

An Investigation of Moral Foundations Theory in Turkey Using Different Measures

Bilge Yalçındağ^{1,2}  · Türker Özkan¹ · Sevim Cesur³ · Onurcan Yılmaz⁴ · Beyza Tepe⁵ · Zeynep Ecem Piyale⁶ · Ali Furkan Biten⁷ · Diane Sunar⁷

Published online: 9 June 2017

© Springer Science+Business Media New York 2017

Abstract Claims of universality for Moral Foundations Theory (MFT) require extensive cross-cultural validation. The present study aims to (1) develop Turkish versions of three instruments used to research MFT (MFQ, MFQL, MSQ); (2) assess the psychometric properties of the Turkish instruments; (3) test the assumptions of the theory against findings from the instruments in Turkish culture. Three independently translated versions of the MFQ were administered to three samples totaling 1432 respondents. Results were consistent across samples. Internal reliability was satisfactory. CFA indicated a best fit for a 5-factor solution despite low fit indices and high error coefficients. EFA yielded a 3-factor solution, which did not replicate the 2-factor “individualizing” and “binding” factors found in U.S. samples. CFA and EFA with the MSQ produced 2-factor solutions which also did not align with the individualizing-binding dichotomy. Meaningful relations between the moral foundations and scores on political orientation and religiosity supported the validity of the measures in Turkish culture.

Findings related to Sample 3 were part of a doctoral dissertation completed by the first author under the supervision of the second.

✉ Bilge Yalçındağ
bilgeyalcindag@gmail.com

¹ Middle East Technical University, Üniversiteler Mahallesi, Dumlupınar Bulvarı No:1, 06800 Çankaya, Ankara, Turkey

² Present address: Nuh Naci Yazgan University, Kayseri, Turkey

³ İstanbul University, İstanbul, Turkey

⁴ Doğuş University, İstanbul, Turkey

⁵ Bahçeşehir University, İstanbul, Turkey

⁶ İstanbul Işık University, Şile, Turkey

⁷ İstanbul Bilgi University, İstanbul, Turkey

Keywords Morality · Moral foundations · Culture · Sacredness · Liberty

For long years, fairness (Kohlberg 1973) and care (Gilligan 1982) were accepted by psychologists as the chief elements constituting the moral domain. Some anthropological accounts, on the other hand, argued for the existence of different morality discourses. For example, Shweder et al. (1997) named three discourses: the ethics of autonomy, community, and divinity.

Building on Shweder’s model, Haidt and Graham (2007; Haidt 2007) proposed Moral Foundations Theory (MFT), postulating that in addition to fairness and care, other principles such as loyalty to the ingroup, respect for authority, and sanctity/purity are also foundations for moral judgment.

This theory of plural moral foundations has been tested cross-culturally, finding supporting evidence in New Zealand (Davies et al. 2014), Germany (Bowman 2010), Sweden (Nilsson and Erlandsson 2015), France (Métayer and Pahlava, 2014), Italy (Bobbio et al. 2011), Turkey (Yılmaz et al. 2016a, b), Mongolia (Berniūnas et al. 2016), South Korea (Kim et al. 2012), and China (Zhang and Li 2015).

Theoretically, care and fairness can be seen as falling into Shweder’s ethic of autonomy, whereas loyalty, authority, and sanctity can be seen as belonging to the ethics of community and/or divinity (Graham et al. 2009; for a related discussion see Sunar 2009). Congruent with this, Graham and colleagues (2009) have distinguished between “individualizing” and “binding” foundations. Theoretically and empirically (in U.S. culture), care and fairness are closely related, while care is barely related to other foundations and fairness is negatively related to authority and sanctity. On the other hand, loyalty, authority, and sanctity are closely related to one another (Graham et al. 2011). Some other cultures draw a different

picture: all foundations are found to be positively related to one another although individualizing and binding foundations are closer within themselves (e.g., Italy, South Korea, New Zealand) (Bobbio et al. 2011; Kim et al. 2012; Davies et al. 2014, respectively).

The theory suggests that additional moral foundations could be discovered (Graham et al. 2013). To date, liberty is the foundation candidate that has received the greatest amount of theoretical and empirical support (Challenges 2009; Haidt 2012; Iyer et al. 2012).

MFT has been used to illuminate the differences between adherents of different political orientations. In the U.S. context, liberals have been found to value the care and fairness foundations, while conservatives value all of them (Graham et al. 2009; Haidt 2012). Libertarians, on the other hand, resemble conservatives by undervaluing fairness and liberals by undervaluing loyalty, authority, and sanctity (Iyer et al. 2012). Heightened liberty concerns, especially in economic and life-style domains, are also typical of libertarians.

Aim, Research Questions and Expectations

The aims of the present study are to test the measures designed to assess MFT in Turkey, and to determine their psychometric characteristics. These measures include the Moral Foundations Questionnaire (MFQ), the Liberty scale (MFQL-developed later in response to the suggestion that liberty might be an additional foundation; Iyer et al. 2012), and the Moral Sacredness Questionnaire (MSQ). While an earlier study by Yilmaz et al. (2016a) confirmed the 5-factor model of the MFQ, the current study provides a more detailed analysis of the scale, along with MFQL and MSQ, which are studied for the first time in Turkey. Throughout the present paper, some earlier studies that described and tested the MFQ and/or MSQ in detail (Graham et al. 2011; Graham et al. 2009; Graham and Haidt 2012) will be taken as anchors and the same analyses will be carried out as far as possible. In general, while we expect results congruent with the literature, some specific expectations are noted as follows:

1. As found in U.S. studies, liberty is expected to be more closely related to care and fairness than to binding foundations of loyalty, authority, and sanctity, and its relation to authority and sanctity may be negative. At the same time, the distinction between different types of liberty, such as economic-governmental vs. life style liberty, found in U.S. culture, may not be salient in Turkish culture.
2. Although the MFQ and MSQ measure the same constructs, they are not designed to be redundant, but rather emphasize different aspects. Therefore patterns of response to these measures are expected to be both parallel

and variable. The filler scale of MSQ may be significantly related with other items, as it includes items related to self-harm or harm to one's dignity.

3. Based on U.S. findings by Graham et al. (2009) and Haidt (2012), the binding foundations are expected to be positively related to religiosity and right wing political orientation.

Information about Studies and Analyses

The current research presents two different studies using three different samples. Study 1 aims to test the structure of the Turkish MFQ using all three samples. The second study investigates the MSQ and MFQL in Turkish, using only the third sample. The two studies together thereby constitute a test of moral foundations theory in Turkey.¹ As three sets of researchers translated the MFQ independently, there are three independent versions of the Turkish MFQ; all three versions converge very closely, with only minor differences among the translations.

All analyses except for confirmatory factor analyses were carried out with SPSS 20. Throughout the analyses concerning MFQ, the full MFQ and its relevance and judgment scales were analyzed separately. Accordingly, we first present the internal consistencies of the full scale and Relevance and Judgment scales, and the relations between them. We then test the structural validity by confirmatory factor analyses (CFA). All CFA's were carried out with Lisrel 9.1, using covariance matrix and maximum likelihood of prediction unless otherwise indicated. Following the original study (Graham et al. 2011), CFA's were performed on the relevance scales, judgment scales and the full MFQ. Single factor, two-factor (care-fairness, and loyalty-authority-sanctity), three-factor (care-fairness, loyalty-authority, and sanctity), and five-factor (care, fairness, loyalty, authority, sanctity) models are compared. For the whole questionnaire, following Graham et al. (2011), six factor (care, fairness, loyalty, authority, tradition, and sanctity) models in which the authority foundation is divided into two (i.e., authority and tradition), and hierarchical models (care-fairness as individualizing foundations, loyalty-authority-sanctity as binding foundations) were also tested. As dictated by the nature of the CFA, we performed no modifications on the initial results. We present the relations of subscales with each other, as well as the relations of the MFQ with demographic variables such as sex, religiosity or political view. Next, we explore the factor structure of MFQ using principal axis factoring with oblimin rotation. Lastly, to

¹ Liberty is still being tested as a candidate foundation, therefore as a scale it is thought to be separate from the MFQ (J. Graham, personal communication, November 24, 2014)

determine the robustness of the factor structure we compare the results of 3 samples using target rotation.² The same procedures are followed in the second study for MFQL and MSQ as well.³

Study 1

Study 1 focuses on the Moral Foundations Questionnaire (MFQ). MFQ is one of the two questionnaires developed to test moral foundation theory (Graham et al. 2009; Graham et al. 2011; the second questionnaire, the MSQ, as well as the supplementary liberty scale, MFQL are examined in Study 2).

Method

Participants

Three different sets of researchers in Istanbul and Ankara each recruited a separate sample of participants, for an overall total of 1432 respondents. Details of the three samples follow below.

Sample 1 The first sample consisted of 433 students from five different universities in İstanbul (mean age = 21.20, range 17 to 56, $SD = 3.44$; 141 did not state their age). There were 237 females and 57 males (139 did not indicate their sex). Respondents were recruited by offering partial course credit to students in psychology courses. No identifying information was asked, and participants were assured that they could withdraw from the study at any time without penalty.

² We repeated all the analyses for 3 samples by a) excluding 2 groups of participants whose ratings on item 6 (“whether or not someone is good at math”) are high (whose ratings are 3, 4, and 5; and 4, and 5), b) excluding weakest items (common and unique in 3 samples) based on the reliability analyses when all participants are in. The weakest items remained the same in the conditions where participants were excluded. For sample 1 and 3, the weakest items were 28, 29, 30; for sample 2, they were 25, 28, & 29. Items 11 (for sample 1) and 30 (for sample 2) were occasionally weak. In these alternative samples, CFAs yield mostly similar results, the changes were minor in model fit indices. For relevance and judgment models, 5-factor models; for full MFQ 5-factor or 6-factor models remained as the best fitting ones. The warnings mostly remained. There were no dramatic changes in model fits and error coefficients. The 3-factor solution of EFA results remained to a large extent the same, across samples and conditions (also, the results of the EFA were to a great extent similar to the reported when filler items were also included in the analyses.).

³ Information related to CFA of Relevance and Judgment scales of MFQ; figures related to CFAs of MFQ, MFQL, and MSQ in 3 samples; partial correlations (when controlled by religiosity and political orientation) in sample 3 can be requested from the corresponding author. When controlled for ideology or religiosity, the correlations of Loyalty, Authority and Sanctity generally decreased to a certain extent. However, correlations regarding Care and Fairness increased, suggesting a suppression effect.

Sample 2 The second sample consisted of 556 participants (319 females, 217 males, 20 not stated) included both university students and non-students. Their age ranged between 18 and 69 years ($M = 27.87$, $SD = 10.89$); about 70% of the participants were between the ages of 18 and 29. Adult participants were recruited using the snowball sampling method.

Sample 3 The sample was heterogeneous in terms of age, education, and occupation and included 493 participants (276 females, 209 males, 8 not stated) whose age ranged between 15 and 74 ($M = 31.42$, $SD = 12.14$), with 64 not reported. Educational attainment of the sample ranged from literate to graduate degree, with most participants being high school or university graduates. About 63% of the participants were non-students who stated a wide array of occupations.

Instrument

Designed to identify the foundations used by the respondent as bases for moral judgments, the MFQ consists of two parts with 5 subscales each. The first part (“moral relevance”), with 15 items and one filler item, asks respondents the extent to which they take the criterion described in each item into account when deciding whether something is right or wrong (e.g. item 1, “whether or not someone suffered emotionally”, care subscale). The second part (moral judgments), with 14 items and one filler item, consists of statements theoretically related to each foundation. Respondents rate their level of agreement with each item (e.g. item 32, “chastity is an important and valuable virtue”, sanctity subscale).

Three different groups of researchers in Ankara and Istanbul independently translated the MFQ into Turkish. Using a partial Turkish translation of the MFQ available at www.moralfoundations.org (Questionnaires, 2013) as a starting point, all followed standard translation-back translation procedures with reconciliation achieved in consultation between translators and back-translators, or in the case of Sample 3, between a bilingual psychologist and a bilingual linguist. A few further revisions were made following a small pilot study in which respondents were asked to identify items that were difficult to understand. The three versions converge very closely, with only minor differences.

Procedure

Sample 1 A questionnaire containing the MFQ as translated by *Sunar, Cesur, Tepe, Piyale and Biten* and demographic questions was administered using Survey Monkey (the questionnaire also included another measure not reported here).

Sample 2 The MFQ and a demographic sheet (including a one-item political orientation question rated from 1- left to 7- right) were administered by paper-pencil forms to the

students in a classroom setting. For the MFQ, the translation carried out by Yilmaz, Harma et al. (2016) was used.

Sample 3 In addition to the MFQ, as translated by *Yalçındağ and Özkan*, participants were asked to indicate on a 7-point scale (1 = not at all, 7 = very much) to what extent they feel religious and their position with regard to political ideology (1 = radical left, 7 = radical right). Responses to these two questions showed a relatively positively skewed distribution ($M = 3.40, SD = 1.46$, for religiosity; $M = 3.88, SD = 1.92$, for political ideology). The paper-and-pencil questionnaire package, which included measures not reported here, was administered to individuals or small groups by undergraduate student assistants who had been thoroughly trained in the procedure.

Results and Discussion

Internal Consistencies, Scale Means and Relations between Relevance and Judgment Subscales Scale means, alpha values, and internal consistency information are presented in Tables 1 and 2. The general reliability analysis of the MFQ indicated mostly parallel results for the three samples. Internal consistency coefficients (Cronbach’s alpha) of all five subscales were at acceptable levels, with the Authority and Sanctity subscales having the highest alpha values. The Fairness subscale had the highest mean score, followed by Care, implying that these subscales were more common concerns for morality, for the current samples. Authority subscales had the lowest means. Relevance subscales had generally relatively higher internal consistency compared to judgment subscales. The weakest items were mostly the same for the samples.

In Sample 1, Relevance subscales had highest correlations with the Judgment subscales of the related foundation (except for the Loyalty subscale, see Table 3). On the other hand, in Sample 2, only the Relevance subscales of Care and Sanctity, and for sample 3 only the Relevance subscales of Fairness and Sanctity had highest correlations with their counterparts in the

Judgment subscales. Highest correlations for the Relevance subscales of the remaining foundations were with their corresponding Judgment subscales as well as other scales. Generally, for all three samples the subscales of the MFQ were positively related to each other. Contrary to the literature, a clear individualizing-binding foundations structure did not emerge.

CFA Among the models constructed with Relevance and Judgment Scales, the five factor model was the best fitting one, although especially for Relevance scales, they had relatively low fit indices and high error coefficients. Similarly, the five-factor and six-factor models resulted in a relatively fair fit with the data from the full MFQ (see Table 4). Due to high correlations among latent variables and an error warning in the six factor model, the five-factor model might provide the best fit. Examination of the standardized loadings and t values indicated that they were significant at $p < .05$, with a few exceptions. However, it should be noted that none of the models reached a desirable and acceptable fit with the data.

Correlations among MFQ Subscales and with Demographics All moral foundations were positively and significantly related to each other, except for Fairness and Authority in Sample 3 (see Table 5). Specifically, while Care and Fairness were strongly correlated, Fairness had the lowest correlations with Authority and Sanctity. Although the “binding” foundations, especially Authority and Sanctity, were strongly related to each other, contrary to earlier findings (e.g. Graham et al., 2011), the correlations among foundations (including Relevance-Judgment subscales of MFQ) did not indicate a clear two-cluster (individualizing-binding) structure.

In Samples 2 and 3, being a woman was positively correlated with Care ($r = -.11, p < .01$; $r = -.15, p < .001$, respectively, 1 = female, 2 = male). Also in Samples 2 and 3, right-wing political orientation was significantly correlated with Loyalty ($r = .12, p < .01, r = .34, p < .001$), Authority ($r = .26, p < .001, r = .45, p < .001$), and Sanctity ($r = .26, p < .001, r = .45, p < .001$). While Fairness was negatively correlated with right-wing political orientation in Sample 3 ($r = -.16, p < .01$), the two were not significantly correlated in Sample 2 ($r = -.08$,

Table 1 Scale means and alpha values of MFQ in three samples, Study 1

Foundation	M (SD)			Alpha values			Judgment subscales’ alpha			Relevance subscales’ alpha		
	S-1	S-2	S-3	S1	S2	S3	S1	S2	S3	S1	S2	S3
Care	3.63 (.82)	3.74 (.77)	3.91 (.75)	.69	.64	.64	.59	.45	.49	.67	.73	.66
Fairness	3.80 (.79)	3.96 (.67)	4.13 (.68)	.73	.61	.70	.57	.33	.45	.77	.76	.73
Loyalty	2.81 (.90)	3.41 (.85)	3.10 (.93)	.67	.64	.66	.50	.38	.44	.65	.73	.63
Authority	2.34 (.95)	3.04 (.99)	2.91 (1.06)	.78	.75	.78	.70	.61	.66	.65	.70	.70
Sanctity	2.80 (1.09)	3.27 (1.03)	3.00 (1.13)	.78	.76	.79	.71	.61	.67	.63	.70	.65

S1 sample 1, S2 sample 2, S3 sample 3

Table 2 Reliability analysis of MFQ subscales, Study 1

Scale/ Item (Short form)	Sample 1		Sample 2		Sample 3	
	α if item deleted	Item total corr.	α if item deleted	Item total corr.	α if item deleted	Item total corr.
Care						
1. Someone suffered emotionally	.65	.39	.56	.48	.58	.40
7. Someone cared for someone weak or vulnerable	.61	.51	.55	.50	.56	.45
12. Someone was cruel	.63	.46	.56	.47	.56	.45
17. Compassion for sufferer most crucial virtue	.62	.51	.58	.43	.60	.36
23. One of the worst things is hurt a defenseless animal	.64	.44	.63	.28	.60	.35
28. Never be right to kill a human being	.71	.23	.69	.12	.65	.22
Fairness						
2. Some people were treated differently than others	.65	.49	.46	.45	.58	.46
8. Someone acted unfairly	.63	.58	.41	.55	.57	.51
13. Someone was denied his or her rights	.62	.58	.63	.50	.55	.56
18. Government ensure everyone treated fairly when making law	.67	.47	.56	.24	.60	.43
24. Justice most important requirement for a society	.65	.52	.56	.24	.63	.36
29. That rich inherit a lot of money while poor nothing morally wrong	.78	.14	.69	.05	.73	.18
Loyalty						
3. Someone's action showed love for his or her country	.58	.53	.56	.45	.55	.57
9. Someone did something to betray his or her group	.61	.45	.56	.47	.63	.38
14. Someone showed a lack of loyalty	.64	.36	.55	.50	.62	.40
19. Proud of my country's history.	.59	.49	.62	.31	.61	.44
25. Loyal to the family members, even when they have done something wrong.	.66	.32	.64	.25	.63	.39
30. More important being a team player than expressing oneself.	.67	.26	.64	.26	.68	.21
Authority						
4. Someone showed a lack of respect for authority	.73	.57	.70	.55	.73	.63
10. Someone conformed to the traditions of society	.73	.60	.69	.56	.73	.63
15. An action caused chaos or disorder	.77	.35	.72	.45	.79	.37
20. All children need to learn respect for authority	.72	.61	.70	.53	.74	.60
26. Men and women have different roles in society	.76	.47	.74	.39	.75	.56
31. If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.	.73	.57	.72	.45	.78	.42
Sanctity						
5. Someone violated standards of purity and decency	.73	.63	.70	.59	.76	.54
11. Someone did something disgusting	.79	.33	.75	.43	.78	.46
16. Someone acted in a way that God would approve of	.75	.55	.70	.60	.74	.61
21. Should not do disgusting things, even if no harmed.	.76	.50	.75	.46	.74	.61
27. I would call some acts wrong on the grounds that they are unnatural.	.76	.49	.76	.38	.79	.42
32. Chastity is an important and valuable virtue.	.71	.70	.71	.59	.74	.62

Values related to weakest items are shown in bold

$p < .09$). Care was not significantly related to political orientation in either sample.

EFA In view of the irregularities of the correlations between relevance and judgment subscales and relatively poor model fit indices in CFA's, an exploratory factor analysis was conducted. For all three samples, Eigenvalues, scree plots and parallel analyses converged in a 3-factor solution (Table 6). The three factor

solutions were generally similar across samples. While the first factor consisted of items of from the "binding" foundations, the second and third factors consisted of the care and fairness items, along with five or six binding foundation items. In other words, while loyalty, authority and sanctity formed one factor, care and fairness divided into two factors. While this fits loosely with Sunar's (2009) lineup of moral foundations with Shweder's ethics, it diverges from the findings indicating a two-cluster

Table 3 Inter-correlations between relevance and judgment subscales of MFQ, Study 1

Judgment subscales	Relevance subscales				
	Care	Fairness	Loyalty	Authority	Sanctity
Sample 1					
Care	.35 ***	.34***	.23***	.26***	.22***
Fairness	.34***	.36 ***	.22**	.12*	.13**
Loyalty	.14**	.13**	.39***	.47***	.35***
Authority	.05	.03	.38***	.56 ***	.47***
Sanctity	.15**	.14**	.43 ***	.47***	.56 ***
Sample 2					
Care	.23 ***	.18 ***	.16***	.16***	.12**
Fairness	.20***	.18 ***	.14**	.12**	.06
Loyalty	.13**	.07†	.31 ***	.44***	.34***
Authority	-.02	-.05	.25**	.49***	.48***
Sanctity	.09*	.04	.31 ***	.50 ***	.54 ***
Sample 3					
Care	.30***	.30***	.32***	.31***	.32***
Fairness	.31 ***	.39 ***	.12**	.00	.05
Loyalty	.02	-.03	.44 ***	.51***	.49***
Authority	-.06	-.06	.39***	.57 ***	.54***
Sanctity	.05	.01	.41***	.57 ***	.63 ***

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. The highest correlation in each column is shown in bold

Table 4 Confirmatory factor analysis results and fit indices of the MFQ, Study 1

Model	X ²	df	X ² /df	AIC	GFI	AGFI	CFI	NNFI	Δ X ² / Δ df	RMSEA	90% CI of RMSEA	SRMR
Full MFQ (30 items, filler items excluded, N = 433), Sample 1												
1. Single factor	4955.25***	405	12.24	5075.255	.567	.502	.522	.487		.161	.157–.165	.122
2. Two factor	2691.46***	404	6.66	2813.465	.707	.662	.684	.659	2263.79/1	.114	.110–.119	.105
3. Three factor	2657.75***	402	6.61	2783.747	.709	.664	.692	.666	33.71/2	.114	.110–.118	.105
4. Five factor	2569.73***	395	6.51	2709.728	.716	.666	.706	.676	88.02/7	.113	.109–.117	.100
5. Six factor ^a	2465.69***	390	6.32	2615.691	.724	.671	.719	.687	104.04/5	.111	.107–.115	.097
6. Hierarchical ^{ab}	2659.86***	399	6.67	2791.858	.709	.661	.697	.670	-194.17/-9	.115	.110–.119	.103
Full MFQ (30 items, filler items excluded, N = 556), Sample 2												
1. Single factor	5305.40***	405	13.10	5425.400	.611	.553	.548	.514		.148	.144–.151	.113
2. Two factor	3249.09***	404	8.04	3371.087	.719	.677	.667	.642	2056.31/1	.113	.109–.116	.101
3. Three factor	3114.73***	402	7.75	3240.725	.728	.685	.677	.650	134.36/2	.110	.107–.114	.099
4. Five factor	2759.61***	395	6.10	2899.610	.751	.707	.706	.676	355.12/7	.104	.100–.108	.096
5. Six factor ^a	2577.27***	390	6.61	2727.266	.764	.718	.720	.688	182.34/5	.101	.097–.104	.094
6. Hierarchical ^{ab}	3189.95***	399	8.00	3321.951	.723	.677	.676	.647	-612.68/-9	.112	.109–.116	.099
Full MFQ (30 items, filler items excluded, N = 493), Sample 3												
1. Single factor	4679.34***	405	11.55	39,084.680	.46	.38	.79	.78		.146	.143–.150	.153
2. Two factor	3298.89***	404	8.17	37,706.231	.63	.57	.86	.85	1380.45/1	.121	.117–.124	.129
3. Three factor	3296.99***	402	8.20	37,708.336	.62	.57	.86	.85	1.9/2	.121	.117–.125	.129
4. Five factor^a	3198.58***	395	8.10	37,623.924	.62	.56	.86	.85	98.41/7	.120	.116–.124	.120
5. Six factor ^a	3119.19***	390	7.99	37,554.537	.63	.56	.87	.85	79.39/5	.119	.115–.123	.118
6. Hierarchical ^{ab}	3236.47***	399	8.11	37,653.813	.62	.56	.86	.85	-117.28/-9	.120	.116–.124	.123

*** $p < .001$, ^a “Latent variable matrix is not positive definite” warning, ^b “Error variance is negative” warning. Best fitting models are shown in bold

Table 5 Correlations among MFQ subscales, Study 1

Variables	Care	Fairness	Loyalty	Authority
Sample 1				
Care	-			
Fairness	.71***	-		
Loyalty	.48***	.36***	-	
Authority	.30***	.17***	.69***	-
Sanctity	.43***	.28***	.67***	.68***
Sample 2				
Care	-			
Fairness	.66***	-		
Loyalty	.49***	.44***	-	
Authority	.30***	.23***	.68***	-
Sanctity	.35***	.23***	.61***	.76***
Sample 3				
Care	-			
Fairness	.66***	-		
Loyalty	.41***	.21***	-	
Authority	.31***	.07	.76***	-
Sanctity	.37***	.12**	.69***	.81***

** $p < .01$, *** $p < .001$

structure (individualizing-binding) (e.g., Graham et al. 2011). The internal consistency of the factors is satisfactory. One Fairness item (“I think it’s morally wrong that rich children inherit a lot of money while poor children inherit nothing”) did not have loadings higher than .30.

A Comparison of Factor Structures of MFQ across 3 Samples Across three samples, principal axis factoring with oblimin rotation resulted in 3-factor solutions for MFQ in which different indices (eigenvalue, scree, parallel analysis) converged on the factor numbers. Additionally, factors of all three samples were similar across samples in that the first factor mostly consisted of Loyalty, Authority and Sanctity items, and the other two factors mostly consisted of Care and Fairness items. Visual comparison of the factor structure showed that the positioning of the items was the same to a large extent. The internal consistency coefficients of these factors were satisfactory in all samples.

To determine the factorial agreement coefficients for the factor matrices across three samples, target rotations (in which each sample is the target and a second sample is the comparison, respectively) were carried out for the 3-factor solution of EFA.⁴ Values above .90 are acceptable for the most commonly used index (the Tucker’s phi or proportionality coefficient), and the most stringent index (identity coefficient) (Van de

⁴ We also tested other alternative factor structures (2-factor, 5-factor and 6-factor) as argued in literature (Graham et al. 2011), as forced EFA solutions. Results are available upon request from the corresponding author.

Vijver and Leung 1997). Resulting values over .90 indicated that there is a structural equivalence among the three samples in the 3-factor solution (Table 7).

Study 2

Study 2 focuses on the liberty questionnaire (MFQL) that was developed later (Iyer et al. 2012); the Moral Sacredness Questionnaire (MSQ, Graham and Haidt 2012); and the relations of both measures with the MFQ.

Like the MFQ, after which it is patterned, the MFQL consists of two parts, but it has only two subscales. The moral relevance part consists of two items, while the moral judgment part consists of seven items. Liberty comprises two subscales: economic/government liberty and life-style liberty. Economic liberty is represented by 6 items and refers to concerns related to economic and governmental liberty (e.g., item 4: “People who are successful in business have a right to enjoy their wealth as they see fit.”). Life-style liberty is represented by 3 items and is related to a more general concept of liberty (e.g., item 3: “I think everyone should be free to do as they choose, so long as they don’t infringe upon the equal freedom of others.”).

The second measurement tool of MFT is the Moral Sacredness Questionnaire (MSQ) (Graham et al. 2009; Graham and Haidt 2012). The MSQ measures the willingness of respondents to violate moral foundations in exchange for money, knowing they will not get caught or punished. The rationale behind the questions is that the more the behavior is perceived as violating a sacred moral value, the harder it will be to sacrifice that value for money. Respondents can choose varying amounts of money (from 10 dollars to 1 million dollars) in exchange for violation of a moral foundation. Besides money, the questionnaire has also two other options at the two ends of the scale, namely accepting to carry out the violation for free and refusal to carry it out for any amount of money. Larger amounts of money (or choosing “never for any amount of money”) indicate that the respondent has a hard time violating this particular foundation and sacralizes the item. The MSQ consists of 24 items (4 items for each moral foundation and 4 filler items). An example item is “burn your country’s flag in private (nobody else sees you)” (Loyalty subscale).

Method

The sample and procedure used are described in Study 1 regarding Sample 3. Turkish versions of the MFQ, MFQL and MSQ, prepared as described in Study 1, were used. In addition demographic questions such as age, gender, education, and residence, ratings of strength of religious feelings and political orientation were also asked.

Table 6 Exploratory factor analysis and internal consistency information of the factors of MFQ, Study 1

Item (Short form)	O.F. ^a	Sample 1				Sample 2				Sample 3			
		F-1	F-2	F-3	Item-total corr.	F-1	F-2	F-3	Item-total corr.	F-1	F-2	F-3	Item-total corr.
32. Chastity is an important and valuable virtue.	S	.74			.74	.77			.68	.76			.72
20. Something all children need to learn respect for authority	A	.73			.64	.72			.64	.76			.69
10. Someone conformed to the traditions of society	A	.68			.63	.33	.60		.64	.74			.71
16. Someone acted in a way that God would approve of	S	.64			.59	.59			.60	.72			.68
31. If I were a soldier and disagreed with my commanding officer's orders, I would obey anyway because that is my duty.	A	.63			.55	.65			.52	.48			.46
26. Men and women each have different roles in society.	A	.62			.60	.61			.51	.65			.64
4. Someone showed a lack of respect for authority	A	.61			.56	.33	.50		.55	.69			.65
19. I am proud of my country's history.	L	.60			.56	.56			.48	.67			.63
3. Someone's action showed love for his or her country	L	.58			.59	.49			.55	.67			.64
27. I would call some acts wrong on the grounds that they are unnatural.	S	.58			.59	.52			.47	.45			.43
5. Someone violated standards of purity and decency	S	.56	.35		.58	.32	.57		.60	.56	.36		.57
25. Loyal to the family members, even when something wrong.	L	.49			.46	.43			.39	.49			.48
21. Should not do disgusting things, even if no one is harmed.	S	.48			.48	.53			.47	.61			.62
12. Someone was cruel	C		.73		.68	.81			.73		.74		.65
13. Someone was denied his or her rights	F		.68		.61	.80			.67		.69		.67
8. Someone acted unfairly	F		.66		.67	.76			.65		.62		.59
7. Someone cared for someone weak or vulnerable	C		.63		.58	.69			.62		.73		.62
14. Someone showed a lack of loyalty	L		.62		.60	.61			.67	.33	.51		.52*
2. Some people were treated differently than others	F		.60		.57	.65			.58		.61		.55
11. Someone did something disgusting	S		.59		.54	.53			.57	.47	.38		.47
1. Someone suffered emotionally	C		.55		.49	.58			.55		.47		.48
9. Someone did something to betray his or her group	L	.31	.51		.51	.62			.66	.30	.49		.48
15. An action caused chaos or disorder	A		.45		.50	.55	.34		.62	.34	.48		.52
24. Justice is the most important requirement for a society.	F			.66	.62			.63	.45			.64	.57
18. Government ensure everyone treated fairly when making law	F			.65	.55			.70	.52			.70	.53
23. One of the worst things is hurt a defenseless animal.	C			.58	.52			.58	.45			.46	.42
17. Compassion for sufferer is the most crucial virtue.	C			.48	.53			.48	.37	.34		.49	.45
28. It can never be right to kill a human being.	C			.47	.45							.35	.35
30. More important to be a team player than to express oneself.	L			.30	.39		.33			.32			.29
29. That rich inherit a lot of money while poor inherit nothing.	F												
Eigenvalue		7.68	3.21	1.65		7.44	3.16	1.77		7.41	3.54	1.50	
Variance accounted for (%)		25.60	10.70	5.50		24.81	10.54	5.91		24.68	11.79	4.99	
α		.89	.86	.75		.90	.86	.65		.90	.84	.68	
N		400	409	399		489	469	519		454	479	488	

^aO.F. (Original factor): C (Care), F (Fairness), L (Loyalty), A (Authority), S (Sanctity) subscale. F: Factor. Loadings lower than .30 are not shown. No item's deletion caused an increase in the alpha. Cross-loaded items have been included in the factor they were loaded higher

* This item has been translated wrongly as “whether or not someone showed loyalty”, in Sample 3. When realized the mistake during analyses, all analyses were repeated without the item. Exclusion of this item caused a decrease in the reliability (Loyalty_α = .62; Loyalty-Relevance_α = .54), however the general pattern remained unchanged. As for the correlations, Loyalty relevance subscale has the highest correlation with loyalty judgment scale (also after controlling for the political ideology). The CFA results and EFA structure remained unchanged. Loyalty subscale without item 14 had a slight decrease in zero order and partial correlations with the other MFQ subscales, with Care and Fairness relations more affected. The pattern remained the same

Table 7 Four identity indices for the 3-factor solution of MFQ in 3 samples (Target rotation), Study 1

Samples compared*	Identity coefficient			Additivity coefficient			Proportionality coefficient			Correlation coefficient		
	F-1	F-2	F3	F-1	F-2	F3	F-1	F-2	F3	F-1	F-2	F3
1–2	.97	.97	.92	.93	.93	.90	.97	.97	.92	.94	.94	.90
1–3	.98	.98	.93	.94	.97	.88	.98	.98	.93	.95	.97	.89
2–1	.97	.97	.93	.93	.93	.89	.97	.97	.93	.93	.95	.89
2–3	.97	.97	.96	.91	.95	.94	.97	.98	.96	.92	.96	.95
3–1	.98	.98	.93	.95	.97	.88	.98	.98	.94	.96	.97	.88
3–2	.98	.96	.96	.95	.91	.95	.98	.97	.96	.96	.93	.95

* 1: sample 1, 2: sample 2, 3: sample 3. The first sample is the target group across comparisons

Results and Discussion

Analyses Concerning MFQL

Reliability Analysis and Scale Means While Life-style Liberty and total Liberty scales had rather low but acceptable levels of internal consistency, the alpha value for Economic Liberty was quite low (see Table 8). For the total Liberty scale, one item reduced the overall consistency; specifically, the exclusion of item 8 increased the alpha value. In the future, the internal consistency of the scale may be improved with new items. The scale mean of Liberty indicates that Liberty was the third most valued foundation after Fairness and Care, respectively.

CFA Single factor, two factor (Economic-government liberty and Life style liberty), and hierarchical models were compared via CFA on the Liberty scale items (see Table 9). Item 8 was not predicted by latent variables in either single-factor and two-factor models; item 7 was not predicted by the latent variable in the hierarchical model. While the best resulting model was the hierarchical model, all three models yielded only fair fit indices and high error coefficients.

EFA As the CFA's did not yield the expected results, an EFA was conducted. In the first phase, principal axis factoring with oblimin rotation was performed on the 9 items of the MFQL. According to the eigenvalue-greater-than-one criterion, the analysis revealed one factor explaining 19.10% of the

Table 8 Reliability analysis and mean values of MFQ-liberty scale, Study 2

Item	Economic liberty		Total liberty scale	
	α = .35		α = .61	
	α if item deleted	Item-total correlation	α if item deleted	Item-total correlation
1. Whether or not private property was respected	.22	.21	.52	.25
4. People who are successful in business have a right to enjoy their wealth as they see fit.	.18	.25	.51	.29
5. Society works best when it lets individuals take responsibility for their own lives without telling them what to do.	.20	.27	.49	.36
7. The government interferes far too much in our everyday lives.	.28	.14	.53	.24
8. The government should do more to advance the common good, even if that means limiting the freedom and choices of individuals. (R)	.49	-.14	.64	-.07
9. Property owners should be allowed to develop their land or build their homes in any way they choose, as long as they don't endanger their neighbors.	.22	.21	.53	.23
	Life style liberty α = .56			
2. Whether or not everyone was free to do as they wanted.	.46	.37	.49	.35
3. I think everyone should be free to do as they choose, so long as they don't infringe upon the equal freedom of others.	.37	.43	.48	.45
6. People should be free to decide what group norms or traditions they themselves want to follow.	.53	.31	.48	.43

R: reverse item. M (SD) = 3.42 (.68), 4.18 (.74), 3.67 (.61) for economic, life style and total liberty scale, respectively

Table 9 Confirmatory factor analysis results and fit indices of the MFQ, MFQL, and MSQ models, Study 2

Model	X ²	df	X ² /df	AIC	GFI	AGFI	CFI	NNFI	Δ X ² / Δ df	RMSEA	95% CI of RMSEA	SRMR
MFQ liberty items (N = 488)												
1. Single factor	257.68***	27	9.54	10,210.591	.87	.76	.79	.72		.132	.118–.147	.106
2. Two factor	257.68***	26	9.91	10,212.590	.87	.77	.79	.71	0/1	.135	.120–.150	.106
3. Hierarchical^a	181.23***	26	6.97	14,176.856	-	-	.70	-	76.45/0	.111	.096–.126	.089
MSQ items (non-moral scale excluded, N = 493)												
1. Single factor ^b	1473.70***	170	8.67	55,425.799	.77	.71	.94	.93		.125	.119–.131	.062
2. Two factor ^b	1348.53***	169	7.98	55,302.625	.78	.73	.95	.94	125.17/1	.119	.113–.125	.062
3. Three factor	1328.39***	167	7.95	55,286.485	.78	.73	.95	.94	20.14/2	.119	.113–.125	.061
4. Five factor^{cb}	1290.38***	160	8.06	55,262.480	.78	.72	.95	.94	38.01/7	.120	.114–.126	.061
MSQ items (non-moral scale subtracted, N = 493)												
1. Single factor	624.34***	170	3.67	8933.802	.88	.86	.84	.82		.074	.068–.079	.067
2. Two factor	569.62***	169	3.37	8881.084	.90	.87	.86	.84	54.72/1	.069	.063–.076	.065
3. Three factor^c	569.38***	167	3.40	8884.839	.90	.87	.86	.84	.24/2	.070	.064–.076	.065
4. Five factor^c	552.73***	160	3.45	8882.190	.89	.87	.86	.83	16.65/7	.071	.064–.077	.064

*** $p < .001$, ^a Conducted following the recommendations of Bentler about CFA with two first order factors (2006, pp.43–45) and with MPlus. ^b “The condition number indicates severe multicollinearity” warning. ^c “Latent variable matrix is not positive definite” warning. For the MSQ models that are controlled by non-moral items, correlation matrix is used. Best fitting models are shown in bold

variance, with an eigenvalue of 1.72. The second highest eigenvalue is .95, explaining 10.60% of the variance. The scree plot, however, indicated two factors. A second principal axis factoring with oblimin rotation with a two-factor solution explained 29.70% of the variance (see Table 10). Although it was a reverse-scored item, item 8 loaded in the same direction

as the other items in the factor. The internal consistency coefficients of the two factors were .64 and .58 respectively.

In the current sample, the distinction between Governmental/economic and Life style was not observed. Instead, the two factors would be better labeled as governmental interventions/life style liberty and economic liberty. There

Table 10 Exploratory factor analysis result of MFQ-liberty items, Study 2

Item	O. F. ^a	F-1	F-2	Item-Total Corr.	α if item deleted
6. People should be free to decide what group norms or traditions they themselves want to follow.	L	.603		.44	.55
3. I think everyone should be free to do as they choose, so long as they don't infringe upon the equal freedom of others.	L	.527		.44	.55
7. The government interferes far too much in our everyday lives.	E	.502		.33	.60
5. Society works best when it lets individuals take responsibility for their own lives without telling them what to do.	E	.479		.37	.57
2. Whether or not everyone was free to do as they wanted.	L	.426		.35	.58
1. Whether or not private property was respected	E		.589	.42	.46
4. People who are successful in business have a right to enjoy their wealth as they see fit.	E		.524	.40	.47
9. Property owners should be allowed to develop their land or build their homes in any way they choose, as long as they don't endanger their neighbors.	E		.509	.38	.49
8. The government should do more to advance the common good, even if that means limiting the freedom and choices of individuals. (R)	E		.450	.26	.59
Eigenvalue		1.72	.95		
Variance accounted for (%)		19.10	10.60		
α		.64	.58		
N		475	481		

^a O.F. (Original factor): L-life style liberty, E- economic /governmental liberty. R: reverse item

may be several reasons for this structure. The current political conjuncture in Turkey may make it difficult to distinguish life style and governmental liberty. Similarly, the benchmark of libertarians in the US context, i.e. economic liberty, may not be salient in the Turkish context. It is also possible that Economic liberty items are weaker than others.

Correlations among Subscales and with MFQ The correlation between Economic and Life style liberty scales was moderate ($r = .49, p < .001$), but high in comparison to the original findings ($r = .27$, Iyer et al. 2012). As expected, Liberty was most strongly and positively associated with Fairness, and then Care (Table 11). It was also weakly and positively associated with Loyalty. Contrary to our expectations, it was not significantly related to Authority and Sanctity.

Analyses Concerning MSQ

MSQ scale scores can be calculated by three different methods. The first type of MSQ score is the average of items for all foundations and the filler scale. The second type is calculated by subtracting (non-moral) filler subscale's scores from each foundation score. The third type of MSQ is based on "never" responses for each moral foundation. That is, following Graham and Haidt (2012), respondents are grouped according to their tendency to select "never" for the moral challenges. As each subscale consists of four behavior-money trade-offs, the number of answers with "never" is 4 at most. In this way, extreme responses can serve as an index of sacralization, either for the foundation in question or for individual differences in the strength of concern. This third type of MSQ score is abbreviated as "never" throughout the following text.

Reliability Analysis and Scale Means The internal consistency of each subscale corresponding with each moral foundation was acceptable (see Table 12).

Higher mean values indicate greater reluctance to violate that specific foundation. Accordingly, while the most taboo moral foundation was Care, the foundation that is easiest to violate was (Respect for) Authority, in line with Graham and Haidt (2012). The lowest mean score among the scale items belonged to an Authority item ("throw a rotten tomato at a political leader you dislike"). Surprisingly, four filler items

had an acceptable level of internal consistency, too. It was also the second taboo subscale after Care among six subscales, different from the findings of Graham and Haidt (2012).

CFA Single factor, two factor (individualizing and binding), three factor (individualizing, loyalty-authority, sanctity) and original five factor models were tested and compared by testing the models both with 20 item (excluding non-moral items) and controlling the 20 item scale using 4 non-moral items (see Table 9). The two, three and five factor models were best fitting models although the fit indices were fair and RMSEA was higher than expected. MSQ models with non-moral items subtracted indicated better fit than models with non-moral items excluded. Examination of the standardized loadings and t values indicated that their magnitudes were significant at $p < .05$. Results indicated that the version of MSQ scores with non-moral items subtracted should be used.

EFA The fair fit indices and relatively high error coefficients of the models led to examination of the factor structure of the scale through exploratory factor analysis. Correlation matrix of 24 items showed that filler (non-moral) items had significant correlations with the other scale items. Therefore EFA was run with the 24 items, 4 items being non-moral filler items. A principal axis factoring with oblimin rotation with a two-factor solution explained 39.71% of the variance (see Table 13). The first factor consisted of mostly binding foundation items, with 1 Care, 2 Fairness, and 2 Filler items. The second factor consisted of 11 items, four of which had cross loadings with the first factor.

In the second phase, a principal axis factoring with 20 items excluding non-moral items was performed to see the sheer relations between moral items. The examination of scree plot and the results of parallel analysis showed two factors, in a converging manner. However according to the eigenvalue-greater-than-one criterion, the analysis revealed only one factor with an eigenvalue of 6.947, explaining 34.73% of the variance. The second highest eigenvalue was .946. Following the scree test, parallel analysis results and previous factor analysis, a second principal axis factoring with oblimin rotation with a two-factor solution explained 39.15% of the variance. The results yielded a structure similar to the 24-item EFA.

As with the MFQ, the EFA resulted in a different structure than its original. While both found a two-factor rather than a five-factor structure, the two factors in this study did not replicate the individualizing-binding distinction found by Graham et al. (2011).

Correlations among MSQ Subscales The zero order correlations were quite high among subscales, ranging from .56 to .70 (Table 14). Also, the filler subscale had high correlations with the other subscales. However when the non-moral subscale scores were subtracted from each subscale, the

Table 11 Correlations of liberty scales with MFQ subscales, Study 2

Variable	Care	Fairness	Loyalty	Authority	Sanctity
Liberty	.31***	.35***	.11*	.04	-.05
Economic liberty	.24***	.24***	.11*	.07	-.03
Life style liberty	.37***	.44***	.08†	.00	-.06

† $p < .10$, * $p < .05$, *** $p < .001$

Table 12 Reliability analyses and mean values of MSQ, Study 2

Scale/ Item (Short form)	MSQ subscales			MSQ never subscales		
	α (N) M (SD)	α if item deleted	Item total correlation	α (N) M (SD)	α if item deleted	Item total correlation
Care	.75 (486)			.78 (493)		
1. Make cruel remarks to an overweight person	7.05 (1.29)	.68	.53	2.74 (1.41)	.76	.53
6. Stick a pin into the palm of a child you don't know		.62	.36		.71	.60
9. Shoot and kill an animal, a member of an endangered species		.68	.31		.73	.57
15. Kick a dog in the head, hard		.68	.32		.70	.64
Fairness	.69 (475)			.75 (493)		
7. Cheat in a game of cards played for money with some people you don't know well.	6.72 (1.37)	.62	.49	2.21 (1.48)	.69	.56
12. Throw out a box of ballots, during an election, to help your favored candidate win		.61	.49		.70	.54
14. Sign a secret but binding pledge to only hire people of your race in your company		.65	.44		.72	.50
24. Say no to a friend to help him move into a new apartment after he helped you move before		.62	.49		.67	.59
Loyalty	.73 (482)			.75 (493)		
10. Say something bad about your nation (which you don't believe to be true) while calling in, anonymously, to a talk-radio show in a foreign nation	6.80 (1.41)	.60	.64	2.31 (1.47)	.64	.66
13. Break off all communications with your immediate and extended family for 1 year		.70	.48		.72	.50
16. Leave the social group, club, or team that you most value		.72	.44		.74	.47
21. Burn your country's flag in private (nobody else sees you)		.64	.57		.68	.48
Authority	.63 (482)			.69 (493)		
8. Slap your father in the face (with his permission) as part of a comedy skit	6.23 (1.48)	.47	.41	2.07 (1.32)	.59	.53
17. Make a disrespectful hand gesture to your boss, teacher, or professor		.45	.46		.62	.49
19. Throw a rotten tomato at a political leader you dislike (remember, you will not get caught)		.59	.32		.66	.42
23. Curse your parents, to their face (you can apologize and explain one year later)		.53	.39		.64	.47
Sanctity	.62 (457)			.69 (493)		
2. Blood transfusion from a convicted child molester	6.62 (1.41)	.54	.33	2.45 (1.34)	.68	.38
4. Performance art piece act like animals (crawling around naked and urinating on stage)		.44	.41		.58	.54
5. 2-in. tail to the end of your spine, remove it in 3 years		.51	.34		.61	.49
20. Sign a piece of paper "I sell my soul, after my death, to whoever has this piece of paper"		.39	.42		.61	.49
Filler	.69 (481)			.70 (493)		
3. Sit in a bathtub full of ice water for 10 min	6.93 (1.11)	.64	.44	2.21 (1.37)	.64	.49
11. Lose your sense of hearing for one year		.62	.45		.68	.42
18. Experience a severe headache for 2 weeks		.52	.58		.59	.57
22. Wear a sign on your back for one month that says, in large letters "I am an idiot."		.62	.41		.64	.49

correlation coefficients decreased indicating the need to control the scale using the filler items. Care was most strongly related to Fairness. Binding foundations were closely related to each other. The correlations among MSQ-never subscales were stronger. There may be a tendency for those who refuse

to violate one foundation to refuse to violate others as well. Higher correlations among MSQ subscales may stem from the provocative nature of the scale; foundations may have different degrees of importance for respondents, but they nevertheless may not be willing to personally violate any of them.

Table 13 Exploratory factor analysis results and reliability information of MSQ, Study 2

Item (Short form)		24 Item		20 Item	
		Original Factor ^a	Factor 1	Factor 2	Factor 1
21. Burn your country's flag in private (nobody sees).	L	.77			.72
20. Sign a piece of paper "I sell my soul, after my death, to whoever has this paper".	S	.72			.75
10. Say something bad about your nation (which you don't believe to be true) while calling in, anonymously, to a talk-radio show in a foreign nation.	L	.63			.58
22. Wear a sign on your back for one month that says, in large letters "I am an idiot."	Filler	.60			
19. Throw a rotten tomato at a political leader you dislike (remember, you will not get caught).	A	.57			.55
7. Cheat in a game of cards played for money with some people you don't know well.	F	.54			.47
1. Make cruel remarks to an overweight person	C	.49			.38
2. Blood transfusion from a convicted child molester.	S	.49			.46
24. Say no to a friend to help him move into a new apartment after he helped you move before.	F	.48			.44
17. Make a disrespectful hand gesture to your boss, teacher, or professor.	A	.46		.34	.38
8. Slap your father in the face (with his permission) as part of a comedy skit.	A	.43			.38
3. Sit in a bathtub full of ice water for 10 min.	Filler	.40			
16. Leave the social group, club, or team that you most value.	L	.33		.33	
11. Lose your sense of hearing for one year.	Filler		-.88		
9. Shoot and kill an animal, a member of an endangered species.	C		-.81	.88	
5. Two-inch tail to the end of your spine, remove it in 3 years.	S		-.61	.66	
14. Sign a secret but binding pledge to only hire people of your race in your company	F		-.57	.62	
13. Break off all communications with your immediate and extended family for 1 year.	L		-.50	.50	
15. Kick a dog in the head, hard.	C		-.48	.55	
12. Throw out a box of ballots, during an election, to help your favored candidate win.	F		-.48	.50	
18. Experience a severe headache for 2 weeks.	Filler	.33	-.44		
6. Stick a pin into the palm of a child you don't know.	C	.37	-.41	.51	
23. Curse your parents, to their face (you can apologize and explain one year later).	A	.31	-.38	.43	
4. Performance art piece, act like animals for 30 min, including crawling around naked and urinating on stage.	S	.34	-.34	.45	
Eigenvalue		8.31	1.22	6.92	.91
Variance Accounted for (%)		34.63	5.07	34.58	4.57
α		.87	.88	.87	.85
N		440	46	466	446

^a C: care, F: fairness, L: loyalty, A: authority, S: sanctity

The nature of the MSQ makes the existence of a filler scale essential so that the money bias can be controlled. On the other hand, the Filler subscale works like a regular subscale and has significant correlations with many variables. It has items related to body and health, which may create a conceptual overlap with Sanctity. The subscale may be improved by a revision that reduces overlapping relations with other variables. Also, to be on a par with the MFQ, further empirical assessment is needed, along with the development of a Liberty scale for the MSQ.

Relations among MFQ, MFQL, & MSQ The relations among the three instruments designed to measure Moral Foundations Theory (MFQ, MFQL, and MSQ) are shown in Table 15.

The correlations between MFQ and MSQ indicate that the scales were parallel only up to a certain point. Only MFQ Care and Loyalty scales had highest correlations with their corresponding counterparts in three types of MSQ scores. Loyalty, Authority, and Sanctity subscales of MFQ had high correlations with all three MSQ score types. Although Liberty diverged from other subscales of the MSQ, surprisingly it was related to the Filler subscale, as well as Care, Loyalty, and Sanctity when scored as MSQ-Never. The filler scale itself had significant correlations with all subscales of MFQ, especially with Sanctity.

Although both scales measure moral foundations, since they are different in that MFQ measures the relevance of each item to morality and MSQ measures the ease of violation of each foundation, some degree of divergence may be expected. While a strict match between subscales of the two questionnaires may

Table 14 Correlations among MSQ subscales, Study 2

Scale	Variable	Care	Fairness	Loyalty	Authority	Sanctity
Original MSQ subscales	1. Care					
	2. Fairness	.70				
	3. Loyalty	.62	.66			
	4. Authority	.60	.60	.68		
	5. Sanctity	.59	.56	.64	.62	
	6. Filler	.66	.65	.65	.61	.60
MSQ subscales non-moral items subtracted	7. Care					
	8. Fairness	.50				
	9. Loyalty	.37	.42			
	10. Authority	.37	.37	.48		
	11. Sanctity	.36	.33	.44	.43	
MSQ never	12. Care					
	13. Fairness	.71				
	14. Loyalty	.67	.68			
	15. Authority	.62	.66	.70		
	16. Sanctity	.58	.56	.62	.65	
	17. Filler	.61	.63	.69	.68	.60

All correlations are significant at $p < .001$

not be a necessary condition for validity, strongest relations between the same foundations and a regular pattern throughout the correlations would be needed. The partial correspondence among foundations between MFQ and MSQ accompany unexpected relations of Filler and Liberty scales with each other and with

others. This pattern may be a shortcoming in terms of both convergent and divergent validity of the scales. As the parallelism between two scales of MFT is lower than expected, further studies may improve the similarity between scales by adding new items or subtracting some of them.

Table 15 Relations among MFQ, MFQL, and MSQ subscales, Study 2

	Variables	MFQ					
		Care	Fairness	Loyalty	Authority	Sanctity	Liberty
MSQ subscales	Care	.24***	.16***	.11*	.06	.14**	.07
	Fairness	.21***	.14***	.19***	.16***	.19***	.04
	Loyalty	.19***	.14**	.37***	.35***	.36***	.07
	Authority	.17***	.08†	.32***	.34***	.40***	.02
	Sanctity	.23***	.10*	.31***	.34***	.37***	-.01
	Filler	.17***	.14**	.17***	.19***	.21***	.16***
MSQ subscales non-moral items subtracted	Care	.12**	.04	-.05	-.13**	-.05	-.08†
	Fairness	.09*	.04	.07	.01	.04	-.11*
	Loyalty	.08†	.04	.31***	.27***	.26***	-.07
	Authority	.05	-.04	.24***	.25***	.30***	-.12**
	Sanctity	.11*	-.01	.21***	.23***	.26***	-.15**
MSQ subscales -never	Care	.26***	.15***	.18***	.13**	.19***	.11*
	Fairness	.20***	.13**	.19***	.18***	.22***	.07
	Loyalty	.19***	.11**	.39***	.39***	.39***	.11*
	Authority	.22***	.10*	.31***	.36***	.37***	.08†
	Sanctity	.25***	.17***	.29***	.30***	.35***	.02
	Filler	.15***	.08†	.25***	.29***	.30***	.11*

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Relations of MFQ, MFQL, and MSQ with Demographic Variables

The correlations among MFQ, MFQL, MSQ and demographic variables were depicted in Table 16. Generally as age increased, endorsement of Loyalty, Authority, and Sanctity decreased and Liberty increased. As for gender, women scored higher on MFQ Care, MFQ Fairness and MSQ subscales in general, with the largest η^2 on MFQ Care (.022) and MSQ-Never-Care (.030). Higher education levels were associated with heightened Liberty concerns and a diminished level of Authority and Sanctity concerns. Higher paying jobs and urban residence were linked to Liberty. On the other hand, for the MSQ, jobs with lower status were linked to Loyalty (marginally) and Authority. Although the scales were in general not related to income, for MSQ only, Fairness and Loyalty had weak positive relations with income. Being a member of a political party, labor union, or an NGO was associated with lower concerns in Loyalty and Authority, but only on the MSQ. As religiosity increased, concern over all foundations generally increased, especially for Loyalty, Authority, and Sanctity, but not for Liberty and MFQ-Fairness.

Similar to religiosity, as political orientation tended to the right, concerns for Loyalty, Authority and Sanctity increased both for MFQ and MSQ. However, the relations of Care and

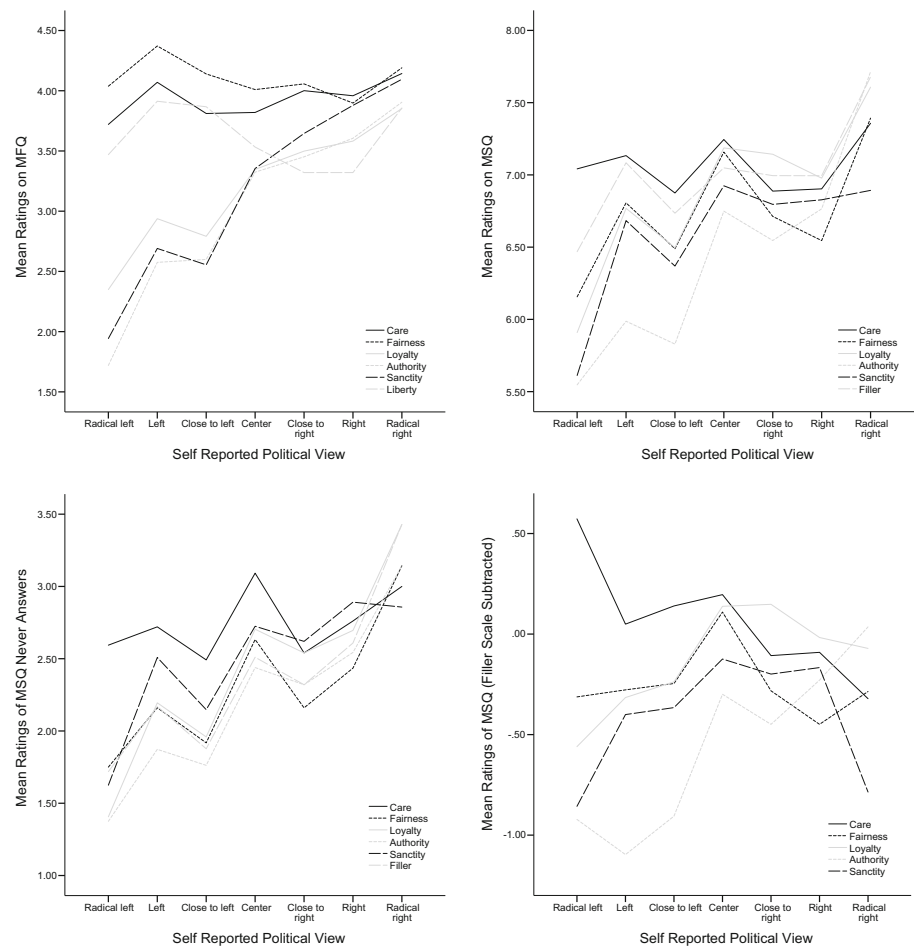
Fairness were not parallel for both scales. MFQ Care, and MSQ Fairness had no relation with political orientation, while MFQ Fairness and MSQ Care had negative correlations with right-wing orientation. For MSQ-Never, all subscales except for Care were positively related to right-wing political orientation. Lastly, Liberty had a negative relation with right wing political orientation. As the distribution of political view was skewed, no significance testing was carried out. However, Fig. 1 indicates that for MFQ as the spectrum goes left, the foundations tend to diverge as individualizing-binding (in this case, Care, Fairness, and Liberty as individualizing; Loyalty, Authority and Sanctity as binding) while in the far right, they tend to converge, consistent with the MFT's claims. While for the far left, the most valued foundations were Care, Fairness, and Liberty; for the far right, the most valued foundations were Care, Fairness, and Sanctity. For MSQ, the patterns were different for scores based on non-moral items subtracted and MSQ-never answers, and they differed also from MFQ. For MSQ (non-moral items subtracted), there was no divergence of the foundations in relation to political view. Also, left-leaning respondents valued Care, Fairness, Loyalty, Sanctity and Authority, in a decreasing order, while for right-leaning respondents Authority, Loyalty, Fairness, Care, and Sanctity

Table 16 Correlations of MFQ and MSQ subscales with demographic variables, Study 2

		Age	Sex	Education	Job Status	City Status	Income	Religiosity	Pol.View	Activism
MFQ	Care	.08 [†]	-.15 ^{***}	.00	.02	.04	.00	.10 [*]	.00	.03
	Fairness	-.03	-.10 [*]	.06	.02	.00	.00	-.08 [†]	-.16 ^{***}	.05
	Loyalty	.24 ^{***}	.05	-.16 ^{***}	-.03	-.02	.03	.47 ^{***}	.34 ^{***}	.04
	Authority	.23 ^{***}	.02	-.24 ^{***}	-.05	-.08 [†]	-.03	.58 ^{***}	.45 ^{***}	-.01
	Sanctity	.27 ^{***}	-.03	-.27 ^{***}	-.04	-.08 [†]	-.04	.62 ^{***}	.45 ^{***}	.00
	Liberty	-.10 [*]	-.03	.10 [*]	.14 ^{**}	.15 ^{***}	.03	-.16 ^{***}	-.26 ^{***}	.02
MSQ	Care	.06	-.21 ^{***}	-.05	.00	.07	.07	.12 [*]	-.01	.05
	Fairness	.08 [†]	-.18 ^{***}	.00	-.01	.05	.10 [*]	.16 ^{***}	.07	.01
	Loyalty	.14 ^{**}	-.11 [*]	-.07	-.03	.00	.10 [*]	.33 ^{***}	.19 ^{***}	-.04
	Authority	.24 ^{***}	-.12 [*]	-.11 [*]	-.04	-.04	.03	.33 ^{***}	.27 ^{***}	-.07
	Sanctity	.13 ^{**}	-.15 ^{***}	-.16 ^{***}	.00	.03	.00	.27 ^{***}	.15 ^{***}	.00
	Filler	.13 ^{**}	-.16 ^{***}	-.07	.04	.03	.02	.17 ^{***}	.08 [†]	.06
MSQ non-moral items subtracted	Care	-.08	-.09 [†]	.01	-.05	.06	.06	-.04	-.11 [*]	.00
	Fairness	-.04	-.07	.07	-.06	.04	.10 [*]	.04	.00	-.04
	Loyalty	.05	.02	-.02	-.09 [†]	-.02	.11 [*]	.26 ^{***}	.16 ^{***}	-.10 [*]
	Authority	.17 ^{***}	.00	-.08 [†]	-.10 [*]	-.08 [†]	.02	.25 ^{***}	.26 ^{***}	-.13 ^{**}
	Sanctity	.02	-.02	-.13 ^{**}	-.04	.01	-.02	.16 ^{***}	.10 [*]	-.06
	Filler	.13 ^{**}	-.16 ^{***}	-.07	.04	.03	.02	.17 ^{***}	.08 [†]	.06
MSQ never	Care	.12 [*]	-.18 ^{***}	-.07	.00	.06	.04	.12 ^{**}	.04	.08
	Fairness	.17 ^{***}	-.13 ^{**}	-.02	-.00	.05	.05	.18 ^{***}	.13 ^{**}	.10 [*]
	Loyalty	.20 ^{***}	-.10 [*]	-.13 ^{**}	.01	-.05	.05	.32 ^{***}	.22 ^{***}	.06
	Authority	.29 ^{***}	-.09 [†]	-.09 [†]	-.02	-.04	.04	.29 ^{***}	.25 ^{***}	.02
	Sanctity	.19 ^{***}	-.14 ^{**}	-.14 ^{**}	-.01	-.02	.02	.26 ^{***}	.18 ^{***}	.06
	Filler	.21 ^{***}	-.13 ^{**}	-.17 ^{***}	.05	-.00	-.07	.25 ^{***}	.18 ^{***}	.04

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. For sex, 1 = female, 2 = male, Pol. View: Political ideology, activism: being a member of political party, labor union, or NGO or not (1 = yes, 2 = no)

Fig. 1 Political View and Different Morality Scales, Study 2



were decreasingly important. For MSQ (never), as the political spectrum goes to radical right, a general increment in the tendency to say never to any violation can be seen. While for radical left Care was the most important foundation, for radical right it was the filler scale and Loyalty. Loyalty, Authority, and Sanctity were strongly affected by religiosity and political orientation. The relative independence of Care and Fairness from political effect in the current sample is different from the MFT literature (e.g., Graham et al. 2009; Graham et al. 2011), in which all five foundations are affected especially by political orientation.

General Discussion

The current research aimed to test Moral Foundations Theory in Turkey with two studies. The Moral Foundations Questionnaire (MFQ) was examined using three different samples. Two of the samples consisted mainly of university students. The third sample was heterogeneous in terms of age, education, and socioeconomic variables. Since the MFQ was translated independently by three different teams, there were minor translation differences in the questionnaires used for the

three samples, but the results are generally parallel across samples. In the second study, the Liberty scale (MFQL) and Moral Sacredness Questionnaire (MSQ) were tested as well. In general, our expectations were supported.

Across three samples, the internal consistency values of MFQ were acceptable. For all three samples, the internal consistency values were higher for Authority and Sanctity as compared to other dimensions. This is congruent with findings from other cultures as well, e.g. New Zealand (Davies et al. 2014), Italy (Bobbio et al. 2011), and U.S. (Graham et al. 2011).

Scale means consistently showed that concern for Fairness is a stronger concern than for the others (Care, Loyalty, Sanctity and Authority, respectively for all three samples). The current findings indicate that the least valued foundation is Authority while it was Sanctity in the original studies (Graham et al. 2009 & Graham et al. 2011). Taking especially the first and second samples’ characteristics into account, this finding may not be generalizable to the overall population of Turkey. Nevertheless studies in different cultures including Italy (Bobbio et al. 2011), South Korea (Kim et al. 2012), and China (Zhang and Li 2015) also indicated that fairness is more important and that authority or sanctity is least endorsed. Also, all three samples have higher means for

Loyalty, Authority and Sanctity, as compared to findings of Graham et al. (2011).

Looking at the relevance and judgment scales, relevance scales generally have higher internal consistency values, in line with Graham et al. (2009, 2011). Association between the relevance and judgment items for each foundation, as predicted by the theory, mostly held true in the current Turkish samples. Also the correlations between relevance and judgment subscales of loyalty, authority, and sanctity were very strong.

Contrary to the original studies (Graham et al. 2011), there is no clear-cut individualizing-binding grouping among the five foundations; rather all foundations are positively related to each other. For all samples, care is most strongly related to fairness (and then loyalty, sanctity and authority, respectively). Loyalty seems to have a double role. Care and fairness have their second most powerful relations with loyalty while loyalty-sanctity relations are not as strong as loyalty-authority and especially authority-sanctity relations. The positive relations among all foundations has been found in other cultures as well, such as South Korea, Italy, and New Zealand (Kim et al. 2012; Bobbio et al. 2011; and Davies et al. 2014, respectively). The overlapping nature of moralities has previously been suggested theoretically (Sunar 2009). Contrary to the original premise of the MFT, that foundations would be independent of one another, the prevailing finding seems to be that of positive relations among different moral foundations.

Across three samples, the five factor (and six factor in the full scale) models are best fitting models compared to others, for relevance, judgment, and full scale items, replicating Graham et al.'s findings (2011). However it should be noted that the error indices are a bit higher and fit indices are lower than expected, especially for the third sample. The relatively greater heterogeneity of the third sample than the first and second samples could be a reason for the higher error and lower fit indices. The co-occurrence of significant standardized loadings and low fit indices indicates a flaw or a shortcoming in the five factor model. This may be an artifact of a purposeful choice of items by the MFT theoreticians as they would prefer to enrich the content and format of items in questionnaires at the expense of redundancy and thus alpha values (Graham et al. 2011). Whether this choice results in a content-validity problem or not should be investigated with further studies. Findings from various cultures converge on the 5-factor model, as the comparatively best working model, although different researchers noted relatively low fit indices and not ideal errors, and discarded some weak items (e.g., Bowman 2010; Zhang and Li 2015). Across the current 3 samples also, some items seem less powerful in terms of their loadings.

Common weak items in the current study, failure to converge with the same foundation of different subscales, and weaknesses in CFA models resulted in a factor structure that is different from the expected but hard to explain. The

analyses resulted in 3 factor structures across samples that are very similar to each other. The 3-factor structure is a robust one, as evidenced in the target rotation analyses as well, as compared to two, five and six factor structures and especially considering the different characteristics of the samples. The conclusion is that the current samples perceive the conservative values of loyalty, authority and sanctity items almost as one entity. They also differentiate morality related to care and fairness into two. One should also note they are not differentiated as care and fairness, but mixed with a few binding foundation items (especially loyalty) and split into two factors consisting of both care and fairness items. One factor is related to preserving the balance or status quo, protection of those who are in need, keeping them safe and away from harm, and providing necessary means to restore balance, indicating a preserve-provide function. The other factor implies a mixture of care and justice. Previously, a possible two-factor (individualizing and binding foundations) (Graham et al. 2009) and a three factor structure (stemming from the two factor structure: individualizing, binding, and sanctity) (Graham et al. 2009; Shweder et al. 1997) have been defended in the literature. On the other hand, the current study's 3-factor structure has not been put forward before. There is, however, additional evidence from Turkey that factors related to different aspects of conservatism (e.g. love of nation, religion, respect for authority) are perceived as a whole (Yalçındağ 2015). Also, similar to the current division, concerns about welfare of others and reciprocity have been explained in a content-rule framework by Sunar (2009). While care is a content or material provided, rules related to how it is distributed may include fairness.

It is evident that works on moral foundations (e.g. Haidt 2007; Haidt and Kesebir 2010; Graham et al. 2009) have expanded our understanding of morality and provided a powerful and insightful framework. However, transition from abstract theory to concrete measurement tools results in a weakening in the power of this framework. Irregularities of MFQ have been noted in the current study, as well as elsewhere (e.g. Nilsson and Erlandsson 2015; Yilmaz et al. 2016a).

The flaws and weaknesses of the MFQ, MFQ-L and MSQ can be reduced by strengthening them. The revision and improvement of the existing liberty scale and development of a Liberty scale for MSQ is a need for thorough measurement. In carrying out any revisions, a few points should be taken into account. First, while items measuring the binding foundations are generally adequate, some items relevant to the care, fairness, and liberty foundations are weaker. Second, measurement items need to fit the definition of the concepts they are designed to measure. For instance, although the definition of fairness as a foundation emphasizes reciprocity, the items tap not only reciprocity but also general concepts of equality and unfairness as well. Third, both loyalty and liberty foundations may include both individualizing and binding elements.

Regarding liberty, its differences and similarities with fairness need to be specified more clearly. Fourth, as correlations among fairness, liberty, loyalty and sanctity are quite strong, it will be helpful to investigate whether these foundations require more mutually exclusive definitions, or rather, as indicated by the findings from other cultures also, the foundations should be conceptualized as inherently overlapping.

Compliance with Ethical Standards

Conflict of Interest Türker Özkan has received research grant from Middle East Technical University for this study (grant number: BAP-07-03-2014-015).

Funding Findings related to Sample 3 were funded by Middle East Technical University (grant number: BAP- 07-03-2014-015).

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

- Bentler, P. M. (2006). *EQS 6 structural equations program manual*. Encino: Multivariate Software, Inc.
- Bermiūnas, R., Dranseika, V., & Sousa, P. (2016). Are there different moral domains? Evidence from Mongolia. *Asian Journal of Social Psychology, 19*, 275–282.
- Bobbio, A., Nencini, A., & Sarrica, M. (2011). Il moral foundation questionnaire: Analisi della struttura fattoriale della versione italiana. *Giornale di Psicologia, 5*, 7–18.
- Bowman, N. (2010, July). German translation of the moral foundations questionnaire-some preliminary results. <http://onmediatheory.blogspot.com.tr/2010/07/german-translation-of-moral-foundations.html>
- Challenges (2009, August). Moral Foundations.org. <http://moralfoundations.org/challenges>
- Davies, C. L., Sibley, C. G., & Liu, J. H. (2014). Confirmatory factor analysis of the moral foundation questionnaire: Independent scale validation in a New Zealand sample. *Social Psychology, 45*, 431–436.
- Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Cambridge: Harvard University Press.
- Graham, J., & Haidt, J. (2012). Sacred values and evil adversaries: A moral foundations approach. In M. Mikulincer & P. R. Shaver (Eds.), *The social psychology of morality: Exploring the causes of good and evil* (pp. 11–31). Washington, DC: APA.
- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology, 96*, 1029–1046.
- Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. *Advances in Experimental Social Psychology, 47*, 55–130.
- Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology, 101*, 366–385.
- Haidt, J. (2007). The new synthesis in moral psychology. *Science, 316*, 998–1002.
- Haidt, J. (2012). *The righteous mind: Why good people are divided by politics and religion*. New York: Pantheon Books.
- Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research, 6*, 98–116.
- Haidt, J., & Kesebir, S. (2010). Morality. In S. Fiske, D. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (5th ed., pp. 797–832). Hoboken: Wiley.
- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding libertarian morality: The psychological dispositions of self-identified libertarians. *PLoS One, 7*(8), 1–23.
- Kim, K. R., Kang, J., & Yun, S. (2012). Moral intuitions and political orientation: Similarities and differences between South Korea and the United States. *Psychological Reports: Sociocultural Issues In Psychology, 111*, 173–185.
- Kohlberg, L. (1973). The claim of moral adequacy of a highest stage of moral development. *Journal of Philosophy, 70*, 630–646.
- Métayer, S., & Pahlavan, F. (2014). Validation de l'adaptation française du questionnaire des principes moraux fondateurs. *Revue Internationale de Psychologie Sociale, 27*(2), 79–107.
- Nilsson, A., & Erlandsson, A. (2015). The moral foundations taxonomy: Structural validity and relation to political ideology in Sweden. *Personality and Individual Differences, 76*, 28–32.
- Questionnaires (2013, August). Moral Foundations.org. <http://moralfoundations.org/questionnaires>
- Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The “big three” of morality (autonomy, community, and divinity) and the “big three” explanations of suffering. In A. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 119–169). New York: Routledge.
- Sunar, D. (2009). Suggestions for a new integration in the psychology of morality. *Social and Personality Psychology Compass, 3*(4), 447–474.
- Van de Vijver, F., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. London: Sage.
- Yalçındağ, B. (2015). *Searching for the content and scope of morality: With a framework of moral foundations theory (unpublished doctoral dissertation)*. Ankara: Middle East Technical University.
- Yılmaz, O., Harma, M., Bahçekapılı, H. G., & Cesur, S. (2016a). Validation of the moral foundations questionnaire in Turkey and its relation to cultural schemas of individualism and collectivism. *Personality and Individual Differences, 99*, 149–154.
- Yılmaz, O., Sarıbay, S. A., Bahçekapılı, H. G., & Harma, M. (2016b). Political orientations, ideological self-categorizations, party preferences, and moral foundations of young Turkish voters. *Turkish Studies, 17*(4), 544–566.
- Zhang, Y., & Li, S. (2015). Two measures for cross-cultural research on morality: Comparison and revision. *Psychological Reports, 117*, 144–166.