

# Magical Thinking in Obsessive-Compulsive Disorder, Panic Disorder and the General Community

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**Abstract.** Magical Ideation was examined in 71 individuals across four groups matched, where possible, for gender and age. These groups were: (1) Obsessive Compulsive Disorder (OCD) patients with cleaning compulsions ( $n = 11$ ); (2) OCD patients with checking compulsions ( $n = 20$ ); (3) panic disorder patients with minimal obsessive compulsive symptoms ( $n = 19$ ); (4) a “normal” control group with minimal obsessive compulsive symptoms ( $n = 21$ ). The Magical Ideation Scale (MI, Eckblad and Chapman, 1983), the Obsessive Compulsive Inventory-Short Version (OCI-SV; Foa et al., 2002) and the Maudsley Obsessional-Compulsive Inventory (MOCI, Hodgson and Rachman, 1977) were administered to all participants. A one-way Anova was conducted with four planned contrasts. As expected, the OCD groups obtained magical ideation scores higher than the normal subjects. This suggests that OCD patients engage in more magical thinking tendencies than non-anxious controls. Similarly, OCD participants obtained a mean magical ideation score significantly higher than the panic disorder group, suggesting that obsessional compulsive patients are more likely to exhibit magical thinking than individuals with panic disorder. Of note, panic disorder and control group means on MI did not differ significantly. Finally, individuals with obsessive cleaning compulsions displayed higher levels of magical thinking compared to individuals with obsessive checking compulsions, despite no difference in severity of their obsessive compulsive symptoms. This observation was counter to previous findings (Einstein and Menzies, 2004a; Einstein and Menzies, 2004b).

*Keywords:* Schizotypy, obsessive compulsive disorder, magical thinking.

## Introduction

Superstitions and magical thinking appear harmless when observed in everyday life. Yet these common thoughts may underlie obsessive compulsive symptoms (Amir, Freshman, Ramsey, Neary and Brigidi, 2001; Einstein and Menzies, 2004a). Magical thinking refers to beliefs that defy culturally accepted laws of causality, such as beliefs in magical influences. In Western culture, an example of a magical thought would be the belief that an action that is physically unrelated to an event could have caused the event. For example, the belief that a rain dance could bring rain. The Magical Ideation Scale (Eckblad and Chapman, 1983) explores beliefs

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in a number of magical influences (e.g. thought transmission, spirit influences, astrology, good luck charms, psychic energy). Superstitious beliefs are a type of magical thinking often passed on through generations. They usually refer to events that signal bad or good luck (e.g. it is bad luck to walk under a ladder).

Piaget (1929) argued that children engage in magical thinking until 11 or 12 years of age. Interestingly, Bolton, Dearsley, Madronal-Luque and Baron-Cohen (2002) observed that magical thinking does not decline after the age of 12 years. They administered the Magical Thinking Questionnaire to groups of children ( $N = 127$ ) between 5 to 17 years of age. Girls demonstrated the same levels of magical thinking throughout the age groups. Boys demonstrated a pattern of increasing levels of magical thinking through the 5–6 and 9–10 age group, a decline in the 12–13 year age group and higher levels repeated in the 14–15 and 16–17 year age groups.

While Magical Ideation (MI) may play a minimal role in normal adult behaviour (emerging only in situations of stress), it may be centrally involved in Obsessive Compulsive Disorder (OCD) and distinguish OCD from the other anxiety disorders (Amir et al., 2001; Einstein and Menzies; 2004a). While we have argued this previously, the present study is the first to investigate whether a difference exists in levels of magical ideation between an obsessive compulsive group and a panic group.

We believe that high MI is not sufficient to develop OCD, but that OCD sufferers with high MI would 1) be more likely to develop certain types of belief and 2) be more likely to engage in superstitious rituals (e.g. blinking or tapping). Therefore magical thinking may require specific attention within treatment.

Thought Action Fusion was described in the 1990s to be a cognitive feature of many clients with OCD (TAF; Rachman 1993; Shafran, Thordarson and Rachman, 1996). The likelihood scales of TAF measure the belief that thinking about an unacceptable or disturbing event makes it more likely to happen. Thought Action Fusion appears to be a derivative of magical thinking. Earlier studies found that a general magical thinking tendency underpinned associations between superstitiousness, thought action fusion and OCD severity (Einstein and Menzies, 2004a, b).

Einstein and Menzies (2004a, b) have consistently found magical thinking (as measured by the Magical Ideation scale, Eckblad and Chapman, 1983) to be significantly correlated with checking subscales of the MOCI and the Padua Inventory, whereas it has not been significantly correlated with the cleaning or contamination subscales of these measures. Similarly, Zebb and Moore (2003) found checking to be correlated with superstitiousness; however, this finding was limited to females in their undergraduate sample. These relationships were explained by the nature of checking and washing behaviour. We propose that checking requires individuals to question their sensory, tactile and visual experiences. For example, an individual can stand at an iron and feel and see that the electricity switch is off and that there is no light on the iron, yet still doubt that the iron has been switched off. Magical thinking is required to deny the evidence that has been obtained by looking at the iron, and touching and seeing the electricity switch. In contrast, cleaning behaviour does not generally require the suspension of scientific laws. The manufacturers of household cleaning products employ marketing campaigns that exaggerate the potential danger of germs and emphasize the invisible nature and continual presence of germs in our environment. Advertisements often suggest that washing with normal soap is ineffective in removing germs. It is argued that washers do not need magical thinking tendencies to imagine, while washing their hands, that these invisible germs may still be present.

This study was designed to test three hypotheses. The first hypothesis was that magical thinking would be elevated in a sample of OCD patients when compared to a matched control group drawn from the normal population. The second hypothesis was that magical thinking would be elevated in a sample of OCD patients when compared to a matched control group of panic disorder patients. The third hypothesis was that checkers would be more prone to magical thinking than a matched group of cleaners. The evidence of a gender bias in previous studies (Zebb and Moore, 2003) provided further reason to control for gender across the four groups.

## Method

### *Participants*

Participants were 71 adults matched for age and gender attending a hospital based anxiety clinic. DSM-IV (APA, 1994) diagnoses of Obsessive-Compulsive Disorder and Panic Disorder (with or without Agoraphobia) were determined by two clinical interviews. The initial interview was a 30-minute telephone screen at which a preliminary diagnosis was made. To confirm this diagnosis, a 90-minute face-to-face assessment interview was conducted by a clinical psychologist and intern clinical psychologist. Clinical psychologists had between 3 and 6 years' experience specializing in the management of anxiety disorders. Participants in the normal control group were recruited from non clinical staff and visitors attending other hospital departments.

At initial intake major subtypes of cleaning versus checking were identified. To classify participants into checking versus washing subtypes a two-fold decision process was conducted. This involved clinical file review and subsequent analysis of OCI-SV scores. The first author reviewed initial intake symptom reports and identified six groups (checking only, cleaning only, checking predominantly, cleaning predominantly, mixed checking and cleaning and other type predominant). Patients reporting mixed cleaning and checking compulsions or no cleaning or checking compulsions were excluded from the study. The OCI-SV checking and washing scores were used to calculate a difference score for each remaining participant. Participants were classified as washers if their difference score was greater than or equal to  $-4$ . Participants were classified as checkers if their difference score was greater than or equal to  $+4$ .

### *Measures*

*Magical Ideation Scale* (MI Scale; Eckblad and Chapman, 1983). The MI Scale consists of 30 true-false items exploring beliefs in a number of magical influences (e.g. thought transmission, spirit influences, astrology, good luck charms, psychic energy). Sample items include: "Horoscopes are right too often for it to be a coincidence" and "Things sometimes seem to be in different places when I get home even though no one has been there." The scale was originally designed as a measure of psychosis proneness. It has demonstrated construct validity as a measure of schizotypy (Chapman and Chapman, 1985; Chapman, Chapman and Miller, 1982), and adequate internal consistency (see further Norman, Davies, Malla, Cortese and Nicholson, 1996).

*Obsessive Compulsive Inventory-Short Version* (OCI-SV; Foa et al., 2002). The OCI-SV is an 18-item self-report measure of obsessive compulsive symptoms. Respondents rate

the distress caused by specific activities on a 5-point Likert scale. The OCI-SV contains six subscales: washing, checking, ordering, hoarding, neutralizing and obsessing. The OCI-SV demonstrates excellent discriminant validity between diagnostic groups and adequate convergent validity with other measures of OCD. The OCI-SV demonstrates high test-retest reliability and high subscale internal consistency. The scale is moderately related to observer ratings of OCD severity as measured by the Y-BOCS (Goodman et al., 1989) and the NIMH Global Obsessive-Compulsive Scale (Goodman and Price, 1992).

*Maudsley Obsessional-Compulsive Inventory* (MOCI; Hodgson and Rachman, 1977). The MOCI consists of 30 true-false items covering the range of obsessive compulsive symptoms. The questionnaire has adequate test-retest reliability, convergent validity (Hodgson and Rachman, 1977), and internal consistency (Norman et al., 1996). Four subscales may be derived from the MOCI, namely checking, cleaning, slowness and doubting. Despite the development of numerous alternative measures of OCD severity over the last two decades, the MOCI probably remains the most widely used instrument for assessing general OCD symptomatology.

#### *Statistical analyses*

Grouping was conducted according to the method outlined above. From a total of 119 patients with OCD, 20 individuals met both decision criteria for checking and 11 individuals met both decision criteria for washing. Checkers were matched for age (within 5 years) and gender with the three remaining groups (cleaners, panic disorder patients and a normal control group). In order to screen out comorbid OCD diagnoses from the panic and normal control groups, these participants must have obtained a MOCI score below a cut off of 12 (consistent with the practice of Shafran et al., 1996).

A one way analysis of variance with planned contrasts was conducted with participants' Magical Ideation scores to compare the differences in magical thinking between OCD patients with checking concerns, OCD patients with cleaning concerns, panic disorder patients, and normal controls. A post-hoc contrast was conducted to examine the difference between the OCD checking group and the two control groups.

### **Results**

Tables 1 and 2 provide the demographic characteristics of the four groups. Not surprisingly given the matching between groups, there were no significant differences in age or sex.

**Table 1** Percentage of participants in each group categorized by country of birth

Country of birth	Checkers	Cleaners	Panic	Control
Australia/New Zealand	45	63.6	52.5	61.8
United Kingdom	5.0	9.1	5.3	14.3
Europe	5	0	10.6	4.8
Africa	0	0	0	4.8
South America	0	0	5.3	0
Asia	5	0	0	0
Middle East	5	9.1	10.5	0
Missing	35	18.2	15.8	14.3

**Table 2** Descriptive statistics for each group including number of participants, age and gender

	Checkers ( <i>n</i> = 20)	Cleaners ( <i>n</i> = 11)	Panic ( <i>n</i> = 19)	Control ( <i>n</i> = 21)
Mean age	38.3	34.7	40.4	37.7
Standard Deviation	12.1	10.08	12.6	13.7
Male:Female	7:13	4:7	6:13	7:14

**Table 3** Mean score (and standard deviation) for each group on the Magical Ideation scale, the OCI-SV, the MOCI scale and the MOCI subscales

	Checkers	Cleaners	Panic	Control
MI	3.8 (2.6)	8.6 (6.4)	3.2 (2.7)	3.0 (3.5)
MOCI	20.4 (12.4)	19.9 (4.6)	8.0 (2.9)	6.0 (2.4)
OCI-SV	32.7 (13.3)	30.4 (11.6)	10.3 (7.8)	9.3 (7.3)
MOCI subscales				
Checking	3.7 (6.4)	1.2 (.83)	.8 (.89)	0.3 (0.5)
Cleaning	3.9 (5.3)	6.0 (1.6)	1.8 (1.8)	0.8 (1.2)
Doubting	1.1 (1.3)	.44 (.53)	.7 (.5)	0.5 (0.5)
Slowness	3.5 (2.5)	3.4 (1.1)	2.7 (1.1)	2.3 (0.5)

A one-way ANOVA examining differences in MI between groups was conducted with four planned contrasts. The first contrast compared the OCD washing group to the OCD checking group. Unexpectedly, pure washers obtained significantly higher magical ideation scores than pure checkers ( $f = 11.70$ ;  $p < .001$ ). The second contrast compared the OCD washing and checking groups to the group of patients with panic disorder. The combined OCD washing and checking groups obtained a significantly higher Magical Ideation mean score compared to that obtained by the panic disorder group ( $f = 7.34$ ,  $p < .009$ ). The third contrast compared the panic disorder group to the normal control group. There was no difference between MI scores obtained by these two groups ( $f = .032$ ,  $p < .858$ ). The fourth contrast compared the combined washing and checking OCD groups to a matched normal control group. As hypothesized, the combined OCD group obtained significantly higher MI scores compared to the matched normal control group ( $f = 8.94$ ;  $p < .004$ ). A post-hoc contrast was conducted comparing checkers alone to panickers and the normal control group. Consistent with the other results, checkers obtained significantly higher MI scores than the combined matched panic control and normal control group ( $f = 4.60$ ;  $p < .04$ ).

To further examine differences between the washing and checking OCD groups, *t*-tests were conducted on their scores on the MOCI and the OCI-SV. No significant differences were observed between the two groups on either symptom measure. Scores for the OCI-SV, the MOCI and MOCI subscale scores are provided in Table 3.

## Discussion

As hypothesized, the OCD groups obtained higher magical ideation scores than the matched normal control group. This supports the findings of previous studies in which strong correlations had been observed between magical ideation and obsessive compulsive symptoms

(Einstein and Menzies, 2004a, b). Magical ideation is a feature that distinguishes individuals with OCD from individuals with minimal obsessional compulsive symptoms. It should be noted that the individuals randomly approached at the hospital to participate in the matched control group were excluded from the group if they obtained MOCI scores over a cut off of 11. This ensured that individuals in the matched control group did not have obsessive compulsive symptoms.

The second hypothesis examined the claim that magical ideation is a clinical feature of OCD that distinguishes it from the other anxiety disorders. In support of this claim, individuals with OCD obtained significantly higher magical ideation scores compared to individuals with panic disorder. Once again, the individuals with panic disorder were excluded from the matched sample if they obtained MOCI scores over the cut off of 11. This ensured that the panic disorder group did not contain individuals with comorbid obsessive compulsive disorder. Importantly, the panic group MI mean and the normal control group MI mean did not significantly differ.

This finding is theoretically important. Magical thinking does not appear to be a key feature of panic disorder (given the absence of difference between panic and normal control groups on MI), and is not likely to be a key feature of other anxiety disorders unless individuals possess comorbid obsessive compulsive symptoms. This is despite the fact that safety behaviours are theorized to play a role in maintaining other anxiety disorders, for example social phobia (Wells and Clark, 1997) and panic disorder (Salkovskis and Hackmann, 1997). In the present study, only individuals with OCD reported high levels of magical thinking. This finding is consistent with our earlier claims that magical thinking may be necessary for many OCD neutralizing behaviours. This is because in order to neutralize the individual must often have the mistaken belief that an unrelated action will effect the chance of a negative event occurring (e.g. tapping on the table or hopping on the spot may prevent serious illness).

The third finding was unexpected. The OCD cleaning group had not been expected to exhibit higher levels of magical thinking than the OCD checking group. In fact one of the primary purposes of this study was to find further support for the finding that checking subscales (of the Padua and OCI-SV) are significantly correlated with magical ideation whilst cleaning subscales are not (Einstein and Menzies, 2004a, b). The difference was not a product of the severity of OC presentations in each group as *t* tests examining differences in levels of OC symptom revealed no differences between the two groups. This finding is inconsistent with the argument that magical thinking is required for obsessive compulsive checking but not for obsessive compulsive washing. The finding may have been an artefact of the present sample. It was counter to our expectations and awaits replication.

Limitations of this study emerge from the uneven number of participants in each group, particularly the small number of washers in the study. This means that the washing sample may have been less representative of the larger obsessive compulsive washing population. A lack of information on the chronicity of presentations also diminishes the conclusions that can be made from this study.

One potential problem that requires discussion is that of criterion contamination. Is it possible that OCD sufferers score high on MI simply because the MI scale might contain obsessive compulsive symptom related items? This explanation could not possibly account for the exceptionally high washer MI scores. No item on the MI scale vaguely resembles a washing symptom item. In addition, the MI scale was initially constructed as a measure of schizotypy or psychosis proneness (Eckblad and Chapman, 1983). In contrast, TAF was constructed by OCD researchers to measure a cognitive variable believed to be present in

OCD. Thus the TAF-R scale (Shafran et al., 1996) more closely resembles an OCD symptom checklist. Past studies, however, have shown TAF to correlate less with OCD symptom scales than MI (Einstein and Menzies, 2004a, b).

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