THE STRUCTURE OF MORAL CONCERNS IN ADOLESCENCE: DIMENSIONALITY AND PSYCHOMETRIC PROPERTIES OF THE MORAL FOUNDATIONS QUESTIONNAIRE IN A SAMPLE OF ITALIAN ADOLESCENTS

GRAZIA DE ANGELIS
UNIVERSITY OF NAPOLI FEDERICO II, ITALY

MIRELLA DRAGONE
GIUSTINO FORTUNATO UNIVERSITY, ITALY

GAETANA AFFUSO
UNIVERSITY OF CAMPANIA "LUIGI VANVITELLI", ITALY

DARIO BACCHINI
UNIVERSITY OF NAPOLI FEDERICO II, ITALY

Research on whether the five moral foundations identified by the Moral Foundations Theory adequately describe the structure of moral concerns in adolescence is in its early stages and has evidenced results in contrast with research on adults. The present study aims to contribute by investigating the structure and the psychometric properties of the Moral Foundations Questionnaire (MFQ) in a sample of 925 Italian high school students. Subjects completed the MFQ and other measures expected to be related with moral foundations. A confirmatory factor analysis evidenced support for the 5-factor model, while internal consistency, stability, and validity proved to be satisfactory. Finally, we found no age difference while gender differences emerged in line with the literature. Our study concludes that we can use the five moral foundations to describe moral concerns also in adolescence, and that the MFQ is an adequate measure of adolescents' endorsement of these foundations.

In recent years has gained increasing acceptance the idea that morality extends far beyond the prescriptive judgments related to justice, rights, and welfare of others, as assumed by the classical theories (Turiel, 1983). Cross-cultural research (Shweder et al., 1987) and the studies including the "harmless taboo violations" (Haidt & Hersh, 2001; Haidt et al., 1993) evidenced that in many cultures and subcultures morality includes issues traditionally considered conventional. Simultaneously, contributions from evolutionary and anthropological explanations of human sociality have suggested that researchers extend the field of morality to a wider set of domains. These evidences led to the development of the Moral Foundations Theory

TPM Vol. 30, No. 1, March 2023
63-77
© 2023 Cises

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

(MFT; Haidt & Joseph, 2004), according to which five "foundations" can be identified, that are the bases upon which each culture constructs their morality:

1. *Care/harm* refers to "sensitivity to or dislike of signs of pain and suffering in others, particularly in the young and vulnerable" (Haidt & Bjorklund, 2008, p. 203).

2. *Fairness/cheating* refers to concerns about unfairness, inequality, or disproportionality in treating others, and violations of the more abstract notion of justice.

3. *Loyalty/betrayal* refers to concerns about violations of the obligations stemming from group membership, such as loyalty to the own group, family and nation, self-sacrifice and vigilance against betrayal.

4. *Authority/subversion* refers to concerns about violations of the obligations resulting from hierarchical relationships such as obedience, respect, and proper role fulfilment.

5. *Sanctity/degradation* refers to concerns about contamination and physical and psychological contagion from people and practices considered not pure.

According to the MFT, these five foundations can explain cultural, subcultural, and individual differences in moral judgment. Moreover, the theory asserts that the moral concerns related to Care and Fairness can be considered the basis of the individual-focused approaches to society, while the moral concerns regarding the other foundations are all about binding people together into large groups or institutions. Therefore, Care and Fairness were defined "individualizing foundations," while Loyalty, Authority, and Sanctity were defined "binding foundations."

Many studies have been carried out so far supporting this broader view of morality. However, the study samples included primarily adults, and even in the few cases in which younger subjects were involved, researchers did not consider developmental issues. Therefore, at present very little is known about the MFT from a developmental point of view, although the authors of the theory 10 years ago had already underlined the need for more research to fill this gap (Graham et al., 2011). In particular, the authors considered of primary interest the development of moral foundations during childhood and the dynamics of moral change throughout adolescence (Graham et al., 2011). Focusing on adolescence, before investigating how morality could shift from one pattern of foundation usage to another, it would be advisable to ascertain whether the model proposed by the MFT adequately describes the structure of moral concerns in adolescence. With this in mind, a good starting point could be investigating the dimensionality and the psychometric properties of the measure developed to assess the endorsement of each of the five foundations.

THE MORAL FOUNDATIONS QUESTIONNAIRE

In order to capture the variability in the endorsement of the five moral foundations, the authors operationalized moral concerns by selecting different foundation-related concerns and a set of more specific and contextualized moral judgments that became the starting point for the development of the Moral Foundations Questionnaire (MFQ; Graham et al., 2011). The final questionnaire comprises 32 items divided into two subscales: the *relevance* subscale and the *judgments* subscale, each one including three items for each foundation and one control item. In the relevance subscale, participants are asked to evaluate to what extent they consider relevant 16 statements (e.g., "Whether or not someone suffered emotionally"; control item: "Whether or not someone was good at math"), using a 6-point scale (from 0 = *not at all relevant* to 5 = *extremely relevant*). In the judgments subscale, participants are asked to evaluate their agreement with 16 statements (e.g., "When the government makes laws, the number one principle should be ensuring that everyone is treated fairly"; control item: "It is better to do good than to do bad") using a 6-point scale (from 0 = *strongly disagree* to 5 = *strongly agree*). Thus, while the relevance subscale provides a better assessment of

the explicit theories about what is morally relevant, the judgments subscale can be considered a better assessment of the actual use of moral foundations.

A first investigation of the factorial structure of the MFQ was conducted a few years ago by Graham and colleagues (2011) with a large cross-cultural sample. As expected, the 5-factor model was the overall best model, with reasonable or good fit for all 11 world regions considered in the study. Moreover, the 5-factor model showed a better fit than the hierarchical model in which two superordinate factors representing individualizing and binding foundations were added. The MFQ proved to have also good reliability indices, although the authors' goal of gauging an extended range of moral concerns with a small number of items and using two different response formats lead to a decrease of internal consistency. Many other studies conducted in different countries have investigated the structure and the psychometric properties of the MFQ (Atari et al., 2020; Bobbio et al., 2011; Davies et al., 2014; Doğruyol et al., 2019; Harper & Rhodes, 2021; Honda et al., 2017; Iurino & Saucier, 2020; Kim et al., 2012; Kivikangas et al., 2017; Métayer & Pahlavan, 2014; Moreira et al., 2019; Nejat & Hatami, 2019; Nilsson & Erlandsson, 2015; Sychev et al., 2016; Yalçındağ et al., 2019; Yilmaz et al., 2016; Zhang & Li, 2015). One of these studies was conducted in Italy on a sample of adults and evidenced the adequacy of both the 5-factor and hierarchical models, showing also acceptable reliability indices (Bobbio et al., 2011). Almost all other researchers obtained results similar to those of the authors (more support for the 5-factor model and acceptable reliability indices), although weaknesses regarding the factorial structure emerged in the Italian study and a number of other validations (Bobbio et al., 2011; Kivikangas et al., 2017; Nejat & Hatami, 2019; Nilsson & Erlandsson, 2015; Yalçındağ et al., 2019; Zhang & Li, 2015). On the other hand, the Brazilian validation found better fit indices for a 2-factor model partially corresponding to individualizing and binding foundations (Moreira et al., 2019), while one other study (Sychev et al., 2016), which was also the only one investigating moral foundations in a sample of adolescents, provided support for a 2-factor solution corresponding to the relevance and the judgments subscale of the MFQ. Finally, some studies conducted in Western (Harper & Rhodes, 2021) and non-Western countries (Atari et al., 2020), failed to replicate the factorial structures proposed by the authors, and problematic results emerged also in cross-cultural research trying to establish measurement invariance across a wide variety of populations (Doğruyol et al., 2019; Iurino & Saucier, 2020).

THE PRESENT STUDY

In the present study, our main aim was to contribute to the knowledge about the structure of moral concerns in adolescence. As we noted above, research conducted so far in the framework of MFT, as well as validation studies of the MFQ, have primarily been focused on adults. To our knowledge, only one study investigated the structure of moral foundations in a sample of adolescents (Sychev et al., 2016) and found results that differed from other research. The few other studies involving adolescents (together with adults) either did not investigate age differences (Davies et al., 2014) or showed only correlations between age and endorsement of foundations (Atari et al., 2020; Yalçındağ et al., 2019), without going into the matter. Thus, our first step was investigating whether the structure of moral concerns proposed by the MFT holds in adolescence. In line with the theory and with the results obtained by the authors (Graham et al., 2011) and the Italian researchers (Bobbio et al., 2011), we decided to take into account the 5-factor model (five moral foundations) against the hierarchical model, including two superordinate factors representative of the individualizing and binding foundations. The 2-factor model corresponding to the relevance and the judgments subscale, which showed the best fit in the only study focusing on adolescence (Sychev et al., 2016), was not taken into account because it does not deal with the structure of moral concerns. On the contrary, it reflects the distinction between explicit theories about what is morally relevant versus the actual use of moral foundations (Graham et al., 2011). Although authors

TPM®

and almost all validation studies found better fit indices for the 5-factor solution, the hierarchical model is also consistent with the theory and both structures were found equally plausible in some of the previous validation studies (Bobbio et al., 2011; Davies et al., 2014). Thus, we were not able to make predictions on this issue.

As a second step, we investigated the internal consistency and the stability of the measure, expecting acceptable indices in line with the literature. Then we completed our investigation about the psychometric properties of the MFQ, examining convergent, discriminant, and concurrent validity. Following the authors (Graham et al., 2011), we used the relevance and the judgments subscales as convergent and discriminant measures of the five moral foundations. Moreover, we investigated the relationship between the endorsement of the five foundations and the concurrent measures identified by the authors (Graham et al., 2011), assuming to find significant relationships in the expected directions.

Gender differences were documented in the endorsement of foundations in adults (Bobbio et al., 2011; Graham et al., 2011; Yalçındağ et al., 2019), so we also compared moral concerns of males and females in our sample of adolescents. In line with the literature, we expected higher levels of moral concerns in females. Finally, we investigated the relationship between endorsement of foundations and age. We could not make a prediction in this area because some previous studies found a significant relationship (Bobbio et al., 2011; Yalçındağ et al., 2019), while other studies showed no significant relationship (Atari et al., 2020).

METHOD

Participants

The sample included 925 Italian adolescents (363 males and 562 females) attending the second to fifth year (10th grade to 13th grade; age range = 14-21; M_{age} = 16.56, SD = 1.30) of nine secondary schools randomly selected in a large area around Naples, one of the main cities in Southern Italy. From the original sample, 140 adolescents (78 males and 62 females) were randomly selected to participate in a second administration in order to evaluate concurrent validity and test-retest reliability.

Finally, we checked our data for outliers using the interquartile range method, and for inattentive responses on the basis of the answers to the two control items included in the MFQ (see the description of the questionnaire above). As a consequence, we excluded from our analysis five problematic outliers and 42 inattentive subjects in the first sample (so the final first sample included 878 adolescents, 345 males and 533 females), and six problematic outliers and eight inattentive subjects in the second sample (so the final second sample included 126 adolescents, 76 males and 50 females)

Measures

Moral Foundations Questionnaire (Graham et al., 2011). The questionnaire was described in detail in the introduction. We used the Italian translation of the questionnaire approved by the authors (available at https://www.moralfoundations.org).

Interpersonal Reactivity Index (IRI; Albiero et al., 2006; Davis, 1983). The "empathic concern" subscale was used. Subjects were asked to rate how much seven statements that evaluate affective empathy (e.g., "I often have tender, concerned feelings for people less fortunate than me") described themselves, using a 5-point scale (from 0 = *it doesn't describe me at all* to 4 = *it completely describes me*). In order to obtain an acceptable reliability index, Item 3 was deleted.

TPM Vol. 30, No. 1, March 2023
63-77
© 2023 Cises

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

Portrait Value Questionnaire (PVQ; Capanna et al., 2005; Schwartz et al., 2001). The *benevolence* subscale, together with a selection of five items (Graham et al., 2011) regarding social justice, national security, obedience, cleanliness, and devotion (see the section "Results") from the 40-item version of the questionnaire, were administered to the sample. Participants were asked to evaluate how much each statement, pointing implicitly to the importance of a value (e.g., "It's very important to him to help the people around him. He wants to care for their well-being"), described themselves, using a 6-point scale (from 1 = *not like me at all* to 6 = *very much like me*).

Adapted Good-Self Assessment (aGSA; Barriga et al., 2001). A selection of five items (Graham et al., 2011) evaluating the degree to which an individual identifies with moral traits dealing with kindness, sympathy, generosity, fairness, and loyalty (see the section "Results") was administered to the sample. First, the scale presents subjects with a diagram depicting three concentric circles meant to represent the centrality of a trait to the self-concept and including the following labels: *not important to me* outside the circles; *not very important to me* in the most external circle; *quite important to me* in the middle circle; and *very important to me* in the innermost circle. Participants are then instructed to think about the figure as they answer how important each trait is to them on a 4-point scale in which each point is labeled the same as the circles in the figure (from 1 = *not important to me* to 4 = *very important to me*).

Social Dominance Orientation questionnaire (SDO; Aiello et al., 2005; Pratto et al., 1994). Participants were asked to rate the degree of their positive or negative feeling toward 16 items regarding the belief that some people are superior or inferior to others and the approval of unequal group relationships (e.g., "Some people are just inferior to others"; "It is not a problem if some people have more of a chance in life than others"), using a 7-point scale (from 1 = *very negative* to 7 = *very positive*).

Right-Wing Authoritarianism questionnaire (RWA; Aiello et al., 2004; Zakrisson, 2005). Participants had to rate their agreement with 15 items regarding conventionalism, authoritarian aggression, and authoritarian submission, which were identified as the core features of right-wing authoritarianism (e.g., "Our country needs a powerful leader in order to destroy the radical and immoral currents prevailing in society today"), using a 7-point scale (from 1 = *totally disagree* to 7 = *totally agree*).

Disgust Scale-revised (DSr; Giampietro et al., 2019; Olatunji et al., 2007). We used a shortened version of the scale resulting from the selection of the highest loading items from Olatunji et al. (2007). Confirmatory factor analyses confirmed the 3-factor structure (see Appendix A) found by Olatunji and colleagues (2007), proving that even though the scale had been shortened the original structure had been maintained. For the purposes of the present study, we used a total score of disgust sensitivity calculated as described in Olatunji and colleagues (2007). The questionnaire asked participants whether they consider true or false the first nine statements (e.g., "I never let any part of my body touch the toilet seat in a public washroom"), and the extent to which they would find disgusting (from 1 = *not disgusting at all* to 3 = *very disgusting*) the experiences proposed in the remaining seven items (e.g., "You see maggots on a piece of meat in an outdoor garbage pail").

Table 4 presents Cronbach's alpha values for the measures in our sample.

Procedure

The questionnaires were administered between the spring of 2016 and the spring of 2017. All the participants received a letter of presentation and an informed consent form for both themselves and their parents. Once we obtained the consent forms, participants completed the questionnaires in their classrooms during the

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

normal lessons. An expert researcher assured participants that the questionnaires were anonymous and that they could withdraw whenever they wanted, moreover the researcher remained present during the entire administration to give support and the explanations required. The research was approved by the Ethical Committee of Psychological Research of the Department of Humanities of the University of Naples "Federico II."

RESULTS

Factorial Structure and Reliability of the Moral Foundations Questionnaire

Before testing the factorial structure of the questionnaire, we calculated intraclass correlations (ICCs) to determine whether the clustering in schools could influence our analyses. We found low school-level ICCs (.03 for Care, .10 for Fairness, .02 for Loyalty, .01 for Authority, and .04 for Sanctity) suggesting little influence on moral concerns by school characteristics. Then, we proceeded to investigate the dimensionality of the MFQ conducting a confirmatory factor analysis (CFA) with Mplus 7.2 (Muthén & Muthén, 2012). Due to the nonnormality of the data, we used MLR, a maximum likelihood parameter estimate with standard errors and chi-square test statistic that are robust to nonnormality. As we said, we tested the 5-factor solution (Care, Fairness, Loyalty, Authority, and Sanctity) against the hierarchical solution, adding two superordinate factors representing the theoretical distinction between individualizing and binding foundations.

Since both models showed poor fit indices, the only item not significantly loading onto its factor (Item 10 of the judgments subscale: "Men and women each have different roles to play in society") was removed and, after examining the modification indices, the residuals regarding all the items included in the relevance subscale were allowed to correlate. This is permitted as long as it has a valid interpretation (Bagozzi, 1983; Fornell, 1983): in our case, items included in the relevance subscale share the same wording and response format, that were different from wording and response format for the judgments subscale. After these modifications, both models showed good fit indices, however, the five correlated factor solution proved to be preferable (Table 1). Moreover, in this model all factor loadings were significant, although weak in some cases (Table 1) and the correlations among the five subscales of the MFQ (Table 2) were all significant for $p < .001$ (r values range from .37 to .63). Finally, no significant correlation emerged with age (Table 2).

TABLE 1
Confirmatory factor analyses of the Moral Foundations Questionnaire.
Fit indices and standardized factor loadings for the five correlated factor model

	χ^2	df	CFI	RMSEA	90%CI	SRMR	$\Delta\chi^2$	df	p
Hierarchical model	691.366	266	.91	.043	[.039, .047]	.045			
Five correlated factors	676.104	262	.91	.042	[.039, .046]	.044	14.88[a]	4	< .01

	Care	Fairness	Loyalty	Authority	Sanctity
Emotionally	.29				
Weak	.41				
Cruel	.44				

(table 1 continues)

Table 1 (continued)

	Care	Fairness	Loyalty	Authority	Sanctity
Compassion	.47				
Animal	.40				
Kill	.53				
Treated		.31			
Unfairly		.37			
Rights		.41			
Fairly		.61			
Justice		.63			
Rich		.17			
Lovecountry			.40		
Betray			.27		
Loyalty			.32		
History			.36		
Family			.44		
Team			.30		
Respect				.48	
Traditions				.24	
Chaos				.39	
Kidrespect				.66	
Soldier				.34	
Decency					.50
Disgusting					.44
God					.44
Harmless disgusting					.59
Unnatural					.29
Chastity					.43

Note. df = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval; SRMR = standardized root-mean-square residual. [a] the value was obtained using Satorra-Bentler scaled chi-square difference test. All factor loadings are statistically significant at *p* < .001.

TABLE 2
Descriptive statistics and Pearson correlations between
the five Moral Foundations Questionnaire subscales and age

	1	2	3	4	5
1.Care	1				
2.Fairness	.63***	1			
3.Loyalty	.49***	.49***	1		
4.Authority	.40***	.39***	.54***	1	
5.Sanctity	.44***	.37***	.49***	.57***	1
Age	.01	−.02	−.03	.01	.01
Mean	3.79	3.77	3.39	2.53	2.99
SD	0.73	0.68	0.67	0.66	0.86

*** *p* < .001.

TPM®

Next, Cronbach's alpha values for each of the five dimensions were calculated in order to evaluate the internal consistency of the MFQ scales. The results were in line with the Italian validation on adults (Bobbio et al., 2011): .63 for Care, .58 for Fairness, .59 for Loyalty, .57 for Authority, and .62 for Sanctity. Lastly, the Pearson correlation analysis was performed in order to evaluate test-retest reliability between the first and second (one month later) administration of the MFQ. Results showed strong, positive, and significant correlations among the two different measurements of Care ($r = .65$, $p < .001$), Fairness ($r = .61$, $p < .001$), Loyalty ($r = .70$, $p < .001$), Authority ($r = .74$, $p < .001$), and Sanctity ($r = .73$, $p < .001$).

Scale Invariance between Females and Males

The scale invariance across gender for the five correlated factor solution was tested by running a series of increasingly restrictive models for males ($n = 345$) and females ($n = 533$). Then models were compared using the chi-square difference test, adjusting the χ^2 values using the Satorra-Bentler scaling correction. At first, we tested the configural invariance obtaining an adequate fit, $\chi^2(524) = 1031.44$, $p < .001$; CFI = .89; RMSEA = .047, 90% CI [.043, .051]; SRMR = .051. Then we constrained the factor loadings to be equal across the two groups and obtained once again adequate fit indices, $\chi^2(548) = 1043.99$, $p < .001$; CFI = .89; RMSEA = .045, 90% CI [.041, .050]; SRMR = .053. In this model the increase of chi-square was not significant, $\Delta\chi^2(24) = 18.88$, $p > .05$, indicating that constraints could be maintained, and that metric invariance was achieved. As a third step, we constrained also intercept to be equal across the two groups obtaining worse fit indices, $\chi^2(572) = 1126.14$, $p < .001$; CFI = .88; RMSEA = .047, 90% CI [.043, .051]; SRMR = .055, and a significant increase of chi-square, $\Delta\chi^2(24) = 86.99$, $p < .001$. The examination of the modification indices suggested to remove the equality constraints for the intercepts of Items 11, 12, 13, and 14 of the judgements subscale. The final model obtained adequate fit indices, $\chi^2(568) = 1073.84$, $p < .001$; CFI = .89; RMSEA = .045, 90% CI [.041, .049]; SRMR = .054, and the increase of chi-square was not significant, $\Delta\chi^2(20) = 28.76$, $p > .05$, establishing partial scalar invariance across males and females.

Relations between Relevance and Judgments Subscales

Pearson correlations were performed in order to evaluate the relationship between the relevance and judgments subscales. Results (see Appendix B) showed that each foundation measured by the relevance subscale is significantly and positively related to the same foundation measured by the judgments subscale (r values range from .30, $p < .001$ to .46, $p < .001$). Moreover, these correlations were stronger than the correlations between different foundations, although in a few cases the differences between coefficients were not significant (Appendix B). Overall and although with some limitations, these results provide evidence of both convergent and discriminant validity.

Gender Differences

In order to investigate possible gender differences, a multivariate analysis of variance (MANOVA) was performed with gender as independent variable and the five foundations as dependent variables. In line with Graham and colleagues (2011), a significant effect of gender emerged — Wilks' $\lambda = .89$, $F(6, 871) = 18.75$, $p < .001$ — with females scoring higher on Care, Fairness, and Sanctity foundations (Table 3).

TM®

TABLE 3
Gender differences in moral foundations

	Males		Females		
Measure	M	SD	M	SD	F(1, 876)
Care	3.58	0.80	3.92	0.64	47.19***
Fairness	3.57	0.70	3.89	0.63	50.32***
Loyalty	3.37	0.70	3.40	0.65	0.60
Authority	2.99	0.81	3.07	0.79	2.11
Sanctity	2.82	0.81	3.10	0.88	21.90***

*** $p < .001$.

Concurrent Validity

Pearson correlations with several variables were performed in order to evaluate concurrent validity. Following Graham and colleagues (2011), our concurrent measures were:

1. For Care foundation: empathic concern subscale of the IRI; PVQ benevolence subscale; three items from the aGSA, on the importance of being kind/caring, sympathetic/compassionate, and generous/giving.

2. For Fairness foundation: SDO (the global score was reverse-scored, as it measures preference for social inequalities), importance of being fair/just on the aGSA, and endorsement of the social justice item on the PVQ.

3. For Loyalty foundation: importance of being loyal/faithful on the aGSA and endorsement of national security on the PVQ.

4. For Authority foundation: RWA and endorsement of obedience value on the PVQ.

5. For Sanctity foundation: DSr and endorsement of clean and devout items on the PVQ.

Items from the same scale were averaged together, and correlations between the foundations and the relative scales were averaged together as well, providing a global index of the association of each foundation with its own conceptually related group of measures. Results evidenced that each foundation correlated with its own concurrent measures significantly and in the expected direction (Table 4), although in some cases this correlation was not much stronger than the correlation of the concurrent measure with another foundation, and Right-Wing Authoritarianism was more strongly correlated to Sanctity than to Authority foundation. Finally, each foundation showed the strongest association with its own conceptually related group of measures (average $r = .36$ vs. average $r = .19$ for the off-diagonals).

TABLE 4
Pearson correlations between Moral Foundations Questionnaire subscales and concurrent measures

		Care	Fairness	Loyalty	Authority	Sanctity
Care	a_GSA: kind/caring, sympathetic/ compassionate, generous/giving	.40***	.24**	.29**	.21*	.13
	PVQ: benevolence subscale (Cronbach's alpha = .70)	.34***	.23*	.33***	.15	.21*
	IRI: empathic concern (Cronbach's alpha = .68)	.58***	.42***	.28**	.16	.23**
	Care scales average	**.44**	.30	.30	.17	.19

(table 4 continues)

TPM Vol. 30, No. 1, March 2023
63-77
© 2023 Cises

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

Table 4 (continued)

		Care	Fairness	Loyalty	Authority	Sanctity
Fairness	a_GSA: fair/just	.25**	.27**	.26**	.12	.14
	PVQ: social justice	.28**	.39***	.27**	.14	.27**
	SDO (reversed; Cronbach's alpha = .91)	.46***	.54***	.12	.18*	.19*
	Fairness scales average	.33	**.40**	.22	.15	.20
Loyalty	PVQ: national security	.13	.17	.30**	.26**	.27**
	a_GSA: loyal/faithful	.13	.20*	.27**	.10	.15
	Loyalty scales average	.13	.19	**.29**	.18	.21
Authority	PVQ: obedience	−.01	.12	.02	.32***	.16
	RWA (Cronbach's alpha = .68)	−.02	.06	.27**	.29**	.43***
	Authority scales average	−.01	.09	.15	**.31**	.29
Sanctity	PVQ: clean, devout	.11	.24**	.21*	.30**	.45***
	DSr (Cronbach's alpha = .77)	.21*	.02	.12	.07	.22*
	Sanctity scales average	.16	.13	.17	.19	**.34**

Note. The highest correlation for each set of scales is shown in bold. a_GSA = adapted Good-Self Assessment; PVQ = Portrait Value Questionnaire; IRI = Interpersonal Reactivity Index; SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; DSr = Disgust Scale-revised.
* $p < .05$; ** $p < .01$; *** $p < .001$.

DISCUSSION

The MFT theorized that all moral concerns in all cultures can be ultimately traced back to the five moral foundations and that these dimensions reflect the main features of individual and group-focused approaches to morality. Researches conducted so far in the framework of MFT, as well as validation studies of the MFQ, have primarily been focused on adults and have found support, in the majority of cases, for the 5-factor structure. On the other hand, the research about whether the structure of moral concerns proposed by the MFT holds in adolescence is just at the beginning stage. Only one study examined the structure of moral foundations in Mongolian and Russian samples of adolescents (Sychev et al., 2016), evidencing results in contrast with research on adults, that is, less support for the 5-factor structure. Thus, our main aim in the present study was to contribute to this issue.

In line with the results obtained by the authors (Graham et al., 2011) and confirmed in the Italian adult sample (Bobbio et al., 2011), we evaluated the 5-factor model (five moral foundations) against the hierarchical model (including two superordinate factors representative of the individualizing and binding foundations). Our results evidenced a better fit for the model with five correlated factors, even though the hierarchical solution was also acceptable (Graham et al., 2011). Moreover, in the 5-factor solution all factor loadings were significant except for one item, referring to men and women having different roles in society, that could be somewhat far from adolescents' experience. That item, as suggested by the modification indices, was removed. On the other hand, a number of items showed weak factor loadings, probably because they could sound generic and unclear to adolescents, for example in the case of the items referring generically to the importance of conforming to the traditions of society or referring to acts considered wrong because unnatural. In other cases, the problematic items may have been hard to understand for our subjects because

TPM Vol. 30, No. 1, March 2023
63-77
© 2023 Cises

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

they have more to do with adults' than adolescents' life, for example in the case of the item regarding the difference of inheritance between rich and poor children. Items showing weak loadings on the latent factors were maintained, as this finding was in line with other studies (Bobbio et al., 2011) and the present study is one of the first to investigate the structure of the MFQ in adolescence. Future research could try to rephrase problematic items or delete them from the questionnaire.

With respect to reliability, our results were satisfactory: we obtained good values of stability and acceptable values of internal consistency. Indeed, although alpha values suggested poor internal consistency, they are in line with the literature, in particular with the Italian study on adults (Bobbio et al., 2011). Moreover, they can be considered reasonable, bearing in mind the small number of items loading on each dimension, their content covering an extended range of moral concerns, and the two different response formats. We completed our investigation of the psychometric properties of the MFQ examining convergent, discriminant, and concurrent validity. Our results were in line with our expectations. The relationships between the same foundations measured by the relevance and the judgments subscales were positive and stronger (although in a few cases the difference between coefficients was not statistically significant) than the relationships between different foundations measured by the two formats, establishing, in line with the authors (Graham et al., 2011), convergent and discriminant validity. Moreover, each foundation correlated with its own concurrent measures significantly, and in the expected direction, supporting concurrent validity. In some cases, this association was not much stronger than the association of the concurrent measure with the other foundations, while in one case the concurrent measure was more strongly related to another foundation (Right-Wing Authoritarianism was more strongly related to Sanctity than to Authority). However, each foundation showed the strongest association with its own conceptually related group of measures, providing further evidence of discriminant validity. Overall, our results demonstrated that the structure and the psychometric properties of the MFQ are maintained in our sample, allowing us to say that also in adolescence, moral concerns can be described with reference to the five moral foundations identified by the MFT, and that the MFQ is an adequate measure of adolescents' endorsement of these foundations.

Finally, we investigated gender invariance and evaluated gender and age differences. The achievement of scalar invariance proved that males and females have the same starting point in moral concerns, so that the latent means can be compared across the two groups meaningfully. With that said, in line with the authors (Graham et al., 2011), females in our sample showed higher endorsement of Care, Fairness, and Sanctity foundations. Our results are also partially consistent with the Italian study involving adults (Bobbio et al., 2011). Indeed, although other Italian researchers found higher concern for Authority in females and did not find differences with respect to Fairness, they evidenced the same differences we found regarding Care and Sanctity. It therefore seems that gender differences, at least regarding Care and Sanctity are somewhat stable. On the other hand, no significant relationship emerged with age. This result was partially in line with the literature. Indeed, while the Iranian validation (Atari et al., 2020) also evidenced no significant association with age, two other studies found significant, although weak, relationships (Bobbio et al., 2011; Yalçındağ et al., 2019). However, both studies showed different and partially inconsistent results: one study found higher endorsement for Care and Loyalty at increasing age (Bobbio et al., 2011), while the other study found lower endorsement of Loyalty, Authority, and Sanctity at increasing age (Yalçındağ et al., 2019). Also considering only studies involving adolescents (Atari et al., 2020; Yalçındağ et al., 2019), results remain inconclusive. As the MFT makes neither developmental hypotheses nor normative claims about which moral concerns are more complex or mature than others, more studies, in particular including longitudinal samples of children and adolescents, are needed to shed light on the developmental issues and clarify which trajectory each foundation will follow during development and thus, how individuals come to have the moral concerns they do. The focus of the present study

TPM Vol. 30, No. 1, March 2023
63-77
© 2023 Cises

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

on the structure of moral concerns in adolescence represents a first step in this direction and can be considered one of the major strengths of our work. The investigation of the different psychometric properties of the MFQ is another strength, as the other research conducted in Italy (Bobbio et al., 2011) and the other study involving adolescents (Sychev et al., 2016) focused on only the dimensionality and the reliability of the instrument, disregarding the assessment of validity. On the other hand, the adolescents participating in this study came from the same geographical area in Southern Italy, thereby limiting the generalizability of our results. Although the other research conducted in Italy on adults (Bobbio et al., 2011) included subjects from different areas of our country, finding results in line with the present study, other research is needed to confirm the structure and the properties we found for the MFQ, in samples of adolescents from different areas.

REFERENCES

Aiello, A., Chirumbolo, A., & Leone, L. (2004). La Scala di Autoritarismo di destra (Altemeyer, 1998): Uno studio di adattamento e validazione [Right-wing Authoritarianism Scale: A study of adaptation and validation to the Italian context]. *Rassegna di Psicologia*, *21*(2), 73-91.

Aiello, A., Chirumbolo, A., Leone, L., & Pratto, F. (2005). Uno studio di adattamento e validazione della Scala di Orientamento/Tendenza alla Dominanza Sociale [A study for the validation of the Social Dominance Orientation Scale]. *Rassegna di Psicologia*, *22*(3), 65-75.

Albiero, P., Ingoglia, S., & Lo Coco, A. (2006). Contributo all'adattamento italiano dell'Interpersonal Reactivity Index [Contribution to the Italian adaptation of the Interpersonal Reactivity Index]. *TPM – Testing, Psychometric, Metodology in Applied Psychology*, *13*(2), 107-125.

Atari, M., Graham, J., & Dehghani, M. (2020). Foundations of morality in Iran. *Evolution and Human Behavior*, *41*(5), 367-384. https://doi.org/10.1016/j.evolhumbehav.2020.07.014

Bagozzi, R. P. (1983). Issues in the application of covariance structure analysis: A further comment. *Journal of Consumer Research*, *9*, 449-450. https://doi.org/10.1086/208939

Barriga, A. Q., Morrison, E. M., Liau, A. K., & Gibbs, J. C. (2001). Moral cognition: Explaining the gender difference in antisocial behavior. *Merrill-Palmer Quarterly*, *47*, 532-562. https://doi.org/10.1353/mpq.2001.0020

Bobbio, A., Nencini, A., & Sarrica, M. (2011). Il Moral Foundation Questionnaire: Analisi della struttura fattoriale della versione italiana [The Moral Foundation Questionnaire. Factorial structure of the Italian version]. *Giornale di Psicologia*, *5*(1-2), 7-18.

Capanna, C., Vecchione, M., & Schwartz, S. H. (2005). La misura dei valori. Un contributo alla validazione del Portrait Value Questionnaire su un campione italiano [The measurement of values. A contribution to the validation of the Portrait Values Questionnaire on an Italian sample]. *Bollettino di Psicologia Applicata*, *246*, 29-41.

Davies, C. L., Sibley, C. G., & Liu, J. H. (2014). Confirmatory factor analysis of the Moral Foundations Questionnaire: Independent scale validation in a New Zealand sample. *Social Psychology*, *45*, 431-436. https://doi.org/10.1027/1864-9335/a000201

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*(1), 113-126. https://doi.org/10.1037/0022-3514.44.1.113

Doğruyol, B., Alper, S., & Yilmaz, O. (2019). The five-factor model of the moral foundations theory is stable across WEIRD and non-WEIRD cultures. *Personality and Individual Differences*, *151*, 109547. https://doi.org/10.1016/j.paid.2019.109547

Fornell, C. (1983). Issues in the application of covariance structure analysis: A comment. *Journal of Consumer Research*, *9*, 443-448. https://doi.org/10.1086/208938

Giampietro, M., Ruggi, S., Caravita, S., Gatti, M., Colombo, L., & Gilli, G. M. (2019). A measure to assess individual differences for disgust sensitivity: An Italian version of the Disgust Scale-Revised. *Current Psychology*, *38*(2), 354-366. https://doi.org/10.1007/s12144-017-9604-x

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*(2), 366-385. https://doi.org/10.1037/a0021847

Haidt, J., & Bjorklund, F. (2008). Social intuitionists answer six questions about moral psychology. In W. Sinnott-Armstrong (Ed.), *Moral psychology: Vol. 2. The cognitive science of morality: Intuition and diversity* (pp. 181-218). MIT Press.

Haidt, J., & Hersh, M. A. (2001). Sexual morality: The cultures and emotions of conservatives and liberals. *Journal of Applied Social Psychology*, *31*(1), 191-221. https://doi.org/10.1111/j.1559-1816.2001.tb02489.x

Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues [Special issue]. *Daedalus*, *133*(4), 55-66. https://doi.org/10.1162/0011526042365555

Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog? *Journal of Personality and Social Psychology*, *65*(4), 613-628. https://doi.org/10.1037/0022-3514.65.4.613

Harper, C. A., & Rhodes, D. (2021). Reanalysing the factor structure of the Moral Foundations Questionnaire. *British Journal of Social Psychology*, *60*, 1303-1329. https://doi.org/10.1111/bjso.12452

Honda, S., Ishimaru, S., Utsunomiya, S., Yamane, T., Oda, M., Sakamoto, K., Ohe, Y., Kobayashi, H., Arima, T., Kidera, A., & Kosugi, K. (2017). Considering the relation between the Haidt's Moral Foundations Theory and Japanese morality through developing a new scale. *Bulletin of the Faculty of Education, Yamaguchi University*, *66*, 95-106.

Iurino, K., & Saucier, G. (2020). Testing measurement invariance of the Moral Foundations Questionnaire across 27 countries. *Assessment*, *27*(2), 365-372. https://doi.org/10.1177/1073191118817916

Kim, K. R., Kang, J. S., & Yun, S. (2012). Moral intuitions and political orientation: Similarities and differences between South Korea and the United States. *Psychological Reports*, *111*(1), 173-185. https://doi.org/10.2466/17.09.21.PR0.111.4.173-185

Kivikangas, J. M., Lönnqvist, J. E., & Ravaja, N. (2017). Relationship of moral foundations to political liberalism-conservatism and left-right orientation in a Finnish representative sample. *Social Psychology*, *48*, 246-251. https://doi.org/10.1027/1864-9335/a000297

Métayer, S., & Pahlavan, F. (2014). Validation de l'adaptation Française du Questionnaire des principes Moraux Fondateurs [Validation of the Moral Foundations Questionnaire in French]. *Revue Internationale de Psychologie Sociale*, *27*(2), 79-107.

Moreira, L. V., Souza, M. L. D., & Guerra, V. M. (2019). Evidências de Validade de uma Versão Brasileira do Questionário de Fundamentos Morais [Validity evidence of a Brazilian version of the Moral Foundations Questionnaire]. *Psicologia: Teoria e Pesquisa*, *35*, e35513. https://doi.org/10.1590/0102.3772e35513

Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Muthén & Muthén.

Nejat, P., & Hatami, J. (2019). Psychometric properties of the Persian version of Moral Foundations Questionnaire in three Iranian samples. *Social Cognition*, *8*, 107-124. https://doi.org/10.30473/SC.2019.40617.2204

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. https://doi.org/10.1016/j.paid.2014.11.049

Olatunji, B. O., Williams, N. L, Tolin, D. F, Abramowitz, J. S., Sawchuk, C. N., Lohr, J. M., & Elwood, L. S. (2007). The Disgust Scale: Item analysis, factor structure, and suggestions for refinement. *Psychological Assessment*, *19*(3), 281-297. https://doi.org/10.1037/1040-3590.19.3.281

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, *67*(4), 741-763. https://doi.org/10.1037/0022-3514.67.4.741

Schwartz, S. H., Melech, G., Lehmann, A., Burgess, S., Harris, M., & Owens, V. (2001). Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of Cross-Cultural Psychology*, *32*(5), 519-542. https://doi.org/10.1177/0022022101032005001

Shweder, R. A., Mahapatra, M., & Miller, J. G. (1987). Culture and moral development. In J. Kagan & S. Lamb (Eds.), *The emergence of morality in young children* (pp. 1-83). University of Chicago Press.

Sychev, O. A., Bespalov, A. M., Prudnikova, M. M., & Vlasov, M. S. (2016). Features of moral foundations in Mongol, German, and Russian adolescents. *Cultural-Historical Psychology*, *12*(1), 85-96. https://doi.org/10.17759/chp.2016120109

Turiel, E. (1983). *The development of social knowledge: Morality and convention*. Cambridge University Press.

Yalçındağ, B., Özkan, T., Cesur, S., Yilmaz, O., Tepe, B., Piyale, Z. E., Biten, A. F., & Sunar, D. (2019). An investigation of moral foundations theory in Turkey using different measures. *Current Psychology*, *38*(2), 440-457. https://doi.org/10.1007/s12144-017-9618-4

Yilmaz, O., Harma, M., Bahçekapılı, H. G., & Cesur, S. (2016). 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. https://doi.org/10.1016/j.paid.2016.04.090

Zakrisson, I. (2005). Construction of a short version of the Right-Wing Authoritarianism (RWA) scale. *Personality and Individual Differences*, *39*(5), 863-872. https://doi.org/10.1016/j.paid.2005.02.026

Zhang, Y., & Li, S. (2015). Two measures for cross-cultural research on morality: Comparison and revision. *Psychological Reports*, *117*(1), 144-166. https://doi.org/10.2466/08.07.PR0.117c15z5

APPENDIX A

Confirmatory factor analyses of the Disgust Scale-revised. Fit indices

	χ^2	df	CFI	RMSEA	90% CI	$\Delta\chi^2$	df	p
One factor	152.57	104	.78	.061	.039-.081			
Three factors	127.29	101	.88	.045	.011-.068	23.86	3	< .001

Note. df = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval.

De Angelis, G., Dragone, M.,
Affuso, G., & Bacchini, D.
Moral foundations in adolescence

APPENDIX B

Correlations between relevance and judgments subscales

Relevance subscale	Judgments subscale				
	1	2	3	4	5
1. Care	**.38*****	.29*** [a]	.19*** [a]	.16* [a]	.17*** [a]
2. Fairness	.29***	**.30*****	.17*** [a]	.15* [a]	.09** [a]
3. Loyalty	.29***	.19*** [a]	**.31*****	.22*** [a]	.23*** [a]
4. Authority	.21*** [a]	.18*** [a]	.26***	**.32*****	.31***
5. Sanctity	.29*** [a]	.25*** [a]	.28*** [a]	.29*** [a]	**.46*****

Note. The correlations between the same foundations as measured by the relevance and the judgments subscales are shown in bold. [a] = different-foundation coefficients significantly different from the same-foundation coefficient in each row, according to the Fisher's *z*-test. * $p < .05$; ** $p < .01$; *** $p < .001$.