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Mapping Moral Dimensions in Italy: Psychometric Adaptation and Predictive Insights from the Morality-as-Cooperation Questionnaire

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Abstract

The study of morality has a long-standing tradition in Italy, yet existing tools, such as the Moral Foundations Questionnaire (MFQ), face notable challenges. This research bridges the gap by introducing and adapting the Morality-as-Cooperation Questionnaire (MAC-Q) in an Italian sample. Grounded in the Morality-as-Cooperation (MAC) Theory, which conceptualizes morality as evolved solutions to cooperation problems, the MAC-Q identifies seven moral dimensions: Obligations to Family, Group Loyalty, Reciprocity, Heroism, Respect for Authority, Fairness, and Respect for Property Rights.

A total of 693 participants completed an online survey including the MAC-Q, which assessed the relevance and judgment of moral considerations. Confirmatory Factor Analysis (CFA) supported the seven-factor structure across both the Relevance and the Judgment subscales, confirming the validity of the theoretical framework in the Italian context. Convergent validity was established through significant correlations between the MAC-Q and the Italian version of the MFQ. Predictive validity analyses indicated that MAC-Q dimensions significantly predicted political orientation, immoral behavioral intentions, and ingroup morality, with differentiated patterns depending on the specific moral dimensions considered. The findings suggest the potential of the MAC-Q as a tool capable of capturing moral dimensions and their correlates in the Italian context.

Keywords: Morality-as-Cooperation Theory; Morality-as-Cooperation Questionnaire; Moral Foundations Theory; Moral Foundations Questionnaire; Political orientation; Morality

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Introduction

Since antiquity, individuals have tried to understand the relationship between human nature and morality - what defines good and bad, right and wrong, and the principles guiding ethical behavior. Why do some individuals adhere to moral principles while others violate them? These enduring questions first captivated the attention of philosophers and theologians and, more recently, have become the focus of various disciplines, including psychology.

In the psychology of morality, numerous theories have emerged to explore the abstract principles that regulate and govern interactions within increasingly complex societies, such as the Moral Foundations Theory (MFT; Graham et al., 2009; Graham et al., 2011; Haidt & Graham, 2007). Over the past two decades, MFT has become a cornerstone for understanding morality, and instruments such as the Moral Foundation Questionnaire (MFQ; Graham et al., 2011) have been widely used to measure individuals' endorsement of moral foundations. The MFQ has been applied across diverse cultural contexts, including Italy (e.g., Baldner & Pierro, 2019; Bianco & Kasic, 2023; Bianco et al., 2021, 2022; Bobbio et al., 2011).

However, the MFT and the MFQ have faced significant criticism (e.g., Braicovich, 2022; Kugler et al., 2014).

These critiques have motivated researchers to develop alternative frameworks, such as the Morality-as-Cooperation (MAC) Theory (Curry, 2016; Curry et al., 2019a, 2019b). Unlike the MFT, the MAC Theory focuses on morality as a set of evolved solutions to cooperation problems and introduces a new measurement instrument, the Morality-as-Cooperation Questionnaire (MAC-Q; Curry et al., 2019a). The MAC-Q has not been tested or adapted in Italy, leaving a gap in its applicability to the Italian context. This study aims to examine the factorial structure and the convergent and predictive validity of the MAC-Q in Italy, providing Italian researchers with a new tool for assessing moral dimensions.

The paper begins with a brief overview of MFT and MFQ, followed by an introduction to MAC and the MAC-Q, highlighting the key similarities and differences between the two influential frameworks.

The Moral Foundations Theory (MFT)

The Moral Foundations Theory (MFT) suggests that moral foundations are quick moral "intuitions" or automatic responses to social stimuli that drive moral judgments about what is morally right or wrong (Haidt, 2001). These judgments arise not from deliberate cognitive processes but from rapid, automatic intuitions closely tied to emotional responses. In this framework, cognitive reasoning functions primarily as a post-hoc rationalizing or justifying pre-formed moral judgments.

Most studies conducted within the MFT framework focused on five moral foundations as universal justice principles (Graham et al., 2009; Graham et al., 2011; Haidt, 2008; Haidt & Graham, 2007): (1) Care/Harm originates from the need to care for and protect others in order to prevent suffering. The virtues and emotions associated with it include caring, kindness, and compassion; (2) Fairness/Cheating is rooted in the principle of mutual cooperation. Emotional

responses to injustice include gratitude, guilt, and anger. The associated virtues are fairness, justice, and trustworthiness; (3) Loyalty/Betrayal stems from the human need to belong to groups. It is triggered by threats to the group and is linked to virtues such as adherence to tradition, patriotism, commitment, sacrifice, and attentiveness to betrayal. Emotional responses include pride in the group and anger toward those who deviate from its norms; (4) Authority/Subversion focuses on respect for social hierarchies, roles, and institutions; this foundation values obedience, duty, and order. Disrespect, non-conformity, or disobedience triggers feelings of disapproval or anger; (5) Purity/Degradation includes virtues of dignity, purity, chastity, and control of desires. It is activated when individuals perceive threats to the group's essence, cultural identity, or religious values. This foundation is often associated with emotions of disgust in response to perceived contamination or moral decay.

The first two foundations – Care and Fairness – encourage protection, partnership, compassion, kindness, and equity, and elicit disapproval of unjustified harm to and/or unfair treatment of others. These are "individualizing" moral foundations (Graham et al., 2009). In contrast, the next three foundations - Loyalty, Authority, and Purity - are classified as "binding" moral foundations because they promote group cohesion and social order by reinforcing shared roles, norms, and traditions (Janoff-Bulman & Carnes, 2013).

MFT has significantly influenced moral psychology. Numerous studies have demonstrated the predictive power of individualizing and binding moral foundations in shaping decision-making, attitudes, and behaviors. For instance, they have been linked to charitable giving (Nilsson et al., 2020), aggression (Cranmer & Martin, 2015), and perspectives on controversial political issues (Koleva et al., 2012).

Importantly, several studies have revealed that moral foundations are also key predictors of political orientation. Research shows that liberals tend to prioritize individualizing foundations, whereas conservatives more evenly value both individualizing and binding foundations (Graham et al., 2009; Kivikangas et al., 2021). In the Italian context, both Left- and Right-wing individuals prioritize individualizing foundations, but Right-wing individuals emphasize binding foundations more than Left-wing individuals (Di Battista et al., 2018; Milesi, 2017).

These moral foundations are commonly assessed by the Moral Foundations Questionnaire (MFQ; Graham et al., 2011), which operationalizes and measures the degree to which individuals endorse each foundation.

Moral Foundations Questionnaires

The Moral Foundations Questionnaire (MFQ; Graham et al., 2011) is one of the most widely used measures in psychology research for assessing moral dimensions, with application across numerous countries and cultural contexts (e.g., Barnett et al., 2018; Christie et al., 2019; Low & Wui, 2016). The MFQ includes two subscales: Relevance and Judgment. The Relevance subscale evaluates individuals' explicit beliefs about what they consider relevant when making judgments about right and wrong. The Judgment scale examines the extent

to which the five moral foundations are concretely used in expressing moral judgments.

Despite its widespread adoption, the MFQ has faced several notable critiques (e.g., Clifford et al., 2015):

(1) Low internal reliability: The dimensions of the MFQ often show only moderate internal reliability. For example, a recent review found that Cronbach's alpha scores for four out of the five subscales averaged 0.70 across 539 studies (Tamul et al., 2020);

(2) Inconsistent support for the five-factor model: The theoretical five-factor structure underlying MFT is not consistently replicated in studies using the MFQ (e.g., Atari et al., 2023; Gray & Keeney, 2015a; Iurino & Saucier, 2020; Wormley et al., 2023; Zakharin & Bates, 2021);

(3) Abstract wording and lack of concrete scenarios: Many MFQ items use phrasing rather than presenting concrete scenarios (Clifford et al., 2015). This can lead to ambiguous interpretations that can affect response patterns and reduce the scale's reliability;

(4) Ethical implications of binding foundations: Throughout history, values such as obedience, loyalty, and purity have been vital in fostering group cohesion and unity among tribes, communities, and nations. However, these same principles have also contributed to in-group favoritism, inter-group conflicts, and atrocities like genocide. Acts of loyalty to the in-group or obedience to authority have often required the exclusion or harm of out-group members. Many of humanity's gravest atrocities have been committed under the banner of group loyalty, blind obedience, and strict adherence to purity standards. Consequently, some scholars have questioned whether binding foundations should be classified as moral dimensions at all (e.g., Kugler et al., 2014);

(5) Conceptual problems with the foundation of Purity: In its current definition, Purity often overlaps with religious and cultural contexts. This raises concerns about its broad, potentially problematic application and about overlooked conceptual nuances in non-religious contexts (e.g., Gray et al., 2023).

Alternative measures have been developed to address these limitations, such as the Moral Foundations Questionnaire 2 (MFQ-2; Atari et al., 2023). The MFQ-2 was specifically designed to overcome several psychometric issues associated with the original MFQ, including concerns related to structural validity, internal consistency, and cross-cultural generalizability. From a theoretical perspective, it refines the moral foundations framework by distinguishing between Equality and Proportionality, while from a methodological standpoint, it introduces a revised item structure and format. Empirical evidence suggests that the MFQ-2 demonstrates improved psychometric properties and greater cross-cultural robustness compared to the original version (e.g., Atari et al., 2023; Zakharin & Bates, 2023; Winkelkotte et al., 2025; Hazrati et al., 2025; Magallares et al., *manuscript under review*), with recent findings from an Italian adaptation further supporting its adequacy in this context (Frisari et al., 2025).

However, despite these advancements, the MFQ-2 was not yet available at the time the present study was conducted. More broadly, both the MFQ and its revised version remain grounded within the Moral Foundations Theory (MFT) framework. In this regard, Haidt and colleagues have consistently encouraged

efforts to refine the taxonomy of moral foundations, either by introducing additional domains or by revisiting existing ones.

At the same time, recent work has highlighted some limitations of this approach. In particular, different taxonomies of moral values – whether within MFT or alternative frameworks – have been argued to converge on the central role of harm, suggesting that diverse moral domains may ultimately be rooted in perceptions of harm and suffering (Gray & Pratt, 2025). Moreover, concerns have been raised regarding the extent to which moral foundations represent distinct and stable cognitive modules, as originally proposed, or rather reflect clusters of values and moral rhetoric shaped by cultural and political contexts (Gray & Pratt, 2025). From this perspective, expanding the number of foundations may not fully address underlying conceptual challenges.

Building on these critiques, Curry (2016) argued that MFT, while framed as an evolutionary account of morality, overlooks several key forms of cooperation, such as kin altruism, reciprocal altruism, competitive altruism, and respect for prior possession. In response, he proposed the Morality-as-Cooperation (MAC) Theory, rooted in the principles of non-zero-sum game theory, as a more comprehensive evolutionary framework for understanding morality. Rather than extending an existing taxonomy, MAC derives moral domains from distinct cooperative functions, offering a theoretically grounded alternative to foundation-based approaches.

The Morality-as-Cooperation (MAC) Theory

The Morality-as-Cooperation (MAC) Theory posits that morality consists of a set of biological and cultural strategies based on the cooperation between humans (Curry, 2016; Curry et al., 2019a, 2019b). Central to this theory is the assertion that morality is fundamentally and universally a cooperative phenomenon. The importance of cooperation in maintaining social order is widely recognized, and philosophers throughout history – from Aristotle to Hume, Russell, and Rawls – have highlighted cooperation and conflict resolution ideas as essential in understanding morality.

Since their emergence, humans have lived in social groups based on mutual support. In these contexts, individuals could observe and reciprocate how they were treated, fostering behaviors promoting cooperation and empathy. These behaviors promoted survival at both the individual and group levels. The mechanisms underlying cooperation not only encouraged these behaviors but also provided a basis for evaluating others' actions. The MAC framework identifies these cooperative traits – including instincts, intuitions, and social institutions – as the core of human morality.

According to the MAC Theory, there are (at least) seven key forms of cooperation that underpin moral behavior: (1) the allocation of resources to kin; (2) coordination to mutual advantage; (3) social exchange; conflict resolution through contests featuring (4) displays of hawkish dominance and (5) dove-ish displays of submission; (6) division of disputed resources; and (7) recognition of property.

Curry (2016) suggests that each form of cooperation can be used to identify and explain specific moral rules or principles:

(1) Kin selection explains why we love and help your family; (2) Reciprocity/mutualism explains why we form groups and support them (there is strength and safety in numbers), and hence why we value unity, solidarity, and loyalty; (3) Social exchange explains why we trust others, reciprocate favors, feel gratitude and guilt, and forgive. Conflict resolution explains why we (4) engage in costly displays of prowess such as bravery and generosity, why we (5) express humility and respect authority, why we (6) divide disputed resources fairly and equitably, and why we (7) respect others' property and refrain from stealing. An analysis of historical ethnographic records of 60 societies revealed a universal moral significance attributed to those seven cooperative behaviors. Evidence for most of these moral values was found across cultures worldwide, demonstrating their broad applicability (Curry et al., 2019a, 2019b). However, the MAC Theory acknowledges that moral values are not uniformly expressed across societies. Instead, cultures vary in prioritizing or ranking these seven moral dimensions, reflecting different social and environmental contexts (Curry et al., 2019a, 2019b).

The Morality-as-Cooperation Questionnaire (MAC-Q)

The Morality-as-Cooperation Questionnaire (MAC-Q) is a self-report measure of moral attitudes across seven cooperative behaviors as defined by the MAC framework (Curry et al., 2019a): (1) Obligations to family (supporting family members, caring for children), (2) Group loyalty (commitment to one's group such as forming friendships, participating in collaborative efforts, favoring own group), (3) Reciprocity/mutualism (mutual exchange of costs and benefits), (4) Heroism (featuring the display of hawkish traits - demonstrating courage, bravery, generosity), (5) Respect for authority (acknowledging and valuing authority, featuring the display of dove-ish traits - humility, respect, obedience), (6) Fairness (sharing contested resources), and (7) Respect for property rights (honoring ownership).

While the MAC-Q shares some similarities with the Moral Foundations Theory (MFT) – particularly in its inclusion of domains like loyalty, authority, and fairness – it goes beyond the MFT by introducing additional moral domains focused on family, reciprocity, heroism, and property rights.

The development of the MAC-Q followed a process similar to that of the Moral Foundations Questionnaire (MFQ; Graham et al., 2011). The MAC-Q employs two subscales to reflect each moral domain: Relevance and Judgment. The Relevance subscale examines whether each proposed domain is morally relevant, while the Judgment subscale measures agreement with specific, context-based moral judgments. Analysis of the MAC-Q showed that modeling relevance and judgment as separate yet correlated latent variables provided a better fit compared to a single-construct model (Curry et al., 2019a).

The present study

The present study aims to examine the psychometric properties of the MAC-Q in the Italian context (Ob. 1) and to assess its convergent validity by comparing it with the MFQ (Ob.

2). Additionally, existing research highlights a significant relationship between moral foundations and political orientation (Clifford et al., 2015; Federico et al., 2013; Graham et al., 2009; Koleva et al., 2012). Specifically, findings suggest that liberals tend to prioritize Care and Fairness, while conservatives tend to be more supportive of Authority, Loyalty, and Purity (e.g., Graham et al., 2009). A secondary objective of this study is to evaluate the predictive validity of the MAC-Q concerning political orientation and moral behavior (Ob. 3). Based on the outlined research objectives, the following hypotheses were proposed:

- Hypothesis 1 (H1): The MAC-Q will exhibit a seven-factor structure, confirming the existence of seven distinct moral dimensions (Obligations to Family, Loyalty to Group, Reciprocity, Heroism, Respect for Authority, Fairness, and Respect for Property) within the Italian context, in alignment with the framework proposed by Curry et al. (2019a).
- Hypothesis 2 (H2): The MAC-Q will demonstrate convergent validity by showing significant correlations between its moral dimensions and the corresponding dimensions assessed by the MFQ, highlighting overlapping constructs while identifying unique aspects of the MAC-Q.
- Hypothesis 3 (H3): Political orientation will be significantly predicted by the moral dimensions measured by the MAC-Q. Specifically, dimensions such as Respect for Authority, Heroism, Obligations to Family, and Respect for Property are expected to be positively associated with a more conservative (right-wing) political orientation. In contrast, dimensions such as Fairness, Loyalty to Group, and Reciprocity are anticipated to predict a more liberal (left-wing) orientation.
- Hypothesis 4 (H4): The MAC-Q will establish predictive validity in explaining (im)moral behavioral intentions. Dimensions such as Respect for Authority, Heroism, and Respect for Property are predicted to be negatively associated with immoral behavioral intentions, reflecting stronger moral inclinations.
- Hypothesis 5 (H5): The MAC-Q will effectively predict perceptions of ingroup morality, with dimensions such as Loyalty to Group, Respect for Authority, and Obligations to Family positively associated with favorable evaluations of ingroup morality. Conversely, Fairness and Reciprocity may be associated with less favorable evaluations of ingroup morality due to their focus on broader or intergroup fairness.

These hypotheses provide a comprehensive framework for testing the factorial structure, convergent validity, and predictive utility of the MAC-Q in the Italian context.

Method

Participants and Procedure

The MAC-Q scale was administered to a sample of Italian adults in 2022. Data were collected online, with a Google Form link distributed via various social media platforms

and among undergraduate Psychology students at Sapienza University of Rome. Students were encouraged to share the link further within their networks, though recruiting additional participants was not required for their participation in the study.

At the start of the survey, participants were presented with informed consent, which outlined the anonymous nature of the study and confirmed their right to withdraw at any time. All responses were recorded anonymously, and the questionnaire took approximately 15 minutes. Participants completed the MAC-Q, the MFQ, a measure of moral behavior, and provided demographic information.

The final sample included 693 Italian participants (excluding those with missing values), comprising 449 women and 244 men, aged 17 to 78 years ($M = 39.10$, $SD = 16.10$). Approximately 60% of the participants were over 30 years of age, with the remaining 40% younger. Regarding educational attainment, 62.9% held a high school diploma, 8.2% had a bachelor's degree, 9.7% had a master's degree, 4.3% had a postgraduate specialization, and the remainder had not completed high school. Regarding political orientation, 40.7% identified as left or center-left, 23.3% as right or center-right, and 36.1% were undecided.

Following Kline's (2016) recommendation for a sample size adequate for CFA based on a 10:1 ratio, 693 participants met the criteria for the proposed confirmatory factor analysis (CFA). The CFA was conducted to assess the seven-factor structure of the MAC-Q as proposed by Curry and colleagues (2019a). After confirming this factorial structure, we conducted a correlation analysis between the MAC-Q and MFQ dimensions to assess convergent validity. Additionally, we analyzed the relationships between the MAC-Q dimensions and political orientation, immoral behavioral intentions, and ingroup morality to assess predictive validity.

The study was approved by the local Ethics Committee of the Department of Psychology of Developmental and Socialization Processes, Sapienza University of Rome (*Prot.* 647).

Measures

The questionnaire included a set of Likert-type scales designed to assess the main constructs of interest.

The *Moral Foundations Questionnaire* (MFQ; Graham et al., 2011). Participants completed the Italian version of the MFQ (Bobbio et al., 2011), also available at <https://moralfoundations.org/questionnaires/>. The MFQ comprises two subscales, each with 15 items (+2 items for a desirability check). The Relevance subscale assesses what individuals consider morally significant across various moral foundations. For example, "Whether or not someone took care of a weak or vulnerable person" (Harm) or "Whether or not someone betrayed their group" (Loyalty). Participants rated the relevance of each statement on a 6-point scale (1 = not relevant at all, 6 = extremely relevant).

The Judgment subscale measures the extent to which individuals agree or disagree with moral judgments based on these foundations (Graham et al., 2011). Example items include "Compassion for those who suffer is the most important virtue

of all" (Harm), "Justice is the most important requirement for a society" (Fairness), and "Chastity is an important and valuable virtue" (Purity). Participants indicated their agreement or disagreement with each statement on a 6-point scale (1 = strongly disagree, 6 = strongly agree). Five indices were created by scoring the corresponding items from both subscales, as suggested by the authors (see also Koleva et al., 2012; Low & Wui, 2016). Cronbach's Alphas for the composite indices were Harm ($\alpha = .73$), Fairness ($\alpha = .72$), Loyalty ($\alpha = .73$), Authority ($\alpha = .71$) and Purity ($\alpha = .71$). Additionally, indices for the individualizing dimension (including items related to the foundations of Care and Fairness; $\alpha = .84$) and binding dimension (including items related to the foundations of Loyalty, Authority, and Purity; $\alpha = .88$) were computed.

The *Morality-as-Cooperation Questionnaire* (MAC-Q; Curry et al., 2019a). The questionnaire also included the MAC-Q. This instrument consists of two subscales – Relevance and Judgment – each containing 21 items across seven moral domains: Obligations to Family, Group Loyalty, Reciprocity, Heroism, Respect for Authority, Fairness, and Respect for Property Rights (3 items each). The Relevance subscale asks participants, "When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?" An example item is: "Whether or not someone did what they said they would do." Responses are provided on a 6-point scale (1 = not at all relevant, 6 = extremely relevant). The Judgment subscale asks participants to rate their agreement with statements using a 6-point scale (1 = strongly disagree, 6 = strongly agree), with a sample item "You should always put your family's interests first." While the MAC-Q items are not identical to those in the MFQ, some items are notably similar; for instance, the MAC-Q item "Whether or not someone deferred to those in authority" parallels the MFQ item "Whether or not someone showed a lack of respect for authority."

Two consecutive steps characterized the translation process of the MAC-Q. In the first step, a bilingual researcher translated the MAC-Q from English into Italian. Then, the Italian version of the questionnaires was sent to two other bilingual researchers to carry out the reverse translation process from Italian to English. As Borsa and colleagues (2012) recommended, none of the translators in either direction had any knowledge of the instrument's functioning, and none of the reverse translators had access to the original English version. This back-translation process identified no conceptual inconsistencies between the two versions (see Supplementary Materials for the complete list of items translated into Italian).

The reliability of the MAC-Q dimensions was satisfactory across domains. Specifically, for Obligations to Family, $\alpha = .94$ for the Relevance subscale and $\alpha = .89$ for the Judgment subscale; for Group Loyalty, $\alpha = .96$ (Relevance) and $\alpha = .86$ (Judgment); for Reciprocity, $\alpha = .93$ (Relevance) and $\alpha = .80$ (Judgment); for Heroism, $\alpha = .91$ (Relevance) and $\alpha = .78$ (Judgment); for Respect for Authority, $\alpha = .94$ (Relevance) and $\alpha = .81$ (Judgment); for Fairness, $\alpha = .85$ (Relevance) and $\alpha = .83$ (Judgment); and for Respect for Property Rights, $\alpha = .95$ (Relevance) and $\alpha = .65$ (Judgment).

The *Ingroup Morality Index*. To assess perceptions of ingroup morality, we developed a scale based on Fiske and colleagues' Stereotype Content Model (2002). Participants were asked

to evaluate the morality of their ingroup (Italians) using the following adjectives: Sincere, False (reverse-coded), Honest, Dishonest (reverse-coded), Trustworthy, Untrustworthy (reverse-coded), Respectful, and Disrespectful (reverse-coded). Each dimension was measured using a six-point Likert scale (1 = not at all, 6 = completely).

An Exploratory Factor Analysis (EFA) was conducted to assess the underlying factor structure of the Ingroup Morality Index. The results indicated that the data were suitable for factor analysis, as evidenced by a significant Bartlett's Test of Sphericity ($\chi^2(28) = 4266, p < .001$) and an adequate Kaiser-Meyer-Olkin measure ($KMO = .84$). The EFA, using the Maximum Likelihood extraction method, revealed a single factor with an eigenvalue greater than 1, explaining 53.8% of the variance. Therefore, a composite index of ingroup morality was computed ($\alpha = .91$), with higher scores indicating more positive moral evaluations of the ingroup.

The *Immoral Behavioral Intentions Scale*. The scale was developed for this study to assess the likelihood of individuals engaging in various unethical, immoral, or risky behaviors. It consists of 11 items, each asking respondents to rate how likely they are to engage in a particular behavior on a 5-point Likert scale (1 = never, 5 = always). The behaviors include tax evasion, substance use, dishonesty in personal and professional settings, and violations of public order. Examples of items are "Throwing garbage in a public place," "Driving under the influence of alcohol," and "Not paying taxes to the state."

An Exploratory Factor Analysis (EFA) was conducted to assess the underlying factor structure of the scale. The results indicated that the data were suitable for factor analysis, as evidenced by a significant Bartlett's Test of Sphericity ($\chi^2(55) = 2836, p < .001$) and an adequate Kaiser-Meyer-Olkin value ($KMO = .90$). The EFA, using the Maximum Likelihood extraction method, revealed a single factor with an eigenvalue greater than 1, explaining 39.5% of the variance supporting the one-dimensionality of the scale. Therefore, a composite index of immoral behavioral intentions was created ($\alpha = .87$). Higher scores on the scale reflect a greater likelihood of engaging in such behaviors.

In addition, socio-demographic variables were collected, including age, gender, nationality, and parents' country of origin. Political orientation was assessed using a 7-point scale (1 = extremely left-wing, 7 = extremely right-wing; $M = 3.69$; $SD = 1.23$).

Complete descriptive statistics for all study variables, including reliability coefficients, are reported in the Supplementary Materials.

Data analyses

CFA analyses with the MLM estimator were conducted using R (R Core Team, 2023). Specifically, we used the lavaan package (Rosseel, 2012). Curry and colleagues conducted a CFA to confirm the factor structure (2019a). The seven-factor model was tested using the MLM estimator. Data fit was evaluated through the following indices: incremental or comparative indices (Tucker–Lewis Index or *TLI*, Comparative Fit Index or *CFI*), approximation indices (Root Mean Square Error of Approximation or *RMSEA*), and sample indices of fit (Standardized Root Mean Residual or *SRMR*). $TLI > .90$, $CFI > .95$, $RMSEA \leq .06$, and $SRMR \leq .08$ were considered indicators of model adequacy (Hu & Bentler, 1999). Subsequently, the convergent validity of the measure was tested by examining zero-order correlations between each factor of the MFQ and the MAC-Q. Finally, the predictive validity of the MAC-Q was tested using multiple linear regression analyses, a method commonly employed in psychometric research to assess the extent to which a measure can predict relevant criterion outcomes (e.g., Kline, 2015). Using the seven MAC-Q dimensions as predictors, separate multiple linear regression analyses were conducted for each outcome variable – political orientation, immoral behavioral intentions, and ingroup morality perception – separately for the Relevance and Judgment subscales.

Results

Confirmatory Factor Analysis

The seven-factor structure of the MAC-Q was tested for each subscale independently through CFA. The fit provided by the model was satisfactory for both the Relevance subscale ($\chi^2(168) = 348, p < .001$; $RMSEA = .050$, 95% *CI* [.05, .06], $TLI = .97$; $CFI = .97$, $SRMR = .030$) and the Judgment subscale ($\chi^2(168) = 574, p < .001$; $RMSEA = .066$, 95% *CI* [.06, .07]; $TLI = .91$; $CFI = .92$, $SRMR = .06$). The tested model supported the hypothesized seven-factor structure for both subscales, with standardized factor loadings ranging from .763 to .955 for the Relevance subscale and from .349 to .921 for the Judgment subscale (see Supplementary Materials for the full set of standardized loadings). Based on these results, we calculated seven composite scores for the MAC-Q by averaging responses for the items corresponding to each factor. Zero-order correlations between factors are available in Tables 1-3.

Tab. 1. Correlations between MAC-Q dimensions (Relevance Subscale), Political Orientation, Ingroup Morality, and Immoral Behavioral Intentions

	1	2	3	4	5	6	7	8	9
1. Obligation to Family	-								
2. Group Loyalty	.65***	-							
3. Reciprocity	.57***	.59***	-						
4. Heroism	.50***	.52***	.55***	-					
5. Respect for Authority	.50***	.55***	.53***	.53***	-				
6. Fairness	.38***	.40***	.52***	.44***	.43***	-			
7. Respect for Property Rights	.43***	.41***	.53***	.39***	.43***	.61***	-		
8. Political Orientation	.17***	.07	.09*	.08*	.21***	.01	.08*	-	
9. Ingroup Morality	.00	.09*	-.02	.09*	.16***	-.03	-.03	.11**	-
10. Immoral Behavioral Intentions	-.11**	-.12**	-.07	-.13***	-.26***	-.13***	-.13***	-.04	-.16***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Tab. 2. Correlations between MAC-Q dimensions (Judgment Subscale), Political Orientation, Ingroup Morality, and Immoral Behavioral Intentions

	1	2	3	4	5	6	7	8	9
1. <i>Obligation to Family</i>	-								
2. <i>Group Loyalty</i>	.40***	-							
3. <i>Reciprocity</i>	.38***	.46***	-						
4. <i>Heroism</i>	.47***	.43***	.43***	-					
5. <i>Respect for Authority</i>	.55***	.45***	.42***	.53***	-				
6. <i>Fairness</i>	.11***	.23***	.30***	.15***	.16***	-			
7. <i>Respect for Property Rights</i>	.03	.07	.05	.05	.08*	.00	-		
8. <i>Political Orientation</i>	.22***	.03	.09*	.20***	.27***	-.17***	-.06	-	
9. <i>Ingroup Morality</i>	.15***	.17***	.07	.25***	.18***	-.05	.00	.11***	-
10. <i>Immoral Behavioral Intentions</i>	-.18***	-.14***	-.12**	-.19***	-.25***	-.07	.34***	-.04	-.16***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Tab. 3. Correlations between MAC-Q dimensions (Relevance and Judgment subscales).

Factor	Obligations to Family ‡	Group Loyalty ‡	Reciprocity ‡	Heroism ‡	Respect for Authority ‡	Fairness ‡	Respect for Property Rights ‡
Obligations to Family †	.50***	.36***	.31***	.33***	.42***	.22***	.20***
Group Loyalty †	.27***	.45***	.35***	.37***	.38***	.31***	.26***
Reciprocity †	.37***	.40***	.46***	.44***	.44***	.41***	.39***
Heroism †	.36***	.34***	.30***	.58***	.49***	.24***	.22***
Respect for Authority †	.37***	.36***	.31***	.36***	.65***	.25***	.26***
Fairness †	.25***	.26***	.33***	.26***	.20***	.29***	.36***
Respect for Property Rights †	-.08*	-.04	-.08*	-.05	.07	-.02	-.03

Note: * $p < .05$; ** $p < .01$; *** $p < .001$; ‡ = Relevance subscale dimensions; † = Judgment subscale dimensions

Convergent validity

We examined the convergent validity of the MAC-Q (Curry et al., 2019a) by conducting a correlation analysis between the Italian adaptation of the MAC-Q and the dimensions of the MFQ (Bobbio et al., 2011), including both the Individualizing and Binding moral foundations (see Table 4).

For the Relevance subscale, the results revealed clear, theoretically coherent patterns of association between the corresponding dimensions of the MAC-Q and the MFQ. In particular, Obligations to Family and Group Loyalty were strongly associated with both Harm and Loyalty (Ingroup), while Reciprocity showed strong correlations with Harm, Fairness, and Loyalty. Fairness and Respect for Property Rights were primarily related to Individualizing foundations (Harm and Fairness), whereas Heroism was mainly associated with Loyalty. Respect for Authority showed strong associations with binding foundations (Authority, Loyalty, and Purity).

For the Judgment subscale, the pattern of correlations was more differentiated. Several dimensions – such as Obligations

to Family, Group Loyalty, Respect for Authority, Respect for Property Rights, and Heroism – were primarily associated with binding foundations (Loyalty, Authority, and Purity), whereas they showed weaker or non-significant relationships with individualizing foundations (Harm and Fairness). In contrast, the Fairness dimension of the MAC-Q was strongly associated with individualizing foundations and weakly related to binding foundations. Reciprocity was most strongly correlated with Harm and Loyalty, while showing significant associations with all moral foundations.

Overall, these results provide support for the convergent validity of the MAC-Q, although some variability across subscales – particularly for Judgment – suggests partial divergence from the MFQ structure.

Predictive Validity

Two linear regression analyses were conducted for each outcome variable, including political orientation, (im)moral

Tab. 4. Convergent validity with correlations between MAC-Q (Relevance and Judgment subscales) and MFQ.

F†	Family \$		Loyalty \$		Reciprocity \$		Heroism \$		Authority \$		Fairness \$		Property Rights \$	
	R	J	R	J	R	J	R	J	R	J	R	J	R	J
Harm	.39***	.16***	.38***	.23***	.41***	.35***	.38***	.23***	.33***	.18***	.38***	.41***	.41***	.09*
Fairness	.31***	.07	.30***	.18***	.38***	.28***	.31***	.12**	.24***	.05	.37***	.41***	.36***	.01
Ingroup	.48***	.50***	.44***	.37***	.40***	.31***	.44***	.44***	.50***	.47***	.31***	.16***	.32***	.05
Authority	.35***	.41***	.35***	.33***	.33***	.28***	.38***	.46***	.61***	.58***	.28***	.05	.30***	.08*
Purity	.34***	.42***	.29***	.31***	.24***	.27***	.33***	.42***	.48***	.47***	.25***	.01	.22***	.10**
Individualizing	.38***	.12***	.36***	.22***	.42***	.33***	.37***	.19***	.30***	.12***	.40***	.44***	.41***	.05
Binding	.43***	.50***	.40***	.38***	.36***	.32***	.43***	.50***	.60***	.56***	.31***	.08*	.31***	.09*

Note: * $p < .05$; ** $p < .01$; *** $p < .001$; F = Factor; † = MFQ dimensions; \$MAC = MAC-Q dimensions; R = MAC-Q Relevance subscale; J = MAC-Q Judgment subscale

behavioral intentions, and ingroup morality to assess the predictive validity of the MAC-Q's moral dimensions. The seven moral dimensions from the MAC-Q were entered as independent variables and analyzed separately for the Relevance and Judgment subscales, following the approach outlined by Curry et al. (2019a). This method allowed us to explore how each moral dimension predicts key outcomes, aligning with the literature that moral values influence group attitudes, behaviors, and perceptions (Graham et al., 2009; Kivikangas et al., 2021). Before the regression analyses, correlations were calculated to examine the relationships between the moral dimensions of the MAC-Q (separately for each subscale) and the three outcome variables (see Tables 1-2).

Political Orientation

Numerous studies have shown that moral dimensions significantly influence political attitudes, as moral values shape how individuals perceive and engage in social and political issues (Haidt & Graham, 2007; Day et al., 2014; Feinberg & Willer, 2013). Individuals with varying political orientations tend to prioritize different moral foundations (Graham et al., 2009; Kivikangas et al., 2021). Additionally, the moral dimensions outlined in the MAC-Q are conceptually tied to values that often diverge according to political ideologies (Curry et al., 2019a). Consequently, political orientation was used as an outcome variable to examine the predictive validity of the MAC-Q dimensions. To this end, two separate linear regression analyses were conducted (for the Relevance and Judgment subscales), with political orientation as the dependent variable.

Both models were statistically significant, explaining 7% and 14% of the variance in political orientation, respectively (Relevance subscale: $R^2 = .07$, $F(7, 685) = 7.75$, $p < .001$; Judgment subscale: $R^2 = .14$, $F(7, 685) = 16.4$, $p < .001$).

For the Relevance subscale, results showed that Obligations to Family ($\beta = .19$, $SE = .06$, $t = 3.57$, $p < .001$) and Respect for Authority ($\beta = .24$, $SE = .05$, $t = 4.99$, $p < .001$) were positively associated with a more right-wing political orientation, whereas Fairness ($\beta = -.13$, $SE = .05$, $t = -2.53$, $p = .012$) and Group Loyalty ($\beta = -.12$, $SE = .06$, $t = -2.32$, $p < .05$) were negatively associated with political orientation, predicting a more left-wing stance. Other dimensions – Reciprocity, Respect for Property, and Heroism – did not show significant associations with political orientation.

For the Judgment subscale, Obligations to Family ($\beta = .11$, $SE = .05$, $t = 2.50$, $p = .013$), Respect for Authority ($\beta = .23$, $SE = .07$, $t = 4.94$, $p < .001$), and Heroism ($\beta = .09$, $SE = .06$, $t = 2.06$, $p = .040$) were positively associated with a more right-wing political orientation. In contrast, Fairness ($\beta = -.21$, $SE = .07$, $t = -5.67$, $p < .001$) and Group Loyalty ($\beta = -.12$, $SE = .07$, $t = -2.83$, $p = .005$) were negatively associated with political orientation, predicting a more left-wing stance. The remaining dimensions – Reciprocity and Respect for Property Rights – were not significant predictors of political orientation.

Finally, we conducted an additional regression analysis to test the predictive validity of the dimensions of the Moral Foundations Questionnaire (MFQ), with political orientation

as the outcome variable ($R^2 = .16$, $F(5, 687) = 27.5$, $p < .001$). The results indicated that Fairness was associated with a more left-leaning political orientation ($\beta = -.32$, $SE = 0.09$, $t = -5.63$, $p < .001$), while Authority ($\beta = .26$, $SE = .08$, $t = 4.39$, $p < .001$) was linked to a more right-leaning political tendency. The other moral foundations showed no significant associations¹.

Immoral Behavioral Intentions

Examining the predictive power of the MAC-Q's moral dimensions on (im)moral behavioral intentions, two linear regression analyses were performed with the (im)moral behavioral intentions score as the dependent variable.

Both regression models were statistically significant, explaining 8% and 18% of the variance in (im)moral behavioral intentions, respectively (Relevance subscale: $R^2 = .08$, $F(7, 685) = 8.35$, $p < .001$; Judgment subscale: $R^2 = .18$, $F(7, 685) = 21.5$, $p < .001$).

Results for the Relevance subscale revealed that Reciprocity ($\beta = .14$, $SE = .04$, $t = 2.57$, $p = .010$) was positively associated with intentions to engage in immoral behaviors, while Respect for Authority ($\beta = -.29$, $SE = .03$, $t = -5.86$, $p < .001$) was negatively associated with immoral intentions, predicting a stronger inclination toward moral behavior. The other dimensions showed no significant associations with the outcome.

For the Judgment subscale, Respect for Authority ($\beta = -.12$, $SE = .04$, $t = -2.62$, $p = .009$) and Heroism ($\beta = -.10$, $SE = .03$, $t = -2.26$, $p = .024$) were negatively associated with immoral behavioral intentions, suggesting a stronger tendency toward moral behaviors, while Respect for Property ($\beta = .34$, $SE = .03$, $t = 9.58$, $p < .001$) was positively associated with immoral behavioral intentions, indicating a greater likelihood of engaging in such behaviors. The remaining dimensions were not significant predictors of (im)moral behavioral intentions.

Finally, we conducted an additional regression analysis to examine the predictive validity of the MFQ dimensions, using the (im)moral behavioral intentions score as the outcome variable ($R^2 = .10$, $F(5, 685) = 14.7$, $p < .001$). The results indicate that both Harm ($\beta = -.13$, $SE = .05$, $t = -2.14$, $p = .033$) and Purity ($\beta = -.19$, $SE = .04$, $t = -3.45$, $p < .001$) are associated with a lower propensity to engage in immoral behaviors. The other moral foundations showed no significant associations with the outcome².

Ingroup Morality

To assess how well the MAC-Q predicts the perception of ingroup morality, two linear regression analyses were conducted, with the Ingroup Morality Index as the dependent variable.

Both regression models were statistically significant, explaining 6% and 8% of the variance in the Ingroup Morality Index (Relevance subscale: $R^2 = .06$, $F(7, 685) = 6.32$, $p < .001$; Judgment subscale: $R^2 = .08$, $F(7, 685) = 8.44$, $p < .001$).

Specifically, results for the Relevance subscale showed that Group Loyalty ($\beta = .12$, $SE = .05$, $t = 2.13$, $p = .034$) and Respect for Authority ($\beta = .22$, $SE = .04$, $t = 4.54$, $p < .001$)

were positively associated with positive moral evaluations of the ingroup. Conversely, Reciprocity ($\beta = -.14$, $SE = .05$, $t = -2.56$, $p = .011$) was negatively associated with positive ingroup morality perceptions. Other dimensions did not exhibit significant associations with the outcome.

For the Judgment subscale, Group Loyalty ($\beta = .10$, $SE = .06$, $t = 2.16$, $p = .029$) and Heroism ($\beta = .21$, $SE = .05$, $t = 4.52$, $p < .001$) were positively associated with favorable perceptions of ingroup morality, indicating their protective role in ingroup evaluations. Conversely, Fairness ($\beta = -.09$, $SE = .06$, $t = -2.40$, $p = .017$) was negatively associated with positive perceptions of ingroup morality. The remaining dimensions showed no significant associations with the outcome.

Finally, we conducted an additional regression analysis to test the predictive validity of the MFQ dimensions, using the Ingroup Morality Index as the outcome variable ($R^2 = .07$, $F(5, 687) = 10.9$, $p < .001$). The results indicated that Fairness was associated with a more negative perception of the ingroup's morality ($\beta = -.15$, $SE = .07$, $t = -2.46$, $p = .014$), while Ingroup ($\beta = .12$, $SE = .06$, $t = 2.02$, $p = .044$) and Purity ($\beta = .23$, $SE = .05$, $t = 4.20$, $p < .001$) were associated with more positive moral evaluations of the ingroup. The other moral foundations showed no significant associations with the outcome variable³.

Discussion

The present study introduces the first Italian adaptation of the Morality-as-Cooperation Questionnaire (MAC-Q; Curry et al., 2019a) and discusses its psychometric properties, including convergent and predictive validity. The study addresses a gap in the existing literature by offering an alternative to widely used measures in moral psychology, particularly the MFQ, aligning with a contemporary framework rooted in cooperation-based morality (Morality-as-Cooperation; Curry et al., 2016).

In recent decades, several theories and measures have been proposed in moral psychology to describe individual differences in people's moral attitudes and values. Among these, the Moral Foundations Theory (MFT; Graham et al., 2013; Haidt & Joseph, 2004, 2007) has been the most influential, proposing that moral judgments can be understood in terms of five (or six) foundational domains. Several measures have been developed to measure adherence to these different moral values. Instruments such as the Moral Foundations Questionnaire (MFQ; Graham et al., 2011) have operationalized these constructs, and the MFQ, in particular, has been largely used in various cultural contexts, including Italy (e.g., Bobbio et al., 2011; Baldner & Pierro, 2019; Bianco & Koscic, 2023; Bianco et al., 2021, 2022; Milesi, 2017; Di Battista et al., 2018). However, despite its widespread use, criticisms of the MFQ have led to the need to explore alternative theories and measures of morality. This study contributes to this growing work by adapting the MAC-Q in the Italian context.

The Morality-as-Cooperation (MAC) Theory (Curry et al., 2016), from which the MAC-Q is derived, defines morality as a set of biological and cultural strategies developed to address cooperation problems recurrent in human social life. It defines seven core types of cooperation, each corresponding

to a distinct moral dimension: (1) Obligations to Family, (2) Group Loyalty, (3) Reciprocity, (4) Heroism, (5) Respect for Authority, (6) Fairness, and (7) Respect for Property Rights.

The CFA and reliability findings supported the original seven-factor correlated structure (Curry et al., 2019a), suggesting that the MAC-Q can be effectively applied in the Italian context without modification.

Although the suitability of MAC theory as the most appropriate framework for understanding moral domains remains open to debate, our results are consistent with previous studies (e.g., Curry et al., 2019a, 2019b) in supporting a multidimensional structure of morality organized around distinct cooperative domains (Hypothesis 1 confirmed). In line with the original recommendations (Curry et al., 2019a), the Relevance and Judgment subscales were analyzed separately to account for potential discrepancies between them.

Convergent validity of the Italian MAC-Q was assessed by examining the correlations between its dimensions and the MFQ ones. Despite conceptual and structural similarities – particularly in domains related to loyalty, authority, and fairness – the MAC-Q extends the MFT framework by capturing additional domains such as family, reciprocity, heroism, and property. The observed correlations revealed theoretically coherent patterns, with strong associations between corresponding dimensions across the two instruments (i.e., loyalty, authority, and fairness). At the same time, some weaker or non-significant correlations – particularly within the Judgment subscale – suggest that the MAC-Q also captures aspects of morality that are not fully overlapping with the MFQ. Taken together, these findings provide overall support for convergent validity while also indicating partial divergence between the two frameworks, thus partially confirming Hypothesis 2.

Consistent with previous literature investigating the association between moral values and political orientation (Haidt & Graham, 2007; Graham et al., 2009), this study confirmed that the moral dimensions of the MAC-Q are significant predictors of political orientation in the Italian context (Hypothesis 3 confirmed).

In particular, dimensions such as Respect for Authority, Obligations to Family, and Heroism emerged as positive indicators of a conservative (right-wing) orientation, aligning with conservatives' traditional emphasis on values that promote social cohesion, order, and stability. This finding is consistent with previous studies showing that conservatives favor Binding moral foundations (Authority, Loyalty, and Purity; Graham et al., 2009; Kivikangas et al., 2021).

In contrast, dimensions such as Fairness showed a negative association with conservative orientation, suggesting a greater affinity with progressive (left-wing) positions, which traditionally emphasize principles of fairness and individual protection. This result aligns with progressives' tendency to emphasize Individualizing moral foundations (Care and Fairness; Graham et al., 2009).

An interesting element concerns the differential associations between the Relevance and Judgment subscales. Although both showed predictive ability, the Judgment subscale explained a higher proportion of variance in political orientation (14% compared to 7% for Relevance). This suggests that explicit

and concrete attitudes towards specific moral standards (as measured by the Judgment subscale) may be more closely related to political preferences than the simple relevance attached to moral principles (Relevance). However, the predictive validity of the MAC-Q regarding political orientation did not replicate the exceptionally high external validity reported for the MFQ in previous studies (e.g., Graham et al., 2011).

In addition to political orientation, we examined the predictive power of the MAC-Q with respect to (im)moral behavioral intentions. The results revealed a differentiated pattern across moral dimensions rather than a uniform effect (Hypothesis 4 partially supported). In particular, only specific cooperation-based moral domains are linked to behavior: values related to authority and social order – such as Respect for Authority and Heroism – appear to inhibit immoral behavior, whereas other domains – such as Reciprocity and Respect for Property – are positively associated with immoral behavioral intentions, suggesting more complex or context-dependent pathways. Overall, these results provide partial support for the predictive validity of the MAC-Q and suggest that its moral dimensions capture meaningful, yet differentiated, pathways to moral behavior. These findings suggest that the MAC-Q shows promising predictive utility for moral behavior, and in some cases may capture variance beyond that explained by the MFQ, in line with previous research (e.g., Dogruyol et al., 2024). Furthermore, this pattern is consistent with prior work linking cooperation-based moral values to behavioral outcomes, including cooperative tendencies in experimental contexts, supporting the relevance of the MAC framework for understanding moral action (e.g., Yilmaz et al., 2021).

Finally, the MAC-Q dimensions also showed a differentiated pattern in predicting ingroup moral perceptions (Hypothesis 5 partially supported). In particular, values related to group cohesion and social order – such as Group Loyalty, Respect for Authority, and Heroism – were associated with more positive evaluations of the ingroup. In contrast, other dimensions, such as Reciprocity (Relevance subscale) and Fairness (Judgment subscale), were negatively associated with ingroup moral perceptions, suggesting a more critical evaluation of the ingroup. This pattern is consistent with previous research showing that binding moral foundations are associated with more favorable ingroup evaluations and, in some cases, with intergroup bias (e.g., Graham et al., 2009), as well as with studies in the Italian context linking these values to prejudice toward migrants (e.g., Baldner & Pierro, 2019; Bianco & Kasic, 2023; Bianco et al., 2021, 2022).

Although these findings are interesting and promising, several limitations should be acknowledged.

First, the sample was not balanced in gender, with a predominance of female participants (64.8%). This distribution may limit the generalizability of the results and underline the need for future research that includes more representative and balanced samples in terms of gender, age, educational level, and socio-cultural background. In addition, the use of social networks and snowball sampling may have introduced selection bias, suggesting the importance of adopting more diverse and randomized data collection strategies.

A second limitation concerns the distinction between the two subscales, Relevance and Judgment. Although the

MAC-Q is designed to capture these as separate subscales, the discrepancies observed in the data might suggest that some moral dimensions are better suited for a unified scale, an issue that warrants further investigation.

With regard to convergent validity, although the MAC-Q showed good convergent validity with the MFQ, some weak or non-significant correlations emerged. This suggests that there may be aspects of morality not fully captured by the MAC-Q, and further comparisons with a broader range of moral instruments would help clarify its scope.

In terms of predictive validity, the use of a single-item measure of political orientation represents a limitation, as it risks oversimplifying the multidimensional nature of political ideology, which encompasses economic, social, and cultural dimensions.

Despite these limitations, the present findings contribute to a growing body of research on the Morality-as-Cooperation framework and provide a foundation for future studies aimed at further exploring the role of cooperation-based moral domains across different psychological and social contexts. Future research could extend the application of the MAC-Q to the study of political attitudes and ideology, further clarifying how different cooperation-based moral domains relate to political orientation, particularly in light of recent evidence suggesting differentiated associations across domains (e.g., van Leeuwen et al., 2024). Similarly, future studies could examine the extent to which the MAC-Q predicts prosocial behavior and decision-making in social dilemmas, building on prior findings that highlight its potential relevance in behavioral contexts (e.g., Yilmaz et al., 2021; Curry et al., 2019b).

In addition, further research may investigate how MAC-based moral domains relate to broader psychological processes, such as attachment styles, compassion, and moral emotions (e.g., shame), thereby contributing to a deeper integration of the MAC framework within developmental and clinical perspectives (Waterman, 2024; Turner, 2024).

Finally, future work should continue to test the cross-cultural generalizability of the MAC framework across diverse contexts, while also addressing areas that require refinement – particularly the psychometric properties of the Judgment subscale (Yilmaz et al., 2021; Nejat & Hazrati, 2025; de Souza et al., 2026).

Overall, the MAC-Q adapted to the Italian context represents a promising instrument that can enrich cross-cultural research on morality, providing a basis for comparisons across societies and contributing to a better understanding of the role of moral values in shaping social attitudes and behaviors.

Note

¹ For detailed tables of regression coefficients examining the relationships between MAC-Q (Relevance and Judgment subscales) and Political Orientation, and MFQ and Political Orientation, refer to the Supplementary Materials.

² For detailed tables of regression coefficients examining the relationships between MAC-Q (Relevance and Judgment subscales) and Immoral Behavioral Intentions, and MFQ and Immoral Behavioral Intentions, refer to the Supplementary Materials.

³ For detailed tables of regression coefficients examining the relationships between MAC-Q (Relevance and Judgment subscales) and Ingroup Morality perception, and MFQ and Ingroup Morality perception, refer to the Supplementary Materials.

Ethical Approval

Approval was granted by the local Ethics Committee of the Department of Psychology of Developmental and Socialization Processes, Sapienza University of Rome [Protocol n.: 647].

Data Availability Statement

The dataset from this study is available in the OSF repository at <https://osf.io/hd6ju/>

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The authors have no competing interests to declare that are relevant to the content of this article.

Author Contributions

Francesca Valeria Frisari: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Software; Validation; Visualization; Writing – original draft; Writing – review & editing.

Ankica Kasic: Conceptualization; Project administration; Methodology; Supervision; Writing – original draft; Writing – review & editing.

Michele Vecchione: Methodology; Supervision; Writing – review & editing.

Supplementary material

The supplementary materials are available at <https://osf.io/hd6ju/>

Declaration about the use of generative AI and AI-assisted technologies in the writing process

No AI was employed in any stage of the study, including the writing process

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