitive model predicts that the strength of such beliefs is correlated with the severity of obsessions and compulsions. Research, primarily from US samples, supports this prediction (e.g., Frost & Steketee, 2002). To date, the only relevant cross-cultural study found that obsessive-compulsive (OC) symptoms and beliefs were correlated in both Australian and Italian students (Kyrios, Sanavio, Bhar, & Liguori, 2001). A limitation of that study was that current measures of beliefs were not used; the authors did not use the measures developed by the Obsessive Compulsive Cognitions Working Group (Frost & Steketee, 2002). The recent measures developed by the Working Group, such as the Obsessive Beliefs Questionnaire, is an improvement over earlier measures because (a) the Working Group's measures are more comprehensive assessments of beliefs thought to be relevant to obsessions and compulsions, and (b) the Working Group's measures have been subjected to extensive studies of reliability and validity (primarily in US samples; see Frost & Steketee, 2002).

To further investigate whether the predicted link between OC symptoms and beliefs is supported in different cultures, we computed symptom-belief correlations in three samples: Greek, Italian, and US undergraduates. The three countries were chosen because they represent distinctive cultural groups with their own habits. Students were used because OC phenomena can be readily identified in student populations (e.g., Frost et al., 1986; Sternberger & Burns, 1990). The use of students also ensures that the cultural groups are approximately matched on extraneous demographic variables such as gender composition and occupational status.

We also compared the cultures in their mean scores on measures of OC symptoms and beliefs. Research by Hofstede (2001) suggests that there may be cross-cultural differences in belief strength. Hofstede found that cultures differ in “uncertainty avoidance,” which is the extent to which members feel uncomfortable (threatened) in unstructured or unknown situations. Uncertainty avoidance is associated with anxiety and powerlessness (Hofstede, 2001), and is similar to the beliefs implicated in obsessions and compulsions, particularly—but not exclusively to—the intolerance of uncertainty (Frost & Steketee, 2002). Hofstede found that uncertainty avoidance was high in Greek individuals, medium in Italians, and low in US individuals. This suggests that these groups may also differ in beliefs putatively related to obsessions and compulsions.

Although there may be cultural differences in mean scores, the cognitive model suggests that the correlation between beliefs and OC symptoms should be similar across cultural groups. For example, strong beliefs about personal responsibility for preventing harm should be associated with harm-preventing compulsions (e.g., cleaning and checking), regardless of the person's cultural background (Frost & Steketee, 2002). However, it is possible that there are culture-specific factors that attenuate this relationship. Cultural factors that promote a sense of powerlessness may weaken the correlation between OC symptoms and putatively related beliefs. To illustrate, people who believe that they are personally responsible for preventing harm may not engage in compulsions if they also believe they are powerless to prevent harm. The present study is a first step to investigate this possibility.

The present study continues the tradition of exploring a variety of clinical or psychological conditions across cultures (e.g., Arrindell et al., 1990; Butcher & Graham, 1994; Jahoda, 1980; Leung, Au, Fernandez-Dols, & Iwawaki, 1992; Spielberger, 1989) and to our knowledge is one of the first inquiring into OC cognitions and symptoms across different national groups.

Method

Participants

We considered people living in the same country to be relatively culturally homogenous, even though a particular culture is not necessarily shared by all the members of a single country. In practice, broad cultural attributes such as nationality, ethnicity, and language are usually selected in order to investigate cross-cultural differences, while recognizing within culture variability. As pointed out by Hofstede (1991), there are strong forces toward integration in nations that have existed for some time; there is usually a single dominant language, educational system, army, political system and so on. These can produce substantial sharing of basic values among residents of a nation. Thus, individuals born in the same country and sharing the same language were considered more similar than different (see also, Berry, 1966; Hofstede, 1980; Strodbeck, 1964; Schwartz, 1992; van de Vijver & Leung, 1997).

The samples consisted of 46 Greek students, 348 Italian students and 73 US students. Greek students were enrolled at University of Thessaloniki; Italian students were enrolled at Universities of Padova and Parma (both located in North Italy); US students were enrolled at Pacific University (Oregon) and at Boston University (Massachusetts). All the students were psychology majors.

Individuals who were born outside the country of enrollment or reporting a first language different from that of the country of enrollment were excluded. Although it was not assessed whether participants were nationally representative of their respective countries, they can be regarded as instances of the cultures under investigation.

Nonclinical participants were recruited for this study because evidence indicates that there is a continuum of severity between nonclinical forms of obsessions and compulsions and the more severe forms seen in obsessive-compulsive disorders, and that the same types of obsessions and compulsions can be found in clinical and nonclinical populations (Gibbs, 1996).

Table 1 shows the demographic characteristics of the three groups, along with the levels of depression. Depression is an important feature to assess since it is one of the factors which may moderate the relationship between OC cognitions and symptoms (Rachman, 1997). No significant differences were found with respect to gender and depression. Italian students were slightly younger and less educated than the other two groups. However, the effect sizes shown in the table were quite small, indicating that the cross-cultural differences accounted for a small proportion of variance. Lastly, all participants were single.

Measures

Obsessive Beliefs Questionnaire (OBQ) This 87-item self-report scale was developed by the Obsessive Compulsive Cognitions Working Group (OCCWG) to measure beliefs regarded as important in the etiology and maintenance of obsessions and compulsions (Frost & Steketee, 2002; OCCWG, 1997, 2001, 2003). Beliefs are relatively enduring assumptions that are held by an individual and are not specific to a particular event. The OBQ contains six scales, each measuring one of the following belief domains: (a) Beliefs about the importance of one's thoughts (e.g., the belief that thoughts are equivalent to actions), (b) beliefs about the importance of controlling one's thoughts, (c) beliefs about the importance of doing things perfectly, (d) beliefs that one has a high degree of personal responsibility for preventing harm, (e) intolerance of uncertainty, and (f) beliefs that threat is ever-present (overestimation of threat). Each item is rated on a 7-point scale ranging from 1 (disagree very much) to 7 (agree very much), with higher scores indicating greater belief strength. Studies of US, Greek, and Italian samples indicate that the OBQ performs acceptably on various indices of reliability and validity (Frost & Steketee, 2002; OCCWG, 2001, 2003).

The OBQ has been translated into several languages, including Italian and Greek. Following established guidelines (e.g., Brislin, 1986), three independent researchers translated the questionnaire from English to Italian or Greek and then reached agreement on a common version. Back-translation to English was performed to ensure accuracy, and the translated scales were administered to participants in a pilot study to assess item clarity.

Padua Inventory (PI) This 60-item self-report instrument contains four scales assessing the following OC symptoms: (a) Impaired mental control (the occurrence of obsessions), (b) contamination compulsions (e.g., cleaning rituals), (c) checking compulsions, and (d) compulsive urges (Sanavio, 1988). Each item is rated on a five-point scale ranging from 0 (not at all) to 4 (very much). The PI is widely used in research on obsessions and compulsions, and is available in English, Italian, and Greek. The PI has

Table 1 Demographic features of Greek, Italian, and US participants: Means (and SDs) or percentages

	Greek (<i>n</i> = 46)	Italian (<i>n</i> = 348)	US (<i>n</i> = 73)	<i>F</i> or χ^2	df	Effect size (η^2)	SNK post-hoc comparisons
Age	23.4 (1.8)	21.1 (2.3)	24.0 (7.5)	23.71***	2,461	.09	1, 3 > 2
Education (years)	15.4 (2.2)	14.3 (2.0)	15.2 (1.9)	10.13***	2,450	.04	1, 3 > 2
Female (%)	50.0	43.7	58.9	5.83	1	.07	–
Beck Depression Inventory	5.2 (4.9)	7.3 (6.3)	6.5 (6.9)	2.29	2,458	.01	–

* $P < .05$, ** $P < .01$, *** $P < .001$

acceptable reliability and validity in US samples, Italian, and Greek samples (Sanavio, 1988; Simos, 1997; Taylor, 1998).

Beck Depression Inventory (BDI). This 21-item self-report measure is a widely used measure of depression that has been validated in English, Italian, and Greek versions (Beck & Steer, 1987; Jemos, 1984; Scillico, 1983).

Procedure

Participants were all psychology undergraduates who were recruited from university classes on winter 2001. To ensure the uniformity of the presentation across the different sites of enrollment, a written form containing the research aims and confidentiality protections was provided. Individuals who agreed to participate gave their informed consent and completed the questionnaires. Although participation was voluntary without remuneration, the majority of invited students participated in the study.

Results

Mean elevation of scores

Mean scores (and *SDs*) on the OBQ and PI are shown in Table 2. For each scale, countries were compared by a one-way ANOVA. Note that ANOVA and related tests are robust when cell sizes are unequal, providing that the cell standard deviations are approximately equal (Glass & Hopkins, 1996), as in the case of our main analyses (Table 2). Significant ANOVA results were followed by Student-Newman-Keuls (SNK) post-hoc comparisons. Effect sizes were calculated as eta-squared (η^2), which is the proportion of variance in the dependent variable that is “explained” or predicted by the independent variable. Table 2 shows that there were a number of statistically significant

Table 2 Means (and *SDs*) for the scales of the Obsessive Beliefs Questionnaire and Padua Inventory

	Greek	Italian	US	<i>F</i>	df	Effect size (η^2)	SNK post-hoc comparisons
Obsessive Beliefs Questionnaire							
Control of thoughts	45.8 (11.4)	34.6 (12.0)	34.1 (15.0)	15.90***	2,450	.07	1 > 2, 3
Importance of thoughts	31.9 (8.3)	29.3 (9.4)	28.3 (13.2)	1.75	2,453	.01	–
Perfectionism	46.2 (13.8)	44.8 (14.9)	43.5 (23.7)	0.37	2,453	.00	–
Responsibility	53.3 (14.7)	49.7 (13.2)	43.2 (20.2)	7.73***	2,452	.03	1, 2 > 3
Intolerance of uncertainty	42.7 (10.6)	43.9 (11.3)	34.7 (15.5)	17.18***	2,453	.07	1, 2 > 3
Threat estimation	34.9 (13.4)	34.0 (12.5)	32.3 (16.8)	0.60	2,453	.00	–
Total	254.8 (59.6)	236.4 (58.6)	216.1 (92.3)	4.96**	2,453	.02	1, 2 > 3
Padua Inventory							
Checking	3.6 (3.9)	5.9 (5.1)	2.9 (3.9)	14.38**	2,462	.06	2 > 1, 3
Contamination	8.5 (5.3)	6.1 (5.8)	4.3 (4.1)	8.08**	2,463	.03	1 > 2 > 3
Impaired mental control	7.5 (5.5)	11.0 (8.5)	7.2 (7.8)	8.95**	2,461	.04	2 > 1, 3
Urges	1.7 (2.4)	2.0 (2.7)	1.2 (1.7)	3.16*	2,459	.01	2 > 3
Total	26.3 (15.7)	31.8 (22.7)	20.2 (18.6)	9.44***	2,461	.04	2 > 1, 3

* $P < .05$, ** $P < .01$, *** $P < .001$

differences between groups. Statistical significance was influenced by the high statistical power of the design, as reflected by the large aggregate N (across samples). Although significant, the effect sizes show that cross-cultural differences were modest, accounting for less than 7% of the variance in scores. Even so, it is noteworthy that the Greek sample tended to have the highest scores on the OBQ, which is consistent with Hofstede's (2001) finding that this culture is associated with particularly high scores on uncertainty avoidance. The pattern of results did not change when age and education level were included as covariates.

Relationships among beliefs and symptoms

Box's M test was used to ascertain whether the variance–covariance matrix for the OBQ and PI scales differed across the groups. The results indicated significant group differences; Box's $M = 237.28$, $F(110, 45641) = 2.00$, $P < .001$. In order to study the nature of such differences, hierarchical regression analyses were conducted.

Hierarchical regressions were performed to identify the effects of culture and their interactions, after controlling for the main effect of beliefs. Five (Padua scales as dependent variables) \times 7 (the OBQ scales as independent variables) regression analyses were run separately. In the first step of each regression analysis, one of the OBQ scales was entered to predict one of the PI scores. In the second step, four culture-related variables were entered: (a) whether the participant was Greek (1 = yes, 0 = no), (b) whether the participant was from the US (1 = yes, 0 = no), (c) the OBQ-by-Greek interaction, and (d) the OBQ-by-US interaction. Note that it was unnecessary to create a third dummy variable, coding whether the participant was Italian; that variable, and its interaction with the OBQ scale, is linearly dependent with the other variables. Each of the OBQ scores was standardized (across data from all participants) before constructing the interaction terms, because this lessens problems with multicollinearity (Aiken & West, 1991). In fact tolerance values for any equation ranged from .61 to .65, indicating that multicollinearity was not a problem (Norusis, 1988).

Overall, all the regression analyses confirmed, without exception, a general effect of “culture”. Looking at the Padua scales, the magnitude of cultural effects was similar for the total score, impaired mental control, checking and contamination (on average, 5% of explained variance over that explained by each OBQ score). In addition, the results suggested that culture and the beliefs-by-culture interactions tended to act as suppressor variables (as indicated by their negative β weights). In other words, cultural factors and their interactions appeared to moderate or attenuate the relationship between beliefs and symptoms. Lastly, as far as OBQ scores are concerned, total, threat estimation, perfectionism and control of thoughts predicted better the Padua scales.

To illustrate the typical outcome of the regression analyses, the result for the final equation using the PI total score as dependent variable and the OBQ total along with the cultural effects as predictors, is shown in Table 3¹. The OBQ total score was a significant predictor of the PI total score: $F(1, 452) = 225.26$, $P < .001$, $R^2 = .33$. The second block of predictors significantly increased the value of R^2 ; incremental $F(5, 448) = 7.31$, $P < .001$, $R^2 = .38$.

To further investigate the relationships between particular beliefs and particular symptoms, correlations were also computed. In examining the pattern of correlations across the groups, two problems were identified. First, the true values of correlations are

¹ Details of the outcome of each regression analysis available from the first author

Table 3 Hierarchical regression: Predicting obsessive-compulsive symptoms from beliefs, culture, and culture-by-belief interaction

Predictor	β	$t(448)$
OBQ total score	.69	14.48***
Greek (1 = yes, 0 = no)	-.09	2.39*
US (1 = yes, 0 = no)	-.15	3.85***
Greek-by-OBQ interaction	-.12	2.92**
US-by-OBQ interaction	-.15	3.37***

* $P < .05$, ** $P < .01$, *** $P < .001$

OBQ = Obsessive Beliefs Questionnaire

underestimated to the extent that the measures are less than perfectly reliable. Comparison of correlations across samples may be complicated by cross-sample differences in reliability. Across scales and countries, internal consistency (Cronbach's α) was $> .70$ in most (83%) cases².

Although this indicates that internal consistency was generally acceptable for research purposes, the cases in which α was less than .70 suggest that some correction for reliability should be used. Accordingly, correlations were disattenuated by correcting for differences in α , using the method described by Nunnally and Bernstein (1994).

The second problem is how to compare the correlations across samples when statistical significance varies with sample size. To circumvent this difficulty, we used Cohen's (1988) scheme to evaluate the substantive significance of correlations: "Large" correlations are defined as those $\geq .50$, "medium" correlations are from .30 to .49, and "small" correlations are .10–.29.

Table 4 shows that the correlations tended to be large for the US sample, medium-to-large for the Italian sample and small-to-medium for the Greek sample. In all the three groups the correlations between the OBQ scales and the measure of obsessionality (PI impaired control scale) tended to be large, whereas correlations between the OBQ and PI urges scale tended to be medium. In the Greek sample, checking and contamination were unrelated to OBQ scores, whereas in the US sample checking and contamination were highly related to OBQ scores. In Italian individuals, checking and contamination were moderately associated with OBQ scores.

Discussion

The patterns of covariation between beliefs and symptoms were fairly similar across the three groups, with putative OC beliefs being generally correlated with symptoms, as predicted by the cognitive model. On the other hand, the results showed that cultural factors appeared to moderate consistently the relationship between beliefs and symptoms. Although the magnitude of the cultural effects was small in absolute terms, it has been noted that interactions explaining as little as 1% of variance are often considered meaningful given the difficulty of detecting moderator effects in non-experimental studies (McClelland & Judd, 1993)³.

² Internal consistency information for each culture and each subscale available from the first author

³ Authors wish to thank an anonymous reviewer for this suggestion

Table 4 Disattenuated correlations between beliefs and symptoms as measured, respectively, by Obsessive Beliefs Questionnaire and Padua Inventory

Group and Padua Inventory scales	Control of Thoughts	Importance of thoughts	Perfectionism	Responsibility	Intolerance of uncertainty	Threat estimation
Greek						
Checking	.25	.15	.26	.18	.15	.31*
Contamination	-.10	.16	-.08	-.12	.00	.14
Impaired mental control	.52**	.69**	.77**	.46*	.70**	.74**
Urges	.15	.39*	.42*	.04	.31*	.35*
Italian						
Checking	.48*	.47*	.40*	.37*	.47*	.56**
Contamination	.35*	.36*	.35*	.34*	.48*	.53**
Impaired mental control	.52**	.54**	.51**	.49*	.56**	.73**
Urges	.24	.31*	.29	.18	.27	.51**
US						
Checking	.49*	.60**	.43*	.57**	.52**	.58**
Contamination	.54**	.63**	.47*	.59**	.55**	.52**
Impaired mental control	.71**	.74**	.62**	.78**	.79**	.88**
Urges	.50**	.40*	.36*	.32*	.45*	.27

Cohen's (1988) classification: * Medium-sized correlations (.30–.49); ** Large correlations ($\geq .50$). Variables listed in the first column are the Padua Inventory scales. Variables in the remaining columns are the scales of the Obsessive Beliefs Questionnaire

The correlations between beliefs and symptoms suggested that the small source of differences across cultures lay largely in the fact that beliefs and contamination and checking symptoms tended to be less strongly correlated for Greek participants, compared to Italian and US counterparts. Such result is expected on the basis of the high level of uncertainty avoidance (and associated powerlessness) characterizing the Greek culture. In this culture it may be that a sense of powerlessness moderates (attenuates) the relationship between OC symptoms and beliefs. To further investigate this possibility, future cross-cultural studies could explicitly include a measure of powerlessness when examining the relationship between OC symptoms and beliefs. In such studies it also would be useful to assess a broader range of OC symptoms than those examined in the present study.

Research on people with obsessive-compulsive disorder (OCD) from countries that are not often studied by OCD researchers, such as Arabic or North African countries, has revealed high rates of rituals different from checking and cleaning. Okasha, Saad, Khalil, El-Dawla, and Yehia (1994) described the warding-off of blasphemous thoughts through repeated religious phrases in Egyptian patients. In their study, repeating rituals were the most common compulsions (reported by 68% of the individuals under study). Likewise, Mahgoub and Abdel-Hafeiz (1991) documented repeating compulsions in form of prayers in Eastern Saudi Arabia patients. Here too, repeating rituals were the most commonly occurring compulsions (50% of patients).

The lack of attention to the different ways to deal with obsessions may be responsible for the underreporting of OCD in some countries. For instance, looking at the epidemiological data, investigations of prevalence by ethnicity revealed very low OCD rates in African, Afro-Caribbean, Asian, and Australian aborigine groups (Jones & Horne, 1973; Samuels & Nestadt, 1997; Weissman et al., 1994). The low frequency of OCD has been commonly explained through the low sense of personal control, fatalism and powerlessness typical of those cultures (German, 1972; Sechrest, 1969). Needless to say,

such characteristics are identical to those described under the label of uncertainty avoidance. It might be well that in such cultures people would react to obsessions in ways not easily recognizable by the investigators making thereby rarer the formal diagnoses of OCD.

It also has been suggested that the content of intrusive thoughts may play an important role in directing compulsions (Lee & Kwon, 2003). In particular, “autogenous obsessions” (that is, without identifiable evoking stimuli, such as immoral thoughts or impulses) would lead to the frequent use of avoidant control strategies like distracting activities or self-punishment. “Reactive obsessions” (which are evoked by identifiable external stimuli and perceived as relatively realistic and rational, such as doubts or concern about contamination, mistake, accident and so forth) would lead to instrumental control behaviors (washing, checking, arranging, etc.). Future cross-cultural research could investigate whether the different content of obsessions may moderate the relation between compulsions and OC beliefs.

Looking at the different OC beliefs, threat estimation, perfectionism and control of thoughts were the best predictors of different types of OC symptoms across the three cultures. Interestingly, a recent study carried on Italian patients showed that perfectionism and control of thoughts were two of the three cognitive domains which better discriminated patients with OCD from patients with generalized anxiety disorder and non clinical individuals (Sica et al., 2004). Additional studies are therefore warranted to ascertain whether such OC beliefs are more relevant than others in predicting OC symptoms across different cultures.

One may wonder whether some statistical artifact may have influenced our findings. Although our samples were dissimilar in size and slightly different in age and education we have several good reasons to argue in favor of validity of the present study. First of all, previous studies have showed that demographic characteristics did not seem influence OCD rates among general population (Parkin, 1997; Pigott, 1998; Samuels & Nestadt, 1997). Of more importance, the three groups were homogenous with respect to the level of depression, a variable undoubtedly associated with OC severity. Moreover, the scores of the three groups on OBQ scales were unaffected by differences in age and education as showed by the covariance analysis. Also, correlation analyses were performed in such a way to correct for the measurement error of the instruments utilized.

A shortcoming of the present study has to do with the degree of representativeness of our samples in terms of geographic location and demographic features and with small sample size (especially in case of Greek individuals). Also, our samples consisted of students rather than population-representative epidemiologic samples. Further research is needed to examine the question of whether the findings of the present study can be generalized to larger, representative samples. Further research is also needed to determine whether the results apply to groups from other cultures, and to groups within the cultures (e.g., employed adults, the elderly, rural inhabitants).

In conclusion, cross-cultural studies can encourage us to systematically and rigorously assess cultural bias implicit in our concepts of psychopathology. More broadly, psychology is and has always been cultural, even if not fully recognized as such (Geertz, 1973). Our findings generally support and give strength to the cognitive theory of obsessions and compulsions. The association between OC cognitions and symptoms was confirmed in all the three groups and the few differences in the covariation pattern did not conflict with the predictions of the model. Moreover, such differences were expected on the basis of well-known cultural characteristics and testable hypotheses were derived.

Further cross-cultural studies should advance our knowledge of how psychological phenomena vary across cultural groups.

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