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Psychometric properties of the Thought–Action Fusion Scale in a Turkish sample

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Abstract

The aim of the present study was to reveal the cross-cultural utility of the Thought–Action Fusion Scale (TAFS; *J. Anxiety Disord.* 10 (1996) 379). Thought–action fusion (TAF) refers to the tendency to overvalue the significance and the consequences of thoughts. Two hundred and fifty one undergraduate Turkish students participated in the current study. The reliability and validity analyses of the Turkish version of the scale indicated that the TAFS had adequate psychometric properties in a Turkish sample. Consistent with the original TAF, the Turkish version of TAFS revealed two subscales as TAF-Likelihood and TAF-Morality. Reliability analysis showed that TAF Scale and its factors had adequate internal consistencies and split-half reliability coefficients. Confirming the expectations, TAFS scores were found to be significantly and positively correlated with obsessive–compulsive symptoms, responsibility, and guilt measures. Moreover, it was found that people with high obsessive–compulsive symptoms had higher TAFS scores than those with low symptoms.

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1. Introduction

Cognitive theory of obsessions (Rachman, 1993, 1997; Salkovskis, 1989, 1993) suggested that cognitions related to faulty beliefs or appraisals were crucial for the development and/or maintenance of obsessive–compulsive disorder (OCD). Over-estimation of the importance of thoughts is regarded as a kind of faulty belief and represents itself in different forms (Freeston,

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Rheaume, & Ladouceur, 1996; Obsessive–Compulsive Cognitions Working Group (OCCWG), 1997). One of these prominent forms is thought–action fusion (TAF) which refers to the tendency to overvalue the significance and the consequences of thoughts, especially the intrusive ones (Rachman, Shafran, Mitchell, Trant, & Teachman, 1996). TAF is composed of two components. The first one, TAF-Likelihood or TAF-probability, is a tendency to believe that even thinking about an unpleasant situation (e.g. death of a person or a car accident) increases the likelihood that this situation will actually occur. The second component of TAF is TAF-Morality, and it refers to the tendency to believe that having immoral thoughts (even involuntary ones) is as unacceptable as actually engaging in immoral behaviour (e.g. thinking violence is equivalent to acting violently). Both components involve misinterpretation of one's thoughts (Shafran, Thodarson, & Rachman, 1996).

Thus, TAF is an important feature of OCD for two reasons (Amir, Freshman, Ramsey, Neary, & Brigidi, 2001). Firstly, if an individual with OCD believes that thinking an upsetting event increases the possibility of its occurrence in reality (TAF-Likelihood), s/he may engage in some acts to prevent the possible negative consequence. The second reason is that if the individual believes that having intrusive thoughts and engaging in negative acts are morally equivalent (TAF-Morality), s/he feels distress for having such thoughts. In other words, these TAF biases might increase both distress and likelihood of neutralization acts to take place; in consequence, these biases increase OCD symptoms.

According to the cognitive theory of OCD (Rachman, 1993, 1997; Salkovskis, 1989, 1993), individuals with OCD appraise that they themselves are responsible for harming not only their own selves but others as well. Thus, they feel themselves responsible for some potential negative consequences, and they believe that these consequences will come about, unless they act to prevent them. That is, these misinterpretations that increase personal responsibilities over the negative events have a key role. Consistently, Shafran and her colleagues (1996) proposed that fusion of thoughts and actions may be accepted as an internal source of inflated sense of responsibility and a fundamental provider for the catastrophic misinterpretation that one's thought contributed to the occurrence of a negative event. Thus, perceived responsibility for misfortunes and TAF in both forms promotes feelings of guilt (Rachman, 1997).

The relationship between TAF and OCD symptoms was verified by different studies (Amir et al., 2001; Rachman, Thodarson, Shafran, & Woody, 1995; Rassin, 2001; Rassin, Merckelbach, Muris, & Schmidt, 2001; Shafran et al., 1996). Rachman and his colleagues (1995) reported that TAF was significantly correlated with obsessionality, guilt, and depression, even after depression was controlled. Furthermore, it was found that induced intrusion (i.e. completing a sentence which includes the thought that a person who is close to the participant is in a car accident) resulted in distress, feelings of responsibility, guilt, and a strong urge to neutralize (Rachman et al., 1996). Moreover, Rassin, Merckelbach, Muris and Spaan (1999) demonstrated that experimentally induced TAF (i.e. having given a piece information like thinking about an apple would cause delivery of shock to another person) raised intrusive thinking, discomfort, resistance, responsibility, and neutralization. Similarly, Zucker, Craske, Barrios and Holguin (2002) suggested that after induction of TAF, subjects who had a strong urge to neutralize felt more responsibility and guilt. In addition, TAF was not only found to be specific to negative events but also related with positive ones, at least in terms of likelihood, which may point to the overvalued ideation in OCD (Amir et al., 2001; Tolin, Abramowitz, Kozak, & Foa, 2001).

Some researchers suggested that the association between TAF and pathology is not only specific to OCD but that it also exists in other anxiety disorders (e.g. panic disorder, social phobia, and generalized anxiety) (Muris, Meesters, Rassin, Merckelbach, & Champbell, 2001; Rassin, Diepstraten, Merckelbach, & Muris, 2001; Rassin et al., 2001).

Educational intervention programs might lead to a significant change in TAF, and related distress and neutralization (Zucker et al., 2002). Freeston et al. (1996) suggested that “downward arrow” or “so what” technique might be useful for identifying and questioning the underlying assumptions beneath TAF, and the technique of reality testing of TAF-based thoughts could be a component of intervention programs especially for TAF-Likelihood bias. Rassin and his colleagues (Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001) also argued that TAF is susceptible to change during psychotherapy through some other cognitive-behavioural techniques such as exposure and response prevention.

In order to evaluate TAF bias, Shafran and her colleagues (1996) developed a 19-item Thought–Action Fusion Scale (TAFS). This self-report scale initially consisted of three subscales which were TAF-Morality, TAF-Likelihood-other, and TAF-Likelihood-self. Their study conducted with obsessional, student, and adult samples indicated that the TAF-Scale had adequate psychometric qualities. However, unlike the student and adult samples, with obsessional sample TAF-Likelihood subscales as self and others were combined into a single factor, so that factor analysis revealed two subscales as TAF-Morality and TAF-Likelihood. Additionally, TAF scores were found to be significantly correlated with obsessional problems and depressive symptoms for all obsessional, student, and adult samples.

Rassin and his colleagues (2001) studied with samples of OCD, other anxiety disorders, student, and normal control, and they concluded again with two-factor solution of TAFS. Among these samples, TAF scores were found to be higher for clinical groups (i.e. OCD and other anxiety disorders), whereas there was no difference between different anxiety disorders. Similarly, there was no significant difference between anxiety disorders and control (i.e. student and normal) groups on the morality subscale. In addition, TAF-Likelihood subscales seemed to correlate more strongly with OCD symptoms.

In light of these findings, TAFS seems to be quite a useful assessment device, which may be effectively utilized in the assessment, prevention, and intervention phases of OCD. Thus, to increase the knowledge of both theory and practice, a study investigating cross-cultural utility of TAF would be beneficial.

2. Method

2.1. Subjects

Two hundred and fifty one undergraduate students, consisting of 211 (84%) females and 40 (16%) males, from various departments of the Middle East Technical University and the Uludag University participated in the present study. The age of the sample ranged from 17 to 36 years with a mean of 20.35 ($SD = 2.2$). Though gender ratio was in favour of females, *t*-test did not reveal any significant gender difference for the measures of total TAF, TAF-Morality, TAF-Likelihood, MOCI and RAS.

2.2. Instruments

2.2.1. Maudsley Obsessive–Compulsive Inventory (MOCI)

The original version of MOCI was developed by [Rachman and Hodgson \(1980\)](#) to assess the existence and extent of different obsessive–compulsive symptoms. It is a 30-item true–false questionnaire comprising four subscales as checking, cleaning, slowness, and doubting. Internal consistency of the scale was reported to be high, with Cronbach's alpha coefficients of 0.70 for checking, slowness, and doubting subscales, and 0.80 for cleaning subscale. The test–retest reliability was found to be 0.80 for the total scale. The criterion-related validity of the MOCI was supported by the significant correlation with Leyton Obsessional Inventory ($r = 0.60$).

The scale was adapted to Turkish by [Erol and Savaşır \(1988\)](#). In the original MOCI, there were only two items explaining rumination; in the Turkish version of the MOCI, Erol and Savaşır included seven additional items related to rumination. Internal consistency analyses revealed Cronbach's alpha coefficients as 0.81 for the 30-item scale and 0.86 for the 37-item scale. The alpha coefficients computed for the original subscales of the MOCI were found to be 0.70 for checking, 0.66 for cleaning, 0.31 for slowness, and 0.56 for doubting. The test–retest reliability coefficients were 0.88 for the total MOCI score, 0.78 for checking, 0.88 for cleaning, 0.59 for slowness, and 0.66 for doubting. Because of the low reliability values for slowness and doubting subscales, the authors subjected the Turkish version of the MOCI to factor analysis and identified three factors as cleanliness/meticulousness, obsessive thinking and checking/slowness. Cronbach's alphas for these three factors were 0.61, 0.66 and 0.65, respectively. Furthermore, in [Yorulmaz's \(2002\)](#) study, internal consistency coefficient of the 37-item scale was reported to be 0.82 for the total MOCI scores. In the present study, the internal consistency coefficient of the MOCI was found to be 0.80, and the Guttman split-half reliability was 0.82 (Cronbach's alpha coefficient for the first part (19-item) was 0.63 and it was 0.68 for the second part (18-item)).

2.2.2. Responsibility Attitudes Scale

Responsibility Attitudes Scale (RAS) is a 7-point 26-item Likert-type scale designed by [Salvovskis et al. \(2000\)](#) to assess general attitudes, beliefs, and predisposing characteristics of responsibility and harm concerns in OCD. Response options for the RAS range from *totally agree* (1) to *totally disagree* (7). The internal consistency of the RAS was found to be 0.92, and test–retest reliability was reported as 0.94. RAS revealed high correlations with MOCI ($r = 0.57$) and obsessive–compulsive inventory ($r = 0.54$). Correlations between RAS and MOCI, and RAS and OCI maintained even when comorbid depression and anxiety levels were controlled for. Moreover, obsessional group had significantly higher scores on RAS than anxious participants and non-clinical controls. [Mancini, D'Olimpio and D'Ercole \(2001\)](#) indicated that RAS was composed of four factors which were prevention, to feel dangerous, thought–action fusion, and self-granted power of harm. The internal consistency of the total scale ($\alpha = 0.90$) and its factors ($\alpha = 0.87, 0.71, 0.76,$ and 0.69 , respectively), and test–retest reliability of the total scale ($r = 0.62$) and its factors ($r = 0.63, 0.38, 0.46,$ and 0.60 , respectively) were found to be satisfactory.

The Turkish adaptation of the scale was conducted by [Yorulmaz \(2002\)](#). For the ease of comprehensiveness, the response options were presented as reversed (totally disagree (1) to totally

agree (7)), with higher scores implying higher responsibility. The Cronbach alpha coefficient of the Turkish version scale was 0.88 and 2-week test–retest reliability of the RAS was 0.55. Yorulmaz also reported its split-half reliability as 0.86, with 0.76 Cronbach's alpha for the first part and 0.82 for the second part of the scale. Considering validity, RAS was found to be significantly correlated with the MOCI ($r = 0.60$, $p < 0.001$); furthermore, RAS scores of the group with high obsessive–compulsive symptoms (OCS) on the basis of MOCI measures were significantly higher than the group with low OCS. In the present study, Cronbach's alpha coefficient of the scale was 0.88, and Guttman split-half reliability was 0.83 (with internal consistency coefficients of 0.75 and 0.82 for the two halves of the scale). For the subscales, Cronbach alpha values for prevention ($r = 0.85$), to feel dangerous ($r = 0.68$), thought–action fusion ($r = 0.68$) and self-granted power of harm ($r = 0.70$) were found to be satisfactory. In the present study, the statistical analyses included both total RAS and RAS with the extraction of thought–action fusion subscale in order to prevent the inflated correlation with TAFS.

2.2.3. Thought–Action Fusion Scale

The TAFS (Shafran et al., 1996) consists of 19 items that measure psychological fusion of thoughts and actions. The items are rated on a 5-point scale with 0 standing for *strongly disagree* and 4 for *strongly agree*. The TAF scale originally had three subscales as TAF-Moral, TAF-Likelihood-for-Others, and TAF-Likelihood-for-Self. The total TAF scores range from 0 to 76, with higher scores indicating stronger TAF. Psychometric properties of the TAF scale were investigated in obsessional, student, and adult samples. Internal consistency coefficients of the subscales of the TAF were high in all samples, with the Cronbach alpha ranging from 0.85 to 0.96. TAF revealed significant associations with the measures of obsessiveness and depressive symptoms. All three subscales of the TAF correlated significantly with the checking subscale of the MOCI in both the obsessional and student samples ($r_s = 0.30$ and 0.38 , respectively). TAF morality, likelihood-for-others, and likelihood-for-self subscales were demonstrated as significantly correlated with the Beck depression inventory (BDI) in an obsessional sample ($r_s = 0.42$, 0.37 , 0.33 , respectively). It was also shown that obsessional participants had significantly higher scores on the TAF than normal controls. However, the factor analysis with obsessional sample did not distinguish the two likelihood subscales, though this distinction was achieved in adult and student samples. Moreover, these groups did not differ in terms of their TAF-Morality subscale scores.

Including control and different anxiety disorder groups in their study, Rassin and his colleagues (Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001) further explored the psychometric properties of the TAF Scale and arrived at results similar to Shafran and her colleagues' study (1996). In addition, the test–retest reliability coefficients of the TAF Scale were found to be 0.52, 0.51, 0.53, 0.47, and 0.54 ($p_s < 0.01$) for the TAF total, likelihood, likelihood-self, likelihood-others, and morality, respectively. Yet, they stated that temporal stability of the scale was disappointing. It was also found that, although normal and clinical groups differed from each other on the basis of TAF measures, there were no significant differences between OCD patients and patients suffering from other anxiety disorders in terms of TAF scores.

In order to demonstrate the cross-cultural utility of the TAFS, the present study was initially translated into Turkish by two independent translators, who were bilingual and who had strong psychology background. Thus, for each item, there were two Turkish translations which were in

fact quite similar to each other with some minor differences. These two alternative translations together with the original items were given to three additional judges, who were asked either to choose one of the translations or to make their own translations for each item. Finally, all the five judges met together and decided on the final form of the Turkish version of the TAFS. This final form was then translated back into English by a graduate psychology student, and this back translated version was quite close to the original scale.

2.2.4. Guilt-Shame Scale

The Guilt-Shame Scale (GSS) is a 24-item Likert-type scale developed by Şahin and Şahin (1992) to assess the feelings of guilt and shame appearing under various conditions. The subjects rate their level of distress on a 5-point scale ranging from *not at all* to *extremely*. The GSS comprises Guilt and Shame subscales. The internal consistency of the Guilt subscale was found to be 0.81 and it was 0.80 for the Shame subscale. GSS revealed significant correlations with the relevant measures, the correlation coefficients for the Guilt subscale were 0.10 with the BDI, 0.33 with the Sociotropy Scale, 0.18 with the Autonomy Scale, and 0.11 with the Submissive Act Scale. As for the Shame subscale, the correlations were found to be 0.50 with the Sociotropy Scale, 0.12 with the Autonomy Scale, and 0.28 with the Submissive Act Scale.

In the present study, only the Guilt subscale was used and it revealed an alpha reliability coefficient of 0.80, and Guttman split-half reliability of 0.70 (Cronbach's alphas were 0.71 and 0.71 for the two halves of the scale).

2.3. Procedure

The instruments were administered during or after regular class hours. Before the administration, instructions were given to the participants. The MOCI, RAS, TAFS, and GSS were presented in a randomized order so as to eliminate the effect of sequencing. The cover page included informed-consent and a brief explanation about the study. The total administration time for the instruments was approximately 15 min.

3. Results

3.1. Factor structure

In order to examine the factor structure of TAFS, factor analysis was performed by using varimax rotation. According to the scree plot and item distribution, instead of three, two factor-solution was preferred with eigen values of 6.25 and 3.29. The explained variances for these two factors were 27.61% and 24.18%, respectively. Seven items constituted the first factor which was called as "TAF-Likelihood" (e.g. "If I think of a relative/friend falling ill, this increases the risk that s/he will fall ill"; "If I think of a relative/friend losing their job, this increases the risk that they will lose their job"; "If I think of myself being injured in a fall, this increases the risk that I will have a fall and be injured") and the alpha coefficient for the factor was 0.92. The second factor which was composed of 12 items (e.g. "When I have a nasty thought about someone else, it is almost as bad as carrying out a nasty action"; "When I think unkindly about a friend, it is almost as disloyal as doing an unkind act"; "If I think about making an obscene gesture at

someone else, it is almost as bad as doing it”) was named as “TAF-Morality” and this factor had an alpha coefficient of 0.85. The internal consistency for the whole scale was 0.86.

3.2. Reliability

In addition to the internal consistency coefficients, split-half reliabilities were also computed for the whole scale and its subscales. Guttman split-half reliability for the total TAFS was 0.92, where the Cronbach alpha coefficient for the first part composed of 10 items, was 0.75, and it was 0.78 for the second part which consisted of 9 items. For 7 items of TAF-Likelihood, Guttman split-half reliability was obtained as 0.92 (Cronbach’s alpha coefficients were 0.86 and 0.84 for the first and the second halves, respectively), and for 12 item-TAF-Morality subscale, it was found to be 0.88 (Cronbach’s alpha coefficients were 0.73 and 0.72 for the first and the second halves, respectively).

3.3. Concurrent validity

Regarding the concurrent validity of TAFS and its subscales, several correlations were examined. Since thought–action fusion also consisted of one of the subscales of RAS, while examining the correlations of TAF measures with RAS, both total RAS score and the RAS score without TAF subscale were utilized. Consistent with expectations, as can be seen in Table 1, there were moderately positive correlations between total TAFS score and obsessive–compulsive symptoms ($r = 0.36, p < 0.001$), responsibility score ($r = 0.37, p < 0.001$), responsibility score without TAF factor ($r = 0.37, p < 0.001$). However, the correlation between total TAFS score and guilt score was low ($r = 0.13, p < 0.05$). TAF-Morality also revealed moderately positive correlations with OC symptoms ($r = 0.35, p < 0.001$), responsibility score ($r = 0.37, p < 0.001$), responsibility score without TAF factor ($r = 0.36, p < 0.001$). Yet, there was low correlation again between TAF-Morality and guilt score ($r = 0.16, p < 0.05$). Though TAF-Likelihood had significant positive correlations with OC symptoms ($r = 0.19, p < 0.001$), responsibility score ($r = 0.22, p < 0.001$) and responsibility score without TAF factor ($r = 0.24, p < 0.001$), this subscale did not reveal a significant correlation with the guilt measure. Moreover, these two TAF factors were significantly and positively correlated with each other ($r = 0.28, p < 0.001$).

3.4. Criterion validity

In order to examine the criterion validity of the scale, initially two extreme groups were generated on the basis of the participants’ MOCI scores. The MOCI scores within the highest and lowest 25th percentile were grouped as “high OC symptoms” and “low OC symptoms” categories, respectively. In the “high OC symptoms” group, there were 77 participants, who had a mean MOCI score of 20.03 ($SD = 2.86$; over 17 points), and in the “low OC symptom” group, there were 59 participants with a mean MOCI score of 6.03 ($SD = 1.53$; below 8 points).

As criterion validity, TAFS including its subscales was expected to differentiate between the groups with high vs. low OC symptoms. In order to reach this aim, a 2 (OC symptoms : high vs. low OC symptoms) \times 2 (TAF : likelihood and morality subscales) ANOVA with repeated measures on the last factor was conducted.

Table 1

Means, standard deviations for, and intercorrelations between the measures

	TAF	TAF-M	TAF-L	MOCI	RAS	RAS/TAF	GS
TAF	1.26 (0.76)	0.87** <i>N</i> = 234	0.72** <i>N</i> = 234	0.36** <i>N</i> = 219	0.37** <i>N</i> = 212	0.37** <i>N</i> = 216	0.13* <i>N</i> = 233
TAF-M		1.54 (0.80)	0.28** <i>N</i> = 234	0.35** <i>N</i> = 223	0.37** <i>N</i> = 215	0.36** <i>N</i> = 219	0.16* <i>N</i> = 237
TAF-L			0.81 (1.06)	0.19** <i>N</i> = 227	0.22** <i>N</i> = 219	0.24** <i>N</i> = 224	0.05 <i>N</i> = 243
MOCI				12.87 (5.61)	0.44** <i>N</i> = 213	0.44** <i>N</i> = 217	-0.01 <i>N</i> = 232
RAS					4.04 (0.94)	0.97** <i>N</i> = 225	0.19** <i>N</i> = 223
RAS/TAF						3.84 (0.99)	0.17** <i>N</i> = 223
GS							4.34 (0.51)

Means, and standard deviations (in parentheses) are given on diagonal. Other than MOCI, for all measures, the means for the average score—as divided by the number of items—and their standard deviations) were provided. TAF = thought–action fusion, TAF-M = thought–action fusion morality, TAF-L = thought–action fusion likelihood, MOCI = Maudsley obsessive–compulsive inventory, RAS = Responsibility Attitude Scale, RAS/TAF = Responsibility Attitude Scale without TAF factor, GS = Guilt Scale.

* $p < 0.05$.

** $p < 0.001$.

The analysis revealed a significant OC symptoms main effect, $F(1, 127) = 24.28$, $p < 0.001$. Consistent with the expectations, the participants with high OC symptoms reported more thought–action fusion ($M = 1.52$) than those with low OC symptoms ($M = 0.85$). The analysis also yielded a significant main effect for TAF factors, $F(1, 127) = 55.34$, $p < 0.001$. The participants experienced more thought–action fusion in the morality domain ($M = 1.56$) than in the likelihood domain ($M = 0.80$).

Moreover, there was a significant OC symptoms \times TAF interaction effect, $F(1, 127) = 5.19$, $p < 0.05$. Pairwise comparisons conducted by the LSD method showed that both high and low OC symptom groups had higher scores on TAF-Morality ($M = 2.02$ and $M = 1.11$, respectively) than on TAF-Likelihood ($M = 1.01$ and $M = 0.58$, respectively). For high OC symptoms group, this difference was larger (see Table 2). Additionally, high OC symptom group had significantly higher TAF-Morality ($M = 2.02$) and TAF-Likelihood ($M = 1.01$) scores than low OC symptom group, and this difference was emphasized more for the morality domain (see Table 2).

4. Discussion

In the present study, the cross-cultural utility of TAFS was examined in a Turkish sample and the results revealed quite promising outcomes. Concerning the psychometric properties of

Table 2
Mean scores of thought–action fusion for low and high MOCI groups

TAF	Obsessive–compulsive symptoms	
	Low	High
Likelihood	0.58 _a	1.01 _b
Morality	1.11 _c	2.02 _d

The mean scores that do not share the same subscript are significantly different from each other at 0.05 alpha level with LSD. MOCI = Maudsley obsessive–compulsive inventory, TAF = thought–action fusion.

TAFS in a Turkish sample, the factor structure, internal consistency, split-half reliability, concurrent and criterion validity of the scale were analysed.

The factor analysis executed in the present study revealed two-factor structure, which were TAF-Morality and TAF-Likelihood. Though TAF was prepared in three different domains as TAF-Morality, TAF-Likelihood-Self, and TAF-Likelihood-Others (Shafran et al., 1996), Shafran and her colleagues (1996) and Rassin and his colleagues (Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001), consistent with the present study, suggested two factor solutions. The following analyses were carried out with the whole TAFS and its two factors.

Reliability coefficients of the scale were studied via internal consistency and split-half procedures. Consistent with the findings of the previous studies (Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001; Shafran et al., 1996), the Turkish version of TAFS was found to be internally consistent and as having good split-half reliability coefficients.

Considering the concurrent validity of the TAFS, the relationships with MOCI, RAS and guilt scale were examined. Parallel to the findings verified by different studies (Amir et al., 2001; Rachman et al., 1995; Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001; Shafran et al., 1996), the present study revealed that thought action fusion and obsessive–compulsive symptomatology were significantly associated. Total TAF Scale, and TAF-Morality and TAF-Likelihood subscales were all moderately and positively correlated with obsessive–compulsive symptoms and responsibility. However, only total TAF and TAF-Morality scores had low correlations with the guilt scores. The reason for not obtaining a significant correlation between TAF-Likelihood and guilt scores may be that since the morality dimension of the scale is related with socially inappropriate thoughts, these appraisals may lead to the stronger feelings of guilt. On the other hand, for likelihood dimension of the scale, though people feel themselves responsible from the possible negative outcomes, this responsibility is not directly related to social approval or disapproval. Thus, morality domain being closely related to the issues of social approval may be a critical domain especially for a culture like Turkey, where traditionally collectivist values are still granted (Kağıtçıbaşı, 1983). Consistent with this argument, in the present study, the participants experienced more thought–action fusion in the morality domain than in the likelihood domain.

As for the criterion validity of TAFS, it was found that high and low obsessive–compulsive symptom groups were successfully differentiated on the basis of the measures of TAFS. People with high obsessional symptoms experienced more thought action fusion than those with low

obsessive–compulsive symptoms. The same difference was also present in both TAF morality and likelihood domains.

In contrast to Shafran and her colleagues (1996), and Rassin and his colleagues (Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001) who showed that TAF-Likelihood was more strongly associated with obsessionality than TAF-Morality, in the present study as compared to TAF-Likelihood, TAF-Morality scores seemed to be more strongly correlated with obsessive–compulsive symptoms. The main reason for this contradictory finding may again be related to some factors embedded in the Turkish culture. TAF-Morality emphasizes the fusion of immoral thoughts and immoral behaviours. In addition to other components, the concept of morality also includes some religious values. Even though the epidemiology of OCD appears to be consistent across cultures (Grabe et al., 2000; Weismann et al., 1994), religious obsessions might be over-represented in clinical populations of Jewish and Middle Eastern cultures, in comparison to the clinical populations of the West, the Far East, and India (Tek & Ulug, 2001). Thus, some obsessions tapping religious connotations (e.g. morality) may be more salient in a Turkish sample, which leads to the stronger associations between TAF-Morality and obsessive–compulsive symptoms.

Gender distribution of the present sample might also be responsible for these discrepant findings, since 84% of the sample was female. Similarly, the samples of the other studies which focused on psychometric properties of TAFS (Shafran et al., 1996; Rassin, Diepstraten, et al., 2001; Rassin, Merckelbach, et al., 2001) were constituted of more females than males. For instance, in Shafran et al.'s study (1996), 74% and 64% of the obsessional samples, and 65% of the student sample, in Rassin et al.'s study, 80% of the student sample and 66% of the clinical sample was female. Thus, gender ratio usually seems to be in favour of females, and this issue can be taken into consideration in the future studies.

Several reports (Rachman et al., 1995; Rassin et al., 1999; Zucker et al., 2002) which pointed to the relationship between induced TAF and responsibility were further supported in the present study. As Mancini et al. (2001) suggested, when TAF-based items in the RAS (Salkovskis et al., 2000) were excluded from the responsibility measure, in order to prevent the effect of inflated correlation, the observed association between the total TAF as well as the two TAF factors with the responsibility measure still remained significant.

Thus, overall, the TAFS is found to be a reliable and valid instrument that can be utilized in the Turkish culture. Still, further studies focusing on psychometric properties of the scale in clinical samples are strongly encouraged. TAF is a clinical phenomenon in OCD, and increased knowledge of this phenomenon will enrich not only the theoretical views but also some practical applications on this psychological problem. In clinical settings, a proper assessment of TAF would provide some useful information on intervention programs. Hence, studies focusing on cross-cultural similarities and differences of this phenomenon, on the basis of either OCD or other anxiety disorders, are also strongly encouraged.

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