

# Research Article

## ROLE OF MAGICAL THINKING IN OBSESSIVE–COMPULSIVE SYMPTOMS IN AN UNDERGRADUATE SAMPLE

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*Thought action fusion (TAF) is an important presenting feature of many individuals with obsessive–compulsive disorder (OCD). “Magical thinking” is a similar construct (developed within the literature on schizotypy) that may provide a more accurate depiction of difficulties encountered by individuals with OCD. This study seeks to examine relationships between components of magical thinking, TAF, and superstitiousness; establish the extent to which these constructs are independently related to OCD proneness; and establish the extent to which these biased reasoning styles are related to each of the major OCD symptom clusters (e.g., washing, checking). The Padua Inventory (PI), the Maudsley Obsessional–Compulsive Inventory (MOCI), the Magical Ideation Scale (MI), the Lucky Behaviours (Lbeh) and Lucky Beliefs (Lbel) Scales, and the Thought Action Fusion–Revised scale (TAF-R) were given to a cohort of 86 undergraduate students. Of all the measures, the MI scale was found to be the most strongly related to obsessive–compulsive symptoms. Large and significant relationships between MI scores and the two measures of OCD (i.e., MOCI and PI) were obtained even when alternative mediators (i.e., Lbeh, Lbel, TAF-R) were held constant. No other variable remained significantly related to the MOCI or PI when magical ideation scores were held constant. The findings suggest that a general magical thinking tendency may underpin previous observed links between superstitiousness, thought action fusion, and OCD severity. Depression and Anxiety 19:174–179, 2004. © 2004 Wiley-Liss, Inc.*

**Key words:** *obsessive–compulsive disorder, thought action fusion*

### INTRODUCTION

#### THE ROLE OF MAGICAL THINKING IN OBSESSIVE–COMPULSIVE DISORDER

“Magical ideation” (MI) is commonplace in obsessive–compulsive disorder (OCD). It centres on the belief that “events that, according to the casual concepts of this culture, cannot have a casual relation with each other, might somehow nevertheless do so” [Meehl, 1964; cited by Eckblad and Chapman, 1983]. In Western society, magical thinking refers to beliefs that appear to defy scientific laws of causality [Chapman et al., 1982], including beliefs in clairvoyance, astrology, spirit influences, and telepathy.

The similarities between OCD and magical thinking have been noted by many prominent authors in the twentieth century [Freud, 1913; Meares, 1994;

Pitman, 1987, 1993; Rachman and Hodgson, 1980]. Bolton et al. [2002] note that MI provides the appearance of control when real control is not possible. Freud [1919] and Piaget [1929] hypothesized that adults would exhibit magical thinking in states of anxiety or fear [Bolton et al., 2002]. On the basis of magical thinking, some writers have suggested that

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OCD shares more with the schizophrenic family of disorders than the anxiety states [Enright, 1996; Enright and Beech, 1997; Enright et al., 1994]. Norman et al. [1996] examined the relative strength of the relationships between obsessive-compulsive symptomatology and schizotypy, anxiety and depression in a sample of 117 psychiatric outpatients. The schizotypy index was a composite score of two measures of psychosis proneness, the Perceptual Aberration (PA) scale [Chapman et al., 1978] and the Magical Ideation Scale (MI) [Eckblad and Chapman, 1983]. When correlation coefficients were compared, the correlation between schizotypy and obsessive-compulsive symptomatology ( $r = .60$ ) was significantly greater than correlations between obsessive-compulsive symptoms and either anxiety ( $r = .42$ ;  $z = 2.09$ ,  $p < .05$ ) or depression ( $r = .38$ ;  $z = 2.31$ ,  $p < .05$ ).

As magical thinking and OCD appear to be related, it is somewhat surprising that there have been few clear attempts to articulate the role that such ideation may play in the disorder. One explanation for the lack of systematic inquiry into magical thinking relates to the large number of similar constructs advanced in the literature. Researchers have used a variety of terms to describe phenomena akin to magical thinking, and this may have contributed to the fragmentation of our understanding of the core construct. Such terms include psychosis proneness [Thalbourne, 1985, 1994], superstitious thinking [Frost et al., 1993; Leonard et al., 1990; Shafran, 1998], and Thought Action Fusion (TAF) [Rachman, 1993; Rassin et al., 1999; Shafran et al., 1996].

Rachman (1993) first introduced the concept of “the psychological fusion of thoughts and actions”. TAF is said to consist of two components. The first component (measured by the Likelihood subscales), refers to the “tendency to assume incorrect casual relationships between one’s own thoughts and external reality” [Rassin et al., 1999]. The second component (measured by the Moral subscale) refers to the interpretation of obsessional thoughts as morally or ethically equivalent to forbidden actions. Because both components of TAF require the belief that thoughts, in and of themselves, are dangerous (in a way that supersede scientific principles of causality), the overlap between TAF and magical thinking is clear. Similarly, another term used to describe MI in both the general community and in OCD is “superstitious thinking” [Leonard et al., 1990; Shafran, 1998].

Given the potential confusion arising from the postulation of closely related (yet undifferentiated) constructs, the present study sought to: (1) examine the relationships between the components of magical thinking, thought action fusion and superstitiousness; (2) establish the extent to which these constructs are independently related to OCD proneness, and; (3) establish the extent to which these biased reasoning styles are related to each of the major OCD symptom clusters (e.g., washing, checking). The Padua Inventory

(PI) [Sanavio, 1988], the Maudsley Obsessive-Compulsive Inventory (MOCI) [Hodgson and Rachman, 1977], the MI Scale [Eckblad and Chapman, 1983], the Lucky Behaviors (Lbeh) and Lucky Beliefs (Lbel) Scales [Frost et al., 1993] and the TAF-Revised Scale [Shafran et al., 1996] were given to a large cohort of undergraduate students. First, it was hypothesized that MI would be the construct most clearly related to obsessive-compulsive symptomatology. Second, superstitious thinking (i.e., lucky behaviours and beliefs) and thought action fusion were hypothesized to be derivatives of magical thinking. Third, it was expected that magical thinking would relate to all major symptom clusters of OCD.

## METHODS

### PARTICIPANTS

Eighty-six undergraduate health science students (mean age = 22 years; 62% female) undertook an introductory psychology course at the University of Sydney. All participants were completing a degree in physiotherapy. Requests for volunteers were made during lectures and an offer of a nominal payment (AU \$20) was made for time taken to complete the instruments. Participants completed the battery of measures described below.

### MEASURES

**Magical Ideation Scale.** The MI Scale [Eckblad and Chapman, 1983] 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). 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 et al., 1982], and adequate internal consistency [Norman et al., 1996].

**Lucky Beliefs Questionnaire.** The Lucky Beliefs Questionnaire (Lbel) [Frost et al., 1993] consists of 30 items, scored on a 5-point Likert scale, concerning a variety of superstitious beliefs. The measure was generated from a semi-structured interview on superstitiousness and has particularly strong internal consistency (.95) [Frost et al., 1993].

**Lucky Behaviours Questionnaire.** The Lucky Behaviours Questionnaire (Lbeh) [Frost et al., 1993] is a companion to the Lbel. Like the Lbel, it consists of 30 items scored on a 5-point Likert scale. Items refer to superstitious behaviours carried out in response to superstitious beliefs. Subjects rate the frequency with which they engage in such behaviours. Internal consistency for the Lbeh is particularly strong [Frost et al., 1993].

**Thought Action Fusion Scale (Revised).** The Thought Action Fusion Scale (Revised) (TAF-R)

[Shafran et al., 1996] consists of 19 items divided into three scales. The TAF-Moral Scale assesses the belief that experiencing an intrusive thought is as morally unacceptable as acting on the thought (e.g., If I wish harm to someone, it is almost as bad as doing harm). The TAF-Likelihood for Others Scale assesses the belief that an unacceptable thought about a negative event occurring to others makes the event more probable (e.g., If I think of a relative/friend falling ill this increases the risk that he/she will fall ill). The TAF-Likelihood for Self Scale assesses the belief that having an unacceptable thought about a negative event occurring to oneself makes the event more probable (e.g., If I think of myself being in a car accident, this increases the risk that I will have a car accident). The measure has been demonstrated to possess adequate reliability in student, adult and obsessional samples [Shafran et al., 1996].

**Maudsley Obsessional-Compulsive Inventory.** The Maudsley Obsessional-Compulsive Inventory (MOCI) [Hodgson and Rachman, 1977] 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.

**Padua Inventory.** The Padua Inventory (PI) Scale [Sanavio, 1988] was developed as a measure of OCD proneness for use in normal samples. It consists of 60 items covering the full range of OCD symptomatology and measures the severity of each symptom on a 0–4-point Likert Scale. The instrument has adequate levels of internal consistency, test-retest reliability and convergent validity [Feske and Chambless, 2000; Macdonald and de Silva, 1999]. Two factor analytic studies have suggested four component scales: (1) checking behaviour; (2) impaired control over mental activities; (3) contamination concerns, and; (4) fear of losing motor control [Norman et al., 1996; Sanavio, 1988; Sternberger and Burns, 1990].

## RESULTS

The means and standard deviations (*sd*) for the scale are shown in Table 1. Of note, the mean Padua score in this sample was below that observed in international samples [Macdonald and de Silva, 1999; Van Oppen, 1992] but comparable to those observed in other Australian samples [Scarrabelotti et al., 1995].

TABLE 1. Values for all scales

Name of scale	Mean ( <i>sd</i> )
Magical ideation	4.85 (3.33)
TAF moral	19.28 (9.60)
TAF likelihood-other	1.53 (2.59)
TAF likelihood-self	1.84 (2.57)
Lucky behaviours	50.42 (14.33)
Lucky beliefs	41.57 (11.87)
Padua	20.65 (18.17)
MOCI	5.85 (4.56)

TAF, thought action fusion; MOCI, Maudsley Obsessional-Compulsive Inventory.

## RELATIONSHIPS BETWEEN MAGICAL THINKING, SUPERSTITIOUSNESS, AND THOUGHT ACTION FUSION

Pearson correlation coefficients were generated to explore relationships between the three constructs of magical thinking, superstitiousness, thought action fusion and their subscales (Table 2). In general, subscales within a measure should attain strong positive correlations indicating convergent validity (i.e., similarity in the underlying construct being measured). In contrast, the correlations between measures of different constructs should be relatively weak indicating divergent validity [Campbell and Fiske, 1959].

The correlations between the two measures of superstitiousness (Lbel and Lbeh;  $r = .78$ ) were strong, demonstrating excellent convergent validity. In contrast, correlations among TAF scales were mixed. The two TAF likelihood scales were significantly correlated with each other ( $r = .61$ ). However, TAF-Likelihood for Self only correlated  $r = .25$  with TAF-Moral, and TAF-Likelihood for Others only correlated  $r = .08$  with TAF-Moral. Neither of these two correlations were significant.

Divergent validity between the different measures was more difficult to establish. Magical thinking was significantly correlated with all of the other scales except for TAF Moral ( $.51 \geq r \geq .35$ ).

Full and partial correlations were generated to explore the ability of these scales to independently predict obsessive-compulsive symptoms. TAF Moral was excluded from these analyses given its failure to relate to all other measures.

MI demonstrated the strongest significant relationships with the MOCI ( $r = .42$ ) and the Padua ( $r = .53$ ). significant correlations were also obtained between TAF Likelihood for self, Lbeh, Lbel, and the Padua Inventory ( $.34 \geq r \geq .30$ ). TAF Likelihood for self was significantly correlated with the MOCI ( $r = .32$ ).

Importantly, after controlling for magical ideation, none of the correlations between TAF, superstitiousness and obsessive-compulsive symptomatology remained significant ( $.18 \geq r \geq .01$ ).

**TABLE 2. Correlations between magical thinking, thought action fusion and superstitiousness<sup>†</sup>**

Scale	Magical ideation	TAF moral	TAF likelihood for others	TAF likelihood for self	Lucky behaviours	Lucky beliefs
Magical ideation	—					
TAF moral	.14	—				
TAF likelihood for others	.35*	.08	—			
TAF likelihood for self	.38*	.25	.61*	—		
Lucky behaviours	.46*	.05	.26	.29	—	
Lucky beliefs	.51*	.06	.24	.37*	.78*	—

<sup>†</sup>TAF, thought action fusion.\* $P < .003$ .**TABLE 3. Correlations and partial correlations between cognitive scales and the MOCI and Padua Inventory for stratified sample (MOCI > 9)**

Variable held constant	Cognitive scales correlated with MOCI (and Padua)					
	MI	TAF self	TAF others	TAF moral	Lucky behaviours	Lucky beliefs
Lucky beliefs	.68** (.74**)					.06 (−.21) <sup>a</sup>
Lucky behaviours	.67** (.68**)				.02 (−.03) <sup>a</sup>	
TAF moral	.61** (.80**)			−.36 (.12) <sup>a</sup>		
TAF others	.67* (.65*)		.12 (.20) <sup>a</sup>			
TAF self	.69** (.66**)	−.25 (−.01) <sup>a</sup>				
MI	.66* (.66*) <sup>a</sup>	−.31 (−.06)	−.06 (.03)	−.15 (.40)	−.08 (−.13)	−.09 (−.37)

<sup>a</sup>Full correlations with MOCI (Padua), all others represent partial correlations.\* $P \leq .05$ .\*\* $P \leq .01$ .

In contrast, correlations between MI and both scales of OC symptoms remained significant after partialling out the remaining variables ( $.50 \geq r \geq .34$ ). This pattern of findings was also significant when a subsample of high scores on the MOCI (scores of 10 or higher,  $n = 15$ ) were examined ( $p < .01$ ; Table 3).

### PRESENCE OF MAGICAL IDEATION WITHIN SUBTYPES OF OCD

Correlations between magical thinking and the subtypes of OCD were examined for both the Padua and the MOCI. MI correlated significantly and most highly with Impaired Control over Mental Activities (Padua;  $r = .51$ ), but also attained significant positive correlations with the Checking subscales on the MOCI ( $r = .48$ ) and the Padua ( $r = .43$ ). In contrast correlations with the washing subscale on the MOCI ( $r = .17$ ) and the contamination subscale of the Padua ( $r = .26$ ) were not significant.

## DISCUSSION

As hypothesized, magical thinking was found to be the construct most clearly related to obsessive-compulsive symptoms. Correlations between the MI scale and both the MOCI and the PI were stronger than correlations observed between TAF Self, TAF Other, Lbeh, Lbel, and the two obsessive-compulsive

symptom scales. On further analysis, partial correlations demonstrated that the relationship between the MI scale and obsessive-compulsive symptoms was independent of the remaining variables. In contrast, the TAF Likelihood scales and the Superstitiousness scales were related to obsessive-compulsive symptoms by virtue of their relationship with the MI scale. The same pattern of results were found in an analysis of a sample of high MOCI scorers (Table 3).

This latter finding is supportive of the second hypothesis (i.e., superstitious thinking and thought action fusion are derivatives of magical thinking). The moral subscale of the TAF-R, however, represents a clear exception to this general finding. This subscale demonstrated very low correlations with all scales (Table 2), a finding that raises questions about the nature of items on the Moral subscale. In our view, items on the TAF Moral scale examine the acceptability of thoughts (rather than their fusion). A high score on this scale shows that the respondent feels that having a harmful or derogatory thought about a friend or religious figure is an unacceptable as the equivalent spoken gesture or action, (a notion that seems consistent with much New Testament Christian scripture). In a normal population, TAF Moral would be expected to be influenced by religious upbringing, particularly when the emphasis has been on the importance of having “pure thoughts.”

Limitations in data interpretation arise from the fact that the current sample is non-clinical. The sample was highly specific, composed of undergraduate physiotherapy volunteers. To enter this degree students must have achieved within the top 5% of the state in their higher school certificate. Volunteers were drawn from a group with a high level of intelligence and record of achievement. It has been assumed that the sample was not biased toward substance abuse or other confounding psychiatric variables.

The present findings need to be replicated with OCD patients. Many phenomena in OCD, however, have been noted in non-clinical samples. For example, a finding that elevated personal responsibility led to higher ratings of the severity of negative outcomes has been observed in a non clinical sample [Menzies et al., 2000]. Its link with elevated OC symptoms has similarly been documented within clinical samples [Ladouceur et al., 1997; Shafran, 1997].

The study assumed that instruments used were sensitive to magical thinking within an Australian cultural context. It may be useful to replicate the findings within different cultural contexts. It must be noted, however, that replications in other cultural groups would need to develop culturally sensitive instruments. This is because beliefs that constitute magical thinking will vary across cultures and must be interpreted in excess of accepted cultural beliefs. Similarly, symptoms of OCD may not be considered symptoms within different religious contexts. Excessive praying, for example, may be appropriate or encouraged by some religious leaders.

The third hypothesis was not supported because magical thinking was not found to relate to all symptom clusters of OCD. Magical thinking was reliably related to checking behaviour but not to washing behaviours or fear of contamination. Rachman [1993] has proposed differences between checkers and cleaners in the theoretical exposition of OCD. He has argued, for example, that an inflated sense of responsibility is a common characteristic of checkers and doubters but is less intense and common amongst cleaners. The present results, and those reported by Shafran et al. [1996] regarding TAF, suggest that magical thinking tends to be associated significantly with some checking behaviours but not with cleaning behaviours.

The nature of the specific behaviours involved in the various OCD subtypes may explain these relationships. For example, standing in front of a stove and repeatedly feeling the knobs to make sure that they are in the right place may require magical thinking, as the individual must continually deny the veracity of visual and other sensory input that they are receiving at the time. In comparison, cleaning behaviours require no magical thinking because the community is aware that germs are everywhere, numerous and invisible to the eye. Magical thinking is not required to believe that germs have not been removed after washing ones' hands.

In conclusion, this study suggests that individuals with magical thinking tendencies are likely to exhibit obsessive-compulsive behaviours to some degree. Further, these behaviours are more likely to be associated with the checking rather than the cleaning domain. Magical thinking has been shown to be the central construct underpinning TAF and superstitions. It is suggested that, given the present findings, further research examining the tractability of magical thinking may advance our understanding of the nature and management of OCD.

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